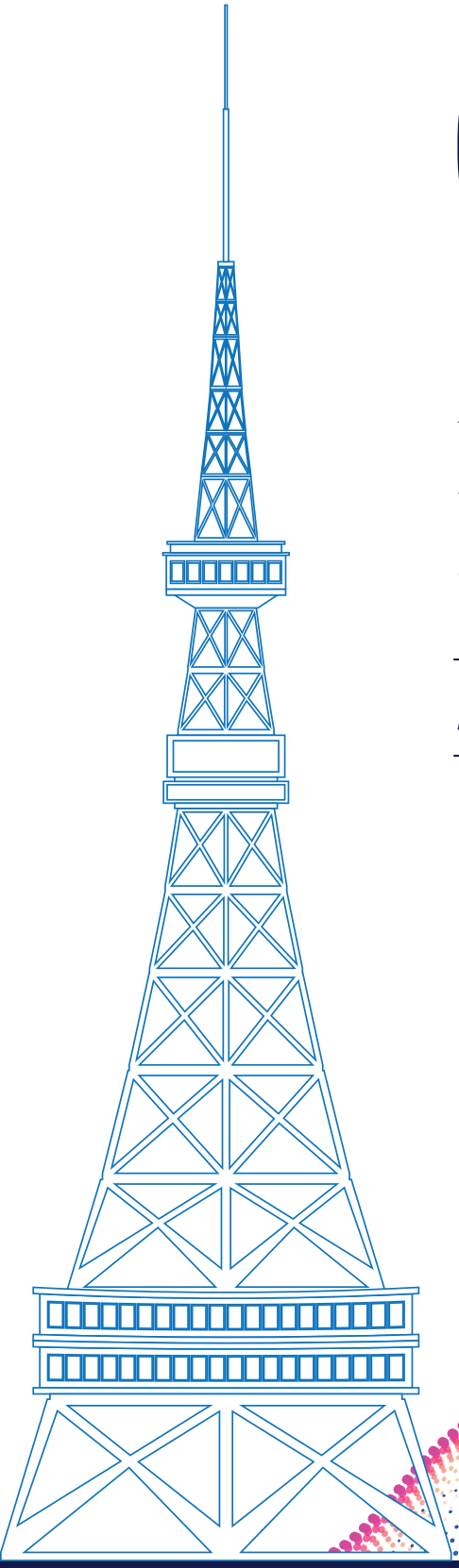
URSI GASS 2023

SAPPORO, JAPAN

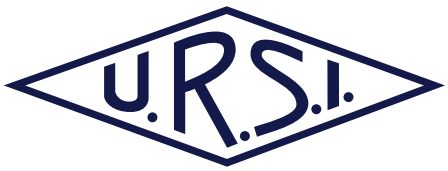
XXXVth URSI General Assembly
and Scientific Symposium

August 19(Sat)–26(Sat), 2023

Sapporo Convention Center



PROGRAM



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Message from URSI GASS 2023 General Chair

On behalf of the organizing committees, it is my great honor and pleasure to welcome all of you to the "XXXVth URSI General Assembly and Scientific Symposium," URSI GASS 2023 in Sapporo, Japan.

The URSI General Assembly and Scientific Symposium, URSI GASS, is a top-tier international conference held every three years since 1919, organized by the International Union of Radio Science, URSI. It aims to review current research trends, present new results and discoveries, and make plans for the future research and special projects in all areas of radio science, especially where international cooperation is desirable.

In the past, the URSI GASS was held twice in Japan: The first one was the 14th General Assembly held in Tokyo in 1963, and the second one was the 24th in Kyoto in 1993. Both of them were led to a great success. The URSI GASS 2023 is the third one held in Japan, 30 years after the Kyoto GASS. We are very happy to have a great number of radio scientists and engineers participating in this conference from all over the world.

The development of radio science has significantly contributed to the creation of our modern life. One prominent example is today's smart ICT society which is supported through the use of advanced wireless communications technologies. Radio science is also extremely important in monitoring the global environment, including climate, oceans and land, and in promoting disaster risk management, which will contribute to the realization of the SDGs. In the conference, state-of-the-art research results in these fields will be presented and discussed by prominent scientists and engineers as well as by young researchers including students, which will definitely result in a significant advance of radio science research worldwide.

We wish you enjoy plenary lectures and scientific sessions as well as fruitful discussions during the conference. In addition to this, we also wish you all have a pleasant stay in Sapporo. We sincerely hope that URSI GASS 2023 will lead to a great success, and contribute to further progress and development of radio science for our sustainable future.

Welcome to Sapporo, and welcome to URSI GASS 2023!

Kazuya Kobayashi
General Chair, XXXVth URSI General Assembly and Scientific Symposium

Message from President of the Japan National Committee of URSI

On behalf of the Japan National Committee of URSI (JNC-URSI), I would like to extend a hearty welcome to all the participants to the XXXVth URSI General Assembly and Scientific Symposium (URSI GASS 2023) in Sapporo, Japan. This conference is hosted by the JNC-URSI, and sponsored by The Institute of Electronics, Information and Communication Engineers (IEICE), Science Council of Japan (SCJ), and International Union of Radio Science (URSI).

The JNC-URSI was established and joined as one of the Member Committees of URSI in 1922, three years after the foundation of URSI in 1919. Since then, radio science research and related URSI activities in Japan have been conducted under the leadership of the JNC-URSI, which currently consists of about 200 official members nationwide. The JNC-URSI is placed under the supervision of the SCJ since 1949. After 1993, it has also adhered to the IEICE. Last year 2022 marked the 100th anniversary of URSI in Japan. At this memorable occasion, we are extremely happy to hold the URSI GASS for the third time in Japan, following the 14th General Assembly in Tokyo in 1963, and the 24th General Assembly in Kyoto in 1993.

Japanese URSI community has made significant contributions to various URSI activities over the 100 years. In addition to the active research and developments in a wide area of radio science covered by Commissions A-K, quite a few Japanese scientists have contributed to URSI management as URSI Board and Commission officers. In 2001, to promote the URSI activities in the Asia and Pacific region, Japan took initiative to establish the Asia-Pacific Radio Science Conference (AP-RASC), which has become one of the three URSI Flagship Meetings from 2016. We have also organized the URSI-Japan Radio Science Meeting (URSI-JRSM) since 2014, which provides a scientific forum for radio scientists and engineers in Japan and in the Asian countries. Since we understand that one of the key activities of URSI is to attract and encourage more young scientists to join the URSI events, we have organized and supported various young scientist programs at the URSI flagship meetings: For example, the Issac Koga Gold Medal has been awarded to an excellent young scientist at every URSI GASS since 1982. As we look toward the next 100 years to come, Japanese URSI community will continue to do our upmost for the advancement of radio science.

We are hoping that the URSI GASS 2023 will lead to a great success. We wish you enjoy fruitful discussions and exchange of ideas during this in-person conference, as well as a pleasant stay in the cozy city of Sapporo!

Satoshi Yagitani

President of the Japan National Committee of URSI

Message from Prof. Ondrej Santolik - URSI GASS 2023 Scientific Program Coordinator

Dear colleagues,

Thank you very much for your participation in the XXXVth General Assembly and Scientific Symposium of the International Union of Radio Science. It is my great pleasure to welcome you to this meeting. Why I'm writing to you: long 22 months ago I received a generous offer from the URSI President, George Uslenghi, to coordinate the scientific program of this meeting. I hesitated for 8 days. URSI is more than 100 years old, and I understand that it needs some volunteer work to continue looking fresh and smoothly running but I wasn't sure about me doing it. Once (much more than 22 months ago and slightly less than 100 years ago) I received a Young Scientist's tie and that tied me to URSI for my entire career. So, it is my strong and long-term affinity to this exceptional union that made me accept.

In this task I received very efficient help from the professional URSI secretary Inge Lievens, who did most of the work by answering piles of emails every day, on weekends and evenings. For that, I would like to thank her sincerely. I also appreciate the cooperation with the Local Organizing Committee lead by the tireless Chair Kazuya Kobayashi. And, as I believe that the only reasonable way of doing this work is the strict bottom-up approach, I asked all the Session conveners, URSI Commission Chairs, Vice-Chairs, and Early Career Representatives, to take their responsibilities and shape their sessions. Their response rate was very good in every step of the long program building procedure, and I'm sending a big "thank you" to all these colleagues from the 10 URSI commissions for their time, dedication, and teamwork.

Without them this meeting would have no contents, but, finally, their volunteer work results in a week-long program of 1590 presentations in 16 rooms (1145 onsite talks, 330 onsite posters, and 115 pre-recorded online videos). In the ten URSI commissions, 131 oral sessions are planned throughout the week, many of them in several blocks of talks. Four sessions are organized by Women in Radio Science. We also have 2 large poster sessions, as some commissions scheduled excellent presentations as posters, expecting thorough discussions. The highlights of the meeting are 10 Commission Tutorials, 3 Early Career Representative tutorials, and, most importantly, 3 general lectures and one public lecture given by top scientists in our fields of research. The pre-conference program includes the URSI School for Young Scientists, other interesting courses, workshops, and networking events.

I wish you a fruitful meeting, full of new resuts, deep discussions, and enjoyable sharing of results of your own work with your colleagues and friends.

Ondrej Santolik

Scientific Program Coordinator of the XXXVth URSI General Assembly and Scientific Symposium

2023 URSI GASS Welcome by the URSI President

Dear Radio Scientists and Accompanying Persons:

Welcome to the XXXVth General Assembly and Scientific Symposium of the International Union of Radio Science (URSI), held in the beautiful city of Sapporo, Japan on August 19-26, 2023!

Japan has an illustrious history of participation in URSI activities. In particular, it has held General Assemblies three times, at intervals of thirty years: in Tokyo (1963), Kyoto (1993), and this year in Sapporo. Japan also hosted the Asia-Pacific Radio Science Conference twice, at Tokyo in 2001 and at Toyama in 2010.

This GASS promises to be very successful in terms of number of participants, quality of the scientific program, and amenities. The presence of His Imperial Highness Crown Prince Akishino and of Government Officials at the Opening Ceremony is a testimonial to the high regard for radio science in Japan, and it adds a unique lustre to this symposium.

We owe a debt of gratitude to the organizers of this event: Kazuya Kobayashi, Chair of the Local Organizing Committee and Associate Scientific Program Coordinator, and his supporting staff; Ondrej Santolik, Scientific Program Coordinator; Satoshi Yagitani, President of the Japanese Committee of URSI; the Officers of the ten URSI Commissions; Peter Van Daele, URSI Secretary General, and his staff, Inge Heleu and Inge Lievens.

In addition to attending the scientific sessions and the social functions of the GASS, I hope that you will find the time to visit Sapporo, his surroundings and other sites in Japan. I wish you a profitable and joyful stay, and a safe return home. With warmest regards,

Piergiorgio L. E. (George) Uslenghi
President of URSI

Message from Prof. Peter Van Daele - URSI Secretary-General

Dear colleagues, it is my pleasure, as Secretary General of URSI, the International Union of Radio Science, to welcome you in the city of Sapporo at the occasion of our 35th General Assembly and Scientific Symposium.

URSI, is a global, non-profit and non-governmental association covering all aspects of radio science. I often refer to this domain as “anything to do with the Maxwell equations”. It is indeed shortly after the formulation of the well-known formulas by Maxwell and the rapid growing interest in wireless transmissions, that new applications of electricity and magnetism popped up at the end of the 19th century, laying the foundations, of our today’s communication networks.

In 1913, more than a century ago, His Royal Highness, King Albert I of Belgium, triggered by his own interest in technology, laid the foundations of URSI by establishing the “Commission Provisoire Internationale de Télégraphie Sans Fil Scientifique”, devoted to research and measurements of radio wave propagation.

This committee formed the basis of the “International Union of Scientific Radio Telegraphy”, established at the occasion of the 1st General Assembly of the International Research Council in 1919, at the same time, the International Union of Astronomy, the International Union of Pure and Applied Chemistry, the International Union of Geodesy & Geophysics and the International Union of Mathematics were established.

URSI held its 1st General Assembly in Brussels, Belgium in July 1922 with 4 Member Committees, namely Belgium, France, the United Kingdom and the United States and also establishing 4 Scientific Commissions. Shortly after this, an URSI Committee was set up in Japan and Japanese scientists participated actively in the 2nd General Assembly in Washington DC, USA in 1927.

Since my own first moments in joining URSI at the General Assembly in Kyoto in 1993, I have always been working together with Japanese scientists as members of the URSI Board or Commission Chairs. This will be also be the 3rd time that our Japanese colleagues host our URSI General Assembly. I take this opportunity to express my gratitude, in name of all our URSI colleagues for this interest and commitment.

URSI also distinguishes itself from many other organizations by running a Young Scientists’ program by which young researchers, presenting their work at the URSI General Assembly, receive an award and financial support based on the scientific quality of their work. The Japanese URSI Committee has been financially supporting this programme for many years, and as Secretary General, I can only express my deepest gratitude for this.

Let me conclude in wishing you all a very fruitful conference with lots of networking opportunities, but also many less formal and enjoyable moments with your colleagues here in Sapporo.

Peter Van Daele

URSI Secretary-General

INTERNATIONAL UNION OF RADIO SCIENCE (URSI)

Mission statement

Radio science encompasses the knowledge and study of all aspects of electromagnetic fields and waves. The International Union of Radio Science (Union Radio-Scientifique Internationale), a non-governmental and non-profit organization under the International Council for Science, is responsible for stimulating and coordinating, on an international basis, studies, research, applications, scientific exchange, and communication in the fields of radio science. Included within the objectives are the following:

a) to encourage and promote international activity in radio science and its applications, for the benefit of humanity;
b) to encourage the adoption of common methods of measurement, and the intercomparison and standardization of the measuring instruments used in scientific work;
c) to stimulate and co-ordinate studies of:
    a. the scientific aspects of telecommunications using electromagnetic waves, guided and unguided;
    b. the generation, emission, radiation, propagation, reception, and detection of fields and waves, and the processing of the signals embedded in them.
d) to represent radio science to the general public, and to public and private organizations.

l'UNION RADIO-SCIENTIFIQUE INTERNATIONALE

Rapport de mission

Les sciences de la radioélectricité comprennent la connaissance et l'étude de toutes questions liées aux champs et ondes électromagnétiques. L'Union Radio-Scientifique Internationale (International Union of Radio Science), une organisation non-gouvernementale et sans but lucrative sous les auspices du Conseil International pour la Science, a pour but de stimuler et de coordonner, à l'échelle internationale, les études, recherches, applications, échanges scientifiques et transferts d'information dans les domaines des sciences de la radioélectricité et, plus particulièrement:

1. d'encourager et de promouvoir, à l'échelle internationale, les activités dans le domaine des sciences de la radioélectricité et de ses applications, au profit de l'humanité;
2. d'encourager l'adoption de méthodes de mesure communes, ainsi que la comparaison et l'étalonnage des instruments de mesure utilisés dans les travaux scientifiques;
3. de stimuler et de coordonner les études portant sur:
    a. les aspects scientifiques des télécommunications utilisant les ondes électromagnétiques guidées et non guidées;
    b. la production, l'émission, le rayonnement, la propagation, la réception et la détection de ces champs et ondes, ainsi que le traitement des signaux dont ils sont porteurs;
4. de représenter les sciences de la radioélectricité auprès du public et des organisations publiques et privées.

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(†) passed away.

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(†) passed away.

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Ashley Vanderlay
Roger Varney
Felix Vega
Kumar Vijay Mishra
Kevin Vinsen
John L. Volakis
Maxim Voronkov
Maria-Theresia Walach
Henrik Wallen
Henrik Wallén
Chao Wang
Ningbo Wang
Jianqing Wang
Shigeto Watanabe
Steven Weiss
Dan Werthimer
Joe Wiart
Yusuf Nur Wijayanto
Stefan J. Wijnholds
Mengjie Wu
Tongning Wu
Sachiko Yamaguchi-Sekino
Tsunayuki Yamamoto
Kenichi Yamazaki
Bo Yang
Pasi Ylä-Oijala
Tatsushiro Yokohama
Qiaowei Yuan
Amir Zaghloul
Kate Zawdie
Haijun Zhang
Hui Zhang
Yuanjin Zheng
Pietro Zucca

URSI GASS 2023 Secretariat

Convention Linkage, Inc., Sapporo, Japan
Director: Yasushi Masuda
Coordinator: Masumi Hatta
Coordinator: Miku Oya

GENERAL ASSEMBLIES

The General Assemblies of URSI are held at intervals of three years. The main objective of the Assembly is to review current trends in research, present new discoveries and make plans for future research work or for specific projects, especially where it seems desirable to arrange for cooperation on an international scale. Symposia at the Assembly on selected topics are usually organized by two or more Commissions. Most radio scientists attend the General Assemblies solely for these scientific activities, which are open to anyone interested in radio science, whether or not connected with a Member Committee of the Union. The URSI General Assemblies were held at the following venues:

1922 Brussels (Belgium)
1927 Washington, D.C. (U.S.A.)
1928 Brussels (Belgium)
1931 Copenhagen (Denmark)
1934 London (U.K.)
1938 Venice (Italy)
1946 Paris (France)
1948 Stockholm (Sweden)
1950 Zurich (Switzerland)
1952 Sydney (Australia)
1954 The Hague (Netherlands)
1957 Boulder, CO (USA)
1960 London (UK)
1963 Tokyo (Japan)
1966 Munich (Germany)
1969 Ottawa (Canada)
1972 Warsaw (Poland)
1975 Lima (Peru)
1978 Helsinki (Finland)
1981 Washington D.C. (USA)
1984 Florence (Italy)
1987 Tel Aviv (Israel)
1990 Prague (Czechoslovakia)
1993 Kyoto (Japan)
1996 Lille (France)
1999 Toronto (Canada)
2002 Maastricht (the Netherlands)
2005 New Delhi (India)
2008 Chicago, IL (USA)
2011 Istanbul (Turkey)
2014 Beijing (China)
2017 Montreal (Canada)
2020 Rome (Virtual)
2021 Rome (Italy)
2023 Sapporo (Japan)

SCIENTIFIC COMMISSIONS

The various branches of radio science are allocated to a set of ten URSI Commissions. The make-up of these Commissions, and the topics of principal interest within them, move with the changing needs and interests of the scientific community. At present the Commissions and their interests are:

COMMISSION A
- ELECTROMAGNETIC METROLOGY, Electromagnetic measurements and standards.

Chair: Prof. Nuno Borges Carvalho (Portugal)

Vice-Chair: Dr. Amitava Sen Gupta (India)

ECR1: Dr. Nosherwan Shoaib (Pakistan)

ECR2: Dr. Giovanna Signorile (Italy)

The commission promotes research and development of the field of measurement standards and physical constants, calibration and measurement methodologies, improved quantification of accuracy, traceability, and uncertainty. Areas of emphasis are:

- the development and refinement of new measurement techniques and calibration standards, including techniques for antennas;
- primary standards, including those based on quantum phenomena, and the realization and dissemination of time and frequency standards;
- characterization of the electromagnetic properties of materials, physical constants, and the properties of engineered materials, including nanotechnology;
- methodology of space metrology and electromagnetic dosimetry, and measurements for health diagnostics, applications, and biotechnology, including bio sensing;
- measurement in advanced communication systems and other applications.

The commission fosters accurate and consistent measurements needed to support research, development, and exploitation of electromagnetic technologies across the spectrum and for all Commissions.

COMMISSION B
- FIELDS AND WAVES, Electromagnetic theory and applications.

Chair: Prof. John L. Volakis (USA)

Vice-Chair: Dr. Henrik Wallén (Finland)

ECR1: Dr. Andrea Michel (Italy)

ECR2: Dr. Dimitrios C. Tzarouchis (Finland)

The interest of Commission B is fields and waves, encompassing theory, analysis, computation, experiments, validation and applications. Areas of emphasis are:

- Time-domain and frequency-domain phenomena;
- Scattering and diffraction;
- General propagation including waves in specialised media;
- Guided waves;
- Antennas and radiation;
- Inverse scattering and imaging.

The Commission fosters the creation, development, and refinement of analytical, numerical, and measurement techniques to understand these phenomena. It encourages innovation and seeks to apply interdisciplinary concepts and methods.

COMMISSION C
- RADIOCOMMUNICATION SYSTEMS AND SIGNAL PROCESSING

Chair: Prof. Yves Louet (France)

Vice-Chair: Dr. Kumar Vijay Mishra (USA)

ECR1: Prof. Haijun Zhang (China, CIE)

ECR2: Dr. Krzysztof K. Cwalina (Poland)

The Commission promotes research and development in :

- Information Theory, Coding, Modulation and Detection;
- Spectrum and Medium Utilization, including cognitive and cooperative techniques;
- Wireless networking;
- Radar, radio localization and navigation systems;
- Green, energy-efficient radio communications.

The design of effective radio-communication and signal processing systems also includes scientific, engineering, and economic considerations. This Commission emphasises the scientific aspects of radio communications, but also provides enabling technologies to other areas of radio science.

COMMISSION D
- ELECTRONICS AND PHOTONICS

Chair: Prof. Naoki Shinohara (Japan)

Vice-Chair: Dr. Atsushi Kanno (Japan)

ECR1: Dr. Hossein Asghari (USA)

ECR2: Dr. Valentina Palazzi (Italy)

The Commission promotes research and reviews new developments in :

- Electronic systems that push beyond current frontiers;
- Microwave, millimeter wave and THz devices, circuits and systems;
- Nanotechnologies and nanoelectronics;
- Combined and hybrid photonic and electronic systems;
- Photonic devices, systems, and their applications;
- Photonic signal processing schemes, regardless of frequency of signal processed;
- Optoelectronic systems, plasmonics, and electro-optics;
- Physics, theoretical modeling, and numerical simulation of all of the above.

The Commission focuses on electronics and photonics devices, circuits and systems for the purpose of implementing either previously unattainable functionalities or for improving the performance of current electronic-only or photonic-only technologies.

COMMISSION E
- ELECTROMAGNETIC ENVIRONMENT AND INTERFERENCE

Chair: Prof. Virginie Deniau (France)

Vice-Chair: Prof. Carlo Carobbi (Italy)

ECR1: Dr. Chaouki Kasmi (United Arab Emirates)

ECR2: Dr. Riccardo Trinchero (Italy)

The Commission promotes research and development in :

- Terrestrial and planetary noise of natural origin, seismic associated electromagnetic fields;
- Man-made electromagnetic environment;
- The composite noise environment;
- The effects of noise on system performance;
- The effects of natural and intentional emissions on equipment performance;
- The scientific basis of noise and interference control, electromagnetic compatibility;
- Spectrum management.

COMMISSION F
- WAVE PROPAGATION AND REMOTE SENSING (planetary atmospheres, surfaces and subsurfaces)

Chair: Prof. Tullio Tanzi (France)

Vice-Chair: Dr. Motoyuki Sato (Japan)

ECR1: Dr. Motoharu Sasaki (Japan)

ECR2: Dr. Fikadu Tafes Dagefu (USA)

The Commission encourages :

- The study of all frequencies in a non-ionised environment :
  - wave propagation through planetary, neutral atmospheres and surfaces;
  - wave interaction with the planetary surfaces (including land, ocean and ice), and subsurfaces;
  - characterisation of the environment as it affects wave phenomena;
- The application of the results of these studies, particularly in the areas of remote sensing and communications;
- The appropriate co-operation with other URSI Commissions and other relevant organisations.

COMMISSION G
- IONOSPHERIC RADIO AND PROPAGATION (including ionospheric communications and remote sensing of ionised media)

Chair: Prof. Giorgiana De Franceschi (Italy)

Vice-Chair: Dr. Keith Groves (USA)

ECR1: Dr. Sean Elvidge (United Kingdom)

ECR2: Dr. Bruce Fritz (USA)

ECR3: Dr. Dario Sabbagh (Italy)

The Commission deals with the study of the ionosphere in order to provide the broad understanding necessary to support space and ground-based radio systems. Specifically, the Commission addresses the following areas:

- Global morphology and modelling of the ionosphere;
- Ionospheric space-time variations and the impacts of space weather on systems;
- Development of tools and networks needed to measure ionospheric properties and trends;
- Theory and practice of radio propagation in and through the ionosphere;
- Application of ionospheric information to radio systems.

To achieve these objectives, the Commission co-operates with other URSI Commissions, corresponding bodies of the ISC family (IUGG, IAU, COSPAR, SCOSTEP, SCAR, etc.) and other organisations (ITU, IEEE, etc.)

COMMISSION H
- WAVES IN PLASMAS (including space and laboratory plasmas)

Chair: Prof. Jyrki Manninen (Finland)

Vice-Chair: Prof. Craig J. Rodger (New Zealand)

ECR1: Dr. Frantisek Nemec (Czech Republic)

The goals of the Commission are :

- To study waves in plasmas in the broadest sense, and in particular :
  - the generation (e.g. plasma instabilities), propagation, and detection of waves in plasmas,
  - wave-wave and wave-particle interactions,
  - plasma turbulence and chaos,
  - spacecraft-plasma interaction,
  - instabilities, heating, and diagnosis of laboratory plasmas;
- To encourage the application of these studies, particularly in the areas of solar/planetary plasma interactions, space weather, and an increased exploitation of space as a research laboratory.

COMMISSION J
- RADIO ASTRONOMY

Chair: Prof. Douglas Bock (Australia)

Vice-Chair: Prof. Stefan J. Wijnholds (The Netherlands)

ECR1: Dr. Jacki Gilmore (South Africa)

ECR2: Dr. Danielle Fenech (United Kingdom)

The activities of the Commission include :

- observation and interpretation of cosmic radio emissions from the early universe to the present epoch and
- radio reflections from solar system bodies Emphasis is placed on :
- The promotion of science-driven techniques for making radio-astronomical observations and data analysis,
- Support of activities to protect radio-astronomical observations from harmful interference.

COMMISSION K
- ELECTROMAGNETICS IN BIOLOGY AND MEDICINE

Chair: Prof. Koichi Ito (Japan)

Vice-Chair: Prof. Francesca Apollonio (Italy)

ECR1: Dr. Kensuke Sasaki (Japan)

ECR2: Dr. Emily Porter (USA)

The Commission is charged with promoting research and development in the following domains:

- Physical interaction of electromagnetic fields (from static to optical) with biological systems;
- Biological effects of electromagnetic fields;
- Mechanisms underlying the effects of electromagnetic fields;
- Exposure systems of experimental electromagnetic fields;
- Assessment of human exposure to electromagnetic fields;
- Medical applications of electromagnetic fields.

Registration Desk

Registration Desk Opening Hours

August 19, Saturday	12:00-18:00
August 20, Sunday	7:30-18:30
August 21, Monday	8:00-18:00
August 22, Tuesday	8:00-17:00
August 23, Wednesday	8:00-18:30
August 24, Thursday	8:00-17:00
August 25, Friday	8:00-17:00
August 26, Saturday	8:00-12:00

Check-in

Upon arrival, please visit the Registration Desk to pick up your conference goods and name badge. Please wear the badge at all times when you stay at the conference venue.

Registration Fees

Category	Early (March 1 – June 1, 2023)	Midterm (June 2 – July 15, 2023)	Late (July 16 – August 26, 2023)
Full Registration[1]			
Members[2]	€ 665	€ 785	€ 900
Non-Members	€ 755	€ 885	€ 1,000
Students	€ 300	€ 360	€ 420
Other Categories			
Virtual Conference Viewers[3]	€ 190	€ 230	€ 270
Pre-Conference Program on August 19 and 20, 2023[4]	-----	€ 220	€ 260
Accompanying Person[5]	€ 100	€ 100	€ 100
Opening Reception (additional ticket)	€ 30	€ 30	€ 30
Banquet	€ 100	€ 100	€ 100

(1) Full registration includes the following:

- Access to URSI GASS 2023 online material: pre-recorded presentations, poster files in pdf, etc. (during the conference until December 31, 2023);
- Admission to URSI GASS 2023 Opening / Closing Ceremonies;
- Access to all URSI GASS 2023 sessions (including Pre-Conference Program on Saturday, August 19, 2023 and Sunday, August 20, 2023);
- Access to URSI GASS 2023 Opening Reception;
- Access to URSI GASS 2023 Exhibition;
- Coffee breaks;
- Onsite conference material;
- 3-year (August 2023 – July 2026) Corresponding Membership for URSI, if not yet being URSI Senior Member or URSI Fellow.

(2) Membership status refers to the following categories:

- URSI Senior Member;
- URSI Fellow;
- Member, IEEE AP-S (Antennas and Propagation Society);
- Member, AGU (American Geophysical Union);
- Member, EurAAP (European Association on Antennas and Propagation);
- Member, IEICE (The Institute of Electronics, Information and Communication Engineers).

(3) Virtual conference viewers can see recordings and PDF materials ONLY AFTER URSI GASS 2023 (until December 31, 2023). Hence there will be no interactions with participants and no possibilities of viewing online material during URSI GASS 2023.

(4) The registration fee for the Pre-Conference Program applies to participants attending the conference events (workshops and short courses) held only on Saturday, August 19, 2023 and Sunday, August 20, 2023. It also includes the admission to the URSI GASS 2023 Opening Ceremony and Opening Reception on Sunday, August 20, 2023 and conference material. This fee does not allow participants to attend the rest of the scientific program.

(5) The accompanying person's fee includes the following:

- Admission to Opening/Closing Ceremonies;
- Admission to Opening Reception;
- Coffee breaks;
- Access to accompanying persons' room, 1F, Sapporo Convention Center;
- Sapporo city tour;
- Japanese cultural experiences.

Language

The official language of URSI GASS 2023 is English. Simultaneous translation will not be provided.

Opening Ceremony and Opening Reception

The Opening Ceremony is split into two parts. Part 1 of the Ceremony will take place at 15:50-16:35 on Sunday, August 20 in Main Hall A, where His Imperial Highness Crown Prince Akishino will be present and deliver an address.

There will be a break between Parts 1 and 2 of the Opening Ceremony. The second part of the Ceremony is Awards Presentations and will take place at 17:50-18:50 in Main Hall A. Then the Opening Reception will be held at 18:50-20:30 in Main Hall B and Conference Hall.

We welcome all the registered participants and their accompanying persons for these special events.

Closing Ceremony

The Closing Ceremony be held on Saturday, August 26 at 12:00 in in the Main-Hall A.

Young Scientist Party (Invitees only)

The Young Scientist Reception will be taken place on Mon day, August 21 at 19:15 at Premier Hotel Tsubaki Sapporo (1 Chome-1-1 Toyohira 4 Jo, Toyohira Ward, Sapporo, Hokkaido 062-0904). Bus transportation will be provided from Sapporo Convention Center to Hotel Tsubaki.

https://tsubaki.premierhotel-group.com/sapporo/english/

Banquet Dinner

A banquet dinner will be held on Wednesday, August 23 at 19:30 at Premier Hotel Tsubaki Sapporo (1 Chome-1-1 Toyohira 4 Jo, Toyohira Ward, Sapporo, Hokkaido 062-0904). Please note that due to the limited number of seats, banquet tickets will not be sold on-site. Bus transportation will be provided from Sapporo Convention Center to Hotel Tsubaki.

https://tsubaki.premierhotel-group.com/sapporo/english/

Cloakroom

Cloakroom is located at the Entrance Hall on the 1st Floor.

*Valuables cannot be checked in the cloakroom.

Cloakroom Opening Hours

August 19, Saturday	10:30-20:30
August 20, Sunday	7:30-20:30
August 21, Monday	8:00-19:00
August 22, Tuesday	8:00-19:30
August 23, Wednesday	8:00-19:00
August 24, Thursday	8:00-19:00
August 25, Friday	8:00-19:30
August 26, Saturday	8:00-18:30

Internet

We offer participants a free internet connection throughout the venue.

Simply select SSID and enter PW below to enjoy surfing.

SSID: ursisapporo

PW: gass2023

URSI Official App

Android

IOS

Meals and Refreshments

- Vending Machine in front of the general information desk of the SCC.
- Terrace Restaurant SORA (in the SSC)
  Opening Hours: 11:00-16:00
- RASORA Sapporo (Shopping Mall near the venue)
  Opening Hours: 10:00-20:00 / Opening Hours of Restaurants: 11:00-21:00

There are also several fancy restaurants in the center of the city.

Useful Information

- Sapporo is in the GMT +9 time zone.
- The currency in Sapporo is the YEN (\)
- Useful Telephone Numbers

  Japan area code: +81

  Sapporo area code: 011

  Ambulance: 119

  Police: 110

Cash Machines

No currency exchange services are available at the conference site.

Seven Bank ATMs, located inside 7-Eleven convenience stores, accept foreign-issued credit cards and cash cards and provide vocal and on-screen guidance in the English, Korean, Chinese, and Portuguese languages. The machines also accept debit cards for cash withdrawals. The following ATMs can be used and can commonly be found.

(Japan Post Bank / Seven Bank / American Express/ Visa / Mastercard / Diners Club / JCB /China Union Pay).

The 7-Eleven near from the Sapporo Convention Center:

The 7-Eleven Higashi Sapporo 5 Jo 5-2-1-28, Higashi-Sapporo, Higashi-ku, Sapporo 003-0005 Japan

Taxi

The taxi pool is located outside of the South Entrance of Sapporo Convention Center.

Taxis have display boards to show the availability status. You can take a taxi displayed as " 空車 " (Vacant). Taxi stands are located near stations, airports and commercial establishments. The basic fixed fare of a taxi is 670 yen for the initial 2km, and 80 yen is added for each additional 302m.

Secretariat Office and Contact Information

Secretariat Office during the congress is located at the briefing room 4 on the 2nd Floor of Sapporo Convention Center.

Email: gass2023_secretariat@c-linkage.co.jp

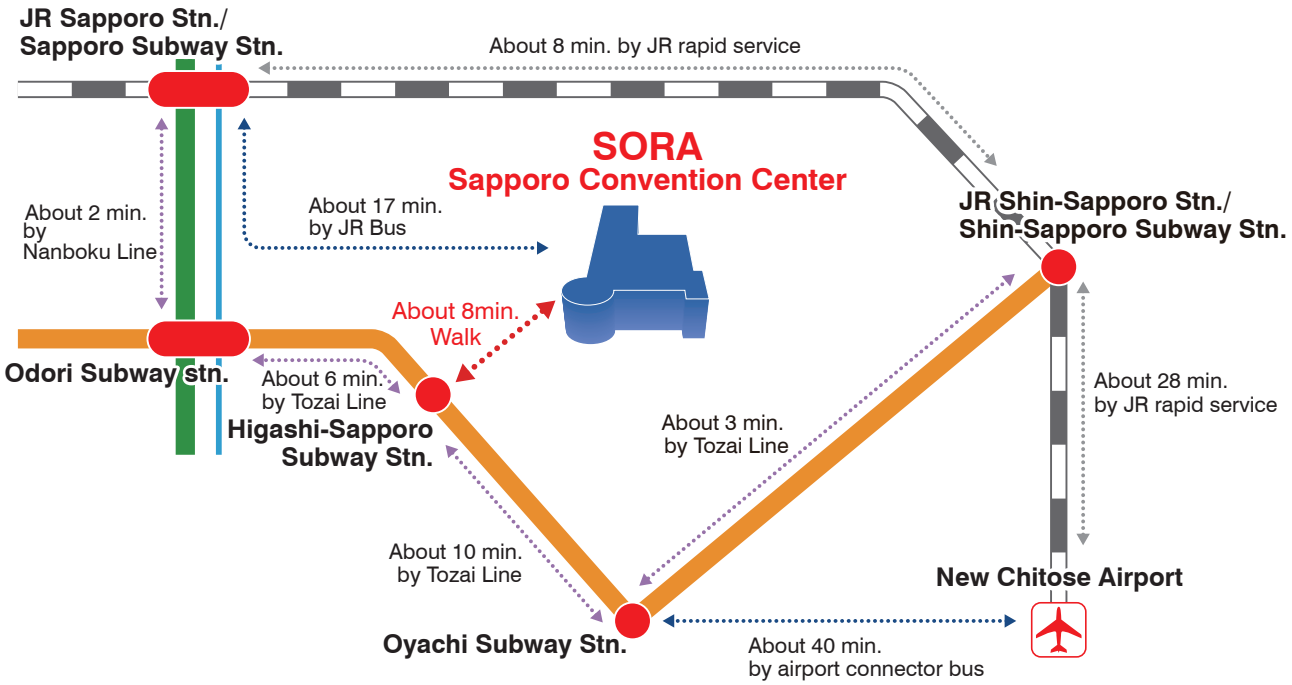
Sapporo Convention Center

1-1-1 Higashi-Sapporo 6-jo, Shiroishi-ku, Sapporo, 003-0006, Japan

https://www.sora-scc.jp/eng/

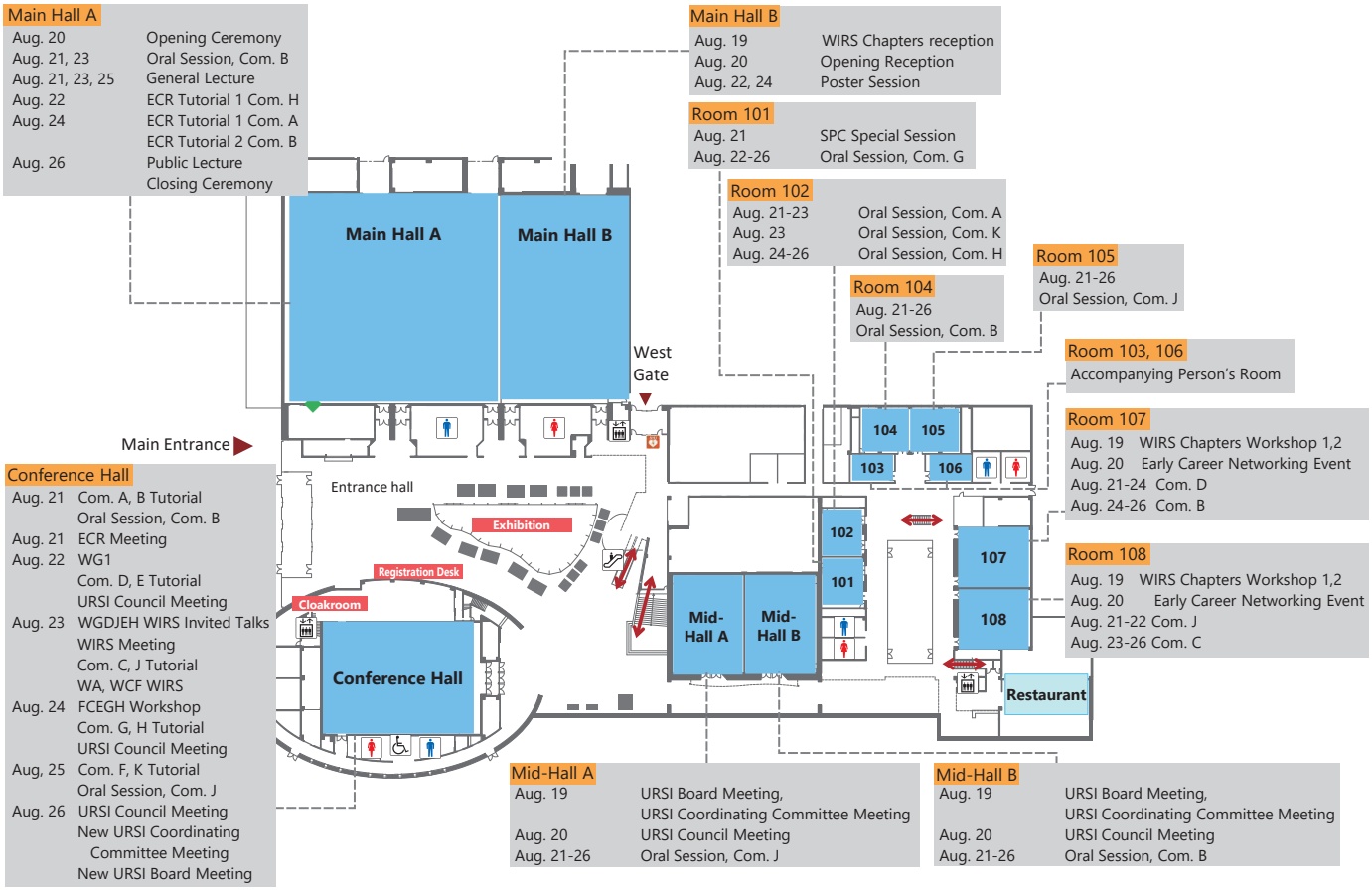
TEL: +81-11-817-1010 / FAX: +81-11-820-4300

Office hours 9:00-18:00



Floor Plan

1st Floor



Main Hall A

Aug. 20	Opening Ceremony
Aug. 21, 23	Oral Session, Com. B
Aug. 21, 23, 25	General Lecture
Aug. 22	ECR Tutorial 1 Com. H
Aug. 24	ECR Tutorial 1 Com. A
	ECR Tutorial 2 Com. B
Aug. 26	Public Lecture
	Closing Ceremony

Main Hall B

Aug. 19	WIRS Chapters reception
Aug. 20	Opening Reception
Aug. 22, 24	Poster Session

Room 101

Aug. 21	SPC Special Session
Aug. 22-26	Oral Session, Com. G

Room 102

Aug. 21-23	Oral Session, Com. A
Aug. 23	Oral Session, Com. K
Aug. 24-26	Oral Session, Com. H

Room 104
Aug. 21-26
Oral Session, Com. B

Room 105
Aug. 21-26
Oral Session, Com. J

Room 103, 106
Accompanying Person's Room

Room 107

Aug. 19	WIRS Chapters Workshop 1,2
Aug. 20	Early Career Networking Event
Aug. 21-24	Com. D
Aug. 24-26	Com. B

Room 108

Aug. 19	WIRS Chapters Workshop 1,2
Aug. 20	Early Career Networking Event
Aug. 21-22	Com. J
Aug. 23-26	Com. C

Conference Hall

Aug. 21	Com. A, B Tutorial
	Oral Session, Com. B
Aug. 21	ECR Meeting
Aug. 22	WG1
	Com. D, E Tutorial
	URSI Council Meeting
Aug. 23	WGDJEH WIRS Invited Talks
	WIRS Meeting
	Com. C, J Tutorial
	WA, WCF WIRS
Aug. 24	FCEGH Workshop
	Com. G, H Tutorial
	URSI Council Meeting
Aug, 25	Com. F, K Tutorial
	Oral Session, Com. J
Aug. 26	URSI Council Meeting
	New URSI Coordinating Committee Meeting
	New URSI Board Meeting

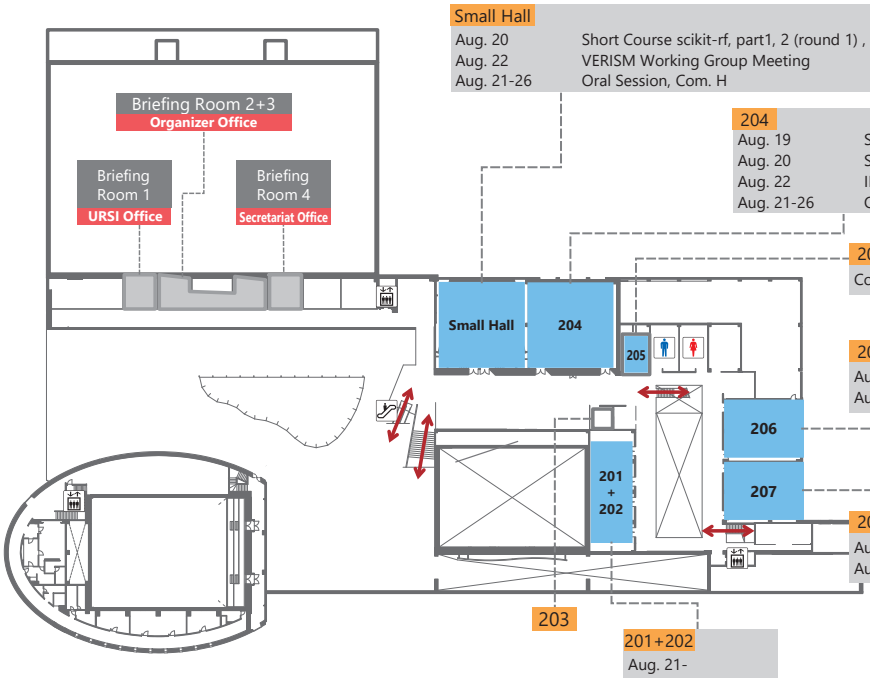
Mid-Hall A

Aug. 19	URSI Board Meeting, URSI Coordinating Committee Meeting
Aug. 20	URSI Council Meeting
Aug. 21-26	Oral Session, Com. J

Mid-Hall B

Aug. 19	URSI Board Meeting, URSI Coordinating Committee Meeting
Aug. 20	URSI Council Meeting
Aug. 21-26	Oral Session, Com. B

2nd Floor



Small Hall

Aug. 20	Short Course scikit-rf, part1, 2 (round 1) , part1, 2 (round 2)
Aug. 22	VERISM Working Group Meeting
Aug. 21-26	Oral Session, Com. H

204

Aug. 19	School part 1, 2
Aug. 20	School part 3, 4
Aug. 22	INAG Working Groupe Meeting
Aug. 21-26	Oral Session, Com. G

205
Commission Chairs' Room

206

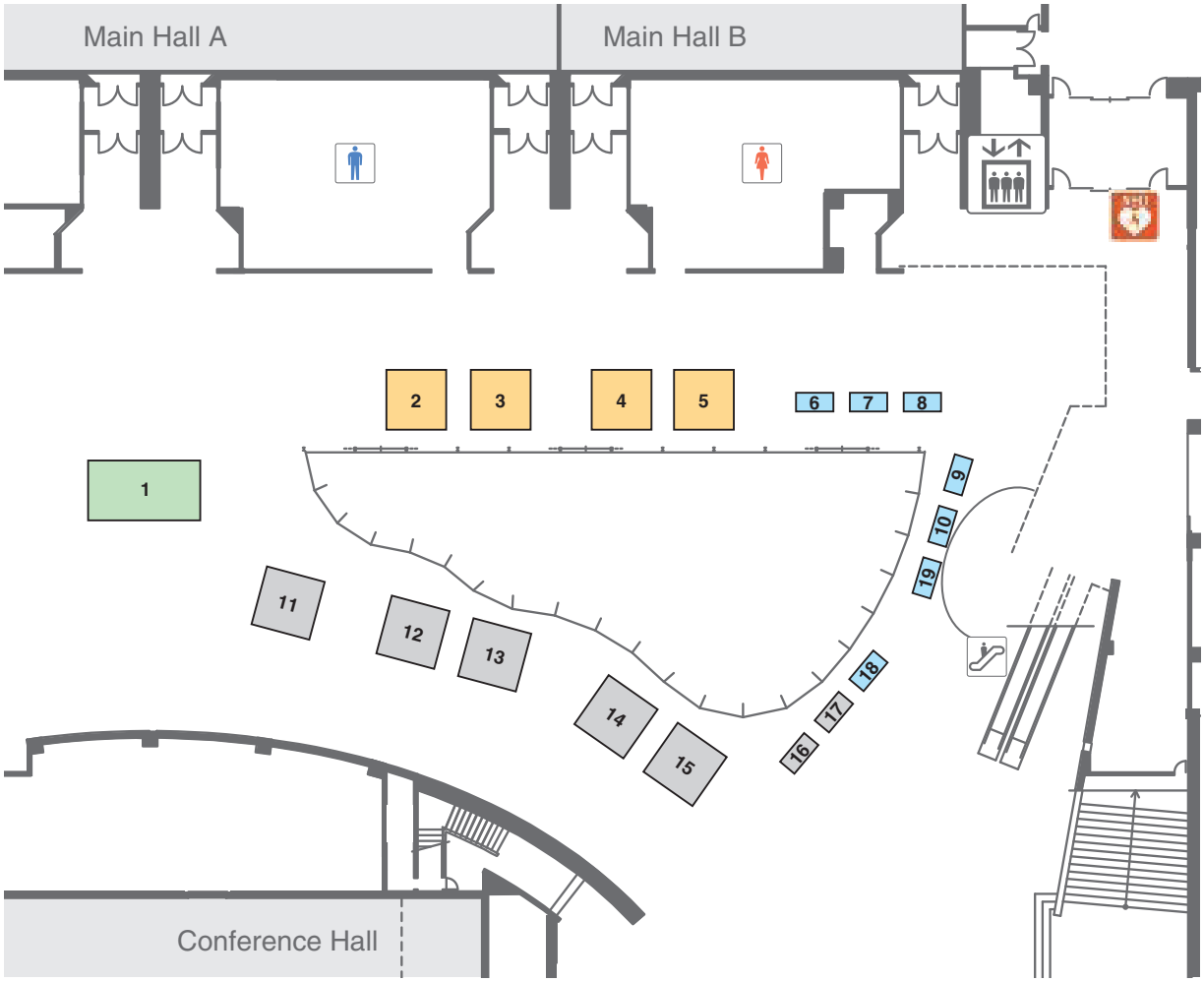
Aug. 21-22	Oral Session, Com. G
Aug. 23-26	Oral Session, Com. F

207

Aug. 21-25	Oral Session, Com. E
Aug. 25-26	Oral Session, Com. K

201+202
Aug. 21-
Oral Session, Com. K

Exhibition Plan



1	NEC Corporation
2	Antenna Giken Co., Ltd.
3	NIHON DEMPA KOGYO CO., LTD.
4	LPKF Laser & Electronics
5	TMY Technology Inc. ZoX Technologies Co., Ltd.
6	TOKYO OHKA KOGYO CO., LTD.
7	Panasonic System Networks R&D Lab. Co., Ltd.
8	KDDI Research,Inc
9	MITSUBISHI ELECTRIC CORPORATION
10	NOISE LABORATORY CO., LTD.
18	RESTAR COMMUNICATIONS Corporation
19	Altair Enginee ring Inc.

11	FARAD Corporation
12	I-WAVE Corporation
13	Keysight Technologies Japan K.K.
14	Murata Manufacturing Co., Ltd.
15	CSIRO, Australia's National Science Agency
16	Springer
17	SHODEN CORPORATION
20	SKA OBSERVATORY
21	Nippon Telegraph and Telephone Corporation
22	NTT DOCOMO, INC.

General Guidelines for Presentations

A registered author can present a maximum of 2 papers. Commission Tutorials, ECR Tutorials, General and Public Lectures do not count toward this limit.

Three categories of presentations will be possible:

1. Oral presentation on-site in Sapporo + optional online pre-recorded video presentation prepared according to **pre-recording guidelines** + optional online PDF file with a size preferably less than 25 MB;
2. Poster on-site in Sapporo + optional online pre-recorded video presentation prepared according to **pre-recording guidelines** + optional online PDF file with a size preferably less than 25 MB;
3. Pre-recorded online video presentation prepared according to **pre-recording guidelines** + optional online PDF file with a size preferably less than 25 MB.

- Authors of Category 3 (pre-recorded video presentations) will automatically receive an invitation to upload their video, with an option to also upload a PDF file. Authors of Category 1 and Category 2 (on-site presentations) will need to write to **ingeursi@ugent.be** if they are interested in uploading their optional online material (video and/or PDF file).
- All Summary Papers physically presented at GASS 2023 (Categories 1 and 2) will be submitted to IEEE Xplore (unless the author opts out). Summary papers with pre-recorded presentations (Category 3) will not be submitted to IEEE Xplore, and will only be published in the URSI GASS 2023 Proceedings.
- All extended abstracts in all presentation categories will not be submitted to IEEE Xplore, and will only be published in the URSI GASS 2023 Proceedings.
- Full papers for the Student Paper Competition will not be submitted to IEEE Xplore nor published in the URSI GASS 2023 Proceedings, in order to allow the authors publishing the material in **URSI Radio Science Letters**, **Radio Science**, or in another journal.

Oral Presentations

- Speakers (presenting authors) have to meet Session Chairs before the session in the scheduled session room. Note that papers with no-shows will not be submitted to IEEE Xplore after the conference.
- The presentation time is 20 minutes for a regular presentation, including 5-minute discussion. Be punctual with your allotted time for keeping the session on schedule. The session chairs are in charge of the session schedule.
- Be seated in the designated front seat placed at the front facing the screen at least 5 mins. before the beginning of your session.
- Use the PC prepared at the convention center for your presentation. Visit the PC center to check your presentation data the day before your presentation (Morning presenters on 21st: by 8:00,

afternoon presenters on 21st: by 2 hours before their sessions). Presenters who would like to use own laptops, check the connection and data at the PC center just in case.

- If your presentation slide includes links to move other files (i.e. images, movies, graphs, etc.) please save them in the same folder, and confirm in advance.

Opening Hours of PC Center

August 21, Monday	8:00-18:00
August 22, Tuesday	8:00-18:00
August 23, Wednesday	8:00-18:00
August 24, Thursday	8:00-18:00
August 25, Friday	8:00-18:00
August 26, Saturday	8:00-10:00

- Prepare presentation slides with high visual contrast with standard fonts such as Times New Roman, Arial, and/or Helvetica. Do not use special fonts or any local language fonts, which may cause text garbling.
- Each session room is equipped with an LCD projector and a Windows PC with Microsoft Power Point and Adobe Acrobat Reader installed. Presenters can use either the prepared Windows PC or his/her own laptop.
- Only Windows Media Player can be used to playback movie files.
- The filename should be as follows: if the presentation is scheduled at 08:20 in Session A01-1 and the speaker's last name is Suzuki, the filename should be "A01-1_0820_Suzuki."
- Speakers who use his/her own PC should connect the PC with a projector quickly before starting their presentations. Copy the presentation data to a USB flash drive for backup.
- Both the 16:9 aspect ratio and the 4:3 aspect ratio are acceptable.
- Technical Equipment: LCS projector, front projection screen, PC, and microphone (for presenters, chairs, and questioners)

Poster Presentations

1. Poster Panel

The size of the poster panel is W900 x H1200. Prepare your poster in A0 size (W841 x H1189) portrait style.

2. Set-up/Removal

There will be two poster sessions: PST1 on Tuesday August 22 and PST2 on Thursday August 24.

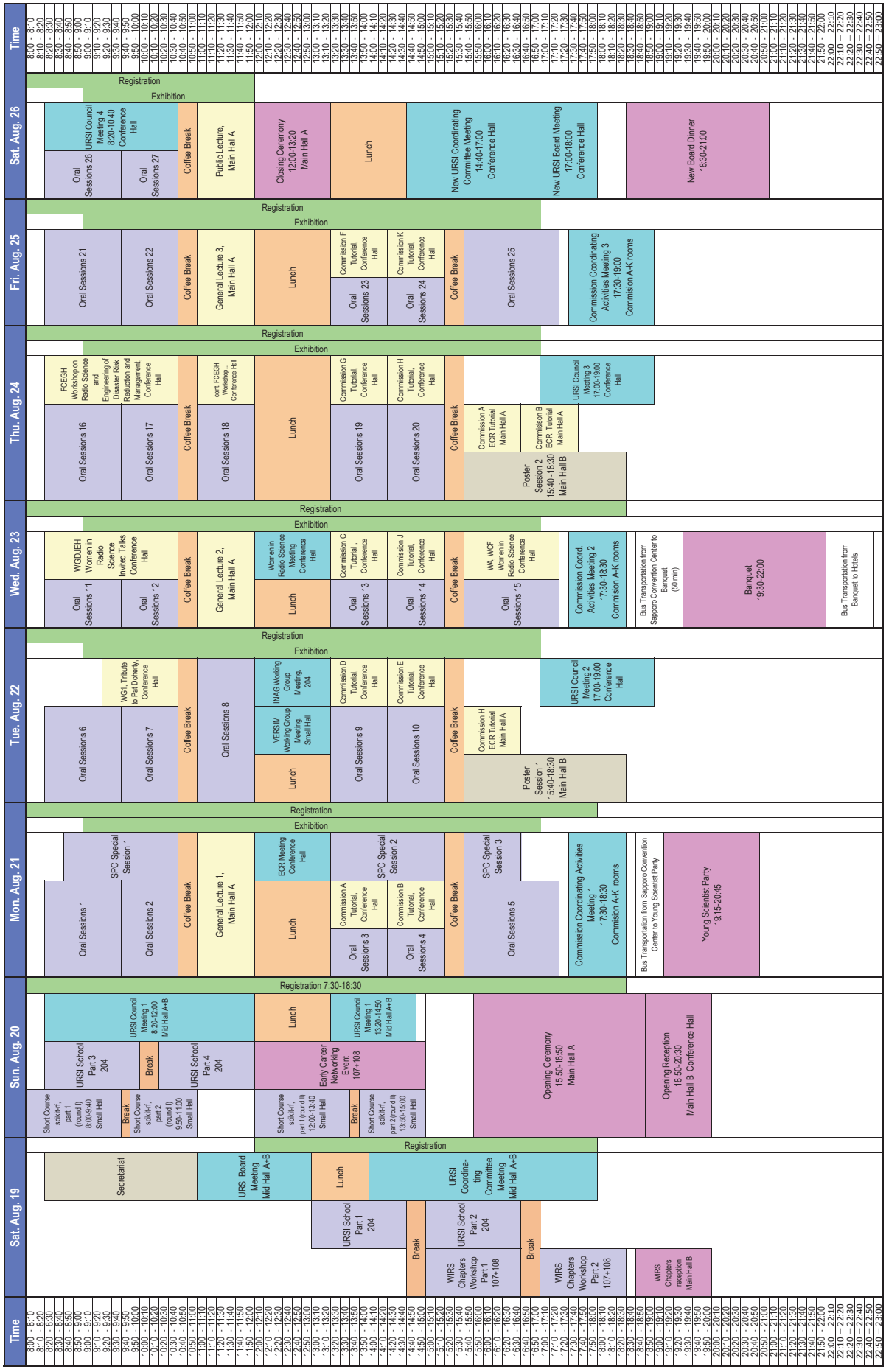
- Prepare presentation slides with high visual contrast with standard fonts such as Times New Roman, Arial, and/or Helvetica. Do not use special fonts or any local language fonts, which may cause text garbling.
- The poster sessions start at 15:40 and end at 18:30. Authors are expected to stay with their posters to answer questions through the entire duration of the poster session. The poster sessions will be in Main Hall B on the first floor.

- Times for set-up/removal are as follows:

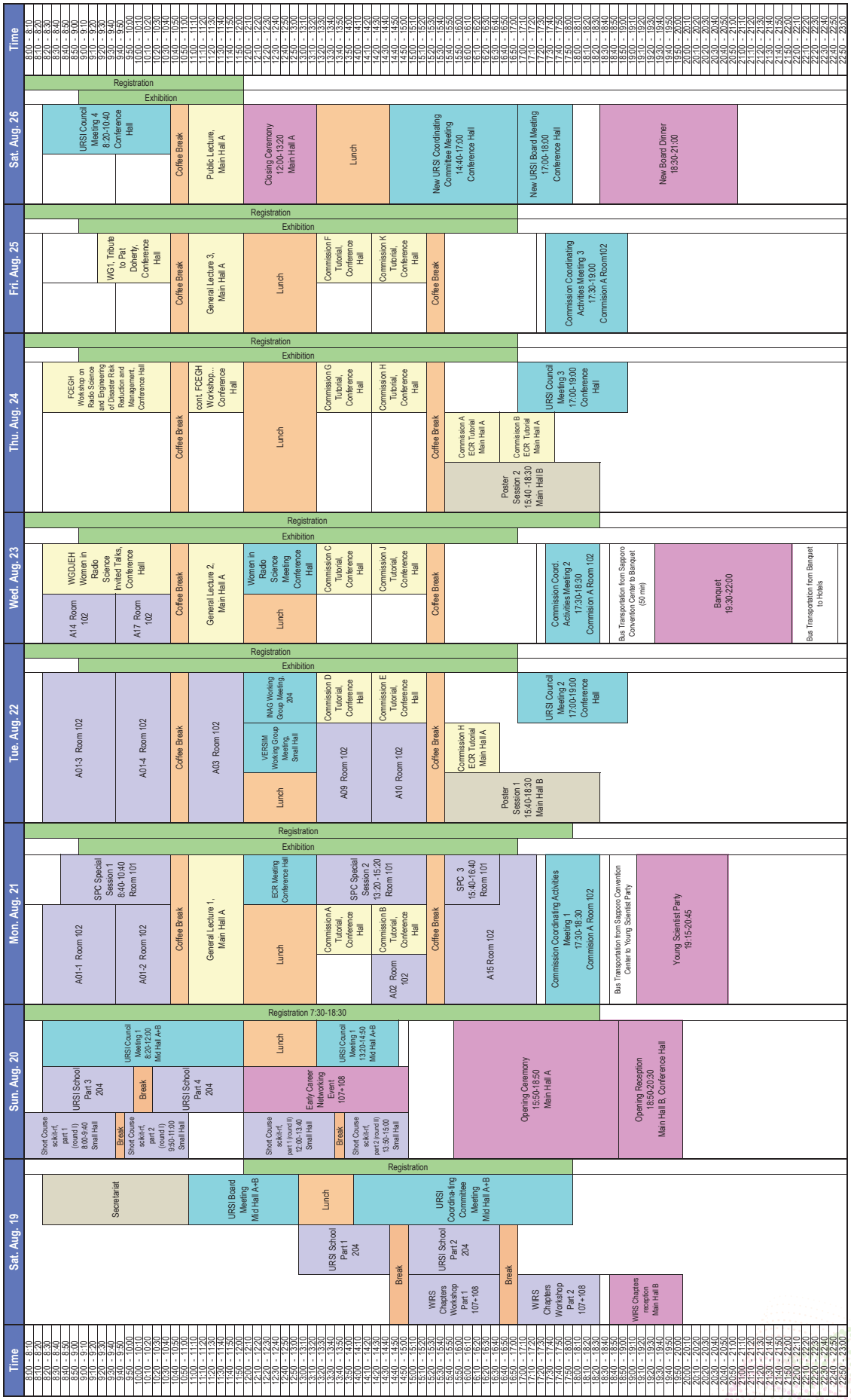
Session	Set-up	Session	Removal Period
PST1	After 13:00 on Aug. 21	15:40-18:30 on Aug. 22	18:30 on Aug.22 - 10:00 on Aug. 23
PST2	After 13:00 on Aug. 23	15:40-18:30 on Aug. 24	18:30 on Aug.24 - 10:00 on Aug. 25

- Any posters left after the removal period will be disposed by the Conference Secretariat.
- Pins will be provided along with the poster board. Do not use any other material (i.e. adhesive tapes).
- The paper number of your poster paper (in the form of 'P-A01-01') can be found in the scientific program posted on the URSI GASS 2023 website, and will be indicated on the upper-left-hand corner of the poster board for your poster paper. The poster boards in each poster session will be grouped into Commissions and sessions within each Commission. The boards are then numbered in sequence of the papers in the session.
- Each poster should have the paper title, authors, and authors' affiliations at the top of the poster. It is strongly suggested that the authors bring business cards to hand out to those who stop by to see the poster and are interested in further contact regarding the topic of the paper.
- Posters are not PowerPoint presentations printed out and pasted on a board. They are thoughtful combinations of text and graphics that tell the story of your work. The fonts on the poster should be large enough for the audience to be able to read everything on your poster from a distance of 1.5 m, and the basic importance and the key conclusions of the work should be understood in five minutes.
- Poster papers neither displayed nor attended by the author will be removed from the final URSI GASS 2023 Proceedings and will not be submitted to IEEE Xplore.
- Paper presentation and publication are subject to the presenting author registering for the conference and the completion of the online publication agreement.

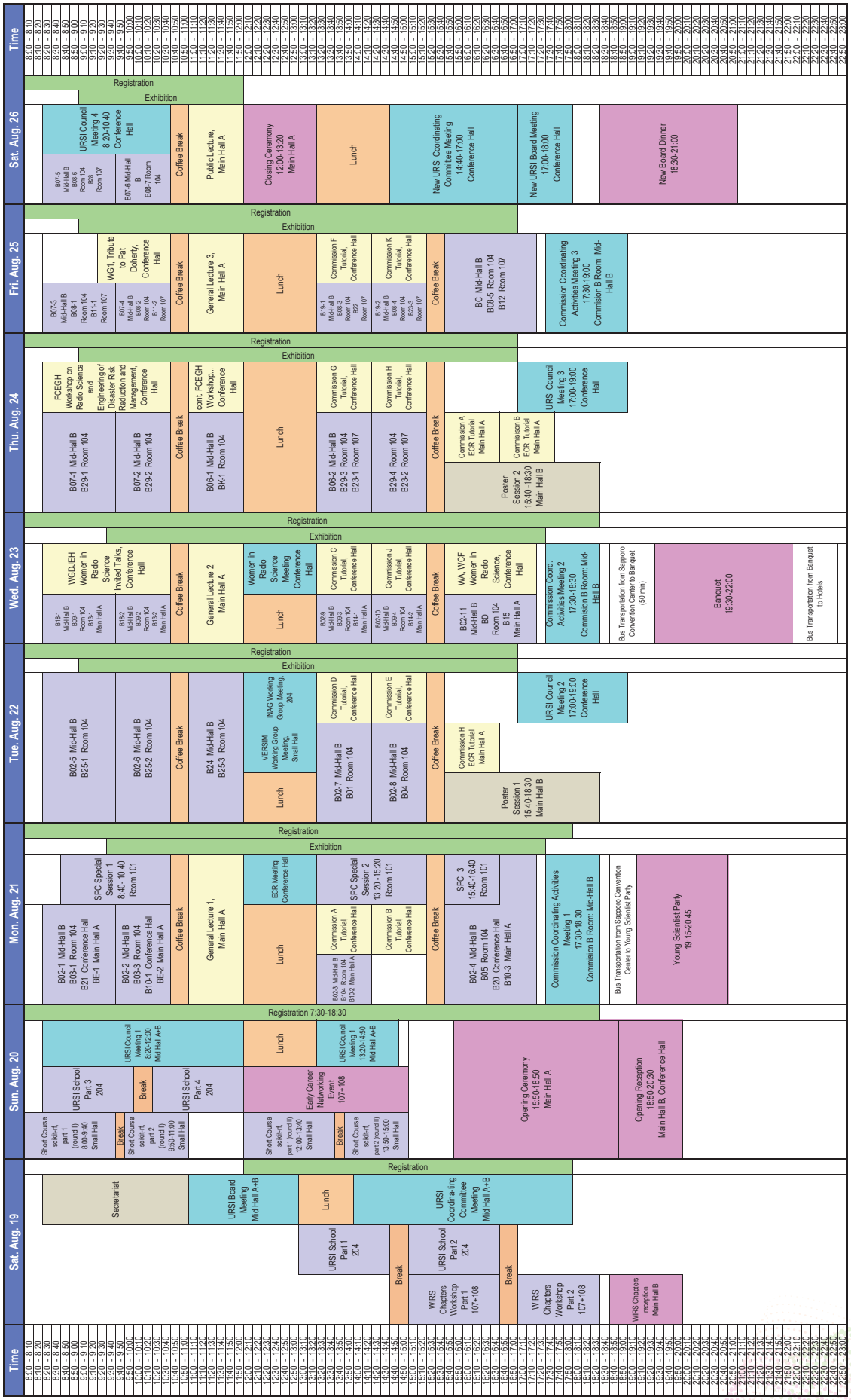
URSI GASS 2023 Program at a Glance



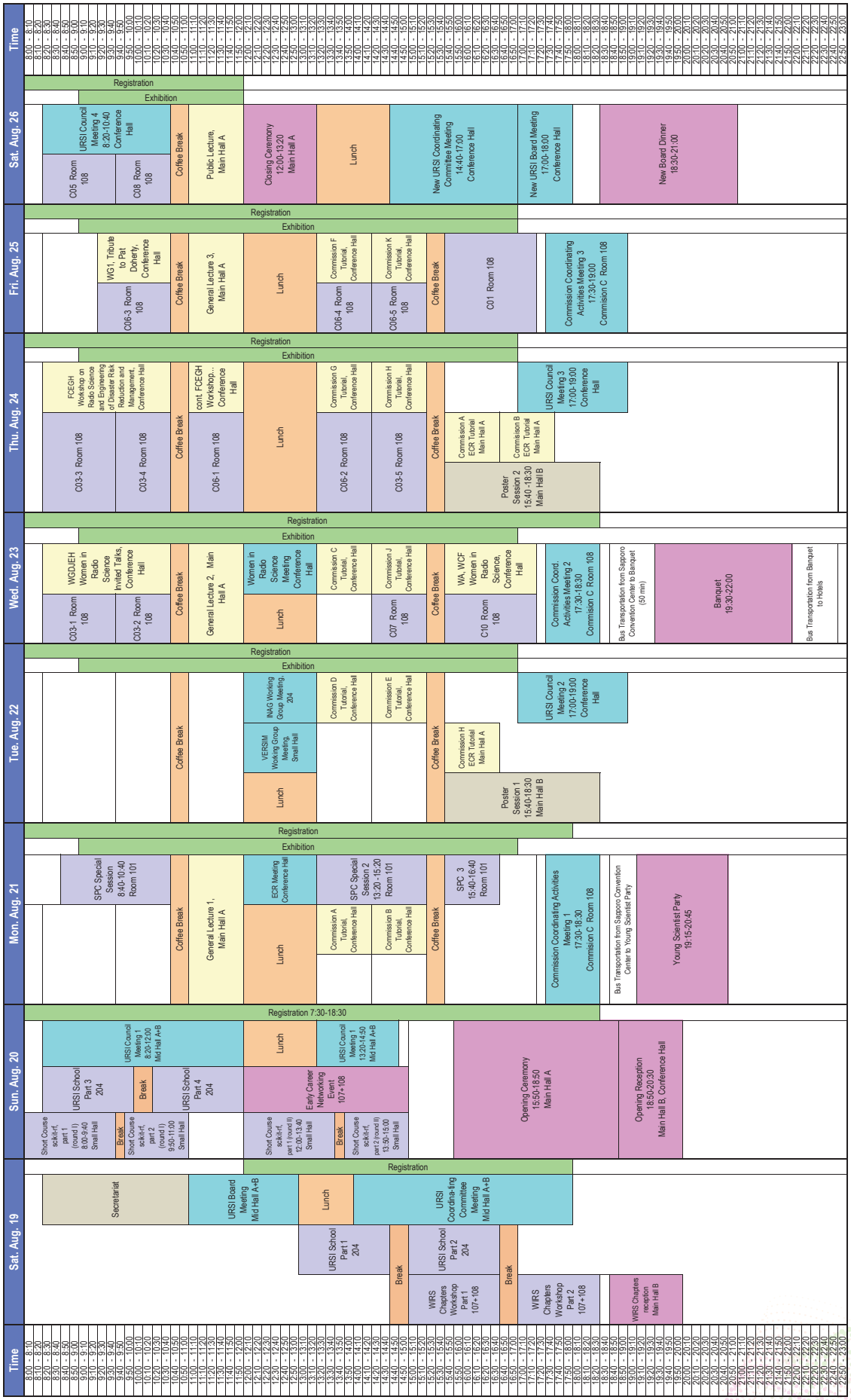
URSI GASS 2023 Commission A: Room 102



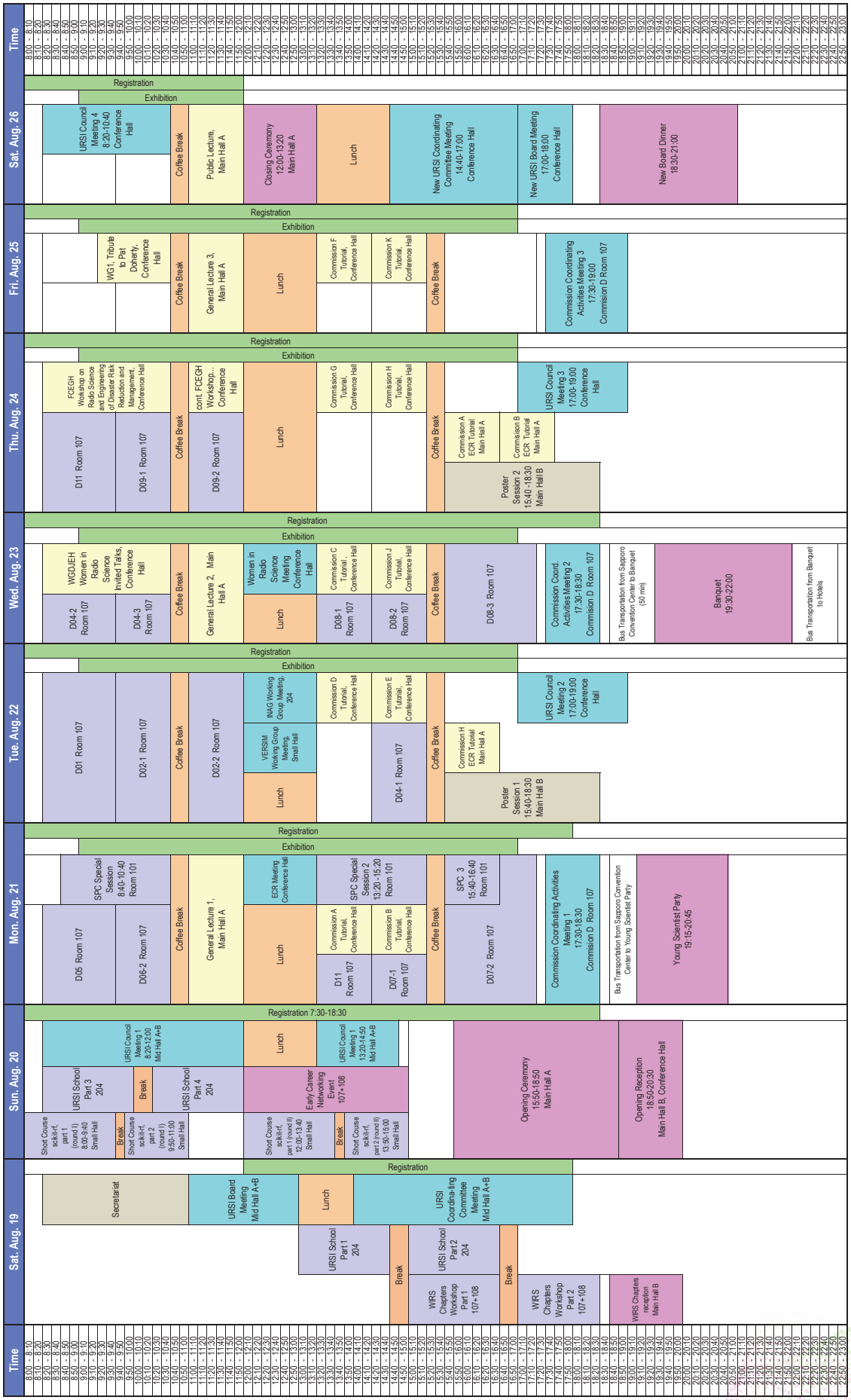
URSI GASS 2023 Commission B: Mid-Hall B + Room 104 + (Room 107 + Conference Hall + Main Hall A)



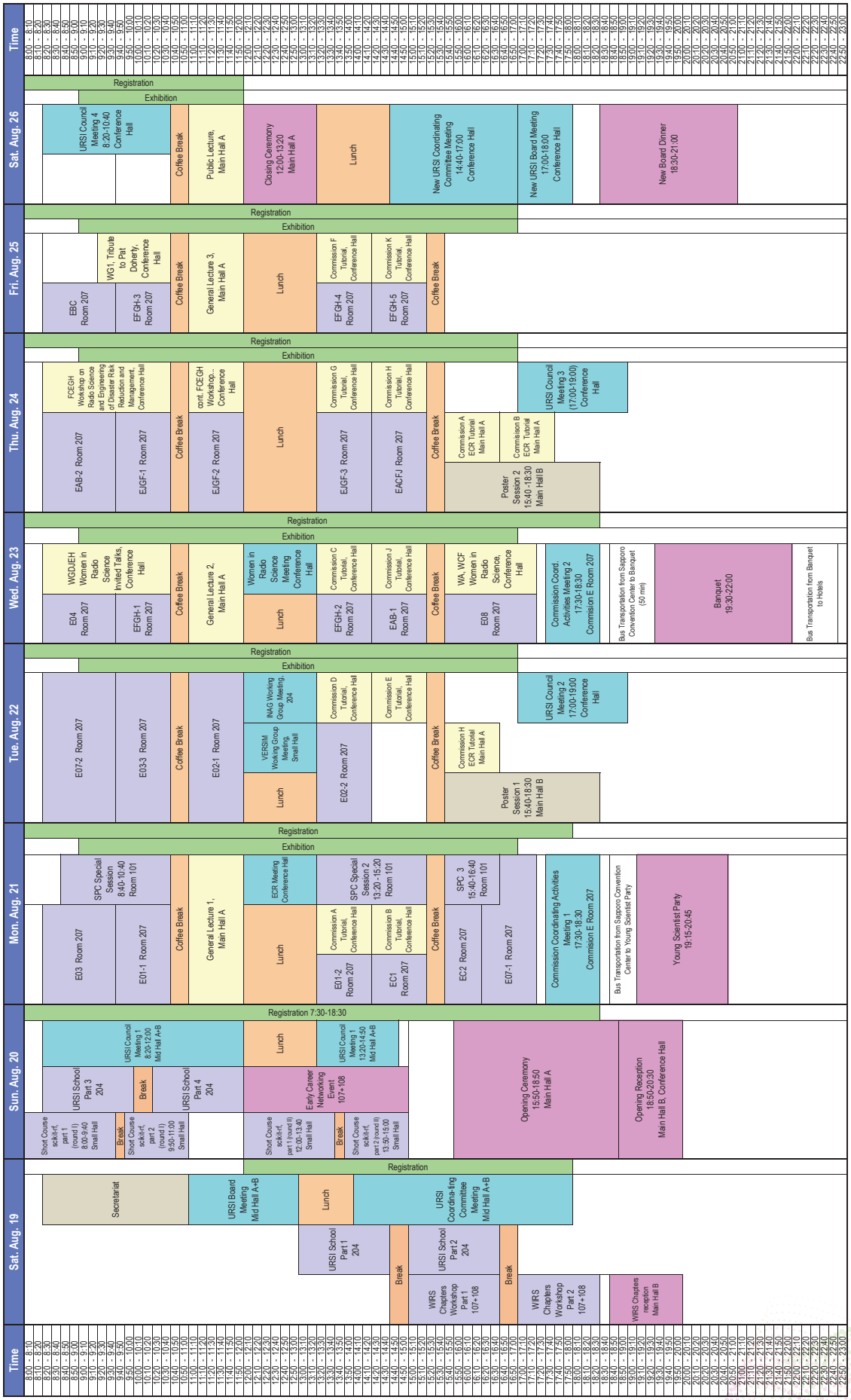
URSI GASS 2023 Commission C: Room 108



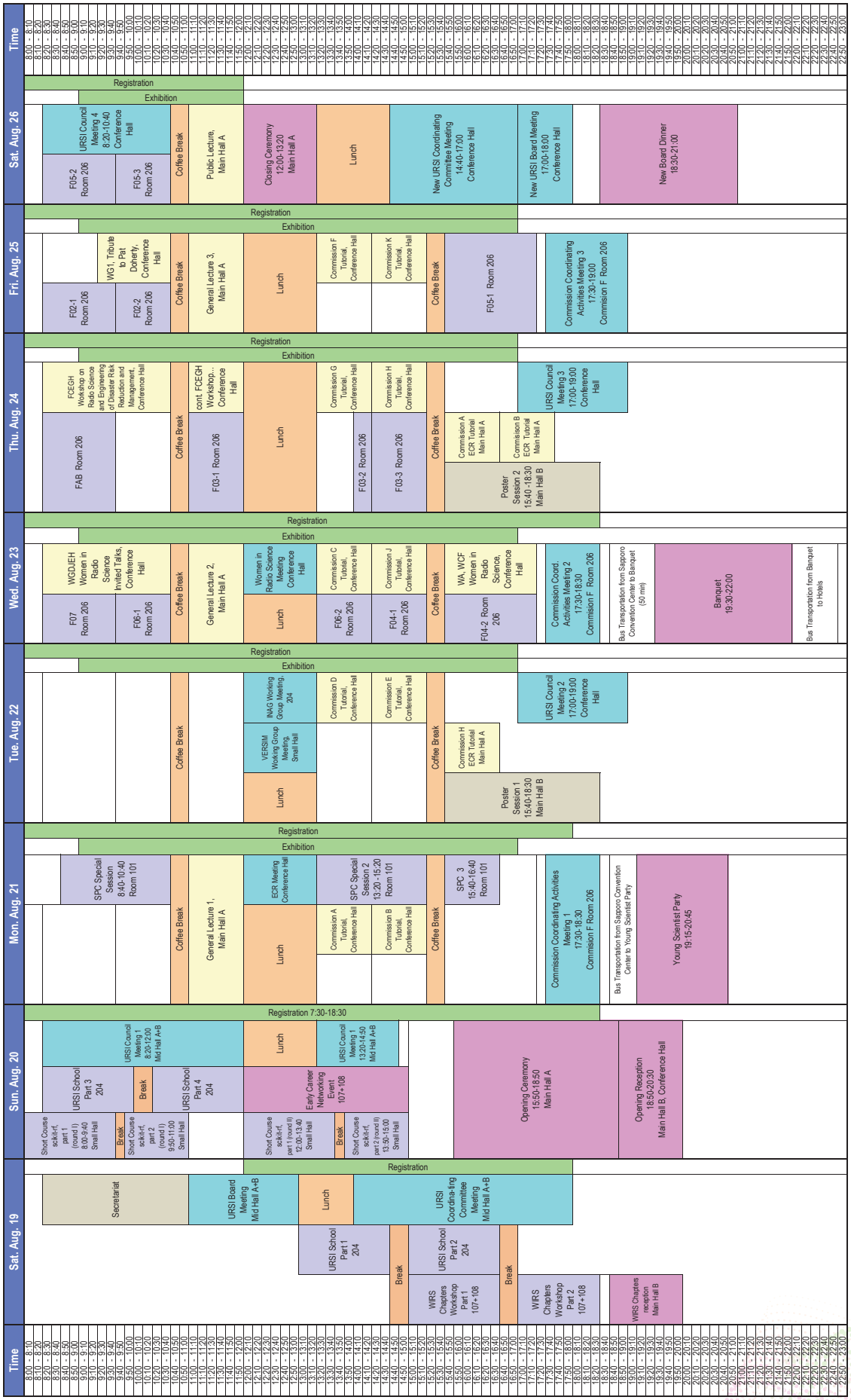
URSI GASS 2023 Commission D: Room 107



URSI GASS 2023 Commission E: Room 207

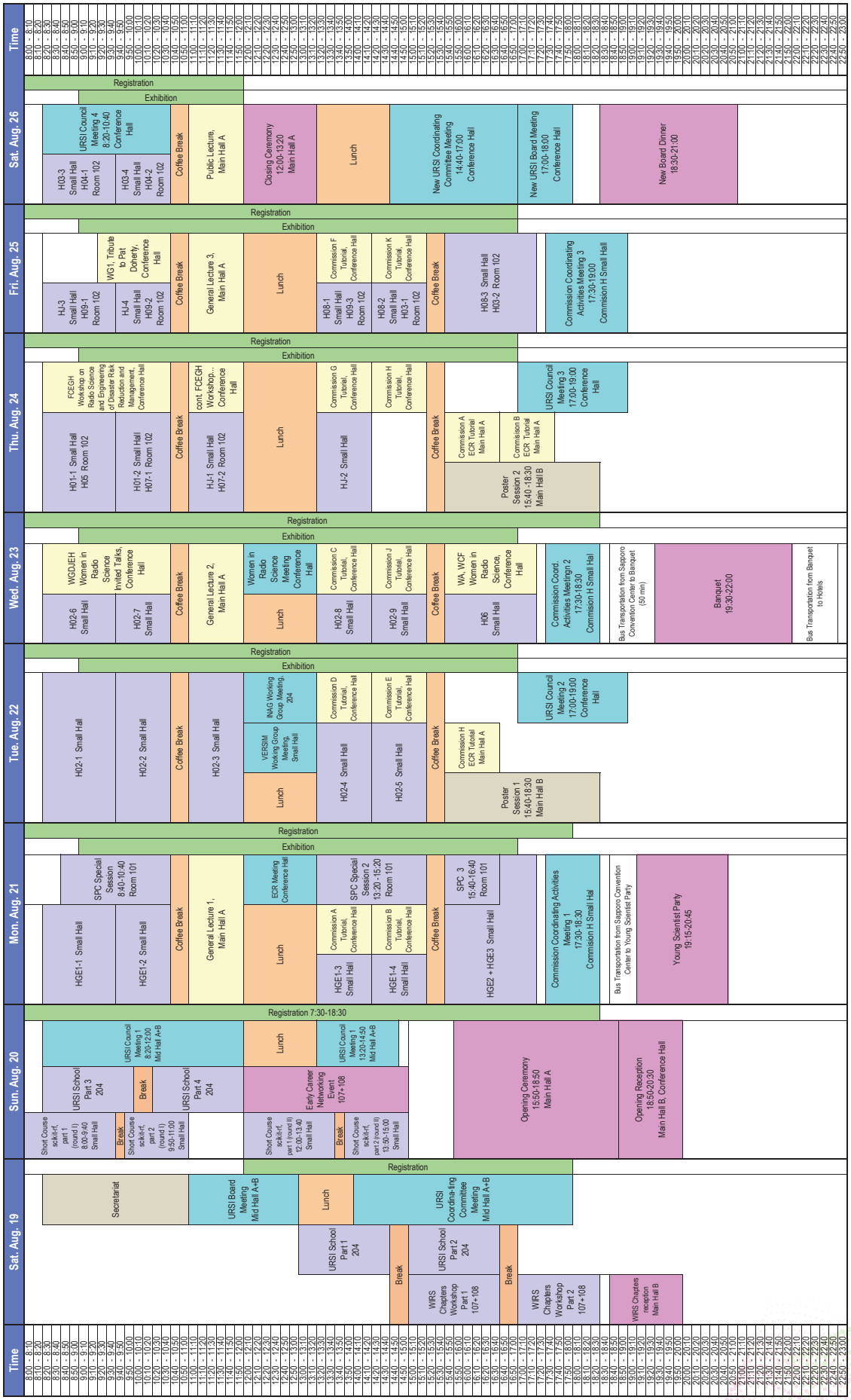


URSI GASS 2023 Commission F: Room 206



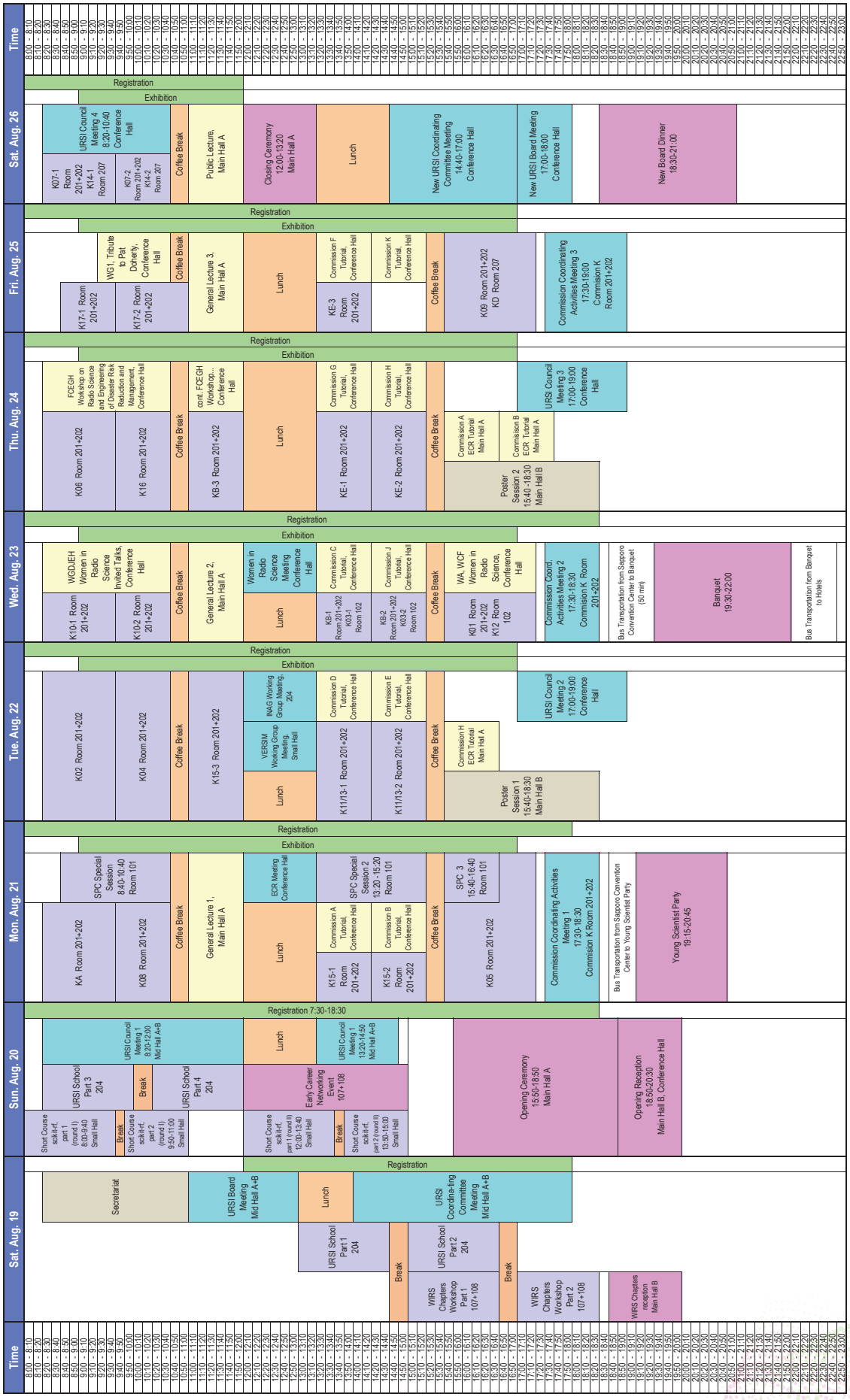
URSI GASS 2023 Commission G: Room 204 + (Room 206 + Room 101 + Conference Hall)

URSI GASS 2023 Commission H: Small Hall (+ Room 102)



URSI GASS 2023 Commission J: Mid-Hall A + Room 105 + (Room 108 + Conference Hall)

URSI GASS 2023 Commission K: Room 201+202 (+ Room 207 + Room 102)



OPENING CEREMONY

Sunday, August 20

15:50-18:50

Main Hall A

OPENING RECEPTION

Sunday, August 20

18:50-20:30

Main Hall B and Conference Hall

GENERAL LECTURE 1

Masataka Nakazawa – "Photonics for next generation radio access network"

Monday, August 21

11:00-12:00

YOUNG SCIENTIST PARTY

Monday, August 21

19:15-20:45

Premier Hotel -TSUBAKI- Sapporo "Camellia"

GENERAL LECTURE 2

Ron D. Ekers – "The History of Radio Astronomy: celebrating 90 years of innovation and discovery"

Wednesday, August 23

11:00-12:00

Main Hall A

BANQUET

Wednesday, August 23

19:30-22:00

Premier Hotel -TSUBAKI- Sapporo "Camellia"

GENERAL LECTURE 3

Craig J. Rodger – "Space weather disturbances in electrical power networks - preparing for an extreme event"

Friday, August 25

11:00-12:00

Main Hall A

PUBLIC LECTURE

Ryuji Kohno – "Harmonization of Scientific, Commercial, and Other Radio Uses with Regulatory Science for SDGs"

Saturday, August 26

11:00-12:00

Main Hall A

CLOSING CEREMONY

Saturday, August 26

12:00-13:20

Main Hall A

1. ECR Tutorials

Commission A:
Introduction to Electromagnetic Compatibility/ Interference (EMC/I), Measurements, Regulatory Authorities & Standards

Lecturer: Nosherwan Shoaib

Tuesday, August 24

15:40-16:40

Main Hall A

Commission B:
Computing with Metamaterials: How to solve equations using electromagnetic waves

Lecturer: Dimitrios Tzarouchis

Tuesday, August 24

16:40-17:40

Main Hall A

Commission H:
Magnetospheric plasma waves and radiation belt dynamics

Lecturer: Frantisek Nemec

Tuesday, August 22

15:40-16:40

Main Hall A

2. Workshop on Radio Science and Engineering of Disaster Risk Reduction and Management

Organizers: Tullio Tanzi, Madhu Chandra, Giuliano Manara, Yasuhide HobaraYasuhide Hobara

Thursday, August 24

08:20-10:40, 11:00-12:00

Conference Hall

3. URSI School for Young Scientists

Part 1
Measurement techniques for emerging wireless technologies

Speaker: Tian Hong Loh

Saturday, August 19

13:00-14:40

Room 204

Part 2
Human Electromagnetic Field Exposure Assessment: Incident Field Evaluations, Dosimetric Evaluations

Speaker: Myles H. Capstick

Saturday, August 19

15:00-16:40

Room 204

Part 3

Natural electromagnetic noise measurements

Speaker: Yasuhide Hobara

Sunday, August 20

08:20-10:00

Room 204

Part 4

Is it difficult to Measure an Antenna?

Speaker: Debatosh Guha

Sunday,August 20

10:20-12:00

Room 204

4. WIRS (Women In Radio Science) Chapters: Its Foundation and Future Perspectives

Organizers: WIRS Japan Chapter

Saturday, August 19

(Part 1) 15:00-16:30

(Part 2) 16:45-18:30

(Part 3: WIRS Reception) 18:40-20:00

(Parts 1 & 2) Room 107+108 Connected

(Part 3) Main Hall B

5. Short Course on scikit-rf

Instructor: Julien Hillairet

Sunday, August 20

(Round 1) 08:00-9:40, 9:50-11:00; (Round 2) 12:00-13:40, 13:50-15:00

Small Hall

6. Early Career Networking Event

Organizers: Claudia Martinez-Calderon, Frantisek Nemec, Chaouki Kasmi, Nosherwan Shoaib, Krzysztof Cwalina, Dimitrios Tzarouchis

Sunday, August 20

12:00-15:00

Room 107+108 Connected

1. URSI Board meetings

URSI Board meeting (members only)

Saturday, August 19, 2023
11:00–13:00
Mid-sized Hall A + B Connected
(lunch will be served at 13:00–14:00)

New URSI Board meeting (members only)

Saturday, August 26, 2023
17:00–18:00
Conference Hall

2. URSI Coordinating Committee meetings

URSI Coordinating Committee meeting (members only)

Saturday, August 19, 2023
14:00–18:00
Mid-sized Hall A + B Connected
(lunch will be served at 13:00–14:00)

New URSI Coordinating Committee meeting (members only)

Saturday, August 26, 2023
14:40–17:00
Conference Hall
(lunch will be served at 13:20–14:40)

3. URSI Council meetings

URSI Council meeting 1 (members only)

Sunday, August 20, 2023
8:20–12:00 / 13:20–14:50
Mid-sized Hall A + B Connected
(lunch will be served at 12:00–13:20)

URSI Council meeting 2 (members only)

Tuesday, August 22, 2023
17:00–19:00
Conference Hall

URSI Council meeting 3 (members only)

Thursday, August 24, 2023
17:00–19:00
Conference Hall

URSI Council meeting 4 (members only)

Saturday, August 26, 2023
8:20–10:40
Conference Hall

4. URSI Commission Coordinating Activities meetings

4.1 URSI Commission A

URSI Commission A Coordinating Activities meeting 1

Monday, August 21, 2023
17:30–18:30
Room 102

URSI Commission A Coordinating Activities meeting 2

Wednesday, August 23, 2023
17:30–18:30
Room 102

URSI Commission A Coordinating Activities meeting 3

Friday, August 25, 2023
17:30–19:00
Room 102

4.2 URSI Commission B

URSI Commission B Coordinating Activities meeting 1

Monday, August 21, 2023
17:30–18:30
Mid-sized Hall B

URSI Commission B Coordinating Activities meeting 2

Wednesday, August 23, 2023
17:30–18:30,
Mid-sized Hall B

URSI Commission B Coordinating Activities meeting 3

Friday, August 25, 2023
17:30–19:00
Mid-sized Hall B

4.3 URSI Commission C

URSI Commission C Coordinating Activities meeting 1

Monday, August 21, 2023
17:30–18:30
Room 108

URSI Commission C Coordinating Activities meeting 2

Wednesday, August 23, 2023
17:30–18:30
Room 108

URSI Commission C Coordinating Activities meeting 3

Friday, August 25, 2023
17:30–19:00
Room 108

4.4 URSI Commission D

URSI Commission D Coordinating Activities meeting 1

Monday, August 21, 2023
17:30–18:30
Room 107

URSI Commission D Coordinating Activities meeting 2

Wednesday, August 23, 2023
17:30–18:30
Room 107

URSI Commission D Coordinating Activities meeting 3

Friday, August 25, 2023
17:30–19:00
Room 107

4.5 URSI Commission E

URSI Commission E Coordinating Activities meeting 1

Monday, August 21, 2023
17:30–18:30
Room 207

URSI Commission E Coordinating Activities meeting 2

Wednesday, August 23, 2023
17:30–18:30
Room 207

URSI Commission E Coordinating Activities meeting 3

Friday, August 25, 2023
17:30–19:00
Room 207

4.6 URSI Commission F

URSI Commission F Coordinating Activities meeting 1

Monday, August 21, 2023
17:30–18:30
Room 206

URSI Commission F Coordinating Activities meeting 2

Wednesday, August 23, 2023
17:30–18:30
Room 206

URSI Commission F Coordinating Activities meeting 3

Friday, August 25, 2023
17:30–19:00
Room 206

4.7 URSI Commission G

URSI Commission G Coordinating Activities meeting 1

Monday, August 21, 2023
17:30–18:30
Room 204

URSI Commission G Coordinating Activities meeting 2

Wednesday, August 23, 2023
17:30–18:30
Room 204

URSI Commission G Coordinating Activities meeting 3

Friday, August 25, 2023
17:30–19:00
Room 204

4.8 URSI Commission H

URSI Commission H Coordinating Activities meeting 1

Monday, August 21, 2023
17:30–18:30
Small Hall

URSI Commission H Coordinating Activities meeting 2

Wednesday, August 23, 2023
17:30–18:30
Small Hall

URSI Commission H Coordinating Activities meeting 3

Friday, August 25, 2023
17:30–19:00
Small Hall

4.9 URSI Commission J

URSI Commission J Coordinating Activities meeting 1

Monday, August 21, 2023
17:30–18:30
Mid-sized Hall A

URSI Commission J Coordinating Activities meeting 2

Wednesday, August 23, 2023
17:30–18:30
Mid-sized Hall A

URSI Commission J Coordinating Activities meeting 3

Friday, August 25, 2023
17:30–19:00
Mid-sized Hall A

4.10 URSI Commission K

URSI Commission K Coordinating Activities meeting 1

Monday, August 21, 2023

17:30–18:30

Room 201 + 202 Connected

URSI Commission K Coordinating Activities meeting 2

Wednesday, August 23, 2023

17:30–18:30

Room 201 + 202 Connected

URSI Commission K Coordinating Activities meeting 3

Friday, August 25, 2023

17:30–19:00

Room 201 + 202 Connected

5. Other meetings (during lunchtime)

5.1 ECR Meeting

Monday, August 21, 2023

12:00–13:20

Conference Hall (box lunch will be provided)

Contact: Nosherwan Shoaib

<nosherwan.shoaib@seecs.edu.pk>

5.2 INAG Working Group Meeting

Tuesday, August 22, 2023

12:00–13:20

Room 204 (box lunch will be provided)

Contact: Ivan Galkin <Ivan_Galkin@uml.edu>

5.3 VERSIM Working Group Meeting

Tuesday, August 22, 2023

12:00–13:20

Small Hall (box lunch will be provided)

Contact: Frantisek Nemec

<frantisek.nemec@mff.cuni.cz>

5.4 Women in Radio Science (WIRS) Meeting

Wednesday, August 23, 2023

12:00–13:20

Conference Hall (box lunch will be provided)

Contact: Sana Salous

<sana.salous@durham.ac.uk>

INTERNATIONAL UNION OF RADIO SCIENCE
UNION RADIO-SCIENTIFIQUE INTERNATIONALE
info@ursi.org www.ursi.org

URSI YOUNG SCIENTISTS AWARDS

A limited number of awards are available to assist young scientists from both developed and developing countries to attend General Assembly and Scientific Symposium of URSI in Sapporo, Japan 19 – 26 August 2023.

To qualify for an award, the applicant:

1. must be less than 35 years old on September 1, 2023;
2. should have a paper, of which he or she is the principal author, submitted and accepted for oral or poster presentation on-site in Sapporo at a regular session of the General Assembly and Scientific Symposium.

Applicants should also be interested in promoting contacts between developed and developing countries. Applicants from all over the world are welcome, including from regions that do not (yet) belong to URSI. All successful applicants are expected to fully participate in the scientific activities of the General Assembly and Scientific Symposium. They will receive free registration, and financial support for board and lodging at the General Assembly and Scientific Symposium on-site. Limited funds will also be available as a contribution to the travel costs of young scientists from developing countries, but this will also strongly depend on the situation with respect to the COVID-19 situation and the general format of the GASS 2023.

All Young Scientist applicants must submit a Summary Paper (2 to 4 pages) meeting the requirements of the Summary Paper Template together with a CV and a list of publications in PDF format. The Summary Papers will be submitted to IEEE Xplore unless the author opts out.

The application needs to be done electronically by going to the same Web site used for the submission of abstracts/papers via https://www.ursi-gass2023.jp. After entering the submission details, authors will be asked if they want to apply for the Young Scientist Award. Please do read the additional instructions for YS applicants in the submission form. Submissions must use the following file naming convention, where "Lastnameauthor" text is replaced by the student's surname and "Firstnameauthor" text is replaced by the student's first name.:

- YSASummaryLastnameauthorFirstnameauthor.pdf
- YSACVLastnameauthorFirstnameauthor.pdf
- YSAPubListLastnameauthorFirstnameauthor.pdf

The deadline for paper submission is **25 January 2023**.

Applications will be assessed by the URSI Young Scientist Committee, taking account of the national ranking of the application and the technical evaluation of the Summary Paper by the relevant URSI Commission. Awards will be announced on **15 April 2023** on the URSI Web site.

For more information about URSI, the General Assembly and Scientific Symposium, and the activities of URSI Commissions, please look at the URSI Web site at: http://www.ursi.org/ and the GASS 2021 Web site at https://www.ursi-gass2023.jp. We will also post updates on our Twitter account @URSI_Radio and on our Facebook page @internationalunionofradioscience.

If you need more information concerning the Young Scientist Program, please contact: **URSI Secretariat, E-mail: ingeursi@ugent.be**

10th International URSI Student Paper Competition

Financially Sponsored by the U.S. National Committee for URSI

Chair: *Sembiam Rengarajan, California State University, Northridge, CA, USA*

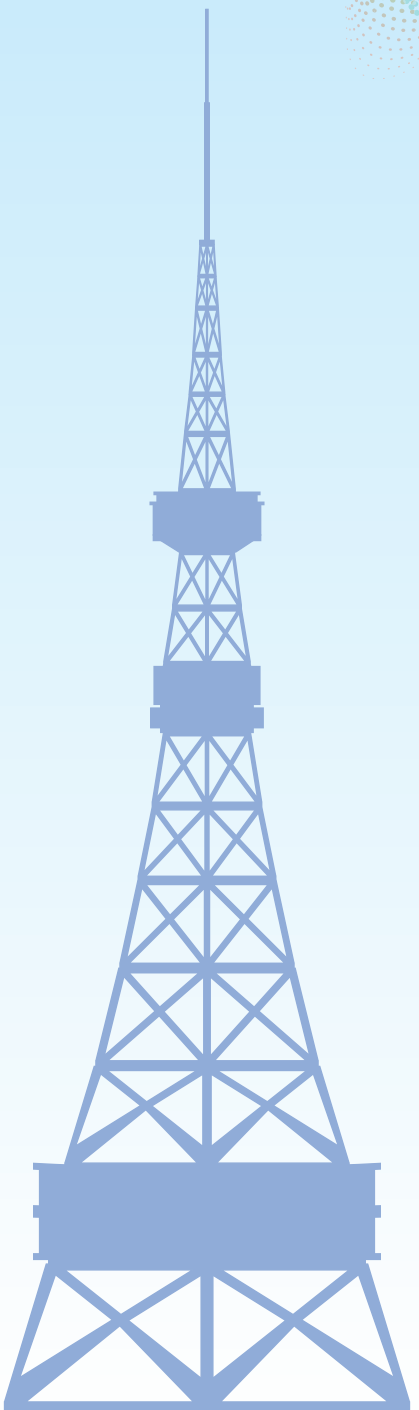
Student Paper Prize winners will be awarded certificates, and checks in the amounts of $1500, $1250, $1000, $750 and $500, respectively, for 1st place through 5th place.

Rules and Guidelines

- The first author and in person presenter must be a full-time university student.
- The topic of the paper must be related to the field of one of the ten URSI Commissions.
- A Full Paper, not longer than 10 pages and not shorter than 4 pages in single-column, single spaced format meeting the requirements of the URSI Template, must be submitted by January 25, 2023.
- Each student is allowed to submit one paper only for the Student Paper Competition.
- Applicants to the previous URSI Student Paper Competitions will not be eligible to participate with the same paper.
- Submissions should be made through the GASS 2023 online paper submission system, with the appropriate box (indicating the Student Paper Competition) being checked during the paper submission.
- The Full Paper will be evaluated within the Competition and will not be published to ensure that there are no subsequent prior-publication issues for those students who wish to submit the work to a journal. This means that the ten-page Full Paper will not be included in the symposium proceedings.
- The student must also submit a Summary Paper or Extended Abstract on the same subject to the appropriate session. The Summary Paper or Extended Abstract will be included in the symposium proceedings.
- A paper that is submitted to a journal before submission to the student competition is ineligible. However, students are encouraged to submit their papers to a journal after January 25, 2023.
- A letter from the student's advisor on university letterhead must be appended to the Full Paper. The letter must state that the author is enrolled as a full-time university student in a degree program. If the Full Paper is coauthored, the letter must state the contribution of each author. Co-authors are expected to have advisory roles only. No other students are permitted as coauthors.
- Ten finalists will be chosen based upon quality, originality and scientific merit. They will receive free access to all social activities and will be recognized. Prizes will be presented to the five top finalists.
- The finalists will present their papers in a special SPC session at GASS 2023. They will be judged by a panel consisting of the ten URSI Commission Chairs or their authorized representatives.
- The prizes will be awarded based on the clarity of the presentation, adherence to time, accessibility to the broad audience of the ten URSI Commissions, and the ability to answer questions on the work.
- All finalists in the SPC must present their paper in person, unless impeded by documented health reasons or by denial of entry visa.
- All finalists attending the GASS in person will be offered a free ticket to the gala dinner. Those who do not show up at the awards ceremony will forfeit their prize.
- Submissions must use the following file naming convention for their submitted PDF files:
  SPCFullLastnameauthorFirstnameauthor.pdf,
  SPCSummaryPaperLastnameauthorFirstnameauthor.pdf,
  SPCExtendedAbstractLastnameauthorFirstnameauthor.pdf,
  SPCLetterLastnameauthorFirstnameauthor.pdf

Prizes will be awarded by check in USD currency.

SCIENTIFIC PROGRAM



13:00-14:40

ABCEFGHK : URSI School for Young Scientists (Part 1)

Room 204

Measurement techniques for emerging wireless technologies
Loh, Tian Hong
National Physical Laboratory (United Kingdom)

15:00-16:40

ABCEFGHK : URSI School for Young Scientists (Part 2)

Room 204

Human Electromagnetic Field Exposure Assessment: Incident Field Evaluations, Dosimetric Evaluations
Capstick, Myles H.
Foundation for Research on Information Technologies in Society (IT' IS) (Switzerland)

15:00-16:30

WIRS (Women In Radio Science) Chapters: Its Foundation and Future Perspectives (Part 1)

Room 107-108

Chair: *Wake, Kanako*
WIRS (Japan)

Short presentations by the WIRS chapters
Kolmasova, Ivana [1] ; Costanzo, Alessandra [2] ; Apollonio, Francesca [2] ; Kasmi, Chaouki [3] ; Dalarsson, Mariana [4] ; Wake, Kanako [5]
[1] WIRS (Czech NC); [2] WIRS (Italy); [3] On behalf of Chair WIRS (France); [4] WIRS (Sweden); [5] WIRS (Japan)

16:45-18:30

WIRS (Women In Radio Science) Chapters: Its Foundation and Future Perspectives (Part 2)

Room 107-108

Chair: *Wake, Kanako*
WIRS (Japan)

Women in Radio Science in Czechia today
Kolmasova, Ivana
WIRS (Czech NC)

Gender gap in STEM field in Japan
Nojiri, Mihoko
KEK (High Energy Accelerator Research Organization) (Japan)

Wrap-up and discussion of future plans in the next triennium

18:40-20:00

WIRS (Women In Radio Science) Chapters: Its Foundation and Future Perspectives (Part 3) Reception

Main Hall B

08:00-11:00

Short Course on scikit-rf (Round 1)

Small Hall

Hillairet, Julien
CEA/IRFM (France)

08:20-10:00

ABCEFGHK : URSI School for Young Scientists (Part 3)

Room 204

Natural electromagnetic noise measurements

Hobara, Yasuhide
The University of Electro-Communications (Japan)

10:20-12:00

ABCEFGHK : URSI School for Young Scientists (Part 4)

Room 204

Is it difficult to Measure an Antenna ?

Guha, Debatosh
University of Calcutta (India)

12:00-15:00

Short Course on scikit-rf (Round 2)

Small Hall

Hillairet, Julien
CEA/IRFM (France)

12:00-15:20

HEACB: Early Career Networking Event

Room 107-108

Session Leaders: *Martinez-Calderon, Claudia*
ISEE, Nagoya University (Japan)

Nemec, Frantisek [1] ; Hanzelka, Miroslav [2] ; Shoaib , Nosherwan [3] ; Michel , Andrea [4] ; Kasmi , Chaouki [5] ; Cwalina , Krzysztof [6] ; Tzarouchis, Dimitrios [7]
[1] *Charles University (Czech Republic);* [2] *Boston University (USA);* [3] *National University of Sciences and Technology (NUST) (Pakistan);* [4] *University of Pisa (Italy);* [5] *TII - Technology Innovation Institute (United Arab Emirates);* [6] *Gdansk University of Technology (Poland);* [7] *Meta Materials Inc. (USA)*

08:20-09:40

SESSION A01-1

Room 102

Antenna and Propagation Measurement Techniques (Tian Loh, Pedro Pinho) (Part 1)
Session Chairs: Loh Tian Hong, National Physical Laboratory, United Kingdom

Compact Antenna Test Range Configuration for Two-way Radar Antenna Radiation Characterization

Chang Teng [1], Chou Hsi-Tseng [1]
[1] *National Taiwan University (Taiwan)*

YSA* Full-Sphere Radiation Pattern Characterization of IoT Devices via Pattern Stitching

Jure Soklic [1], Holger Arthaber [1]
[1] *TU Wien (Austria)*

(Invited)The MMwave Channel Sounder Based on Antenna in Module

Haowen Wang [1], Philip Lo [2], Jason Tsai [1], Joe Hu [1], Tu Fangze [1], Pengren Ding [1], Ssun Ppingshan [1], Haowen WANG [1]
[1] *Shanghai institute of Microsystems and information technology - Chinese academy of sciences (China);* [2] *Foxconn International Holdings (Taiwan)*

Recommended Practices for Millimetre-Wave Channel Sounder Verification

David Michelson [1], Xin Chen [1]
[1] *University of British Columbia (Canada)*

SESSION B02-1

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (part 1)
Session Chairs: Hrabar Silvio, University of Zagreb, Croatia
Jonsson B. L. G., Kungliga Tekniska Högskolan (KTH) royal institute of technology, Sweden

Teaching Applications of Complex Variable Theory for Courses in Applied Electromagnetics

Steven Weiss [1]
[1] *The Johns Hopkins University (United States)*

A Compact Filtering Vivaldi Antenna With High Selectivity and Wide Out-of-Band Suppression

Ahmad Emadeddin [1], B. L. G. Jonsson [1]
[1] *KTH Royal Institute of Technology (Sweden)*

Research on Multi-layer dual-band Microstrip feed

Sha LI [1], Yi Yan [1], Wei Wang [1]
[1] *National Space Science Center (China)*

Mutual Coupling Reduction Between Closely Packed Microstrip Patch Antennas Using Parallel Coupled-line Resonators

Beytullah Bozkır [1]
[1] *Aselsan (Turkey)*

SESSION B03-1

Room 104

Scattering and diffraction (Ludger Klinkenbusch, Giuliano Manara (Part 1)
Session Chairs: Manara Giuliano, Università di Pisa, Italy
Klinkenbusch Ludger, Kiel University, Germany

High Frequency Scattering by a Thick Conducting Plate With Multiple Holes –E Polarization Case–

Cuong Manh BUI [1], Hiroshi Shirai [1]
[1] *Chuo University (Japan)*

Diverging Dynamic Fields near the Edge of Dielectric Wedge

Jung Woong Ra [1]
[1] *The National Academy of Sciences (Republic of Korea)*

Scattering by Wedges and Cones Filled with DNG Metamaterial

Piergiorgio L.E. Uslenghi [1]
[1] *University of Illinois at Chicago (United States)*

(Invited)Uniform Theory for Complex Source Pulsed Pulsed Beam (CSPB) Diffraction by a Wedge: A Spectral Theory of Transient (STT) Solution
Ehud Heyman [1]
[1] *Tel Aviv University (Israel)*

SESSION B21

Conference Hall (Tutorials)

Theory and applications of characteristic modes (Henrik Wallén, Pasi Ylä-Oijala)
Session Chairs: Wallén Henrik, Aalto University, Finland

(Invited)MLFMA Based Characteristic Mode Analysis of Inhomogeneous Media
Di Wu [1], Dongliang Zhang [1], Qi Wu [1]
[1] *Beihang University (China)*

Characteristic Modes and Energy Modes using Impedance Operator from Mie Series
Henrik Wallén [1], Pasi Ylä-Oijala [1]
[1] *Aalto University (Finland)*

Efficiency Optimization of Electrically Small Antennas using Network Characteristic Modes
Abdellah Touhami [1], Sylvain Collardey [1], Ala Sharaiha [1]
[1] *Institut d'Electronique et des Technologies du numéRique (IETR), Univ. Rennes (France)*

(Invited)Scattering Matrix Formulation for Substructure Characteristic Mode Analysis
Mats Gustafsson [1], Johan Lundgren [1], Kurt Schab [2], Lukas Jelinek [3], Miloslav Capek [1]
[1] *Lund University (Sweden);* [2] *Santa Clara University (United States);* [3] *Czech Technical University in Prague (Czechia)*

SESSION BE-1

Main Hall A (General Lectures)

Near-field wireless systems for communications and sensing (Gabriele Gradoni, Andrea Michel, Paolo Nepa) (Part 1)
Session Chairs: Michel Andrea, University of Pisa, Italy
Gradoni Gabriele, University of Nottingham, United Kingdom

(Invited)Novel Rotman-Lens-based Beamforming Networks for Hybrid Near- and Far-field Multi-beam Radiations with Distinguished Selection Ports
ShihKai Ho [1], Chou Hsi-Tseng [1]
[1] *National Taiwan University (Taiwan)*

(Invited)Near- and far-field Pattern Synthesis of Antenna Array Based on the Extended Method of Maximum Power Transmission Efficiency (EMMPTE)
Shen-Yun Wang [1], Wen Geyi [1]
[1] *Nanjing University of Information Science and Technology (China)*

(Invited)60GHz Gigabit Compact-Range Wireless Access System
Makoto Ando [1], Jiro Hirokawa [1], Miao Zhang [2], Toru Taniguchi [3]
[1] *Tokyo Institute of Technology (Japan);* [2] *Xiamen University (China);* [3] *JRC (Japan Radio Co. Ltd.) (Japan)*

SESSION D05 and D06-1

Room 107

Near Field WPT (Qiaowei Yuan, Naoki Shinohara) / Far-Field Wireless Power Transfer and Energy Harvesting (Bo Yang, Tsunayuki Yamamoto) (Part 1)
Session Chairs: Shinohara Naoki, Kyoto University, Japan
Yuan Qiaowei, Tohoku Institute of Technology, Japan
Yang Bo, Kyoto univ., Japan
Yamamoto Tsunayuki, National Institute of Technology, Tsuyama College,

High-Performance Radiative Near-Field Transmitter for Wireless Power Transfer to Biomedical Implants
Hoang Le-Huu [1], Chulhun Seo [1]
[1] *Soongsil University (South Korea)*

YSA* Multi-Target Microwave Power Transmission With Maximum Efficiency and Allocable Power Proportion
Xiao Cai [1], Mengchi Xu [1]
[1] *Nanjing University of Information Science and Technology (China)*

Design Method of Rectenna using Source-Pull Simulation with Harmonics
Katsumi Kawai [1], Naoki Shinohara [1], Tomohiko Mitani [1]
[1] *Kyoto University (Japan)*

Compensation Capacitor Tuning Method of LCC-S Topology Wireless Power Transfer System to Implement ZVS under Various Conditions
Haerim Kim [1], Jangyong Ahn [1], Jaewon Rhee [1], Seungyoung Ahn [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

A prototype of rectenna integrated with a 900 MHz band antenna and a rectifier.
Norimasa Nakashima [1], Tatsuya Sumiyoshi [1]
[1] *Fukuoka Institute of Technology (Japan)*

(Invited)Visualization EM Field Application for WPT system Based on AR Technology
Qiaowei Yuan [1], Yunchong Tang [1]
[1] *Tohoku Institute of Technology (Japan)*

SESSION E03 Room 207

Stochastic/Statistical Techniques in EMC (Luk Arnaut, Sebastien Lalléchère, Chaouki Kasmi, Sergio Pignari)
Session Chairs: Arnaut Luk, Queen Mary University London, United Kingdom
Lalléchère Sébastien, SAFRAN, France

Correlation and Spectral Density Functions for Dynamic Stochastic Fields
Luk Arnaut [1]
[1] *Queen Mary University London (United Kingdom)*

Modeling of Mode Conversion Due to Asymmetry/Coating in Transmission Line System
Zongfei Zhou [1], Bing Li [1], Chen Wang [1], Donglin Su [1]
[1] *Beihang University (China)*

Equipment Working State Recognition Based on Broadband Spectral Features in Electromagnetic Noise Environment
Fan Zhang [1], Dexin Ren [2], Dongrong Zhang [3], Hui Xu [1], Weihan Sang [4], Xiaozhu Lu [1], Donglin Su [1]
[1] *Beihang University (China);* [2] *Project Management Center (China);* [3] *Zhongguancun Laboratory (China);* [4] *State Wuhu Machinery Factory (China)*

Methodology for assessing the Compatibility and Reliability of Detection Chain Performances
Sébastien Lalléchère [1], Laurent Patier [2], François De Daran [1], Olivier Maurice [3]
[1] *SAFRAN (France);* [2] *CNES (France);* [3] *ArianeGroup (France)*

SESSION G04-1 Room 206

International Reference Ionosphere: Improvement, Validation and Usage (Dieter Bilitza, Vladimir Truhlik, Shigeto Watanabe) (Part 1)
Session Chairs: Bilitza Dieter, George Mason University, United States
Watanabe Shigeto,

Validation of the topside ionosphere description made by the International Reference Ionosphere model through in-situ satellites, GNSS radio occultation, and incoherent scatter radars observations
Alessio Pignalberi [1], Michael Pezzopane [1], Dieter Bilitza [2], Bruno Nava [3], David Themens [4]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy);* [2] *George Mason University (United States);* [3] *The Abdus Salam International Centre for Theoretical Physics (Italy);* [4] *University of Birmingham (United Kingdom)*

Improved global model of the electron temperature in the topside ionosphere with corrected satellite data sets
Vladimir Truhlik [1], Dieter Bilitza [2], Ludmila Triskova [1]
[1] *Institute of Atmospheric Physics of the Czech Academy of Sciences (Czech Republic);* [2] *George Mason University (United States)*

(Invited)IGS Ionosphere Working Group cooperation with IRI – provision of GNSS TEC products to GAMBIT database
Andrzej Krankowski [1], Paweł Flisek [1], Adam Froń [1], Kacper Kotulak [1], Manuel Hernandez-Pajares [2], Zishen Li [3], Ningbo Wang [1], Ivan Galkin [1]
[1] *University of Warmia and Mazury (Poland);* [2] *Universitat Politècnica de Catalunya (Spain);* [3] *Chinese Academy of Sciences (CAS) (China)*

(Invited)Fusing IRTAM and GIM resources for Real-Time IRI Weather
Ivan Galkin [1], Adam Fron [2], Bodo Reinisch [1], Manuel Hernandez-Pajares [1], Andrzej Krankowski [1], Nava Bruno [1], Zishen Li [1], Dieter Bilitza [1]
[1] *University of Massachusetts Lowell (United States);* [2] *University of Warmia and Mazury (Poland)*

SESSION HGE1-1

Small Hall

Atmospheric, ionospheric, magnetospheric, and high energy effects of lightning discharges (Sebastien Celestin, Martin Fullekrug, Ningyu Liu, Ivana Kolmašová) (Part 1)

Session Chairs: Kolmašová Ivana, Institute of Atmospheric Physics, Czech Academy of Sciences, Czech Republic
Celestin Sebastien, LPC2E, CNRS, University of Orléans, France

SPCFinalist* Fractal Modeling of Shallow Lightning on Jupiter

Annelisa Esparza [1], Jeremy Riousset [1], Csaba Palotai [2]
[1] *Embry Riddle Aeronautical University (United States);* [2] *Florida Institute of Technology (United States)*

YSA* Detecting Narrow Bipolar Events on a Global Scale with Machine Learning

Yanan Zhu [1], Jeff Lapierre [1], Elizabeth DiGangi [1], Michael Stock [2], Si Chen [3], Vladimir Rakov [1], Ziqin Ding [1], Yunjiao Pu [1], Steven Cummer [1]
[1] *AEM (United States);* [2] *University of Oklahoma (United States);* [3] *University of Florida (United States)*

(Invited)YSA* VHF emitting width and 3D polarization of lightning dart leaders

Brian Hare [1], Olaf Scholten [2], Stijn Buitink [3], Joseph Dwyer [4], Ningyu Liu [1], Chris Sterpka [1], Sander Ter Veen [1]
[1] *ASTRON (Netherlands);* [2] *University of Groningen (Netherlands);* [3] *Vrije University of Brussels (Belgium);* [4] *University of New Hampshire (United States)*

SESSION J06-1

Room 105

Scientific data processing in radio astronomy (Maxim Voronkov, Danielle Fenech, Jan-Willem Steeb, Kazunori Akiyama) (Part 1)

Session Chairs: Voronkov Maxim, CSIRO, Australia

Efficient Deconvolution of a Heterogeneous Array Observation Using a Direction-Dependent Point Spread Function

Stefan J. Wijnholds [1], Tammo Jan Dijkema [1], Herman Groot [2], Maikel Lukkezen [1], Maik Nijhuis [1], André Offringa [1], Chiara Salvoni [1], Sebastiaan Van der Tol [1], Mark De Wever [1]
[1] *ASTRON (Netherlands);* [2] *S[&]T (Netherlands)*

(Invited)Processing ASKAP's Big Data - Challenges and Lessons Learnt

Wasim Raja [1], Maxim Voronkov [1], Matthew Whiting [1], Mark Wieringa [1], Daniel Mitchell [1], Stephen Ord [1], Minh Vuong [1], Eric Bastholm [1], Matt Austin [1], Paulus Lahur [1], Perica Manojlovic [1], Ozgur Cekmer [1], Tim Galvin [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)*

Recent results from the uGMRT data analysis pipelines CAPTURE and CAPTURE-POL

Ruta Kale [1], Santra Ramananda [1], Humaira Bashir Lone [2], Srimoyee Mitra [3], Ishwara-Chandra C. H. [1], Preeti Kharb [1], Yogesh Wadadekar [1], Dharam Vir Lal [1], Yashwant Gupta [1]
[1] *NCRA-TIFR (India);* [2] *University of Kashmir (India);* [3] *Maulana Azad college (India)*

Learning how to clean deep and fast, with R2D2: Residual-to-Residual DNN series for high-Dynamic range imaging in radio astronomy

Yves Wiaux [1], Matthieu Terris [1], Adrian Jackson [2], Yves Wiaux [1]
[1] *Heriot-Watt University (United Kingdom);* [2] *EPCC - University of Edinburgh (United Kingdom)*

SESSION J12-1

Room 108

Modern techniques for radio technosignature (SETI) searches (Cherry Ng, Chenoa Temblay, Danny Price) (Part 1)

Session Chairs: Ng Cherry, CNRS, France
Temblay Chenoa, SETI Institute, United States

Next Generation SETI with COSMIC and the VLA

Chenoa Temblay [1], Savin Shynu Varghese [1]
[1] *SETI Institute (United States)*

YSA* Exploring the Use of Generative AI in the Search for Extraterrestrial Intelligence (SETI)

John Hoang [1], Bryan Brzycki [1], Peter Xiangyuan Ma [2], Aiden Zelakiewicz [3], Zihe Zheng [4]
[1] *Berkeley SETI Research Center (United States);* [2] *Department of Mathematics- - University of Toronto (Canada);* [3] *The Ohio State University (United States);* [4] *Yale University (United States)*

The PANOSETI Transient Search, The FAST Multibeam SETI Sky Survey, and Observations of the Best SETI@home Candidates
Dan Werthimer [1], David Anderson [1], Franklin Antonio [1], Aaron Brown [1], Jeff Cobb [1], Ran Duan [2], Andrew Howard [1], Paul Horowitz [1], Eric Korpela [1], Xiao_Hang Luan [1], Di LI [1], Wei Liu [1], Jerome Maire [1], Rick Raffanti [1], Zhen-Zhao Tao [1], Nicolas Rault-Wang [1], James Wiley [1], Shelley Wright [1], Zhu Yan [1], Tong-Jie Zhang [1], Yinghui Zheng [1]
[1] *University of California (United States);* [2] *National Astronomical Observatories of China (China)*

Refurbishment of the Allen Telescope Array: Science and Capabilities
Wael Farah [1], Alexander Pollak [1], Andrew Siemion [2], Sofia Sheikh [1]
[1] *SETI Institute (United States);* [2] *University of California Berkeley (United States)*

SESSION KA

Room 201-202

Advancement on measurement technology of absorbed/epithelial power density for human exposure to EMF over 6 GHz (Joe Wiart, Kensuke Sasaki)
Session Chairs: Wiart Joe, LTCI, Telecom Paris, Institut Polytechnique de Paris, France
Sasaki Kensuke, National Institute of Information and Communications Technology, Japan

A Verification of SAR Measurement for APD Evaluation at frequency 6 GHz to 10 GHz
Yuto Shimizu [1], Tomoaki Nagaoka [1], Hioshi Kawakami [1]
[1] *National Institute of Information and Communications Technology (Japan)*

YSA* A Comparison of Non-corrected Planar and Spherical Near-Field Scanning For Absorbed Power Density Evaluation Using Inverse Source Technique
Rasyidah Hanan Binti Mohd Baharin [1], Tomoaki Nagaoka [1], Kensuke Sasaki [1]
[1] *National Institute of Information and Communications Technology (Japan)*

Traceable Absorbed Power Density Assessment System in the 28 GHz Band
Ninad Chitnis [1], Fariba Karimi [1], Arya Fallahi [1], Sven Kühn [1], Niels Kuster [1]
[1] *IT'IS Foundation (Switzerland)*

Analysis of Absorbed Power Density Change by Dielectric Properties of Phantom Shell in 6-10 GHz Band
Changmin Lee [1], Jangyong Ahn [1], Sungryul Huh [1], Hyukchoon Kwon [2], Yongho Park [1], Seungyoung Ahn [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea);* [2] *Samsung research (South Korea)*

08:40-09:40

SESSION G03-1

Room 204

Ionospheric Space Weather and Impacts on Technological Systems (Iwona Stanislawska, Anthea Coster, Vincenzo Romano, Takuya Tsugawa) (Part 1)
Session Chairs: Stanislawska Iwona, Space Research Centre of Polish Academy of Sciences, Poland
Coster Anthea, MIT Haystack Observatory, United States

Global and Regional Validation of SAMI3
Angeline Burrell [1], Sarah McDonald [1], Eliana Nossa [2], Dustin Hickey [1], Meghan Burleigh [1], Manbharat Dhadly [1], Chris Metzler [1], Jennifer Tate [3]
[1] *U.S. Naval Research Laboratory (United States);* [2] *Aerospace Corporation (United States);* [3] *Computational Physics Inc. (United States)*

(Invited)NICT Contribution to international activities for space weather services
Mamoru Ishii [1], Takuya Tsugawa [1], Hidekatsu Jn [1], Yuki Kubo [1]
[1] *National Institute of Information and Communications Technology (Japan)*

YSA* How the upper atmosphere effects can influence European technological systems: a study of the socioeconomic quantification
Sara Mainella [1], Pietro Vermicelli [2]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy);* [2] *SpacEarth Technology srl (Italy)*

08:40-10:10

SESSION SPC
Room 101

Special Session (Part 1)

(Invited)SPCFinalist* Quasi-Helmholtz Projectors for High-Order Basis Functions: Definitions, Computational Strategies, Applications
Johann Bourhis [1], Adrien Merlini [2], Francesco P. Andriulli [1]
[1] *Politecnico di Torino (Italy);* [2] *École nationale supérieure Mines-Télécom Atlantique Bretagne Pays de la Loire (France)*

SPCFinalist* 3-D Microwave Absorbers With Ultrawide Bandwidths and Simple Structures: From Synthetic Design to Implementation
Tian-Xi Feng [1], Lei Zhu [1]
[1] *University of Macau (China)*

SPCFinalist* Fractal Modeling of Shallow Lightning on Jupiter
Annelisa Esparza [1], Jeremy Riousset [1], Csaba Palotai [2]
[1] *Embry Riddle Aeronautical University (United States);* [2] *Florida Institute of Technology (United States)*

09:40-10:20

SESSION B10-1
Conference Hall (Tutorials)

Integral equation, hybrid, and fast methods (Amir Boag, Shanker Balasubramaniam, Thomas Eibert) (Part 1)
Session Chairs: Boag Amir, Tel Aviv University, Israel

(Invited)Three-Dimensional Generalized Source Integral Equations for Enhanced Moment Matrix Compression
Dor Zvulun [1], Amir Boag [1], Yaniv Brick [2]
[1] *Tel Aviv University (Israel);* [2] *Ben Gurion University of the Negev (Israel)*

SPC* Spherical harmonic analysis for Time Domain Integral Operators discretized with Convolution Quadratures
Pierrick Cordel [1], Cools Kristof [2], Adrien Merlini [3], Francesco P. Andriulli [1]
[1] *Politecnico di Torino (Italy);* [2] *Ghent University (Belgium);* [3] *IMT Atlantique (France)*

SESSION G03-2
Room 204

Ionospheric Space Weather and Impacts on Technological Systems (Iwona Stanislawska, Anthea Coster, Vincenzo Romano, Takuya Tsugawa) (Part 2)
Session Chairs: Romano Vincenzo, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy
Tsugawa Takuya, National Institute of Information and Communications Technology, Japan

Characteristics and Spatial-Temporal Variations of the Ionosphere from Subauroral to Equatorial Latitudes during a Space Weather Event
Chaosong Huang [1]
[1] *Air Force Research Laboratory (United States)*

Effects of Equatorial Plasma Bubbles on RTK Positioning in Bangkok, Thailand
Pornchai Supnithi [1], Phyo Thu [1], Lin Min Min Myint [1], Jirapoom Budtho [1]
[1] *King Mongkut's Institute of Technology Ladkrabang (Thailand)*

09:40-10:40

SESSION A01-2
Room 102

Antenna and Propagation Measurement Techniques (Tian Loh, Pedro Pinho) (Part 2)
Session Chairs: Loh Tian Hong, National Physical Laboratory, United Kingdom
Lievens Inge, URSI, Belgium

Radar Cross Section Measurements on Wind Turbines in VHF Band
Jens Werner [1], Mahsa Ghaznavi [1], Karsten Schubert [1]
[1] *Jade University of Applied Sciences (Germany)*

Construction Method of Outdoor Electromagnetic Space Based on Ubiquitous Perception Intelligent Platform
Shuo Hu [1], Lixing Guo [1], Zhongyu Liu [1]
[1] *Xidian University (China)*

Quantitative Analysis of Outdoor Electromagnetic Situation Based on Hybrid Ray-tracing Model
Shuo Hu [1], Lixing Guo [1], Zhongyu Liu [1]
[1] *Xidian University (China)*

SESSION B02-2

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (part 2)
Session Chairs: Hrabar Silvio, University of Zagreb, Croatia
Jonsson B. L. G., Kungliga Tekniska Högskolan (KTH) royal institute of technology, Sweden

2x2 MIMO antenna design for WiFi triple band antenna module applications
I-Fong Chen [1], Fei-Lung Wu [2], Chia-Mei Peng [1]
[1] *Jinwen University of Science and Technology (Taiwan);* [2] *Feng Chia University (Taiwan)*

Ground-plane insensitive antenna design for WiFi triple-band USB dongle applications
I-Fong Chen [1], Liu Jung Sheng [2], Chia-Mei Peng [1]
[1] *Jinwen University of Science and Technology (Taiwan);* [2] *Feng Chia University (Taiwan)*

Bi-directional Dual Band Antenna Development for Wi-Fi Applications in Street Scenarios
CHANG-LUN LIAO [1]
[1] *Chunghwa Telecom Laboratories (Taiwan)*

SESSION B03-2

Room 104

Scattering and diffraction (Ludger Klinkenbusch, Giuliano Manara (Part 2)
Session Chairs: Manara Giuliano, University of Pisa, Italy
Klinkenbusch Ludger, Kiel University, Germany

(Invited)Degrees of Freedom and Characteristic Modes in Scattering and Antenna Problems
Mats Gustafsson [1], Johan Lundgren [1]
[1] *Lund University (Sweden)*

Research on the Coupling Mechanism of Creeping Waves Based on the Complex Planar Mesh Model
Qi Huang [1], Wancong Li [1], Siyuan He [1]
[1] *Wuhan University (China)*

(Invited)CWA simulation of electromagnetic coupling to a metasurface-covered lossy multilayer
Cristina Ponti [1], Giuseppe Schettini [1], Giuliano Manara [2], Tognolatti Ludovica [1]
[1] *Roma Tre University (Italy);* [2] *Università di Pisa (Italy)*

SESSION BE-2

Main Hall A (General Lectures)

Near-field wireless systems for communications and sensing (Gabriele Gradoni, Andrea Michel, Paolo Nepa) (Part 2)
Session Chairs: Michel Andrea, University of Pisa, Italy
Gradoni Gabriele, University of Nottingham, United Kingdom

YSA* SPC* Contactless Switching of a RF CBRAM Switch
Daisuke Kobuchi [1], Romain Siragusa [2], Yoshiaki Narusue [1], Arnaud Vena [1], Perret Etienne [1]
[1] *The University of Tokyo (Japan);* [2] *Grenoble Institute of Technology (France)*

(Invited)Analysis of Signal-to-Noise For Estimating Far Fields from Near Field Measurements
Yanyan Zhang [1], Rodney Vaughan [1]
[1] *Simon Fraser University (Canada)*

Near-field UHF RFID Systems
Andrea Michel [1], Giuliano Manara [1], Paolo Nepa [1]
[1] *University of Pisa (Italy)*

SESSION D06-2

Room 107

Far-Field Wireless Power Transfer and Energy Harvesting (Bo Yang, Tsunayuki Yamamoto) (Part 2)

Session Chairs: Yang Bo, Kyoto univ., Japan
Yamamoto Tsunayuki, National Institute of Technology, Tsuyama College,

(Invited)A Compact High-Efficiency RF Rectifier with Wide Power Range and Its Application in Wireless Power Transfer

Daotong Li [1], Dongyi Sui [2], Haokun Zhang [1], Qiang Chen [1]

[1] *Tohoku University (Japan);* [2] *Chongqing University (China)*

(Invited)A Compact Transmitter and a Dual-Polarized Rectenna Array for Low-Power Microwave Wireless Power Transmission

Changjun Liu [1], Jianwei Jing [1], Yan Liping [1], Lan Jing [1]

[1] *Sichuan University (China)*

Power confirmation method from radio wave using rectenna for SPS demonstration satellite.

Yuta Nakajima [1], Yoshiyuki Fujino [1]

[1] *Toyo University (Japan)*

Design of a Simplified Controlled Phased Array for Focused Beams and Beamforming

Bo Yang [1]

[1] *Kyoto University (Japan)*

SESSION E01-1

Room 207

EMC Analytical & Numerical Modeling in complex systems (Riccardo Trinchero, Christophe Guiffaut, Chaouki Kasmi) (Part 1)

Session Chairs: Trinchero Riccardo, Politecnico di Torino, Italy
Kasmi Chaouki, TII - Technology Innovation Institute, United Arab Emirates

YS* A Far-Field Susceptibility Pattern of a Shielded Object

Anna Grytsko [1], Piotr Slobodzian [1]

[1] *Wroclaw University of Science and Technology (Poland)*

Compact models for EMC of on-board mechatronic equipment in automotive context

Paul Clérico [1], Lionel Pichon [1], Laurent Daniel [1], Naraindranath Doorgah [2], Jeffrey Lambert [1], Ignacio Alvarez [1]

[1] *CentraleSupélec (France);* [2] *Forvia (France)*

YSA* SPC* A Novel Lightning Strike Location Prediction Method

Clint Snider [1], Robert Moore [1]

[1] *University of Florida (United States)*

SESSION G04-2

Room 206

International Reference Ionosphere: Improvement, Validation and Usage (Dieter Bilitza, Vladimir Truhlik, Shigeto Watanabe) (Part 2)

Session Chairs: Galkin Ivan, Space Science Laboratory, University of Massachusetts, United States
Krankowski Andrzej, Space Radio-Diagnostics Research Center, University of Warmia and Mazury in Olsz, Poland

An Evaluation of Empirical Plasmasphere Models with the Goal of Extending the International Reference Ionosphere (IRI) to Plasmaspheric Altitudes

Dieter Bilitza [1]

[1] *George Mason University (United States)*

(Invited)NEDM modelling studies and its potential to improve the IRI model

Mainul Hoque [1], Norbert Jakowski [1], Fabricio S Prol [2]

[1] *German Aerospace Center (DLR) (Germany);* [2] *Finnish Geospatial Research Institute (FGI) (Finland)*

(Invited)Plasmaspheric Total Electron Content Variations obtained from GPS Total Electron Content Data

Yuichi Otsuka [1], Zhiyu Chen [2], Atsuki Shinbori [1], Takuya Sori [1], Kazuo Shiokawa [1], Septi Perwitasari [1], Michi Nishioka [1], Fuminori Tsuchiya [1], Atsushi Kumamoto [1], Yoshiya Kasahara [1], Yoshizumi Miyoshi [1], Masahiro Kitahara [1], Satoko Nakamura [1], Ayako Matsuoka [1], Iku Shinohara [1]

[1] *Nagoya University (Japan);* [2] *Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan)*

SESSION HGE1-2

Small Hall

Atmospheric, ionospheric, magnetospheric, and high energy effects of lightning discharges (Sebastien Celestin, Martin Fullekrug, Ningyu Liu, Ivana Kolmašová) (Part 2)

Session Chairs: Kolmašová Ivana, Institute of Atmospheric Physics, Czech Academy of Sciences, Czech Republic
Celestin Sebastien, LPC2E, CNRS, University of Orléans, France

(Invited)Multi-Frequency Observation of Downward Terrestrial Gamma-ray Flashes in Winter Thunderstorms

Yuuki Wada [1], Takeshi Morimoto [2], Yoshitaka Nakamura [3], Teruaki Enoto [4], Hiroshi Kikuchi [5], Eiichi Yoshikawa [6], Tomoo Ushio [1]
[1] Osaka University (Japan); [2] Kindai University (Japan); [3] Kobe City College of Technology (Japan); [4] Kyoto University (Japan); [5] The University of Electro-Communications (Japan); [6] Japan Aerospace Exploration Agency (Japan)

Modeling Self-Consistent Effects in Relativistic Runaway Electron Avalanches

Pierre Gourbin [1], Sebastien Celestin [1]
[1] LPC2E - CNRS - University of Orléans (France)

XStorm: A new instrument to study the terrestrial gamma ray flashes and gamma ray glows on balloon campaigns OREO and Strateole-2.

Yanis Hazem [1], Melody Pallu [2], Francois Trompier [3], Sebastien Celestin [2]
[1] LPC2E - CNRS - Orléans University (France); [2] Université Paris Cité, CNRS (France); [3] Institute for Radiological Protection and Nuclear Safety (IRSN) (France)

SESSION J03-2

Mid-sized Hall A

VLBI (Leah Morabito , Hiduyaki Nobeyashi) (part 2)

Session Chairs: Morabito Leah, Centre for Extra-galactic Astronomy, Durham University, United Kingdom

The southern hemisphere Long Baseline Array

Philip Edwards [1], Chris Phillips [1], Cormac Reynolds [1], George Heald [1]
[1] Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)

(Invited)VLBI with the SKA: from concept to reality

Cristina García Miró [1], Jack F. Radcliffe [2], Paragi Zsolt [3]
[1] Yebes Observatory (Spain); [2] University of Pretoria (South Africa); [3] Joint Institute for VLBI ERIC (Netherlands)

Enabling VLBI for the upgraded GMRT

Visweshwar Ram Marthi [1], Preeti Kharb [1], Harshavardhan Reddy [2], Sanjay Kudale [1], Sandeep Choudhari [1], Prakash Hande [1], Ajith Kumar [1], Yashwant Gupta [1]
[1] Tata Institute of Fundamental Research (India); [2] Giant Metrewave Radio Telescope Observatory (India)

SESSION J06-2

Room 105

Scientific data processing in radio astronomy (Maxim Voronkov, Danielle Fenech, Jan-Willem Steeb, Kazunori Akiyama) (Part 2)

Session Chairs: Steeb Jan-Willem, National Radio Astronomy Observatory, United States

Australian EoR Pipeline verification and all-sky 21 cm sky maps

Jack Line [1]
[1] ICRAR - Curtin University (Australia)

(Invited)Extending MWA-scale Ionospheric Calibration for SKA-Low

Daniel Mitchell [1]
[1] Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)

Calibrated MWA Solar Imaging using Bluebild

Shreyam Krishna [1], Emma Tolley [1], Rohit Sharma [2], Michele Bianco [1], Matthieu Simeoni [1]
[1] Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland); [2] FHNW (Switzerland)

SESSION J12-2

Room 108

Modern techniques for radio technosignature (SETI) searches (Cherry Ng, Chenoa Temblay, Danny Price) (Part 2)
Session Chairs: Ng Cherry, CNRS, France
Temblay Chenoa, SETI Institute, United States

On the Utility of Spectral Kurtosis Statistics in Narrowband Dedoppler Technosignature Searches
Danny Price [1]
[1] *ICRAR / Berkeley SETI (Australia)*

Upper limits on transmitter rate of extragalactic civilizations placed by Breakthrough Listen observations
Yuri Uno [1], Tetsuya Hashimoto [1], Tomotsugu Goto [2], Simon Ho [1], Tzu-Yin Hsu [1]
[1] *Natinal Chung Hsing Unviersity (Taiwan);* [2] *National Tsing Hua University (Taiwan)*

The Penn State Extraterrestrial Intelligence Center
Jason Wright [1], Nick Tusay [1]
[1] *Penn State University (United States)*

SESSION K08

Room 201-202

Challenges and standardization of assessment methods related to human exposure to wireless technologies (Jafar Keshvari, Kensuke Sasaki)
Session Chairs: Sasaki Kensuke, National Institute of Information and Communications Technology, Japan
Shimizu Yuto, National Institute of Information and Communications Technology, Japan

Incident Power Densities on Temporal Head Surfaces Over the Standard and Anatomical Models: A Computational Study from 20 to 70 GHz
Kensuke Sasaki [1], Tomoaki Nagaoka [1], Teruo Onishi [1]
[1] *National Institute of Information and Communications Technology (Japan)*

Exposure Estimation of mm-Waves Using Metasurfaces and Infrared Cameras
Daniel Sjöberg [1], Johan Lundgren [1], Marzieh Zahibipour [2], Deyu Tu [1], Isak Engquist [1], Mats Gustafsson [1]
[1] *Lund University (Sweden);* [2] *Linköping University (Sweden)*

Electromagnetic Exposure from Wireless Devices as Function of Distance
Mark Douglas [1], Nitin Jain [2], Beyhan Kochali [3], Niels Kuster [1]
[1] *IT'IS Foundation (Switzerland);* [2] *BNN SPEAG (India);* [3] *Schmid & Partner Engineering AG (Switzerland)*

11:00-12:00

SESSION GENERAL LECTURE 1

Main Hall A (General Lectures)

Photonics for next generation radio access network (RAN) (Masataka Nakazawa)
Session Chairs: Ando Makoto, Tokyo Institute of Technology, Japan

Photonics for next generation radio access network (RAN)
Masataka Nakazawa [1]
[1] *Tohoku University (Japan)*

13:20-14:00

SESSION B10-2

Main Hall A (General Lectures)

Integral equation, hybrid, and fast methods (Amir Boag, Shanker Balasubramaniam, Thomas Eibert) (Part 2)
Session Chairs: Boag Amir, Tel Aviv University, Israel

Refinement-free Preconditioning Strategies Based on Laplacian-filtered Quasi-Helmholtz Projectors
Adrien Merlini [1], Clément Henry [1], Davide Consoli [2], Lyes Rahmouni [1], Alexandre Dély [1], Francesco P. Andriulli [1]
[1] *IMT Atlantique (France);* [2] *Politecnico di Torino (Italy)*

(Invited)YSA* A Domain Decomposition Scheme with an Efficient Multitrace Multiresolution Preconditioner for the Simulation of Complex Composite Problems
Victor F Martin [1], Jose M. Taboada [2], Francesca Vipiana [3]
[1] *University of Extremadura/Politecnico di Torino (Spain);* [2] *University of Extremadura (Spain);* [3] *Politecnico di Torino (Italy)*

13:20-14:20

SESSION B02-3

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (part 3)
Session Chairs: Guha Debatosh, Calcutta University, India
Michel Andrea, University of Pisa, Italy

Magneto-Dielectric Material for Small Antenna System packaged within a metallic handset at VHF band
Thomas Finet [1], Ala Sharaiha [1], Anne-Claude Tarot [1], Cyrille Le Meins [2], Hanadi Breiss [3], Jean-Luc Mattei [1], Patrick Pottier [1], Philippe Pouliguen [1]
[1] University of Rennes (France); [2] Thales Six GTS (France); [3] Université de bretagne occidentale (France)

YSA* Armed Microstrip Patch: New Configuration with Promising Feature of High 3D Cross-Polar Discrimination
Debi Dutta [1], Debatosh Guha [1]
[1] Calcutta University (India)

13:20-14:20

SESSION Commission A Tutorial

Conference Hall (Tutorials)

The City as a Measurement Platform
Nuno Carvalho [1]
[1] Aveiro Instituto de Telecomunicações (Portugal)

SESSION D11

Room 107

Recent Advances in Electronics and Photonics (Open Session) (Naoki Shinohara, Atsushi Kanno)
Session Chairs: Kanno Atsushi, Nagoya Institute of Technology, Japan
Shinohara Naoki, Kyoto University, Japan

Utilizing Petri-Nets to Represent Electromagnetic Waveguide Junction Switching Processes
Alessandro Ventisei [1], Tony Knightley [1], Ross Macdonald [1], Joe Riley [1], Alex Yakovlev [1], Victor Pacheco-Peña [1]
[1] Newcastle University (United Kingdom)

Enabling perfect splitting using four-port interconnected rectangular waveguides
William Rogers [1], Ross G. MacDonald [1], Christian Johnson-Richards [1], Alex Yakovlev [1], Victor Pacheco-Peña [1]
[1] Newcastle University (United Kingdom)

SESSION E01-2

Room 207

EMC Analytical & Numerical Modeling in complex systems (Riccardo Trinchero, Christophe Guiffaut, Chaouki Kasmi) (Part 2)
Session Chairs: Trinchero Riccardo, Politecnico di Torino, Italy
Carobbi Carlo, Università degli Studi di Firenze, Italy

YS* Readout Integrated Circuit for MIR Detector within ASPIC
Pawel Pienczuk [1], Witold Pleskacz [2], Grzegorz Janczyk [1]
[1] Łukasiewicz-IMiF (Poland); [2] Warsaw University of Technology (Poland)

SPCFinalist* 3-D Microwave Absorbers With Ultrawide Bandwidths and Simple Structures: From Synthetic Design to Implementation
Tian-Xi Feng [1], Lei Zhu [1]
[1] University of Macau (China)

YSA* Induction Motor High-Frequency Behavioral Modeling Using PINN
Zhenyu Zhao [1], Kye Yak See [1]
[1] Nanyang Technological Univeristy (Singapore)

Machine Learning Based Classification and Prediction of Electromagnetic Absorption in Electrical Reverberation Chambers
Eden Tafa Tulu [1], Marcus Stiemer [2], Mohammed Elsayed [1], Ilda Cahani [1]
[1] Helmut Schmidt University / University of the Federal Armed Forces (Germany); [2] Helmut Schmidt University (Germany)

SESSION G04-3

Room 206

International Reference Ionosphere: Improvement, Validation and Usage (Dieter Bilitza, Vladimir Truhlik, Shigeto Watanabe) (Part 3)

Session Chairs: Truhlik Vladimir, Institute of Atmospheric Physics of the Academy Sciences of the Czech Republic, Czech Republic
Liu Huixin, Kyushu University, Japan

YSA* CLIMF2: A Climatological Model of the Ionospheric F2 Layer

Danielle Edwards [1], Thomas Chambers [2], Manuel Cervera [1]

[1] *Defence Science and Technology Group (Australia);* [2] *The University of Adelaide (Australia)*

(Invited)Long-term trend in sporadic E layer observed in Japan during 1948-2021

Huixin Liu [1], Teraoka Sorai [1], Michi Nishioka [2]

[1] *Kyushu University (Japan);* [2] *NICT (Japan)*

(Invited)SPC* Monthly Probability of ESF occurrence between Observations, IRI-2016 Model, and AI Models at Chumphon Station, Thailand

Phimmasone Thammavongsy [1], Pornchai Supnithi [1], Myint Lin Min Min [1], Kornyanat Hozumi [2]

[1] *King Mongkut's Institute of Technology Ladkrabang (Thailand);* [2] *National Institute of Information and Communications Technology (Japan)*

SESSION HGE1-3

Small Hall

Atmospheric, ionospheric, magnetospheric, and high energy effects of lightning discharges (Sebastien Celestin, Martin Fullekrug, Ningyu Liu, Ivana Kolmašová) (Part 3)

Session Chairs: Kolmašová Ivana, Institute of Atmospheric Physics, Czech Academy of Sciences, Czech Republic
Celestin Sebastien, LPC2E, CNRS, University of Orléans, France

Observing lightning and transient luminous events from the International Space Station: an astronaut's perspective

Yoav Yair [1], Melody Korman [2], Eytan Stibbe [3]

[1] *Reichman University (Israel);* [2] *Tel Aviv University (Israel);* [3] *Vital Capital (Israel)*

Green emissions associated with sprites

Sebastien Celestin [1], Matthieu Garnung [1], Thomas Farges [2], Burcu Kosar [3], Levi Boggs [4]

[1] *LPC2E - University of Orleans - CNRS (France);* [2] *CEA / DAM / DIF (France);* [3] *NASA Goddard Space Flight Center (United States);* [4] *SSRC - Georgia Tech Research Institute (United States)*

SPC* Simplified Nighttime Mesospheric Photochemistry for Lightning-Ionosphere Interactions

Joshua Santos [1], Robert Moore [1]

[1] *University of Florida (United States)*

SESSION J03-3

Mid-sized Hall A

VLBI (Leah Morabito , Hiduyaki Nobeyashi) (part 3)

Session Chairs: Kobayashi Hideyuki, National Astronomical Observatory of Japan, Japan

(Invited)Next-generation Very Large Array - Long Baseline Design & Performance

Anthony Beasley [1], Walter Brisken [1], Lucas Hunt [1], Eric Murphy [1], Rob Selina [1], Willem Esterhuyse [1], William Hojnowski [1]

[1] *National Radio Astronomy Observatory (United States)*

Four Years of ICRF3 Source Positions

Phil Cigan [1], Nathan Secrest [1], David Gordon [1], Megan Johnson [1], Valeri Makarov [1], Remington Sexton [1]

[1] *USNO (United States)*

(Invited)Korean VLBI Network and Extended-KVN Project

Taehyun Jung [1], Do-Young Byun [2]

[1] *Korea Astronomy and Space Science Institute (South Korea);* [2] *University of Science & Technology (South Korea)*

SESSION J06-3

Room 105

Scientific data processing in radio astronomy (Maxim Voronkov, Danielle Fenech, Jan-Willem Steeb, Kazunori Akiyama) (Part 3)

Session Chairs: Kazunori Akiyama, Massachusetts Institute of Technology, United States

Current Status and Future Challenges of Newly Developed Imaging Tool for ALMA

Takeshi Nakazato [1], Shiro Ikeda [2], Takashi Tsukagoshi [3], Akio Taniguchi [4], Masayuki Yamaguchi [5], George Kosugi [1], Mareki Honma [1], Ryohei Kawabe [1], Kazunori Akiyama [6], Toshinobu Takagi [7], Yoshihiro Yamada [1], Atsushi Miyazaki [1]
[1] National Astronomical Observatory of Japan (Japan); [2] The Institute of Statistical Mathematics (Japan); [3] Ashikaga University (Japan); [4] Nagoya University (Japan); [5] Academia Sinica Institute of Astronomy and Astrophysics (Taiwan); [6] Massachusetts Institute of Technology Haystack Observatory (United States); [7] Japan Space Forum (Japan)

Instrument Modelling for the next-generation Event Horizon Telescope

Iniyan Natarajan [1], Lindy Blackburn [1], Dominic Pesce [1], Paul Tiede [1], Freek Roelofs [1]
[1] Center for Astrophysics - Harvard & Smithsonian (United States)

(Invited)Data pathway of the Event Horizon Telescope

Lindy Blackburn [1]
[1] Center for Astrophysics - Harvard & Smithsonian (United States)

SESSION JG-1

Room 108

Mutual benefit between radio astronomy and ionospheric science (Maaijke Mevius, Claudio Cesaroni, Christopher Jordan) (Part 1)

Session Chairs: Cesaroni Claudio, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

GNSS Astronomy: a new field of synergestic research facilitated by the response of the Earth's ionosphere to solar flares and stellar superflares

Manuel Hernandez Pajares [1], David Moreno-Borràs [2], Fors Octavi [1], Liu Qi [1], Alberto Garcia-Rigo [1], Monte-Moreno Enric [1], Roma-Dollase David [1], Olivares-Pulido Germán [1], Graffigna Victoria [1], Raul Orus-Perez [1], Ventura-Traveset Javier [1]
[1] Universitat Politècnica de Catalunya (Spain); [2] UPC-IonSAT (Spain)

Detection of multi-scale ionospheric irregularities with LOFAR and GNSS data: the case of the January 2022 storm

Luca Spogli [1], Maaijke Mevius [2], Claudio Cesaroni [1], Katarzyna Beser [1], Rebecca Ghidoni [1], Lucilla Alfonsi [1], Maestri Tiziano [1]
[1] Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy); [2] ASTRON (Netherlands)

Expanding the Jicamarca Radio Observatory Radar Capabilities

Fabiano Rodrigues [1], Marco Milla [2], Danny Scipion [3], David Hysell [4], Jorge Chau [5], Kenneth Obenberger [6]
[1] University of Texas at Dallas (Peru); [2] Pontificia Universidad Católica del Perú (Peru); [3] Instituto Geofísico del Perú (Peru); [4] Cornell University (United States); [5] Leibniz Institute of Atmospheric Physics at the Rostock University (Germany); [6] Air Force Research Laboratory - Kirtland Air Force Base (United States)

SESSION K15-1

Room 201-202

Advances in numerical modeling for bioelectromagnetics - part 1 (Tomoaki Nagaoka, Essam A. Rashed, Emily Porter)

Session Chairs: Nagaoka Tomoaki, National Institute of Communications and Technology, Japan
Laakso Ilkka, Aalto University, Finland

Frequency-Dependent Nonuniform Energy Absorption around Human Eyeballs for the Electromagnetic Waves of 5G Mobile Communications

Tuya Wuren [1], Takeru Mastukuma [1]
[1] Kurume National College of Technology (Japan)

Numerical Estimation of SAR Enhancement Characteristics Due to Implanted Metal Plates Exposed to Oblique Incidence Plane Waves

Shuhei Waki [1], Tsumura Funa [1], Takashi Hikage [1], Tomoaki Nagaoka [2]
[1] Hokkaido University (Japan); [2] National Institute of Information and Communications Technology (Japan)

YS* SPC* Radio-Frequency Dosimetry of in vivo Experiments with Aquatic Larval Yellow Fever Mosquitoes

Eline De Borre [1], Arno Thielens [1]
[1] Ghent University (Belgium)

13:20-15:20

SESSION SPC

Room 101

Special Session (Part 2)

SPCFinalist* Analysis of Electromagnetic Waves Generated From Simulated Hypervelocity Impact Plasmas for Spacecraft Threat Assessment
Raymond Lau [1], Nicolas Lee [1], Sigrid Elschot [1]
[1] *Stanford University (United States)*

SPCFinalist* The Full-Wave Alternative to Eddy-Current Solvers: on a Low-Frequency and Dense-Discretization Stable PMCHWT Equation for Dielectric and Conductive Media
Viviana Giunzioni [1], Adrien Merlini [2], Francesco P. Andriulli [1]
[1] *Politecnico di Torino (Italy);* [2] *IMT Atlantique (France)*

SPCFinalist* Observations of Kilometer-Scale Instabilities in the Polar Summer Mesosphere Resembling Varicose Mode Flows
Jennifer Hartisch [1], Jorge L. Chau [1], Ralph Latteck [1], Toralf Renkwitz [1], Miguel Urco [1], Marius Zecha [1]
[1] *Leibniz Institute of Atmospheric Physics (Germany)*

(Invited)SPCFinalist* Heuristic Quantum Optimization for Engineering Reconfigurable Intelligent Surfaces in Smart Radio Environments
Qi Jian Lim [1], Zhen Peng [1], Gabriele Gradoni [2]
[1] *University of Illinois at Urbana-Champaign (United States);* [2] *University of Nottingham (United Kingdom)*

13:40-14:20

SESSION G03-3

Room 204

Ionospheric Space Weather and Impacts on Technological Systems (Iwona Stanislawska, Anthea Coster, Vincenzo Romano, Takuya Tsugawa) (Part 3)
Session Chairs: Tsugawa Takuya, National Institute of Information and Communications Technology, Japan
Stanislawska Iwona, Space Research Centre of Polish Academy of Sciences, Poland

A statistical analysis of GNSS-derived 2014 mid-latitude TEC climate at Matera, Italy
Nenad Sikirica [1], Babatunde Rabiu [2], Teodor B Iliev [3], Renato Filjar [1]
[1] *University of Applied Sciences Hrvatsko Zagorje Krapina (Croatia);* [2] *UN African Regional Centre for Space Science Technology & Education (Nigeria);* [3] *University of Ruse (Bulgaria)*

YSA* A correlation between AKR-like emissions and field-aligned currents
Agata Chuchra-Konrad [1], Barbara Matyjasiak [1], Roman Schreiber [1], Hanna Rothkaehl [1]
[1] *Space Research Centre (Poland)*

14:20-14:40

SESSION HGE1-4

Small Hall

Atmospheric, ionospheric, magnetospheric, and high energy effects of lightning discharges (Sebastien Celestin, Martin Fullekrug, Ningyu Liu, Ivana Kolmašová) (Part 4)
Session Chairs: Kolmašová Ivana, Institute of Atmospheric Physics, Czech Academy of Sciences, Czech Republic
Celestin Sebastien, LPC2E, CNRS, University of Orléans, France

YS* Scattered Field Polarization for VLF Remote Sensing of Transient Events
Hunter Burch [1], Robert Moore [2]
[1] *Auburn University (United States);* [2] *University of Florida (United States)*

14:20-15:20

SESSION A02

Room 102

Measurements in Telecommunications and Health Diagnostics ((Tian Loh, Nuno Carvalho)

Session Chairs: Loh Tian Hong, National Physical Laboratory, United Kingdom

An Alternative Method to Identify the Susceptibility Threshold Level of Device under Test in a Reverberation Chamber

Qian Xu [1], Kai Chen [2], Xueqi Shen [1], Lei Xing [1], Yi Huang [1], Tian Hong Loh [1]

[1] *Nanjing University of Aeronautics and Astronautics University (United Kingdom);* [2] *Nanjing Rongce Testing Technology Ltd (China)*

(Invited)Reduce Size, High Power mmWave Phased-Array Antenna System with Integrated Compound Semiconductor Power Amplifiers

Su-Wei Chang [1], Jiun-Wei Wu [1], Po-Chia Huang [1], Chun-Cheng Chan [1], Che-Wei Hsu [1], Yu-Ting Kao [1], Hung-Yuan Hsu [1], Shun-Zhao Huang [1], Chao-Chun Hsu [1], Chih-Hsien Wu [1], Chien-Tse Fang [1]

[1] *TMY Technology Inc. (Taiwan)*

AI-Powered Radar Sensing for Remote Health Monitoring

George Shaker [1]

[1] *UW (Canada)*

SESSION Commission B Tutorial

Conference Hall (Tutorials)

Session Chairs: Tzarouchis Dimitrios, Meta Materials Inc., United States

Radio Frequency Identification (RFID) Systems: from electromagnetic theory to applications

Andrea Michel [1]

[1] *University of Pisa (Italy)*

SESSION D07-1

Room 107

Photonic Signal Processing, Real-time Instruments and Biomedical Imaging (Hossein Asghari, Masayuki Suzuki, Chao Wang) (Part 1)

Session Chairs: Asghari Hossein, Loyola Marymount University, United States
Shinohara Naoki, Kyoto University, Japan
Kanno Atsushi, Nagoya Institute of Technology, Japan
Suzuki Masayuki, Doshisha University, Japan

Theoretical Analysis of Integrated Optical Nested Ring Coupled Dual Ring Resonator (NCDRR) For Filtering Applications

Pragya Mishra [1], Tushar Gaur [1], Srinivas Talabattula [1]

[1] *Indian Institute of Science (India)*

(Invited)Improving the performance of the terahertz chemical microscope for biomedical and environmental sensing

Tsuneyuki Ozaki [1]

[1] *INRS (Canada)*

(Invited)Advances in ultrafast photonic spectrograms towards sub-THz bandwidths

José Azana [1], Benjamin Crockett [1], Xinyi Zhu [1], Connor Rowe [1]

[1] *Institut national de la recherche scientifique (Canada)*

SESSION EC-1

Room 207

EM Security of Cyber-physical systems & Wireless Technologies (Yuichi Hayashi, Chaouki Kasmi, Virginie Deniau) (Part 1)

Session Chairs: Hayashi Yuichi, Nara Institute of Science and Technology, Japan
Kasmi Chaouki, TII - Technology Innovation Institute, United Arab Emirates

Improvement of IEMI Fault Injection from Outside Cryptographic Devices

Hikaru Nishiyama [1], Yuichi Hayashi [1], Daisuke Fujimoto [1], Sone Hideaki [2]

[1] *Nara Institute of Science and Technology (Japan);* [2] *Tohoku University (Japan)*

YS* Verification of an EMI-compliant monitor and its vulnerabilities from a data security point of view
David Martinez [1], Aysha Alneyadi [1], Islem Yahi [1], Farhad Rachidi [2], Chaouki Kasmi [1]
[1] Technology Innovation Institute (United Arab Emirates); [2] Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland)

Fundamental Study on TEMPEST Under Limited Measurement Performance
Taiki Kitazawa [1], Yuichi Hayashi [1], Hiroyuki Kubo [2]
[1] Nara Institute of Science and Technology (Japan); [2] Chiba University (Japan)

SESSION G03-4

Room 204

Ionospheric Space Weather and Impacts on Technological Systems (Iwona Stanislawska, Anthea Coster, Vincenzo Romano, Takuya Tsugawa) (Part 4)
Session Chairs: Stanislawska Iwona, Space Research Centre of Polish Academy of Sciences, Poland
Coster Anthea, MIT Haystack Observatory, United States

Harmonize HF COM Maximum Usable Frequency(MUF) Global Space Weather Centers Advisories.
Loredana Perrone [1], Vickal Kumar [2], Mihail Codrescu [3], Ishii Mamoru [1], Ivan Galkin [1], Andry Zalizovski [1], Steenburgh Robert [1], Takuya Tsugawa [1], Yana Maneva [1], Hidekatsu Jiin [1], Iwona Stanislawska [1], Tzu-Wei Fang [1], Kostantin Tsybulya [1], Paolo Bagiacchi [1]
[1] Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy); [2] Australian Bureau of Meteorology (Australia); [3] Space Weather Prediction Center (United States)

Observations of sporadic E using aeronautical navigation radio waves
Keisuke Hosokawa [1], Susumu Saito [2], Jun Sakai [1], Ichiro Tomizawa [1], Hiroyuki Nakata [1], Toru Takahashi [1], Michi Nishioka [1], Takuya Tsugawa [1], Mamoru Ishii [1], Akinori Saito [1], Manabu Shinohara [1]
[1] University of Electro-Communications (Japan); [2] Electronic Navigation Research Institute (Japan)

Relations of HF Doppler Ionospheric Monitoring with GNSS Positioning Errors
Jaroslav Urbar [1], Lubos Rejfek [1], Jaroslav Chum [1], Vladimir Truhlik [1], Jan Rusz [1], Jiri Base [1], Jakub Horky [1], Jiri Simunek [1], Zbysek Mosna [1], Daniel Kouba [1], Dalia Obrazova [1]
[1] Institute of Atmospheric Physics of the Czech Academy of Sciences (Czech Republic)

SESSION G04-4

Room 206

International Reference Ionosphere: Improvement, Validation and Usage (Dieter Bilitza, Vladimir Truhlik, Shigeto Watanabe) (Part 4)
Session Chairs: Habarulema John Bosco, South African National Space Agency, South Africa
Themens David, University of Birmingham, United Kingdom

Use of whistlers in the ELF detected by Swarm satellites to validate IRI
Pierdavide Coïsson [1], Martin Jenner [1], Louis Chauvet [1], Vladimir Truhlik [2], Dalia Obrazová [1], Gauthier Hulot [1]
[1] Université Paris Cité - Institut de physique du globe de Paris - CNRS (France); [2] Institute of Atmospheric Physics of the Czech Academy of Sciences (Czechia)

(Invited)Toward capturing the behaviour of polar cap absorption events in empirical models: A fast, quasi-empirical solar energetic proton module
David Themens [1], Neil Rogers [2], Ben Reid [1], Anthony McCaffrey [1], Robyn Fiori [1], Emma Spanswick [1], P.T. Jayachandran [1], Farideh Honary [1], Sean Elvidge [1]
[1] University of Birmingham (United Kingdom); [2] University of Lancaster (United Kingdom)

Towards a global model of the sporadic E layer occurrence probability for the International Reference Ionosphere
Vladimir Truhlik [1], Dieter Bilitza [2], Christina Arras [3]
[1] Institute of Atmospheric Physics of the Czech Academy of Sciences (Czech Republic); [2] George Mason University (United States); [3] German Research Centre for Geosciences GFZ (Germany)

SESSION J03-4

Mid-sized Hall A

VLBI (Leah Morabito , Hiduyaki Nobeyashi) (part 4)
Session Chairs: Kobayashi Hideyuki, National Astronomical Observatory of Japan, Japan

Probing intriguing properties of BL Lac object 2021+317 With mm-VLBI Polarimetry
Wei Zhao [1]
[1] Shanghai Astronomical Observatory (China)

Inferring Morphologies from Closure Invariants in VLBI using Machine Learning
Nithyanandan Thyagarajan [1], Lucas Hoefs [2], Ivy Wong [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia);* [2] *Curtin University (Australia)*

VLBI as a key to the sources of high energy neutrinos
Yuri Kovalev [1], Alexander Plavin [2], Yuri A. Kovalev [1], Sergey Troitsky [1]
[1] *MPIfR (Germany);* [2] *Lebedev Physical Institute (Russia)*

SESSION J06-4

Room 105

Scientific data processing in radio astronomy (Maxim Voronkov, Danielle Fenech, Jan-Willem Steeb, Kazunori Akiyama) (Part 4)
Session Chairs: Kazunori Akiyama, Massachusetts Institute of Technology, United States

New Data Analysis Method for Single-dish Spectroscopy Based on Gaussian Filtering
Takeshi Shakunaga [1], Hajime Ezawa [1], Wataru Kawasaki [1], Renaud Miel [1], Takeshi Nakazato [1], Kazuhiko Shimada [1], Kanako Sugimoto [1], Akira Yoshino [1]
[1] *National Astronomical Observatory of Japan (Japan)*

YS* Data science based efficient and automated spectroscopy for submillimeter single-dish telescopes
Akio Taniguchi [1], Yoichi Tamura [1], Shiro Ikeda [2], Tatsuya Takekoshi [3], Ryohei Kawabe [4], Kotaro Kohno [5], Takeshi Sakai [6]
[1] *Nagoya University (Japan);* [2] *Institute of Statistical Mathematics (Japan);* [3] *Kitami Institute of Technology (Japan);* [4] *National Astronomical Observatory of Japan (Japan);* [5] *The University of Tokyo (Japan);* [6] *The University of Electro-Communications (Japan)*

Pre-conditioning and traditional weighting in ASKAPsoft
Maxim Voronkov [1], Daniel Mitchell [2], Wasim Raja [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia);* [2] *CSIRO Space & Astronomy (Australia)*

SESSION JG-2

Room 108

Mutual benefit between radio astronomy and ionospheric science (Maaijke Mevius, Claudio Cesaroni, Christopher Jordan) (Part 2)
Session Chairs: Harry Bevins, University of Cambridge, UK

A census of ionospheric activity observed by the Murchison Widefield Array
Christopher H. Jordan [1], Dev Null [1], Cathryn M. Trott [1]
[1] *International Centre for Radio Astronomy Research (ICRAR) - Curtin University (Australia)*

REC-JG-02 Characterizing Low-Latitude Ionosphere with GMRT
Abhirup Datta [1], Soumen Datta [2], Sarvesh Mangla [1]
[1] *Indian Institute of Technology Indore (India);* [2] *IIT Indore (India)*

SESSION K15-2

Room 201-202

Advances in numerical modeling for bioelectromagnetics - part 2 (Tomoaki Nagaoka, Essam A. Rashed, Emily Porter)
Session Chairs: Nagaoka Tomoaki, National Institute of Communications and Technology, Japan
Laakso Ilkka, Aalto University, Finland

Dosimetry of an Unrestrained Mouse in an Exposure Apparatus at 85kHz
Siriwat Wasoontarajaroen [1], Hitomi Ishiwata [1], Yukihisa Suzuki [1], Keiji Wada [1], Shin Ohtani [2], Kenji Hattori [1], Akira Ushiyama [1], Sachiko Yoshie [1], Masateru Ikehata [1]
[1] *Tokyo Metropolitan University (Japan);* [2] *Meiji Pharmaceutical University (Japan)*

Alvar: an anatomical whole-body model with electrically anisotropic skeletal muscles for computational dosimetry
Otto Kangasmaa [1], Juhani Kataja [1], Ilkka Laakso [1]
[1] *Aalto University (Finland)*

Multiphysics Simulations of Human Head Exposition to Electromagnetic Fields via the FCC-FDTD Method
Xinsong Wang [1], Guangzhi Chen [1], Wanli Du [1], Donglin Su [1]
[1] *Beihang University (China)*

15:40-16:20

SESSION EC-2

Room 207

EM Security of Cyber-physical systems & Wireless Technologies (Yuichi Hayashi, Chaouki Kasmi, Virginie Deniau) (Part 2)

Session Chairs: Hayashi Yuichi, Nara Institute of Science and Technology, Japan
Vega Felix, TII - Technology Innovation Institute, United Arab Emirates

YSA* BLT-Based Field Coupling to Microstrip Network Model Enabling Radiated Immunity Assessment for PCB Wiring Design

Tao Liang [1], Yan-Zhao Xie [1], Zhi-Hao Xi [1]

[1] *Xi'an Jiaotong University (China)*

Development of commercial and defence microwave and laser-Directed Energy Systems

Haridim Moti [1], Jacob Gavan [1], Ely Recht [1]

[1] *HIT (Israel)*

15:40-17:00

SESSION B05

Room 104

Electromagnetics of time-varying scatterers and materials (Hakan Bagci, Dan Jiao, Viktar Asadchy)

Session Chairs: Weiss Steven, The Johns Hopkins University, United States

Time-modulated metamaterials based on reconfigurable field-focused cavity for non-reciprocal near-field wave transmission control

Jong-Wook Lee [1], Bui Huu Nguyen [1], Phi Ngoc Hung [1]

[1] *Kyung Hee University (South Korea)*

(Invited)Four-dimensional media: from zero temporal reflections to effective media

Victor Pacheco-Peña [1], Nader Engheta [2]

[1] *Newcastle University (United Kingdom);* [2] *University of Pennsylvania (United States)*

Controlling Beam Directions using Self-reconfigurable Time-varying Metasurfaces

Ashif Aminulloh Fathnan [1], Hiroki Wakatsuchi [1]

[1] *Nagoya Institute of Technology (Japan)*

(Invited)Non-Foster-inspired Time-varying Matching of a Small Transmitting Dipole

Silvio Hrabar [1], Darin Nozina [1], Davor Dobrota [1], Lara Vrabac [1], Hela Kipson-Posavec [1], Dominik Zanic [1], Zvonimir Sipus [1]

[1] *University of Zagreb (Croatia)*

SESSION B20

Conference Hall (Tutorials)

Women Contributions to Radio Science (Maria Antonia Maisto, Reyhan Baktur, Dan Jiao)

Session Chairs: Bojja Venkatakrishnan Satheesh, Florida international university, United States

The SCAR Expert Group GRAPE (GNSS Research and Application to Polar Environment) activities 2012-2023.

Giorgiana De Franceschi [1]

[1] *INGV (Italy)*

(Invited)3D full wave electromagnetic modeling of label-free optical microscopes

Yingying Qin [1], Krishna Agarwal [1]

[1] *UiT - The Arctic University of Norway (Norway)*

(Invited)Enabling Low-Cost Versatile Remote Sensing of Water Cycle Variables with Ultrawideband UAV-mounted Software-Defined Radar

Mahta Moghaddam [1], Ruzbeh Akbar [2], Kazem Bakian-Dogaheh [1], Sepehr Eskandari [1], Asem Melebari [1], Piril Nergis [1], Samuel Prager [1], Agnelo Silva [1]

[1] *University of Southern California (United States);* [2] *Jet Propulsion Laboratory (United States)*

15:40-17:10

SESSION SPC Special Session (Part 3)

Room 101

YSA* SPCFinalist* Online Determination of GNSS Differential Code Biases using Rao-Blackwellized Particle Filtering
Benjamin Reid [1]
[1] *University of New Brunswick (Canada)*

SPCFinalist* Implementation of Low-Loss Sub-Terahertz Band Substrate Integrated Waveguide-based Interconnects and Cavities in CMOS Technology
Samundra Kumar Thapa [1], Ramesh Kumar Pokharel [1], Adel Barakat [1], Shuhei Amakawa [2], Ruibing Dong [3], Shinsuke Hara [1], Issei Watanabe [1], Akifumi Kasamatsu [1]
[1] *Kyushu University (Japan);* [2] *Hiroshima University (Japan);* [3] *National Institute of Information and Communications Technology (Japan)*

YSA* SPCFinalist* On the use of SuperDARN Ground Backscatter Measurements for Ionospheric Propagation Model Validation
Joshua Ruck [1], David Themens [1]
[1] *Space Environment and Radio Engineering (SERENE) - University of Birmingham (United Kingdom)*

15:40-17:20

SESSION A15

Room 102

Time and Frequency Transfer Techniques and Metrology (Amitava Sen Gupta)
Session Chairs: Sen Gupta Amitava, The North Cap University, HUDA Sector 23-A, Gurgaon, India

Timescale Predictions Using Gated Recurrent Units
J. Mauricio Lopez [1], Mayra Rivera [2], Andres Mendez [1]
[1] *Cinvestav (Mexico);* [2] *Cinvestav Unidad Guadalajara (Mexico)*

Microwave Interrogation signal generation system for PTB's caesium fountain clocks
Michael Kazda [1], Burghard Lipphardt [1], Johannes Rahm [1], Stefan Weyers [1]
[1] *Physikalisch-Technische Bundesanstalt (Germany)*

Upgradation and Evaluation of Optics and Control Electronics for the operation of Cs Fountain Frequency Standard
Poonam Arora [1], Navraj Poudel [1], Aniket Gupta [1], Suchi Yadav [1], Manoj Das [1], Amitava Sen Gupta [2], Poonam Arora [1]
[1] *CSIR-National Physical Laboratory (India);* [2] *The North Cap University (India)*

Design procedure of a highly stable GPS disciplined BVA OCXO for the MeerKAT telescope Time and Frequency System
Geomarr Van Tonder [1], Renier Siebrits [1], Johan Burger [1], Romeo Gamatham [1]
[1] *SARAO (South Africa)*

Calibration of an optically isolated GNSS Traveling Calibrator
Romeo Gamatham [1], Renier Siebrits [1], Geomarr Van Tonder [1], Chris Matthee [2], Johan Burger [1]
[1] *NRF SARAO (South Africa);* [2] *NMISA (South Africa)*

SESSION B02-4

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (part 4)
Session Chairs: Guha Debatosh, Calcutta University, India
Michel Andrea, University of Pisa, Italy

On the Theory of Transparent Antennas
Natalie Yudis [1], Dan Kanyas [1], Amir Gamliel [2], Mulkan Adgo [3], Jacob Gavan [4], Haridim Moti [1]
[1] *Merchavim Institute of R&D in Negev (Israel);* [2] *Israel Police (Israel);* [3] *The Hebrew university of Jerusalem (Israel);* [4] *HIT (Israel)*

Simplified Model for Printed Dipole Antenna Using Conductive Ink
Sho Hirano [1], Takumi Nishime [1], Hiroshi Hashiguchi [1], Naobumi Michishita [1], Hisashi Morishita [1]
[1] *National Defense Academy (Japan)*

Frequency Reconfigurable Monopole Antenna using Switchable DGS Resonator
Rushiraj Jawale [1], Jyotibhusan Padhi [2], Awanish Kumar [1], G Shrikanth Reddy [1]
[1] *Independent Researcher (India);* [2] *Indian Institute of Technology Mandi (India)*

YS* SPC* Millimeter-Wave Polarization Reconfigurable Circularly Polarized Antenna with Wide Axial Ratio bandwidth
Maharana Pratap Singh [1], Jiro Hirokawa [2], Saptarshi Ghosh [1]
[1] *Indian Institute of Technology Indore (India);* [2] *Tokyo Institute of Technology (Japan)*

(Invited)YSA* SPC* 3D-Printed Smooth-Walled Conical Horn Antennas: Manufacturing and Quasioptical Analysis
Ricardo Pereira [1], Alessandra Costanzo [2], Diego Masotti [1], Nuno Carvalho [1]
[1] *Institute of Telecomunications (Portugal);* [2] *University of Bologna (Italy)*

SESSION B10-3

Main Hall A (General Lectures)

Integral equation, hybrid, and fast methods (Amir Boag, Shanker Balasubramaniam, Thomas Eibert) (Part 3)
Session Chairs: Boag Amir, Tel Aviv University, Israel
Shlivinski Amir, Ben Gurion University of the Negev, Israel

YS* Simulating Magnetized Plasma using an Accelerated Finite Element-Boundary Integral Code
Niklas Wingren [1], Daniel Sjöberg [1]
[1] *Lund University (Sweden)*

(Invited)YSA* Solving Combined Field Integral Equations of 3D PEC Targets Based on Physics-informed Graph Residual Learning
Tao Shan [1], Maokun Li [1], Fan Yang [1], Shenheng Xu [1]
[1] *Tsinghua University (China)*

(Invited)Non-conformal SIE methods: different approaches
Victor F Martin [1], Daniel Jericó [2], Diego M. Solís [1], L. Landesa [1], Fernando Obelleiro [1], Jose Manuel Taboada [1]
[1] *University of Extremadura/Politecnico di Torino (Spain);* [2] *Universidad de Extremadura (Spain)*

(Invited)SPC* Bounds, Analyses and Applications of Spectral Asymptotic Decays for 2D Electromagnetic Integral Equations
Ermanno Citraro [1], Adrien Merlini [2], Francesco P. Andriulli [1]
[1] *Politecnico di Torino (Italy);* [2] *IMT Atlantique (France)*

SESSION D07-2

Room 107

Photonic Signal Processing, Real-time Instruments and Biomedical Imaging (Hossein Asghari, Masayuki Suzuki, Chao Wang) (Part 2)
Session Chairs: Asghari Hossein, Loyola Marymount University, United States
Suzuki Masayuki, Doshisha University, Japan
Kanno Atsushi, Nagoya Institute of Technology, Japan
Shinohara Naoki, Kyoto University, Japan

Device Placement Problem Analysis in General-Purpose Microwave Photonic Processors (GPMWPPs) Implemented using Barrium Titanate Based Electro-optically Tunable Devices
Tushar Gaur [1], Pragya Mishra [1], Talabattula Srinivas [1], Gopalkrishna Hegde [1]
[1] *Indian Institute of Science (India)*

(Invited)Powered Arbitrary Waveform Generator beyond Trade-off between Resolution and Frequency
Tsuyoshi KONISHI [1], Masayuki Makino [1], Tomoki Tsuji [1], Shizen Nakayama [1]
[1] *Osaka University (Japan)*

(Invited)Observation of Unstable Pulse Generation in Yb-fiber Mamyshev Oscillator using Time-stretch Spectroscopy
Masayuki Suzuki [1], Hiroyuki Toda [1]
[1] *Doshisha University (Japan)*

(Invited)Signal Processing based on Quantum and Artificial Neural Network Integrated Photonics
Stefania Sciara [1], Luigi Di Lauro [1], Abdul Rahim Aadhi [1], Nicola Montaut [1], Imtiaz Alamgir [1], Bennet Fischer [1], Hao Yu [1], Pavel Dmitriev [1], Mario Chemnitz [1], Brent E. Little [2], Sai T. Chu [3], David J. Moss [4], Zhiming Wang [5], Roberto Morandotti [1]
[1] *Institut national de la recherche scientifique (Canada);* [2] *QXP Technology Inc (China);* [3] *City University of Hong Kong (China);* [4] *Swinburne University of Technology (Australia);* [5] *University of Electronic Science and Technology of China (China)*

SESSION G03-5

Room 204

Ionospheric Space Weather and Impacts on Technological Systems (Iwona Stanislawska, Anthea Coster, Vincenzo Romano, Takuya Tsugawa) (Part 5)

Session Chairs: Coster Anthea, MIT Haystack Observatory, United States
Romano Vincenzo, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

Space Weather and Global Navigation Satellite Systems

Sharafat Gadimova [1]
[1] *UNOOSA (Austria)*

Slant ionosphere augmentation for GNSS high-precision positioning

Yan Xiang [1], Ling Pei [1]
[1] *Shanghai Jiaotong University (China)*

(Invited)Characterization of Ionospheric Spatial Decorrelation for GNSS-based Aeronautical Navigation Systems

Susumu Saito [1], Maho Nakamura [1], Takayuki Yoshihara [1], Minh Le Huy [2], Thang Nguyen Chien [1], Slamet Supriadi [1], Prayitno Abadi [1], Dwiko Unggul Prabowo [1]
[1] *National Institute of Maritime, Port and Aviation Technology (MPAT) (Japan);* [2] *Institute of Geophysics - Vietnam Academy of Science and Technology (Vietnam)*

Global ionosphere specification and forecast using VISTA TEC data

Shasha Zou [1], Yang Chen [1], Hu Sun [1], Zihan Wang [1], Yurui Chang [1], Anthea Coster [1]
[1] *University of Michigan (United States)*

Time-Lag Effects on GNSS Kinematic Precise Point Positioning of Ionospheric Response to Severe Geomagnetic Storms

Zhe (Jenny) Yang [1], Jade Morton [2]
[1] *Tongji University (China);* [2] *University of Colorado at Boulder (United States)*

SESSION G13

Room 206

Upper atmospheres and ionospheres at planetary bodies (Alessandro Ippolito, Yuki Harada, Bruno Nava)

Session Chairs: Harada Yuki, Kyoto Universtiy, Japan
Ippolito Alessandro, Istituto Nazionale di Geofisica e Vulcanologia, Italy

Radio Instrument Package for Lunar Ionospheric Observation: A Concept Study

Chris Watson [1], P.T. Jayachandran [1], Anton Kashcheyev [1], David Themens [2], Richard Langley [1], Richard Marchand [3], Andrew Yau [4]
[1] *University of New Brunswick (Canada);* [2] *University of Birmingham (United Kingdom);* [3] *University of Alberta (Canada);* [4] *University of Calgary (Canada)*

Study of variation mechanisms of the Martian diffuse aurora based on Monte Carlo simulations and MAVEN observations

Taishin Okiyama [1], Kanako Seki [1], Robert Lillis [2], Ali Rahmati [1], Davin Larson [1], Gina Dibraccio [1], Shannon Curry [1]
[1] *The University of Tokyo (Japan);* [2] *University of California (United States)*

(Invited)Effects of Solar Wind Variations on the Martian Ionosphere and Ion Escape From Mars: Ion Species Dependence Based on MAVEN Observations

Kanako Seki [1], Akira Kurosu [1], Takuya Hara [2], Brain David [1], Fowler Christopher [1], James McFadden [1], Jasper Halekas [1], Gina DiBraccio [1], Robert Lillis [1], Davin Larson [1], Frank Eparvier [1], Shannon Currey [1]
[1] *The University of Tokyo (Japan);* [2] *University of California Berkeley (United States)*

(Invited)Space weather effects on Mars' upper atmosphere and ionosphere

Beatriz Sanchez-Cano [1], Mark Lester [1], Dikshita Meggi [1], Katerina Stergiopoulou [1], Simon Joyce [1], Catherine Regan [2], Olivier Witasse [3], Pierre-Louis Blelly [4], Roberto Orosei [5], Marco Cartacci [6], Robert Lillis [7], Hermann Opgenoorth [8]
[1] *University of Leicester (United Kingdom);* [2] *Mullard Space Science Laboratory, University College London (United Kingdom);* [3] *ESTEC, European Space Agency (Netherlands);* [4] *Institut de Recherche en Astrophysique et Planétologie (France);* [5] *Istituto di Radioastronomia, Istituto Nazionale di Astrofisica (Italy);* [6] *Istituto di Astrofisica e Planetologia Spaziali - Istituto Nazionale di Astrofisi (Italy);* [7] *Space Sciences Laboratory - University of California Berkeley (United States);* [8] *Umeå University (Sweden)*

Data-Model Comparison of SEP-Induced Radar Signal Attenuation in the Martian Ionosphere: Initial Results

Yuki Harada [1], Yuki Nakamura [2], Beatriz Sanchez-Cano [1], Mark Lester [1], Naoki Terada [1], François Leblanc [1]
[1] *Kyoto Universtiy (Japan);* [2] *Tohoku University (Japan)*

SESSION HGE2 + HGE3 Meet the Experts presentations + panel

Small Hall

(Invited)Wave-Particle Interactions in the Solar System Plasmas: A Brief Review and Outstanding Questions
Wen Li [1]
[1] *Boston University (United States)*

(Invited)Turning Nuisances in Satellite Navigation into Signals-of-Opportunity for Remote Sensing of Ionosphere, Troposphere, and Earth Surface
Y. Jade Morton [1]
[1] *University of Colorado at Boulder (United States)*

(Invited)An Exceptional Lightning Research Facility in the Swiss Alps
Farhad Rachidi [1], Marcos Rubinstein [2]
[1] *Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland);* [2] *Institute for Information and Communication Technologies - University of Applied (Switzerland)*

SESSION J03-5

Mid-sized Hall A

VLBI (Leah Morabito , Hiduyaki Nobeyashi) (Part 5)
Session Chairs: Kobayashi Hideyuki, National Astronomical Observatory of Japan, Japan

Development for Japan L-band VLBI Observation
Kohei Kurahara [1], Takuya Akahori [1], Kazuhiro Hada [1], Tomoya Hirota [1], Sota Ikebe [1], Hiroshi Imai [2], Takaaki Jike [1], Hideyuki Kobayashi [1], Yasuhiro Murata [1], Hiroyuki Nakanishi [1], Kotaro Niinuma [1], Tomoaki Oyama [1], Kazuhiro Takefuji [1], Toshio Terasawa [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *Kagoshima university / Amanogawa Galaxy Astronomy Research Center (Japan)*

(Invited)Overview of Event Horizon Telescope achievements: Supermassive Black Holes and Relativistic Jets
Kotaro Moriyama [1]
[1] *Goethe University (Germany)*

Low-frequency VLBI observation with Iitate and Zao observatory
Hajime Kita [1], Hiroaki Misawa [2], Fuminori Tsuchiya [1], Tetsuro Kondo [1], Kazuhiro Takefuji [1]
[1] *Tohoku Institute of Technology (Japan);* [2] *Tohoku University (Japan)*

Multi-frequency Event Horizon Telescope: the Sharpest Color Camera of the Universe
Akiyama Kazunori [1]
[1] *Massachusetts Institute of Technology (United States)*

Studying Magnetic Fields near a Black Hole with the EHT using Polarized Geometric Models
Freek Roelofs [1], Michael D. Johnson [1]
[1] *Center for Astrophysics - Harvard & Smithsonian (United States)*

SESSION J06-5

Room 105

Scientific data processing in radio astronomy (Maxim Voronkov, Danielle Fenech, Jan-Willem Steeb, Kazunori Akiyama) (Part 5)
Session Chairs: Fenech Danielle,

Chiborg: a Bayesian jackknife framework for testing consistency of multiple measurements
Michael Wilensky [1]
[1] *University of Manchester (United Kingdom)*

Modernizing The Radio Interferometry Software Ecosystem Towards Distributed, Flexible And Reproducible Workflows
Landman Bester [1], Jonathon Kenyon [1], Simon Perkins [2], Oleg Smirnov [1]
[1] *South African Radio Astronomy Observatory (South Africa);* [2] *Rhodes University (South Africa)*

(Invited)Time Is On Our Side: Dynamic Imaging With MeerKAT
Oleg Smirnov [1]
[1] *Rhodes University (South Africa)*

Calibration and Imaging Algorithms R&D for Next-generation Radio Telescopes
Sanjay Bhatnagar [1]
[1] *NRAO (United States)*

Visibility and Image Parallel Execution Reduction (VIPER) Prototype
Jan-Willem Steeb [1], Urvashi Rau [1], Andrew McNichols [1]
[1] National Radio Astronomy Observatory (United States)

SESSION J07-1

Room 108

Machine learning and AI in radio astronomy (Anna Scaife, Kushatha Ntwaetsile, Hongming Tang, German Chaparro) (Part 1)
Session Chairs: Scaife Anna, University of Manchester, United Kingdom

A comparison framework for RFI detection algorithms
Charl Du Toit [1], Trienko Grobler [1], Danie Ludick [1]
[1] Stellenbosch University (South Africa)

YSA* A model local interpretation routine for deep learning based radio galaxy classification
Hongming Tang [1], Shiyu Yue [2], Zijun Wang [1], Jizhe Lai [1], Leyao Wei [1], Yan Luo [1], Chuni Liang [1], Jiani Chu [1], Dandan Xu [1]
[1] Tsinghua University (China); [2] Sun Yat-sen University (China)

Scattering Transform for Analysing Galactic Morphology
Emma Tolley [1]
[1] Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland)

Automatic Recognition of Type III Solar Radio Bursts Using Machine Learning
Jun Cheng [1], Yihua Yan [2], Yanjun Zhang [3]
[1] National Space Science Center (China); [2] National Space Science Center (China); [3] School of Cyberspace Science and Technology (China)

YSA* SERENEt: Deep learning approach for identification of HII regions and 21-cm signal recovery from SKA-Low reionization observations
Michele Bianco [1]
[1] Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland)

SESSION K05

Room 201-202

Human studies and the related assessment of exposure (Alexandre Legros, Niels Kuster, Micaela Liberti)
Session Chairs: Kuster Niels, IT'IS Foundation, Switzerland
Apollonio Francesca, SAPIENZA UNIVERSITY OF ROME, Italy

Does the electromagnetic field in the frequency range used in telecommunications affect psychomotor skills and is perceived by people? The results of provocative tests
Grzegorz Tatoń [1], Paweł Bieńkowski [2], Artur Kacprzyk [3], Tomasz Rok [1], Anna Wasik [1], Marcin Siwek [1]
[1] Jagiellonian University Medical College (Poland); [2] Wroclaw University of Science and Technology (Poland); [3] Doctoral School of Medical and Health Sciences - JU Medical College (Poland)

(Invited)Novel Whole-body and Localized Exposure Systems to Investigate Human Biological Effects for 5G and Beyond Wireless Systems
Takashi Hikage [1], Hiroshi Masuda [2], Sachiko Kodera [3], Akimasa Hirata [1]
[1] Hokkaido University (Japan); [2] Kurume University School of Medicine (Japan); [3] Nagoya Institute of Technology (Japan)

Human Body Shadowing Effect on Measurement of Personal RF Exposure Meter for Epidemiological Research on Children's Health
Sakura Tsuruga [1], Keiko Yamazaki [1], Atsuko Ikeda-Araki [1], Chihiro Miyashita [1], Naomi Tamura [1], Reiko Kishi [1], Takashi Hikage [1], Kaito Sugimura [1]
[1] Hokkaido University (Japan)

Semi-specific dosimetry on active and placebo patients: towards assessing the neuroprotective effect of PEMFs
Micol Colella [1], Sara Fontana [1], Noemi Dolciotti [1], Simona Salati [2], Stefania Setti [1], Ruggero Cadossi [1], Francesca Apollonio [1], Micaela Liberti [1]
[1] Sapienza University of Rome (Italy); [2] IGEA Biophysics Laboratory (Italy)

Estimation of in situ electric field thresholds for transcranial magnetic stimulation
Ilkka Laakso [1], Noora Matilainen [1], Juhani Kataja [1]
[1] Aalto University (Finland)

16:20-17:20

SESSION E07-1

Room 207

Lightning and related phenomena (Farhad Rachidi, Marcos Rubinstein, Takeshi Morimoto) (Part 1)

Session Chairs: Rubinstein Marcos, Institute for Information and Communication Technologies, University of Applied, Switzerland
Morimoto Takeshi, Kindai University, Japan

(Invited)Estimation of Lightning Current Waveform for Strike to Flat Ground from Electric Field Waveform for Strike to Tall Object

Masahiro Hasegawa [1], Shunsuke Koike [1], Masahiro Hasegawa [1], Toshihiro Tsuboi [2], Vladimir Rakov [3]
[1] Doshisha University (Japan); [2] TEPCO (Japan); [3] University of Florida (United States)

Real-time Lightning 3D Imaging and Forecasting Project for Sustainable and Reliable Supply of Energy and Storm Disaster Early Warning ~SATREPS Project in Malaysia~

Takeshi Morimoto [1], Takeshi Kudo [2], Daohong Wang [3], Kazuo Yamamoto [4], Tatsuo Torii [5], Zen-Ichiro Kawasaki [6], Ammar Al Kahtani [7], Riduan Mohd [1], Zafri Baharuddin [1]
[1] Kindai University (Japan); [2] Otowa Electric Co. Ltd. (Japan); [3] Gifu University (Japan); [4] Chubu University (Japan); [5] University of Fukui (Japan); [6] Osaka University (Japan); [7] Universiti Tenaga Nasional (Malaysia)

(Invited)The Newly Designed Lightning Location System Named LENTRA and The Observation of Lighting Strokes Hitting Tokyo Skytree

Mikihisa Saito [1], Ami KUDO [1], Toru MIKI [1]
[1] CRIEPI (Japan)

08:20-09:40

SESSION A01-3

Room 102

Antenna and Propagation Measurement Techniques (Tian Loh, Pedro Pinho) (Part 3)
Session Chairs: Loh Tian Hong, National Physical Laboratory, United Kingdom

Optimal Electrical Parameters of Deterministic Wireless Channel Prediction Models in Indoor Environment Based on Genetic Algorithm
Zhongyu Liu [1], Qi Yao [1], Lixin Guo [1]
[1] *Xidian University (China)*

Challenges in the measurement at W band
Xiaoliang Sun Wang [1], Jorge Calatayud-Maeso [1], Belén Galocha-Iragüen [1], Manuel Sierra-Castañer [1], Fernando Rodríguez-Varela [2], Ignacio Montesinos-Ortego [3]
[1] *Universidad Politécnica de Madrid (Spain);* [2] *Universidad Rey Juan Carlos de Madrid (Spain);* [3] *TTI North (Spain)*

Full Polarimetric Modeling of the Reconfigurable Over-The-Air Chamber
Benjamin Arnold [1], Michael Jensen [1]
[1] *Brigham Young University (United States)*

Assessment of Non-free Space Conditions on Wave Propagation
Mikaela Webber [1], Stanley Kuja [1], Jennifer Williams [1]
[1] *Rhodes University (South Africa)*

SESSION B25-1

Room 104

Vehicular and automotive RF links (Andrea Michel, Daniel Aloi) (Part 1)
Session Chairs: Michel Andrea, University of Pisa, Italy
Aloi Daniel, Oakland University, United States

(Invited)Decomposition of Antenna Array and their Two-way Radiation Characteristics to Enhance ESPRIT Estimation of Angle-of-arrival for Vehicular ADAS Applications
ShihKai Ho [1], Chou Hsi-Tseng [1]
[1] *National Taiwan University (Taiwan)*

(Invited)Circularly Polarized Reconfigurable Antenna Composed of Curved Metalines
Tomoki Abe [1], Junji Yamauchi [1], Hisamatsu Nakano [1]
[1] *Hosei University (Japan)*

(Invited)Low-Profile MIMO Antenna System for Vehicular Wi-Fi 7 Wireless Communications
Daniel Aloi [1], Ahmad Yacoub [1]
[1] *Oakland University (United States)*

LSE-NRD Guide Primary Radiator Compatible with Dielectric-tube Supported Metal Rod Transmission Line at 140 GHz
Daiya Miyamoto [1], Futoshi Kuroki [1]
[1] *National Institute of Technology - Kure College (Japan)*

SESSION D01

Room 107

Electronic devices, circuits and systems for THz communications (Kyoya Takano, Shinsuke Hara)
Session Chairs: Hara Shinsuke, National Institute of Information and Communications Technology, Japan
Takano Kyoya,

SPCFinalist* Implementation of Low-Loss Sub-Terahertz Band Substrate Integrated Waveguide-based Interconnects and Cavities in CMOS Technology
Samundra Kumar Thapa [1], Ramesh Kumar Pokharel [1], Adel Barakat [1], Shuhei Amakawa [2], Ruibing Dong [3], Shinsuke Hara [1], Issei Watanabe [1], Akifumi Kasamatsu [1]
[1] *Kyushu University (Japan);* [2] *Hiroshima University (Japan);* [3] *National Institute of Information and Communications Technology (Japan)*

(Invited)Differential Wilkinson Couplers with Reduced Reflections at Intersections
Zhen Yan [1], Satoshi Tanaka [1], Takeshi Yoshida [1], Minoru Fujishima [1]
[1] *Hiroshima University (Japan)*

(Invited)300-GHz CMOS Transceivers and Future of Sub-Terahertz Communication
Minoru Fujishima [1]
[1] *Hiroshima University (Japan)*

Two-element coupled array of resonant-tunneling-diode terahertz oscillator integrated with offset-fed slot antenna
Safumi Suzuki [1]
[1] *Tokyo Institute of Technology (Japan)*

Design of 76GHz-band Rectangular Planar-Circuit-Type 90-Degree Couplers
Tadashi Kawai [1]
[1] *University of Hyogo (Japan)*

SESSION G01-1

Room 101

GNSS Radio Occultation and zenith data from Low Earth Orbit: advancements on measurements, data assimilation and models (Riccardo Notarpietro, Mainul Hoque, Manuel Hernandez Pajares, Mengjie Wu) (Part 1)
Session Chairs: Wu Mengjie,

(Invited)YS* Neustrelitz Electron density assimilation based on 4D-Var approach: NEDAM
Liangliang Yuan [1], Mainul Hoque [1]
[1] *German Aerospace Center (Germany)*

(Invited)The Data Assimilation Model Global Ionospheric Specification (GIS)
Chi-Yen Lin [1], Jann-Yenq Liu [1], Charles Lin [2]
[1] *National Central University (Taiwan);* [2] *National Cheng Kung University (Taiwan)*

Evaluating the Impact of Commercial Radio Occultation Measurements of the Ionosphere with Data Assimilation and Observing System Simulation Experiments
Ian Collett [1], Joseph Hughes [1], Geoff Crowley [1], John Noto [1]
[1] *Orion Space Solutions (United States)*

YSA* A Neural network model of Electron density in Earth's Topside ionosphere (NET)
Artem Smirnov [1], Yuri Shprits [1], Fabricio Prol [2], Hermann Luehr [1], Max Berrendorf [3], Irina Zhelavskaya [1], Chao Xiong [4]
[1] *GFZ Potsdam (Germany);* [2] *National Land Survey of Finland (Finland);* [3] *LMU Munich (Germany);* [4] *Wuhan University (China)*

SESSION G05-1

Room 204

Advances in Irregularities and Scintillation Studies (Luca Spogli, Yuichi Otsuka, Kshitija Deshpande, P. T. Jayachandran) (Part 1)
Session Chairs: Spogli Luca, Istituto Nazionale di Geofisica e Vulcanologia, Italy

YSA* On the formation of small-scale irregularities driven by auroral particle precipitation
Florine Enengl [1], Luca Spogli [2], Daria Kotova [1], Yaqi Jin [1], Kjellmar Oksavik [3], Noora Partamies [4], Wojciech J. Miloch [1]
[1] *University of Oslo (Norway);* [2] *INGV (Italy);* [3] *University of Bergen (Norway);* [4] *University Centre in Svalbard (Norway)*

Midlatitude Nighttime Plasma irregularities detected with Swarm measurements in the African-European longitudes: 2014 and 2019
Zama Katamzi-Joseph [1]
[1] *South African National Space Agency (South Africa)*

Investigation of the vertical slope of MSTID phase fronts from GNSS data
Ruslan Sherstyukov [1], Adel Akchurin [2], Oleg Sherstyukov [1]
[1] *Oulu university (Finland);* [2] *Kazan Federal university (Russia)*

Gravity Wave breaking at thermospheric altitude during tropical cyclone Amphan observed by GPS and GAGAN network
Soumen Datta [1], Saurabh Das [1]
[1] *Indian Institute of Technology Indore (India)*

SESSION H02-1 Small Hall

Wave-particle interactions and radiation belt dynamics (Vania Jordanova, David Hartley, Yoshi Miyoshi) (Part 1)
Session Chairs: Jordanova Vania, Los Alamos National Laboratory, United States
Hartley David, University of Iowa, United States

Nonlinear Wave-Particle Interactions: Recently Developed Theoretical Results
Jay Albert [1], Anton Artemyev [2]
[1] *Air Force Research Laboratory (United States);* [2] *UCLA (United States)*

Nonlinear Wave Growth Process of Whistler-mode Hiss and Chorus Emissions in the Magnetosphere
Yoshiharu Omura [1], Yin Liu [1], Yuya Fujiwara [1], Takeshi Nogi [1]
[1] *Kyoto University (Japan)*

YSA* Nonlinear Wave Growth Analysis of Chorus Emissions modulated by field line resonance and mirror-mode ULF waves
Li Li [1], Omura Yoshiharu [2], Zhou Xuzhi [1], Zong QiuGang [1], Rankin Robert [3], Yue Chao [1], Fu Suiyan [1], Ren Jie [1]
[1] *School of Earth and Space Sciences (China);* [2] *Research Institute for Sustainable Humanosphere (Japan);* [3] *Department of Physics (Canada)*

SESSION J05-1 Room 105

Real-time processing for radio astronomy (Dan Werthimer, Andrew Van Der Byl, Danny Price) (Part 1)
Session Chairs: Price Danny, ICRAR / Berkeley SETI, Australia

(Invited)Past, Present and Future of the Collaboration for Astronomy Signal Processing and Electronics Research (CASPER)
Jonathon Kocz [1]
[1] *UC Berkeley (United States)*

Hybrid Architectures for Fast Imaging with Large, Multi-scale Interferometer Arrays
Nithyanandan Thyagarajan [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)*

Real-time Imaging of the Radio Sky with the DSA-2000 Radio Camera
Martin Pokorny [1]
[1] *California Institute of Technology (United States)*

Characteristic evaluation of multi-channel digital backend on RFSoC
Xiaoyun Ma [1], Yuheng Zhang [2], Ran Duan [1]
[1] *National Astronomical Observatories - Chinese Academy of Sciences (China);* [2] *Cloudminds Robotics (China)*

SESSION J09-1 Room 108

Survey science (Nikolas Pingel, Bi Qing For) (Part 1)
Session Chairs: Pingel Nickolas, University of Wisconsin-Madison, United States

Tomographic analysis of gravitational lens galaxies with cm-wavelength polarimetry
Rikuto Omae [1], Takuya Akahori [2], Mami Machida [1]
[1] *The Graduate University for Advanced Studies (Japan);* [2] *National Astronomical Observatory of Japan (Japan)*

FAST Observation and Results for Core Collapse Globular Cluster M15 and NGC6517
YuXiao Wu [1], De-Jiang Yin [2], Zhichen Pan [1], Lei Qian [1], Yu Pan [1], LiYun Zhang [1], MingHui Li [1], YiFeng Li [1], BaoDa Li [1], YinFeng Dai [1], YaoWei Li [1], XingNan Zhang [1]
[1] *Chongqing University of Posts and Telecommunications (China);* [2] *Guizhou University (China)*

(Invited)The Widefield ASKAP L-band Legacy All-sky Blind surveY (WALLABY)
Bi-Qing For [1]
[1] *International Centre for Radio Astronomy Research (ICRAR) (Australia)*

(Invited)The Rapid ASKAP Continuum Survey (RACS): progress, data releases, and highlights
Stefan Duchesne [1], Philip Edwards [2]
[1] *ICRAR - International Centre for Radio Astronomy Research (Australia);* [2] *CSIRO Space & Astronomy (Australia)*

SESSION J10-1

Mid-sized Hall A

Millimetre and sub-millimetre wave astronomy (Nario Kuno, Luca Olmi, Lewis Knee) (Part 1)
Session Chairs: Tsuboi Masato, Meisei University, Japan
OLMI LUCA, INAF, Italy
Kohno Kotaro, The University of Tokyo, Japan

YSA* Commissioning Observations in 2022 with 100-GHz MKID Camera at Nobeyama 45-m Telescope
Shunsuke Honda [1], Yosuke Murayama [2], Makoto Nagai [1], Hosun Lee [1], Yuji Ishizaki [1], Tom Nitta [1], Nario Kuno [1], Hiroshi Matsuo [1], Yutaro Sekimoto [1], Takashi Noguchi [1], Masato Naruse [1], Naomasa Nakai [1]
[1] University of Tsukuba (Japan); [2] National Astronomical Observatory of Japan (Japan)

Quantitative analysis of the molecular gas distribution in the nearby star-forming galaxies
Takashi Yamamoto [1]
[1] University of Tsukuba (Japan)

Environment effects on the cold gas in galaxies: the Virgo and Fornax clusters
Kana Morokuma [1]
[1] University of Tsukuba (Japan)

ALMA Lensing Cluster Survey (ALCS): Overview and synergies with JWST
Kotaro Kohno [1]
[1] University of Tokyo (Japan)

SESSION K02

Room 201-202

Molecular and cellular targets in bioelectromagnetic studies (Michal Cifra, Francesca Apollonio)
Session Chairs: Apollonio Francesca, SAPIENZA UNIVERSITY OF ROME, Italy
Mir Lluis, Université Paris-Saclay, Institut Gustave Roussy, CNRS, France

Effect of 3G and 4G mobile phone radiation on brain and sperm cells of Wistar rat
Paulraj Rajamani [1], KUMARI VANDANA SINGH [1], Rohit Gautam [1], Jay Prakash Nirala [1], Sonali Pardhiya [1], Jitendra Behari [1]
[1] Jawaharlal Nehru University (India)

YSA* Molecular Dynamics Studies on the Effects of RF EM fields on Biological Membranes
Laura Caramazza [1], Paolo Marracino [2], Micaela Liberti [3], Francesca Apollonio [1]
[1] Sapienza University of Rome (Italy); [2] Rise Technology S.r.l. (Italy); [3] DIET@Sapienza University of Rome (Italy)

(Invited)Experimental Study of Proteins under Strong Electric Fields on the Order of 100 MV/m
Sunao Katsuki [1], Yuya Sato [1], Tsurusaki Koki [1]
[1] Kumamoto University (Japan)

(Invited)YSA* Electric Field Effect on Protein Dissociation: a Computational Evaluation of the Energy Barrier over Thiol-Disulfide Interchange Reaction in TRX-TXNIP Complex as an Interaction Model for Biological Antioxidant Response
Donatella Fracassi [1], Valeria D' Annibale [1], Marco D'Abramo [1], Guglielmo D'inzeo [1]
[1] La Sapienza University of Rome (Italy)

08:40-09:40

SESSION B02-5

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (Part 5)
Session Chairs: Hrabar Silvio, University of Zagreb, Croatia
Guha Debatosh, Calcutta University, India

Compact polarized MIMO antenna with Halo antenna
Tomokazu Mizutani [1], Naobumi Michishita [1], Hiroshi Sato [2], Yoshio Koyanagi [1], Hisashi Morishita [1]
[1] National Defense Academy (Japan); [2] Wireless Technology Department - Panasonic Corporation (Japan)

Novel C-shaped loop rectenna arrays for LED accessories
Tamami Maruyama [1], Noa Ebita [1], Akari Kamada [1], Masashi Nakatsugawa [1], Masaya Tamura [2]
[1] National Institute of Technology, Hakodate College (Japan); [2] Toyohashi University of Technology (Japan)

SESSION E07-2

Room 207

Lightning and related phenomena (Farhad Rachidi, Marcos Rubinstein, Takeshi Morimoto) (Part 2)

Session Chairs: Rachidi Farhad, Ecole polytechnique fédérale de Lausanne (EPFL), Switzerland
Rubinstein Marcos, Institute for Information and Communication Technologies, University of Applied, Switzerland
Morimoto Takeshi, Kindai University, Japan

(Invited)Modelling of Lightning Return Stroke Channel above Lossy Ground in FDTD Code and Its Validation with Triggered Lightning Data

Ge Zhang [1], Mingli Chen [1], Ya-ping Du [1]

[1] *Hong Kong Polytechnic University (China)*

(Invited)Overview of Lightning Current Observation at Tokyo Skytree

Toru Miki [1], Ami Kudo [1], Mikihisa Saito [1]

[1] *Central Research Institute of Electric Power Industry (CRIEPI) (Japan)*

SESSION G12-1

Room 206

Ionosphere monitoring & modeling review (Manuel Hernandez Pajares, Tim Fuller Rowell) (Part 1)

Session Chairs: Fuller Rowell Tim, University of Colorado, United States
Hernandez Pajares Manuel, Universitat Politècnica de Catalunya, Spain

Ongoing strategies for assessing VTEC maps performance over a low latitude region

Gabriel Oliveira Jerez [1], Manuel Hernández-Pajares [2], Andreas Goss [3], Fabrício Santos Prol [1], Daniele Barroca Marra Alves [1], João Francisco Galera Monico [1], Crislaine Meneses da Silva [1], Michael Schmidt [1]

[1] *Sao Paulo State University (UNESP)/Universitat Politècnica de Catalunya (UPC) (Brazil);* [2] *Universitat Politècnica de Catalunya (UPC-IonSAT) (Spain);* [3] *Deutsches Geodätisches Forschungsinstitut (DGFI-TUM) - Technische Universität München (Germany)*

(Invited)Monitoring Ionospheric Space Weather During Solar Cycle 25

Anthea Coster [1], Nestor Aponte [1], Susan Skone [2], Emma Spanswick [1], Eric Donovan [1], Don Hampton [1]

[1] *MIT Haystack Observatory (United States);* [2] *University of Calgary (Canada)*

A Review of Ionospheric Data Assimilation Models

Sean Elvidge [1], David Themens [1]

[1] *University of Birmingham (United Kingdom)*

09:20-10:40

SESSION WG1

Conference Hall (Tutorials)

Tribute to Patricia (Pat) Doherty (Sana Salous, Giorgiana De Franceschi, Iwona Stanislawska)

Session Chairs: Salous Sana, Durham University, United Kingdom
Stanislawska Iwona, Space Research Centre of Polish Academy of Sciences, Poland

(Invited)The power of kindness

Lucilla Alfonsi [1]

[1] *INGV (Italy)*

(Invited)Patricia Doherty – scientist, mentor and manager

Andrzej Krankowski [1], Iwona Stanisławska [2], Bruno Nava [3], Andrzej Krankowski [1]

[1] *University of Warmia and Mazury (Poland);* [2] *Polish Academy of Sciences (Poland);* [3] *The Abdus Salam International Centre for Theoretical Physics (Italy)*

(Invited)A partnership with Pat Doherty to promote the advancement of radio science and applications in developing countries, particularly in Africa

Sandro Radicella [1]

[1] *Boston College (United States)*

(Invited)REC-WG1- Towards accelerating innovation in radio science and technology – more involvement of woman scientists is indispensable.

Hiroko Shinnaga [1]

[1] *Kagoshima University (Japan)*

09:40-10:40

SESSION A01-4

Room 102

Antenna and Propagation Measurement Techniques (Tian Loh, Pedro Pinho) (Part 4)
Session Chairs: Loh Tian Hong, National Physical Laboratory, United Kingdom

Radiation Pattern Evaluation of the High-gain Antennas Based on the Electrooptic Near-field Measurements and Direct Far-field Measurements

Kota Miyake [1], Yusuke Tanaka [1], Keizo Inagaki [2], Shintaro Hisatake [1]
[1] *Gifu University (Japan);* [2] *National Institute of Information and Communications Technology (Japan)*

Experimental Measurement in the mmWave Band.

Nicholas Attwood [1], Francois Gallee [1], Patrice Pajusco [1], Marion Berbineau [2]
[1] *IMT Atlantique (France);* [2] *Universite Gustave Eiffel (France)*

Recommended Practices for Synthetic Aperture Channel Sounding

David Michelson [1], Xin Chen [1]
[1] *University of British Columbia (Canada)*

SESSION B02-6

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (Part 6)
Session Chairs: Hrabar Silvio, University of Zagreb, Croatia
Guha Debatosh, Calcutta University, India

Multiple OAM Modes Based on a Fisheye-Lens Beamforming Circuit

Kuan-Hsun Wu [1], Hsi-Tseng Chou [1], Ding-Bing Lin [2]
[1] *NTU (Taiwan);* [2] *NTUST (Taiwan)*

Microwave Antenna Framework Radiating Orbital Angular Momentum Modes based on Spherical Harmonics

Marc Jofre [1], Bedri A. Cetiner [2], Jordi Romeu [1], Luis Jofre-Roca [1]
[1] *Universitat Politecnica de Catalunya (Spain);* [2] *Utah State University (United States)*

Generation of Orbital Angular Momentum (OAM) by Metasurface Lens Antenna at 140GHz for 6G Applications

Tung Nguyen [1], Sharon Varghese [2], Mahesh Babu [1], Nijas Kunju [1]
[1] *Ansys Japan (Japan);* [2] *Ansys India (India)*

SESSION B25-2

Room 104

Vehicular and automotive RF links (Andrea Michel, Daniel Aloi) (Part 2)
Session Chairs: Michel Andrea, University of Pisa, Italy
Aloi Daniel, Oakland University, United States

(Invited)Overview of Wave Propagation Effects for V2X Rooftop Antennas and Hidden Inside the Car

Wilfrid Pascher [1], Miguel Bueno Díez [1], Stefan Lindenmeier [1]
[1] *University of the Bundeswehr Munich (Germany)*

Vehicle Shadowing Modeling for Deterministic Channel Emulator and Electromagnetic Simulation-Based Validation

Siraphop Saisa-ard [1], Nopphon Keerativoranan [1], Jun-ichi Takada [1]
[1] *Tokyo Institute of Technology (Japan)*

Cellular Antennas for Vehicular Applications

Andrea Michel [1], Rajesh Kumar Singh [2], Paolo Nepa [1]
[1] *University of Pisa (Italy);* [2] *Defence Institute of Advanced Technology (India)*

SESSION D02-1

Room 107

Advanced technologies for underwater wireless systems (Yoshihisa Takayama, Tomoyuki Miyamoto) (Part 1)

Session Chairs: Miyamoto Tomoyuki, Tokyo Institute of Technology, Japan
Takayama Yoshihisa, Tokai University, Japan

YS* Coupling characteristics to single mode fiber by using a holographic optical element for underwater optical communication systems

Hiroki Yamashita [1], Akihiro Omura [2], Koki Wakunami [1], Yasuyuki Ichihashi [1], Yoshihisa Takayama [1], Ryutaro Oi [1]

[1] National Institute of Information and Communications Technology (Japan); [2] Tokai University (Japan)

(Invited)YSA* Implementation of Bidirectional High-Rate Underwater Acoustic Communication Systems for Fully Wireless-Controlled Remotely Operated Vehicles

Hiroyuki Fukumoto [1], Ryota Okumura [1], Yosuke Fujino [1], Seiji Ohmori [1], Yuya Ito [1], Takumi Ishihara [1], Yushi Tabata [1]

[1] NTT (Japan)

(Invited)Research and Development Trends of Underwater Optical Wireless Communication Technologies

Kazuhiko Nakamura [1], Masanori Hanawa [1]

[1] University of Yamanashi (Japan)

SESSION E07-3

Room 207

Lightning and related phenomena (Farhad Rachidi, Marcos Rubinstein, Takeshi Morimoto) (Part 3)

Session Chairs: Rachidi Farhad, Ecole polytechnique fédérale de Lausanne (EPFL), Switzerland
Rubinstein Marcos, Institute for Information and Communication Technologies, University of Applied, Switzerland
Morimoto Takeshi, Kindai University, Japan

(Invited)Comparison of Different Formulations to Compute the Ground Return Parameters in the Analysis of High-Frequency Pulse Propagation Along a Wire Above a Lossy Ground

Rafael Alipio [1], Naiara Duarte [1], Farhad Rachidi [1]

[1] Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland)

(Invited)Investigation of Lightning Risk Map using LLS Data and Lightning Data on Wind Turbines

KAZUO YAMAMOTO [1], Shoma Takatsu [1], Tomohiro Date [1]

[1] Chubu University (Japan)

Lightning Localization Using Three-Dimensional Time Reversal MUltiple SIgnal Classification (TR-MUSIC) Algorithm

Siavash Rajabi [1], Hamidreza Karami [2], Marcos Rubinstein [1], Farhad Rachidi [1]

[1] Hamedan University of Technology (Switzerland); [2] Institute for Information and Communication Technologies - University of Applied (Switzerland)

SESSION G01-2

Room 101

GNSS Radio Occultation and zenith data from Low Earth Orbit: advancements on measurements, data assimilation and models (Riccardo Notarpietro, Mainul Hoque, Manuel Hernandez Pajares, Mengjie Wu) (Part 2)

Session Chairs: Wu Mengjie,
Hoque Mainul, DLR - Space Weather Observations, Institute for Solar-Terrestrial Physics, Germany

Global Ionospheric Electron Density from GNSS-POD Limb Measurements

Dong L. Wu [1], Nimalan Swarnalingam [2], Cornelius Csar Jude Salinas [3], Daniel Emmons [4], Tyler Summers [5]

[1] NASA Goddard Space Flight Center (United States); [2] The Catholic University of America (United States); [3] GESTAR-2 University of Maryland Baltimore County (United States); [4] The Air Force Institute of Technology (United States); [5] Science Systems and Applications Inc (United States)

Comparison between RO and Digisonde ionospheric peak characteristics over low-latitudes

Haris Haralambous [1], Krishnendu Paul [1]

[1] Frederick Research Center (Cyprus)

Estimating electron density on the CASSIOPE satellite using different methods

Oksana Grynyshyna-Poliuga [1], Chris Watson [1]

[1] University of New Brunswick (Canada)

SESSION G05-2

Room 204

Advances in Irregularities and Scintillation Studies (Luca Spogli, Yuichi Otsuka, Kshitija Deshpande, P. T. Jayachandran) (Part 2)

Session Chairs: Spogli Luca, Istituto Nazionale di Geofisica e Vulcanologia, Italy

Multi GNSS carrier phase irregularities in response to magnetic field perturbations over Canada

Reza Ghoddousi-Fard [1]

[1] *Natural Resources Canada (Canada)*

Survey of GNSS scintillation-inducing irregularity layer altitude

Alex English [1], David Stuart [1], Donald Hampton [2], Leslie Lamarche [3], Gytis Blinstrubas [1], Seebany Datta-Barua [1]

[1] *Illinois Institute of Technology (United States);* [2] *University of Alaska at Fairbanks (United States);* [3] *SRI International (United States)*

Effect of SAID on the Development of Ionospheric Scintillations and Irregularities in the Subauroral Region

Daria Kotova [1], Aleksandr Sinevich [2], Alexander Chernyshov [1], Dmitrii Chugunin [1], Wojciech Miloch [1]

[1] *University of Oslo (Norway);* [2] *Space Research Institute of RAS (Russia)*

SESSION G12-2

Room 206

Ionosphere monitoring & modeling review (Manuel Hernandez Pajares, Tim Fuller Rowell) (Part 2)

Session Chairs: Fuller Rowell Tim, University of Colorado, United States
Hernandez Pajares Manuel, Universitat Politècnica de Catalunya, Spain

(Invited)Ionospheric Models, Ray Tracing and Instrumentation for HF Systems

Paul Cannon [1], Sean Elvidge [1], David Themens [1], Luke Nugent [1], Joshua Ruck [1]

[1] *University of Birmingham (United Kingdom)*

Estimation of the Absorption of HF Radio waves for the HF-START Project

Hiroyuki Nakata [1], Shun Sato [1], Kornyanat Hozumi [2], Susumu Saito [3], Keisuke Hosokawa [4], Hiroyo Ohya [1]

[1] *Chiba University (Japan);* [2] *National Institute of Information and Communications Technology (Japan);* [3] *Electronic Navigation Research Institute - National Institute of Maritime (Japan);* [4] *The University of Electro-Communications (Japan)*

Development and Current Status of Empirical Modelling of the Ionosphere

Dieter Bilitza [1]

[1] *George Mason University (United States)*

SESSION H02-2

Small Hall

Wave-particle interactions and radiation belt dynamics (Vania Jordanova, David Hartley, Yoshi Miyoshi) (Part 2)

Session Chairs: Jordanova Vania, Los Alamos National Laboratory, United States
Hartley David, University of Iowa, United States

Analysis of radiation belt killer electron energy spectra

Danny Summers [1], Sarah Stone [1]

[1] *Memorial University of Newfoundland (Canada)*

Remediation of Radiation Belt Energetic Particle Populations with Ionospheric Amplification of EMIC and Whistler Mode Waves

Paul Bernhardt [1], Paul Bernhardt [1], Man Hua [2], Jacob Bortnik [1], Qianli Ma [1], Vijay Harid [1], Golkowski Mark [1], Howarth Andrew [1], Carl Siefring [1]

[1] *University of Alaska at Fairbanks (United States);* [2] *UCLA (United States)*

Lifetime of Energetic Electrons due to Their Interactions with Chorus Waves

Dedong Wang [1], Yuri Shprits [1], Bernhard Haas [1]

[1] *Helmholtz Centre Potsdam German Research Centre for Geosciences - GFZ (Germany)*

SESSION J05-2

Room 105

Real-time processing for radio astronomy (Dan Werthimer, Andrew Van Der Byl, Danny Price) (Part 2)
Session Chairs: Van Der Byl Andrew, South African Radio Astronomy Observatory (SARAO), South Africa

Continuous Integration Testing of Real-time Signal Processing and Control for the SKA Low Correlator and Beamformer

Andrew Bolin [1], Sophia Chiang [1], Giles Babich [1], Grant Hampson [1], Bernardo Bacic [1], Keith Bengston [1], Guillaume Jourjon [1], David Humphrey [1], John Bunton [1], Yuqing Chen [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)*

Firmware improvements of the Tile Processing Module for the Low Frequency Aperture Array of the Square Kilometer Array

Alessio Magro [1], Riccardo Chiello [2], Gianni Comoretto [3], Peter Duffin [4], Kristian Zarb Adami [5]
[1] *University of Malta (Malta);* [2] *University of Oxford (United Kingdom);* [3] *INAF (Italy);* [4] *Rutherford Appleton Laboratory (United Kingdom);* [5] *Department of Physics - University of Oxford (United Kingdom)*

Design of a Large-N Correlator for the SKA Low Telescope

David Humphrey [1], Grant Hampson [1], John Bunton [1], Giles Babich [1], Yuqing Chen [1], Chris Phillips [1], Xinping Deng [1], Bernardo Bacic [1], Keith Bengston [1], Guillaume Jourjon [1], Andrew Bolin [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)*

SESSION J09-2

Room 108

Survey science (Nikolas Pingel, Bi Qing For) (Part 2)
Session Chairs: For Bi-Qing, International Centre for Radio Astronomy Research, Australia

A companion tool to FLASHfinder to automatically separate true detections from artefacts

O. Ivy Wong [1], Xiu Liu [1], Hyein Yoon [2]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia);* [2] *University of Sydney (Australia)*

Characterizing the physical state of neutral hydrogen in the Milky Way and Magellanic System using GASKAP-HI

Nickolas Pingel [1]
[1] *University of Wisconsin-Madison (United States)*

(Invited)A very efficient survey using Interplanetary Scintillation to study sub-arcsecond scale objects

Rajan Chhetri [1], Ron Ekers [1], John Morgan [2]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia);* [2] *International Centre for Radio Astronomy Research (ICRAR) - Curtin University (Australia)*

SESSION J10-2

Mid-sized Hall A

Millimetre and sub-millimetre wave astronomy (Nario Kuno, Luca Olmi, Lewis Knee) (Part 2)
Session Chairs: Tsuboi Masato, Meisei University, Japan
OLMI LUCA, INAF, Italy
Kohno Kotaro, The University of Tokyo, Japan

LMT 2 millimeter receiver system (B4R): Overview and results of demo-science

Kotomi Taniguchi [1], Ryohei Kawabe [1], Takeshi Sakai [2], Bunyo Hatsukade [3], Kunihiko Tanaka [1], Akio Taniguchi [1], Yuki Yoshimura [1], Tatsuya Takekoshi [1], Teppei Yonetsu [1], Masato Hagimoto [1], Hiroyuki Maezawa [1], Yoichi Tamura [1], Kotaro Kohno [1], David Hughes [1], Peter Schloerb [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *The University of Electro-Communications (Japan);* [3] *The University of Tokyo (Japan)*

Tolerance analysis of the ALMA Band 2 receiver optics

Hiroaki Imada [1], Keiko Kaneko [1], Ryo Sakai [1], Takafumi Kojima [1], Alvaro Gonzalez [1]
[1] *National Astronomical Observatory of Japan (Japan)*

Development of wide IF band Receiver for simultaneous observations of CO(J=4-3) and [CI] (3P1 - 3P0) lines in 500-GHz band

Fuuta Takiguchi [1]
[1] *University of Tsukuba (Japan)*

SESSION K04

Room 201-202

Pulsed electric fields: a multi-level view from molecular interactions to medical treatments (Lluis Mir, Claudia Consales)
Session Chairs: Mir Lluis, Université Paris-Saclay, Institut Gustave Roussy, CNRS, France
Consales Claudia, ENEA, Italy

(Invited)Microsecond electric pulses effects on stem cells: results from RISEUP project
Innamorati Giorgia [1], Giulia Bergafora [2], Camilla Codazzi [1], Giardullo Paola [1], Caterina Merla [1], Camera Francesca [1], Sanchez Petidier Marina [1], André Franck [1], Laura Caramazza [1], Noemi Dolciotti [1], Fontana Sara [1], Maria Pedraza [1], Moreno Manzano Victoria [1], Marracino Paolo [1], Claudia Consales [1]
[1] Tor Vergata University of Rome (Italy); [2] ENEA (Italy)

YSA* Use of Microsecond Electric Pulses in Human Mesenchymal Stem Cells for Tissue Regeneration
Marina Sánchez Petidier [1], Leslie Vallet [1], Romain Fernandes [1], Nataliia Naumova [1], Giorgia Innamorati [2], Caterina Merla [1], Claudia Consales [1], Franck André [1], Lluis Mir [1]
[1] Université Paris-Saclay - Institut Gustave Roussy - CNRS (France); [2] ENEA, Division of Health Protection Technologies (Italy)

(Invited)Advances in 3D realistic modeling of cells for microdosimetry studies on PEF exposure
Laura Caramazza [1], Noemi Dolciotti [2], Sara Fontana [1], Micol Colella [1], Alessandra Paffi [1], Victoria Moreno-Marzano [1], Neus Torres [1], Maria Pedraza [1], Lluis M. Mir [1], Franck M. Andre [1], Leslie Vallet [1], Fernandes Romain [1], Claudia Consales [1], Francesca Apollonio [1], Micaela Liberti [1]
[1] Sapienza University of Rome (Italy); [2] DIET@Sapienza University of Rome (Italy)

11:00-11:40

SESSION G12-3

Room 206

Ionosphere monitoring & modeling review (Manuel Hernandez Pajares, Tim Fuller Rowell) (Part 3)
Session Chairs: Fuller Rowell Tim, University of Colorado, United States
Groves Keith, Boston College, United States

YS* On the correlation between electron density and temperature in the topside ionosphere through Swarm satellites data
Alessio Pignalberi [1], Fabio Giannattasio [1], Michael Pezzopane [1], Igino Coco [1], Tommaso Alberti [1]
[1] Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy)

The Impact of Gamma-Ray Burst (GRB-221009A) on the Ionosphere
James Camp [1], Robert Moore [1]
[1] University of Florida (United States)

SESSION H02-3

Small Hall

Wave-particle interactions and radiation belt dynamics (Vania Jordanova, David Hartley, Yoshi Miyoshi) (Part 3)
Session Chairs: Miyoshi Yoshizumi, Nagoya University, Japan
Hartley David, University of Iowa, United States

(Invited)Observations and statistics of the plasmasphere boundaries from the Van Allen Probes
Jean-Francois Ripoll [1], Scott Thaller [2], David Hartley [3], G. Cunningham [4], V. Pierrard [5], William S. Kurth [6], Craig Kletzing [1]
[1] CEA / DAM / DIF (France); [2] Orion Space Solutions (United States); [3] Department of Physics and Astronomy (United States); [4] LANL (United States); [5] BIRA (Belgium); [6] University of Iowa (United States)

Effects of the dynamics of cold plasma on the excitation of internally driven ULF waves based on the magnetosphere-ionosphere coupled model
Tomotsugu Yamakawa [1], Kanako Seki [1], Takanobu Amano [1], Yoshizumi Miyoshi [2], Naoko Takahashi [3], Aoi Nakamizo [1], Kazuhiro Yamamoto [1]
[1] The University of Tokyo (Japan); [2] Nagoya University (Japan); [3] National Institute of Information and Communications Technology (Japan)

SESSION K15-3

Room 201-202

Advances in numerical modeling for bioelectromagnetics - part 3 (Tomoaki Nagaoka, Essam A. Rashed, Emily Porter)
Session Chairs: Nagaoka Tomoaki, National Institute of Communications and Technology, Japan
Laakso Ilkka, Aalto University, Finland

Investigation of a global multi-trace formulation for quasi-electrostatic, composite problems
Paula Mira Respondek [1], Simon B. Adrian [1]
[1] Universität Rostock (Germany)

A boundary element method based tissue-specific model to estimate dielectric properties
Simon B. Adrian [1], Paula Mira Respondek [1], Joshua M. Tetzner [1], Ursula Van Rienen [1], Julius Zimmermann [1]
[1] *Universität Rostock (Germany)*

11:00-11:50

SESSION A03 — Room 102

Metrological Analysis and Characterization of Material Properties (Nosherwan Shaoib, Imran Shoaib, Takashi Shimizu)
Session Chairs: Shoaib Nosherwan, National University of Sciences and Technology (NUST), Pakistan

Contacting Electromagnetic Sensors for Determination of Soil Moisture
Wojciech Skierucha [1], Marcin Kafarski [1], Andrzej Wilczek [1], Agnieszka Szypłowska [1], Małgorzata Budzeń [1], Jacek Majcher [1], Arkadiusz Lewandowski [1]
[1] *Institute of Agrophysics PAS (Poland)*

YS* Near field underwater capacitive environment detection
Nicolas Troesch [1], Arnaud Vena [1], Séverin Pistre [1], Yves Elkaim [1], Philippe Combette [1]
[1] *CNRS / University of Montpellier (France)*

11:00-12:00

SESSION B24 — Mid-sized Hall B

RF front ends with MIMO (Debdeep Sarkar, Arjuna Madayanake) + B27 : Duplex/Simultaneous transmit-receive RF front ends (Satheesh Bojja Venkatakrishnan, John Volakis, Debdeep Sarkar)
Session Chairs: Bojja Venkatakrishnan Satheesh, Florida International University, United States

Current Trends and Approaches to improve Self-Interference Cancellation at the RF Domain across a Wide Bandwidth
Satheesh Bojja Venkatakrishnan [1], John Volakis [1]
[1] *Florida International University (United States)*

Four-port Antenna Configuration in n78 5G Band for Energy Harvesting in Agricultural Sensors
Debarati Ganguly [1], Jogesh Chandra Dash [1], Debdeep Sarkar [1]
[1] *Indian Institute of Science (India)*

YSA* 3-D-printed X/Ku-band High-gain Integrated Lens MIMO Antenna Using CPW-fed Magnetoelectric dipoles
Aditya Singh [1], Carlos E. Saavedra [1]
[1] *Queen's university (Canada)*

SESSION B25-3 — Room 104

Vehicular and automotive RF links (Andrea Michel, Daniel Aloi) (Part 3)
Session Chairs: Michel Andrea, University of Pisa, Italy
Aloi Daniel, Oakland University, United States

YSA* UAV-based 3D localization of passive UHF-RFID tags empowering outdoor stock management
Andrea Motroni [1], Paolo Nepa [1]
[1] *University of Pisa (Italy)*

YSA* Design of Series-Fed Antenna Array with Low SideLobe Level and Improved Azimuth Fied-of-View for Automotive RADAR Application
Jogesh Chandra Dash [1], Debdeep Sarkar [2], Yahia M. M. Antar [3]
[1] *National Institute of Technology Rourkela (India);* [2] *Indian Institute of Science Bangalore (India);* [3] *Royal Military College of Canada (Canada)*

(Invited)In-Cabin Sensing using Radars
George Shaker [1]
[1] *UW (Canada)*

SESSION D02-2

Room 107

Advanced technologies for underwater wireless systems (Yoshihisa Takayama, Tomoyuki Miyamoto) (Part 2)
Session Chairs: Takayama Yoshihisa, Tokai University, Japan
Miyamoto Tomoyuki, Tokyo Institute of Technology, Japan

(Invited)Long-distance and High-speed Underwater Optical Wireless Communication ~Challenge to 1Gbps x 100m underwater optical wireless communication~
Ken-Ichi Suzuki [1], HirokiHiroki Okuzawa [1], Seigo Takahashi [1], Shojiro Ishibashi [2]
[1] Trimatiz Limited (Japan); [2] Japan Agency for Marin-Earth Science and Technology (Japan)

Underwater LiDAR utilizing Visible Light Devices
Ken-Ichi Suzuki [1], Hiroki Okuzawa [1], Chihiro Kawabata [1], Koichi Tezuka [1]
[1] Trimatiz Limited (Japan)

High Power and Long Distance Underwater Optical Wireless Power Transmission
Tomoyuki Miyamoto [1], Yamato Takahashi [1], Yuha Tai [1]
[1] Tokyo Institute of Technology (Japan)

CO2 Raman scattering measurements in seawater for marine lidar
Kakeru Ito [1], Ken-Ichi Suzuki [2], Koichi Tezuka [1], Tatsuo Shiina [1]
[1] Chiba University (Japan); [2] Trimatiz (Japan)

SESSION E02-1

Room 207

EMC Measurement techniques (Ramiro Serra, Carlo Carobbi) (Part 1)
Session Chairs: Carobbi Carlo, Università degli Studi di Firenze, Italy
Serra Ramiro, Eindhoven University of Technology, Netherlands

On the Relation Between Field Correlation and Field Uniformity in Reverberation Chambers
Carlo Carobbi [1], Ramiro Serra [2]
[1] Università degli Studi di Firenze (Italy); [2] Eindhoven University of Technology (Netherlands)

Effect of the Insertion of a Ferrite Along Return Cable and of Return Cable Layout on ESD Contact Discharge
Carlo Carobbi [1], Burger Alain [2], Spartaco Caniggia [3]
[1] Università degli Studi di Firenze (Italy); [2] AMETEK - CTS (Switzerland); [3] EMC consultant (Italy)

Equivalent Circuit Analysis of Stacked Metasurface Absorber for Broadband Measurement of Field Distributions
Taiga Miyai [1], Satoshi Yagitani [1], Shota Nakamura [1], Shinkuro Fujino [2], Shin-ichi Tanimoto [1], Akihiro Tatsuta [1], Tomohiko Imachi [1], Mitsunori Ozaki [1]
[1] Kanazawa University (Japan); [2] Panasonic Connect Co., Ltd. (Japan)

SESSION G01-3

Room 101

GNSS Radio Occultation and zenith data from Low Earth Orbit: advancements on measurements, data assimilation and models (Riccardo Notarpietro, Mainul Hoque, Manuel Hernandez Pajares, Mengjie Wu) (Part 3)
Session Chairs: Hoque Mainul, DLR - Space Weather Observations, Institute for Solar-Terrestrial Physics, Germany
Hernandez Pajares Manuel, Universitat Politècnica de Catalunya, Spain

Validation of ionospheric products derived from the EUMETSAT Radio Occultation receivers on board Metop satellites
Riccardo Notarpietro [1], Christian Marquardt [2], Axel Von Engeln [1], Saverio Paolella [1], Mainul Hoque [1], Manuel Hernandez Pajares [1], Fabricio Prol [1], Liangliang Yuan [1], Germán Olivares-Pulido [1], Yago Andres [1], Leonid Butenko [1], Francisco Martin Alemany [1], Sebastiano Padovan [1], Francisco Sancho [1], Nicolas Morew [1]
[1] EUMETSAT (Germany); [2] EUMETSAT - RSP (Germany)

Ionospheric Electron Density Profiles from GOES Geostationary GPS Observations: Early Results and Validation
Irina Zakharenkova [1], Iurii Cherniak [1], Scott Gleason [1], Douglas Hunt [1], Sergey Sokolovskiy [1]
[1] UCAR (United States)

(Invited)Differences between the radio occultation retrieved TEC, global ionospheric maps and satellite altimetry observations
Peng Guo [1], M.J. Wu [2], Xinee Ma [1], J.C. Xue [1], X.G. Hu [1]
[1] Chinese Academy of Sciences (CAS) (China); [2] Shanghai Astronomical Observatory - Chinese Academy of Sciences (China)

SESSION G05-3

Room 204

Advances in Irregularities and Scintillation Studies (Luca Spogli, Yuichi Otsuka, Kshitija Deshpande, P. T. Jayachandran) (Part 3)

Session Chairs: Jayachandran P. T., University of New Brunswick, Canada

(Invited)Nightside High-Latitude Phase and Amplitude Scintillation during a Substorm using 1-second Scintillation Indices

Toshi Nishimura [1], Thomas Kelly [1], P. T. Jayachandran [2], Sebastijan Mrak [3], Josh Semeter [1], Eric Donovan [4], Vassilis Angelopoulos [5], Nozomu Nishitani [6]

[1] Boston University (United States); [2] University of New Brunswick (Canada); [3] University of Colorado (United States); [4] University of Calgary (Canada); [5] University of California (United States); [6] Nagoya University (Japan)

Statistics and Modeling of Ionospheric Scintillations in the European Arctic Region

Yaqi Jin [1], Jacobsen Knut Stanley [2], Kotova Daria [1], Clausen Lasse [1], Miloch Wojciech [1]

[1] University of Oslo (Norway); [2] Norwegian Mapping Authority (Norway)

The Implications of Longitudinal Variations in Daily Variability for Forecasting Spread F

Keith Groves [1], John Retterer [1], Charles Carrano [1], Christopher Bridgwood [1]

[1] Boston College (United States)

SESSION J05-3

Mid-sized Hall A

Real-time processing for radio astronomy (Dan Werthimer, Andrew Van Der Byl, Danny Price) (Part 3)

Session Chairs: Werthimer Dan, University of California, Berkeley, United States

E-KVN Correlator Development Status

Se-Jin Oh [1], Jae-Hwan Yeom [1]

[1] Korea Astronomy and Space Science Institute (South Korea)

GMRT Digital Back-end : Next level upgrades

Harshavardhan Reddy Suda [1], Shelton Gnanaraj [1], Sandeep Choudhari [1], Sanjay Kudale [1], Mangesh Umbarje [1], Jayanta Roy [1], Ajith Kumar [1], Yashwant Gupta [1]

[1] NCRA-TIFR (India)

BLADE: Allen Telescope Array GPU Accelerated Real-Time Beamformer

Luigi Cruz [1], Wael Farah [1], Alexander Pollak [1]

[1] SETI Institute (United States)

SESSION J09-3

Room 108

Survey science (Nikolas Pingel, Bi Qing For) (Part 3)

Session Chairs: Pingel Nickolas, University of Wisconsin-Madison, United States

Polarised Emission from Faint Radio Sources

Lennart Heino [1], Russ Taylor [1], Srikrishna Sekhar [1]

[1] Inter-University Institute for Data Intensive Astronomy (South Africa)

(Invited)REC-J09-03 Long-period radio transients

Natasha Hurley-Walker [1]

[1] International Centre for Radio Astronomy Research (ICRAR) - Curtin University (Australia)

(Invited)ASKAP wide FoV surveys for FRBs

Ron Ekers [1]

[1] Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)

SESSION J10-3

Room 105

Millimetre and sub-millimetre wave astronomy (Nario Kuno, Luca Olmi, Lewis Knee) (Part 3)
Session Chairs: Tsuboi Masato, Meisei University, Japan
OLMI LUCA, INAF, Italy
Kohno Kotaro, The University of Tokyo, Japan

Proper Motion of Sagittarius A* with Atacama Large Millimeter/Submillimeter Array

Masato Tsuboi [1], Takahiro Tsutsumi [2], Ryosuke Miyawaki [3], Makoto Miyoshi [4], Atsushi Miyazaki [5]
[1] *Meisei University (Japan);* [2] *National Radio Astronomy Observatory (United States);* [3] *J. F. Oberlin University (Japan);* [4] *National Astronomical Observatory of Japan (Japan);* [5] *Japan Space Forum (Japan)*

Commissioning and Science Verification of the ALMA ACA Spectrometer

Shun Ishii [1], Jihyun Kang [2], Yusuke Aso [1], Seiji Kameno [1], Hiroshi Nagai [1], Scott Zang [1], Jongsuk Hong [1], Makoto Shizugami [1], Susumu Nakayama [1], Manabu Watanabe [1], Jongsoo Kim [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *Korea Astronomy and Space Science Institute (South Korea)*

An unbiased census of giant molecular clouds in the low-metal dwarf galaxy NGC 6822

Tomoka Tosaki [1], Shinji Fujita [2], Takeshi Kamazaki [1], Kunihiko Tanaka [1], Bunyo AHtsukade [1], Fumi Egusa [1], Yutaka Komiyama [1], Hiroyuki Kaneko [1], Kotaro Kohno [1]
[1] *Joetsu University of Education (Japan);* [2] *The University of Tokyo (Japan)*

SESSION WB

Conference Hall (Tutorials)

Challenges of 6G wireless communications
Session Chairs: Salous Sana, Durham University, United Kingdom

(Invited)THz Communications for 6G

Thomas Kuerner [1]
[1] *TU Braunschweig (Germany)*

(Invited)Software defined metasurfaces for future wireless communications

Yang Hao [1], Sana Salous [2]
[1] *Queen Mary University London (United Kingdom);* [2] *Durham University (United Kingdom)*

(Invited)Millimeter-Wave Simultaneous Trasmit/Receive Radios

John L. Volakis [1], Satheesh Bojja Venkatakrishnan [1]
[1] *Florida International University (United States)*

13:20-14:00

SESSION G01-4

Room 101

GNSS Radio Occultation and zenith data from Low Earth Orbit: advancements on measurements, data assimilation and models (Riccardo Notarpietro, Mainul Hoque, Manuel Hernandez Pajares, Mengjie Wu) (Part 4)
Session Chairs: Hernandez Pajares Manuel, Universitat Politècnica de Catalunya, Spain
Hoque Mainul, DLR - Space Weather Observations, Institute for Solar-Terrestrial Physics, Germany

(Invited)Space Weather Commercial Weather Data Pilot GNSS Processing and Evaluation

Jan-Peter Weiss [1], John Braun [1], Iurii Cherniak [1], Doug Hunt [1], Maggie Sleziak-Sallee [1], Sergey Sokolovskiy [1], Teresa VanHove [1], Irina Zakharenkova [1]
[1] *University Corporation for Atmospheric Research (United States)*

Location of Ionospheric Irregularities in Extended GNSS-RO Measurements Using Back Propagation Method

Vinicius Ludwig Barbosa [1], Joel Rasch [2], Anders Carlström [1], Jacob Christensen [1], Viet Thuy Vu [1], Mats I. Pettersson [1]
[1] *Blekinge Institute of Technology (Sweden);* [2] *Beyond Gravity Sweden AB (Sweden)*

SESSION G03-6

Room 206

Ionospheric Space Weather and Impacts on Technological Systems (Iwona Stanislawska, Anthea Coster, Vincenzo Romano, Takuya Tsugawa) (Part 6)

Session Chairs: Stanislawska Iwona, Space Research Centre of Polish Academy of Sciences, Poland
Romano Vincenzo, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

(Invited)Global Distribution of The Unintended Sources of Radio Frequency Interference

Yizengaw Endawoke [1], Paul Straus [2]
[1] *Aerospace Corporation (United States);* [2] *Aerospace Corporation (United States)*

New two-dimensional UHF radar observations of space weather at the Jicamarca Radio Observatory

Fabiano Rodrigues [1], Marco Milla [2], Danny Scipion [3], Joab Apaza [1], Karim Kuyeng [1], Carlos Padin [1]
[1] *The University of Texas at Dallas (United States);* [2] *Pontificia Universidad Católica del Perú (Peru);* [3] *Geophysical Institute of Peru - Jicamarca Radio Observatory (Peru)*

13:20-14:20

SESSION A09

Room 102

Calibration, Traceability, and Inter Comparisons of Instruments and Measurements (Demetrios Matsakis)

Session Chairs: Matsakis Demetrios, Masterclock, Inc., United States

Phase-Tracking Vital Sign Radar Using Frequency-Locked Loop

Kang-Chun Peng [1], Chi-Hung Fu [2], Tzyy-Sheng Horng [1]
[1] *National Kaohsiung University of Science and Technology (Taiwan);* [2] *National Sun Yat-sen University (Taiwan)*

Research on Voltage Fluctuation Calibration Method Based on Hilbert Transformation

Shaohua Chen [1], Beichen Guo [1], Jingjing Li [1], Li You [1]
[1] *Beijing Orient Institute of Measurement and Test (China)*

YSA* Influence of the Supporting Material on the Conical Monopole Sensor Calibration Setup

Hamad Deiban [1]
[1] *Technology Innovation Institute (United Arab Emirates)*

SESSION B01

Room 104

Electromagnetic theory (Henrik Wallén, Daniel Sjoberg)

Session Chairs: Wallén Henrik, Aalto University, Finland
Sjöberg Daniel, Lund University, Sweden

(Invited)Absorption beyond Rozanov bound by LTI surfaces

Chen Firestein [1], Amir Shlivinski [1], Yakir Hadad [2]
[1] *Ben Gurion University (Israel);* [2] *Tel Aviv University (Israel)*

(Invited)Uncertainty Dependencies in Computational Array Antenna Design Considerations

Lars Jonsson [1], Harald Hultin [1]
[1] *KTH Royal Institute of Technology (Sweden)*

YS* A Frequency Selective Surface based Polarization-Independent Band Notched Electromagnetic (EM) Wave -Absorber

Awanish Kumar [1], Jyotibhusan Padhi [1], Rushiraj Jawale [1], G. Shrikanth Reddy [1]
[1] *Indian Institute of Technology Mandi (India)*

SESSION B02-7

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (Part 7)

Session Chairs: Michel Andrea, University of Pisa, Italy
Pascher Wilfrid, University of the Bundeswehr Munich, Germany

YS* X-Shaped Slot Antenna for Sub-6 GHz 5G Application

Mangseang Hor [1], Masanobu Hirose [2], Takashi Hikage [3]
[1] *7Gaa Co Ltd (Hokkaido) (Japan);* [2] *7Gaa Co Ltd (AIST-Tsukuba) (Japan);* [3] *Wireless Technology and EMC Research Laboratory - Hokkaido University (Japan)*

(Invited)Modeling LTE MIMO Antenna Systems on Vehicles
Daniel Aloi [1], Ahmad Yacoub [1], John Locke [1]
[1] *Oakland University (United States)*

YSA* Novel 4×4 PIFA Antenna Module Covering Bands N78/N79 of 3.40-3.60 and 4.80-4.90 GHz for 5G Mobile Terminals
Le Chang [1], Xiaomin Chen [2]
[1] *Xi'an Jiaotong University (China);* [2] *Inner Mongolia University (China)*

SESSION Commission D Tutorial
Conference Hall (Tutorials)

Lithium niobate photonic integrated circuits for future optical and microwave links
Cheng Wang [1]
[1] *City University of Hong Kong (China)*

SESSION E02-2
Room 207

EMC Measurement techniques (Ramiro Serra, Carlo Carobbi) (Part 2)
Session Chairs: Carobbi Carlo, Università degli Studi di Firenze, Italy
Serra Ramiro, Eindhoven University of Technology, Netherlands

YSA* Foster's Reactance Theorem for a Multiport, and its Application to Q Factor Measurement
Chiu-Chih Chou [1]
[1] *National Central University (Taiwan)*

Design of a Low-Cost High-Current LISN for EMC Test
Xiaozhu Lu [1], Donglin Su [1], Bo Hu [2]
[1] *Beihang University (China);* [2] *Shanghai Institute of Satellite Engineering (China)*

Magnetic Near-Field Measurement and Visualization for Estimation of Noise Current Distribution
Tomoya Nakahama [1], Satoshi Yagitani [1], Naoya Ito [1], Mitsunori Ozaki [1], Tomohiko Imachi [1]
[1] *Kanazawa University (Japan)*

SESSION G05-4
Room 204

Advances in Irregularities and Scintillation Studies (Luca Spogli, Yuichi Otsuka, Kshitija Deshpande, P. T. Jayachandran) (Part 4)
Session Chairs: Spogli Luca, Istituto Nazionale di Geofisica e Vulcanologia, Italy

Study of Nighttime Mid-latitude E-F Coupling in Geomagnetic Conjugate Regions Using a Double-thin-shell Model and Multi-source Data
Weizheng Fu [1], Tatsuhiro Yokoyama [2], Nicholas Ssessanga [1], Guanyi Ma [1], Mamoru Yamamoto [1]
[1] *Nagoya University (Japan);* [2] *Kyoto University (Japan)*

Periodic Oscillations of Doppler Frequency Associated with the Tonga Eruption in 2022
Hiroyuki Nakata [1]
[1] *Chiba University (Japan)*

Equatorial plasma bubble extending to mid-latitudes observed by SuperDARN and GNSS-TEC during a geomagnetic storm on May 27 and 28, 2017
Takuya Sori [1], Atsuki Shinbori [1], Yuichi Otsuka [1], Michi Nishioka [2], Septi Perwitasari [1], Nozomu Nishitani [1]
[1] *Nagoya University (Japan);* [2] *National Institute of Information and Communications Technology (Japan)*

SESSION H02-4
Small Hall

Wave-particle interactions and radiation belt dynamics (Vania Jordanova, David Hartley, Yoshi Miyoshi) (part 4)
Session Chairs: Jordanova Vania, Los Alamos National Laboratory, United States
Walton Samuel, University of California, Berkeley, United States

Magnetospheric Ducts for Whistler-Mode Waves
Anatoly Streltsov [1]
[1] *Embry Riddle Aeronautical University (United States)*

Code coupling simulation of whistler mode chorus waves during storm time
Yoshizumi Miyoshi [1], Vania Jordanova [2], Yuto Katoh [3], Shinji Saito [4], Satoshi Kurita [5], Shoya Matsuda [6], Shreedevi P.R. [1]
[1] *Nagoya University (Japan);* [2] *Los Alamos National Laboratory (United States);* [3] *Tohoku University (Japan);* [4] *National Institute of Information and Communications Technology (Japan);* [5] *Kyoto University (Japan);* [6] *Kanazawa University (Japan)*

Newly Constructed Empirical Models of Whistler Mode Waves in the Radiation Belts
Ondrej Santolik [1], Ivana Kolmasova [1], Ulrich Taubenschuss [1], Marie Turcicova [1], Miroslav Hanzelka [1]
[1] *Institute of Atmospheric Physics of the Czech Academy of Sciences (Czech Republic)*

SESSION J05-4
Mid-sized Hall A

Real-time processing for radio astronomy (Dan Werthimer, Andrew Van Der Byl, Danny Price) (Part 4)
Session Chairs: Van Der Byl Andrew, South African Radio Astronomy Observatory (SARAO), South Africa

Multi-Function Digital Signal Processing System for a 110-meter Radio Telescope
Xin Pei [1], Jian Li [1], Xue-Feng Duan [1]
[1] *XinJiang Astronomical Observatory (China)*

(Invited)Antenna Characterization and RFSoC Digital Back End Development for the ALPACA Phased Array Receiver
Karl Warnick [1], Mitch Burnett [1], Brian Jeffs [1], Amit Vishwas [2], Don Campbell [1]
[1] *Brigham Young University (United States);* [2] *Cornell University (United States)*

SKARAB digital spectrometers for the Italian radio telescope
Andrea Melis [1], Giovanni Comoretto [1], Alessandro Cabras [1], Carlo Migoni [1]
[1] *Istituto Nazionale di Astrofisica (Italy)*

SESSION J07-2
Room 108

Machine learning and AI in radio astronomy (Anna Scaife, Kushatha Ntwaetsile, Hongming Tang, German Chaparro) (Part 2)
Session Chairs: Tang Hongming, Tsinghua University, China

Artificially Intelligent Pipeline Sequencer
Brian Kirk [1], Urvashi Rau [1], Ramyaa Ramyaa [2]
[1] *National Radio Astronomy Observatory (United States);* [2] *New Mexico Institute of Mining and Technology (United States)*

Automated morphological classification of Fast Radio Bursts using a Deep Learning framework
Ajay Kumar [1], Ashish Mahabal [2], Shriharsh Tendulkar [3]
[1] *National Centre for Radio Astrophysics (India);* [2] *California Institute of Technology (United States);* [3] *Tata Institute for fundamental Research (India)*

YS* Deep supervised hashing for fast retrieval of radio image cubes
Steven Ndungú [1], Dimka Karastoyanova [1], George Azzopardi [1], Stefan Wijnholds [2], Trienko Grobler [3]
[1] *University of Groningen (Netherlands);* [2] *ASTRON (Netherlands);* [3] *Stellenbosch University (South Africa)*

SESSION J10-4
Room 105

Millimetre and sub-millimetre wave astronomy (Nario Kuno, Luca Olmi, Lewis Knee) (Part 4)
Session Chairs: OLMI LUCA, INAF, Italy
Tsuboi Masato, Meisei University, Japan
Kohno Kotaro, The University of Tokyo, Japan

Development of Readout Circuit for SIS Photon Detector with Low Noise and High Speed Operation
Tomohiro Koseki [1], Hiroshi Matsuo [2], Ezawa Hajime [1], Ayako Niwa [1], Rina Enohi [1]
[1] *University of Tsukuba (Japan);* [2] *National Astronomical Observatory of Japan (Japan)*

Developments toward the Terahertz Photon Counting System
Hajime Ezawa [1], Hiroshi Matsuo [1], Go Fujii [2], Shigetomo Shiki [1], Ayako Niwa [1], Norio Okada [1], Mitsuhiro Fukushima [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *National Institute of Advanced Industrial Science and Technology (Japan)*

Three-mirror anastigmatic five-meter aperture telescope and camera optics for CMB-S4
Patricio Gallardo [1]
[1] *University of Chicago (United States)*

SESSION K11/13-1

Room 201-202

Dielectric and thermal properties of biological materials and EM-based Thermal Therapies (organised by MyWAVE network) - part 1 (Lourdes Farrugia, Kazuyuki Saito, Katia Grenier, Emily Porter)

Session Chairs: Farrugia Lourdes, University of Malta, Malta
Saito Kazuyuki, Chiba University, Japan

YS* A Microstrip Patch Antenna Immersed in Water – A Preliminary Investigation

Jonathan Farrugia [1], Charles Sammut [1], Joseph Caruana [1], Iman Farhat [1]

[1] *University of Malta (Malta)*

Development of microwave surgical energy device for suppressing backward heating

Tsugumi Nishidate [1], Kazuyuki Saito [1]

[1] *Chiba University (Japan)*

PTFE Expansion at Ablative Temperatures of an Uncooled Coaxial Monopole Antenna

Federico Cilia [1], Evan Joe Dimech [1], Julian Bonello [1], Charles Victor Sammut [1], Iman Farhat [1], Lourdes Farrugia [1]

[1] *University of Malta (Malta)*

14:20-15:20

SESSION A10

Room 102

Space Metrology (Liu Min, Amitava Sen Gupta)

Session Chairs: Sen Gupta Amitava, The North Cap University, HUDA Sector 23-A, Gurgaon, India

Discussion on seperation of calendar unit and unit of time metrology

Min Liu [1], Qianjuan Wang [1]

[1] *Beijing Orient institute of metrology and measurement (China)*

Development of Wideband Power Standard for Wireless Energy Transmission

You Li [1], Min Liu [1]

[1] *Beijing Orient Institute of Measurement and Test (China)*

(Invited)A Method for Measuring Signals from 0.001Hz to 1Hz

Haini Jiao [1], Haowen Yang [2], Yizhou Wang [1]

[1] *Beijing Orient Institute of Measurement and Test (China);* [2] *Dalian University of Technology (China)*

SESSION B02-8

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (Part 8)

Session Chairs: Michel Andrea, University of Pisa, Italy
Pascher Wilfrid, University of the Bundeswehr Munich, Germany

Design Procedure of Coil Embedded in Soil for Estimation of Soil Moisture Content Using AM Radio Broadcasting Waves in Landslide Warning System

Takato Shinhama [1], Subaru Iwaki [1], Futoshi Kuroki [1]

[1] *National Institute of Technology - Kure College (Japan)*

An Antenna Far-field Prediction Method Based on Shooting and Bouncing Ray Method

Haoting Yan [1], Yaoyao Li [1], Shaoxiong Cai [1], Youwei Meng [1], Shijian Zhang [1]

[1] *Beihang University (China)*

Measuring Extinction and Monostatic Radar Cross-Sections of Low-Scattering Antennas

Alexandros Pallaris [1], Rasmus Jacobsen [2], Daniel Sjöberg [1]

[1] *Lund University (Sweden);* [2] *Technical University of Denmark (Denmark)*

SESSION B04

Room 104

High-frequency and hybrid methods (Robert Burkholder, Prabhakar Pathak, Giuliano Manara)

Session Chairs: Manara Giuliano, University of Pisa, Italy

Manipulation of curved beams and curved pulsed beam features

Timor Melamed [1], Brick Yaniv [1], Gabriel Lasry [1]

[1] *Ben Gurion University of the Negev (Israel)*

Plane Wave Scattering by a Dielectric Wedge
Jung Woong Ra [1]
[1] *The National Academy of Sciences (Republic of Korea)*

A Well-Conditioned Weak Coupling of Boundary Element and High-Order Finite Element Methods for Time-Harmonic Electromagnetic Scattering
Ismaïl Badia [1], Xavier Antoine [2], Christophe Geuzaine [3]
[1] *Thales DMS (France);* [2] *Université de Lorraine (France);* [3] *Université de Liège (Belgium)*

SESSION Commission E Tutorial
Conference Hall (Tutorials)

Migration methods for GPR signal enhancement
Felix Vega [1]
[1] *Technology Innovation Institute (United Arab Emirates)*

14:20-15:00

SESSION D04-1
Room 107

Microwave/millimeter-wave/THz and photonic systems for Beyond 5G/6G communications (Isao Morohashi, Hwang-Seok Chung) (Part 1)
Session Chairs: Kanno Atsushi, Nagoya Institute of Technology, Japan
Morohashi Isao, National Institute of Information and Communications Technology (NICT), Japan

A frequency-tunable photonic terahertz oscillator referencing to a microresonator frequency comb
Tomohiro Tetsumoto [1], Kentaro Furusawa [1], Norihiko Sekine [1]
[1] *National Institute of Information and Communications Technology (Japan)*

Development of planar antennas integrated quantum well phase modulator for 60GHz band signals
Gaku Sekiguchi [1], Shunsuke Nakamori [2], Yui Otagaki [1], Hiroshi Murata [1], Ryotaro Nakazawa [1], Takuto Mori [1], Kento Yamada [1], Kouichi Akahane [1], Taro Arakawa [1]
[1] *Yokohama National University (Japan);* [2] *Mie University (Japan)*

SESSION G11
Room 206

Limits of predictability of ionosphere variability: search for its chaotic and deterministic components (Yenca Migoya-Oruè, Massimo Materassi, Sandro Radicella, Tatsushiro Yokohama)
Session Chairs: Radicella Sandro, Boston College, United States
Migoya-Orué Yenca, The Abdus Salam International Centre for Theoretical Physics (ICTP), Italy

Ionosphere's predictability by vTEC time series dynamics analysis
Massimo Materassi [1], Tommaso Alberti [2], Yenca Migoya-Orué [3], Sandro Maria Radicella [4], Giuseppe Consolini [5]
[1] *Consiglio Nazionale delle Ricerche (Italy);* [2] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy);* [3] *INTERNATIONAL CENTER FOR THEORETICAL PHYSICS (Italy);* [4] *Boston College (United States);* [5] *Istituto Nazionale di Astrofisica (Italy)*

(Invited)Ionospheric Variability: Predictability of the Magnetosphere and Lower Atmosphere Driven Components
Tim Fuller Rowell [1], Tim Fuller-Rowell [1]
[1] *University of Colorado (United States)*

SESSION H02-5
Small Hall

Wave-particle interactions and radiation belt dynamics (Vania Jordanova, David Hartley, Yoshi Miyoshi) (Part 5)
Session Chairs: Jordanova Vania, Los Alamos National Laboratory, United States
Walton Samuel, University of California, Berkeley, United States

YSA* Chorus Wave Observations from Van Allen Probes: Quantifying the Impact of the Sheath Corrected Electric Field
David Hartley [1], Ivar Christopher [1], Craig Kletzing [1], William S. Kurth [1], Ondrej Santolik [2], Ivana Kolmasova [1], Matthew Argall [1], Narges Ahmadi [1]
[1] *University of Iowa (United States);* [2] *Institute of Atmospheric Physics (Czechia)*

Statistical Investigation of Electrostatic Waves Associated with Whistler Mode Chorus Observed by the Arase Satellite
Satoshi Kurita [1], Daiki Eda [1], Hirotsugu Kojima [1], Yoshiya Kasahara [1], Shoya Matsuda [1], Ayako Matsuoka [1], Yoshizumi Miyoshi [1], Iku Shinohara [1]
[1] *Kyoto Univesity (Japan)*

SESSION J05-5

Mid-sized Hall A

Real-time processing for radio astronomy (Dan Werthimer, Andrew Van Der Byl, Danny Price) (Part 5)
Session Chairs: Price Danny, ICRAR / Berkeley SETI, Australia

FFT and Beamforming Development for BURSTT
Homin Jiang [1]
[1] *Academia Sinica (Taiwan)*

Towards Transient Radio Interference Detection Using MeerKAT's D-Engine
Zubair Mohamed-Fakier [1], Simon Winberg [2], Stephen Paine [1]
[1] *South African Radio Astronomy Observatory/ University of Cape Town (South Africa);* [2] *University of Cape Town (South Africa)*

14:20-15:20

SESSION G04-5

Room 101

International Reference Ionosphere: Improvement, Validation and Usage (Dieter Bilitza, Vladimir Truhlik, Shigeto Watanabe)(Part 5)
Session Chairs: Coïsson Pierdavide, Université Paris Cité, Institut de physique du globe de Paris, CNRS, France
Hoque Mainul, DLR - Space Weather Observations, Institute for Solar-Terrestrial Physics, Germany

(Invited)Regional and global equatorial vertical ExB drift studies based on satellite and ground based data
John Bosco Habarulema [1], Daniel Okoh [2]
[1] *South African National Space Agency (South Africa);* [2] *Obafemi Awolowo University Campus (Nigeria)*

FUV Observation of Ionosphere Dynamics
Yongliang Zhang [1], Larry Paxton [1], Robert Schaefer [1], Chaosong Huang [2]
[1] *The Johns Hopkins University Applied Physics Laboratory (United States);* [2] *Space Force (United States)*

(Invited)Incoherent Scatter Observations by the MU Radar over Japan: Potential Contribution to the IRI Model
Tatsuhiro Yokoyama [1], Mamoru Yamamoto [1], Yuichi Otsuka [2]
[1] *Kyoto University (Japan);* [2] *Nagoya University (Japan)*

SESSION G05-5

Room 204

Advances in Irregularities and Scintillation Studies (Luca Spogli, Yuichi Otsuka, Kshitija Deshpande, P. T. Jayachandran) (Part 5)
Session Chairs: Spogli Luca, Istituto Nazionale di Geofisica e Vulcanologia, Italy

Climatology of ionospheric perturbations associated with Pc3-6 ULF waves, as observed using ground-based GPS total electron content measurements
Chris Watson [1], P.T. Jayachandran [1]
[1] *University of New Brunswick (Canada)*

E region irregularities observed by dual band beacon from the sounding rocket S-520-32
Toru Takahashi [1], Susumu Saito [1], Mamoru Yamamoto [2], Manabu Shinohara [3]
[1] *National Institute of Maritime, Port and Aviation Technology (MPAT) (Japan);* [2] *Research Institute for Sustainable Humanosphere - Kyoto University (Japan);* [3] *Liberal Arts and Science - National Institute of Technology - Kagoshima College (Japan)*

Small (Sub-decameter) Scale and Mesoscale Plasma Density Irregularities in the Topside Ionosphere Using High-cadence e-POP (Swarm-E) Observations
Andrew Yau [1], Andrew Howarth [1], Marzena Kastyak-Ibrahim [1], Andrew White [1], Victoria Foss [1]
[1] *University of Calgary (Canada)*

SESSION J10-5

Room 105

Millimetre and sub-millimetre wave astronomy (Nario Kuno, Luca Olmi, Lewis Knee) (Part 5)
Session Chairs: Tsuboi Masato, Meisei University, Japan
OLMI LUCA, INAF, Italy
Kohno Kotaro, The University of Tokyo, Japan

Update on the East Asia ALMA Development Program – the first steps towards the implementation of the ALMA2030 Wideband Sensitivity Upgrade

Alvaro Gonzalez [1], Takafumi Kojima [1], Keiko Kaneko [1], Shohei Ezaki [1], Miho Fujieda [1], Takeshi Kamazaki [1], Hitoshi Kiuchi [1], Manabu Watanabe [1], Kanako Sugimoto [1], Hiroshi Nagai [1], Daisuke Iono [1]
[1] *National Astronomical Observatory of Japan (Japan)*

Fiber-based time transfer system for ngVLA system

Hitoshi Kiuchi [1], Miho Fujieda [1], Tadahiro Gotoh [2]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *National Institute of Information and Communications Technology (Japan)*

Development of Seven BEam Equipment (7BEE) for the Nobeyama 45-m Telescope

Atsushi Nishimura [1], Yutaka Hasegawa [2], Yasumasa Yamasaki [1], Sho Yoneyama [1], Sho Masui [1], Sana Kawashita [1], Shimpei Nishimoto [1], Tsubasa Chinen [1], Chiaki Nosohara [1], Heyang Sun [1], Ikko Fujitomo [1], Yuma Nishikawa [1], Ryo Nakagawa [1], Takeru Matsumoto [1], Toshikazu Onishi [1], Hideo Ogawa [1], Chieko Miyazawa [1], Toshikazu Takahashi [1], Jun Maekawa [1], Alvaro Gonzalez [1], Takafumi Kojima [1], Takeshi Sakai [1], Ken' ichi Tatematsu [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *Osaka Metropolitan University (Japan)*

SESSION J14-4

Room 108

Observatory reports, latest news and general discussion (Chair: Douglas Bock)
Session Chairs: Douglas Bock, CSIRO, Australia

SuperMIGHTEE: Exploring the Deep GHz Universe with GMRT and MeerKAT

Dharam Lal [1], Russ Taylor [2], Srikrishna Sekhar [1], CH Ishwara-Chandra [1]
[1] *National Centre for Radio Astrophysics TIFR (India);* [2] *Inter-University Institute for Data Intensive Astronomy University of Cape Town (South Africa)*

SESSION K11/13-2

Room 201-202

Dielectric and thermal properties of biological materials and EM-based Thermal Therapies (organised by MyWAVE network) - part 2 (Lourdes Farrugia, Kazuyuki Saito, Katia Grenier, Emily Porter)
Session Chairs: Farrugia Lourdes, University of Malta, Malta
Saito Kazuyuki, Chiba University, Japan

Miniaturised Four-Electrode Conductivity Probe with PEDOT:PSS Coating

Niko Ištuk [1], Rita Matta [2], Hamza Benchakroun [1], Jara Maria Baena Montes [1], Leo Quinlan [1], David Moreau [1], Rodney O'Connor [1], Eoghan Dunne [1], Adnan Elahi [1], Martin O'Halloran [1]
[1] *University of Galway (Ireland);* [2] *École des Mines de Saint-Étienne (France)*

A 24-GHz Microwave Microfluidic Sensor Based on the Frequency-Locked Loop for Liquid Concentration Measurement

Hsiu-Che Chang [1], Chao-Hsiung Tseng [1]
[1] *National Taiwan University of Science and Technology (Taiwan)*

A data analysis application for a systematic reporting of dielectric properties of biological tissue.

Julian Bonello [1], Lourdes Farrugia [1], Denis Cutajar [1], Daniela Godinho [2], Raquel Conceição [1], Iman Farhat [1], Charles Sammut [1]
[1] *University of Malta (Malta);* [2] *Instituto de Biofísica e Engenharia Biomédica - Faculdade de Ciências - Universi (Portugal)*

15:40-16:40

SESSION Commission H ECR Tutorial

Main Hall A (General Lectures)

Session Chairs: Rodger Craig J., University of Otago, New Zealand

Magnetospheric plasma waves and radiation belt dynamics

Frantisek Nemec [1]
[1] *Charles University (Czech Republic)*

08:20-09:40

SESSION A14

Room 102

Realization and Dissemination of Time Scales and Standard Frequencies (Demetrios Matsakis, Jose Mauricio Lopez, Ashish Agarwal, Dirk Piester)
Session Chairs: Lopez J. Mauricio, Cinvestav, Mexico

Predicting a negative leap second
Demetrios Matsakis [1]
[1] *Masterclock (United States)*

Circumstances after the URSI resolution on continuous reference time scale
Yasuhiro Koyama [1]
[1] *NICT (Japan)*

Long-term contribution of an optical lattice clock to the steering UTC(NICT)
Hidekazu Hachisu [1], Hiroyuki Ito [1], Nils Nemitz [1], Nozomi Ohtsubo [1], Yuka Miyauchi [1], Masaki Morikawa [1], Kensuke Matsubara [1], Tetsuya Ido [1]
[1] *NICT (Japan)*

Towards application of machine learning methods to improve performance of the UTC(CNM) timescale
J. Mauricio Lopez [1], Mayra Rivera [2], Andres Mendez [1], Eduardo De Carlos [1], Carlos A. Ortiz [1], Nélida Diaz [1]
[1] *Cinvestav (Mexico);* [2] *Cinvestav Unidad Guadalajara (Mexico)*

SESSION B09-1

Room 104

Machine Learning and Optimization Techniques in Electromagnetics: new trends and novel applications (Sembiam R. Rengarajan, Ahmad Hoorfar, Christos Christodoulou) (Part 1)
Session Chairs: Rengarajan Sembiam R., California State University, United States

(Invited)Inverse-Designed Metasurface-Loaded Antennas Enabled by Efficient Modal Expansion Methods and Global Optimization Algorithms
Mengyuan Bie [1], Manxin Peng [1], Zhi Hao Jiang [1], Jianjia Yi [2], Pingjuan Werner [3], Douglas Werner [1]
[1] *Southeast University (China);* [2] *Xijiao University (China);* [3] *The Pennsylvania State University (United States)*

Deep Learning and Latent Variables in Nonuniform Antenna Array Processing for Direction of Arrival
Luis Bote-Curiel [1], Luis Bote-Curiel [1], José Luis Rojo-Álvarez [1], Christos Christodoulou [2], Manel Martínez-Ramón [1]
[1] *Universidad Rey Juan Carlos (Spain);* [2] *New Mexico University (United States)*

Multi-objective problems in Antenna Optimization
Riccardo Zich [1], Riccardo Zich [1]
[1] *Politecnico di Milano (Italy)*

SAR-ATR based on Three-dimensional Scattering Centers Model
Junjie Hou [1], Hai Lin [1], Jing Jin [1], Siyuan He [1]
[1] *Central China Normal University (China)*

SESSION B13-1

Main Hall A (General Lectures)

Mathematical modelling of EM problems (Paul Smith, George Uslenghi) (Part 1)
Session Chairs: Uslenghi Piergiorgio L.E., University of Illinois at Chicago, United States
Smith Paul, Macquarie University, Australia

Plane Wave Diffraction by a Fractional Half-Plane: Comparison with Impedance Boundary Conditions
Takashi Nagasaka [1], Kazuya Kobayashi [2]
[1] *Ashikaga University (Japan);* [2] *Chuo University (Japan)*

Second Order Transition Boundary Condition for not Dense Thin Sheets Analysis with MoM
Agnese Mazzinghi [1], Alessandro Mori [2], Mirko Bercigli [1], Mauro Bandinelli [1], Angelo Freni [1]
[1] *University of Florence (Italy);* [2] *IDS Ingegneria dei Sistemi S.p.A. (Italy)*

YS* On the behavior of Green's function along the distinguished axis of uniaxial media
Elias Le Boudec [1], Farhad Rachidi [1], Marcos Rubinstein [2], Nicolas Mora [3], Felix Vega [4]
[1] Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland); [2] University of Applied Sciences of Western Switzerland (Switzerland); [3] Universidad Nacional de Colombia (Colombia); [4] Technology Innovation Institute (United Arab Emirates)

Wave interaction with active dielectric slab
Ari Sihvola [1]
[1] Aalto University (Finland)

SESSION C03-1
Room 108

Emerging Technologies for Radar & Communications (Kumar Vijay Mishra, Amir Zaghloul) (Part 1)
Session Chairs: Bojja Venkatakrishnan Satheesh, Florida International University, United States

YSA* Suppression of Mainlobe Deceptive Jammers with SF-RDA Radar
Lan Lan [1], Shengqi Zhu [1], Guisheng Liao [1], Liao Guisheng [1], Xu Jingwei [1], So Hing-Cheung [2]
[1] Xidian University (China); [2] City University of Hong Kong (China)

YS* 3D Terahertz Imaging Technology for Non-Destructive Inspection
Hikaru Tsuchida [1], Kazuaki Ishioka [1], Michiya Hayama [1], Shusaku Umeda [1], Akinori Taira [1]
[1] Information Technology R&D Center, Mitsubishi Electric Corporation (Japan)

Weak Target Detection Within Sea Clutter Based on EMD Fractal Feature
YiFei Fan [1], Xinbao Wang [1], Yanyun Gong [1], Zhengguang Li [2]
[1] Northwestern Polytechnical University (China); [2] Xi'an Satellite Control Center (China)

Opportunities for the Australia Telescope Compact Array (ATCA) to Contribute to Space Situational Awareness (SSA)
Douglas Hayman [1], Hamed Nosrati [1], Stephanie Smith [1], Hellicar Andrew [1], Shinji Horiuchi [1], Ken Smart [1]
[1] Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)

SESSION D04-2
Room 107

Microwave/millimeter-wave/THz and photonic systems for Beyond 5G/6G communications (Isao Morohashi, Hwang-Seok Chung) (Part 2)
Session Chairs: Morohashi Isao, National Institute of Information and Communications Technology (NICT), Japan
Kanno Atsushi, Nagoya Institute of Technology, Japan

Continuous Phase Modulations for Sub-THz Wireless Communications
Paul Desombre [1], Jérôme Taillieu [2], Charikleia Tzimoragka [1], Laurent Bramerie [1], Mathilde Gay [1], David González Ovejero [1], Mehdi Alouini [1], Haïfa Farès [1], Yves Louët [1]
[1] IETR/CENTRALESUPÉLEC (France); [2] IETR/Univ. Rennes 1 (France)

Demonstration of obstacle-tolerant wireless transmission at 300 GHz using Bessel beam
Yu Katsuue [1], Atsushi Kanno [2], Norihiko Sekine [3], Ayumu Yabuki [4], Junichi Nakajima [1], Shintaro Hisatake [1]
[1] Gifu University (Japan); [2] Nagoya Institute of Technology (Japan); [3] National Institute of Information and Communications Technology (Japan); [4] SoftBank (Japan)

YS* Photonic Phase Stabilization for PSK Terahertz Wave Transmission
Amalina Athira Ibrahim [1]
[1] Kyushu University (Japan)

YS* 3D Printed Terahertz Lens Antenna Fed by Effective-Medium-Clad Dielectric Waveguide
Weijie Gao [1], Withawat Withayachumnankul [2], Masayuki Fujita [1], Tadao Nagatsuma [1]
[1] Osaka University (Japan); [2] The University of Adelaide (Australia)

SESSION E04
Room 207

HPEM, Intentional EMI (Felix Vega, Nicolas Mora)
Session Chairs: Vega Felix, TII - Technology Innovation Institute, United Arab Emirates
Carobbi Carlo, Università degli Studi di Firenze, Italy

Experimental Investigation of the Mixture of Sulfur Hexafluoride and Nitrogen in pulsed regime
Hasan Alhammadi [1], Mohamed AlYousef [1], Hamad AlYahyaee [1], Mariam AlMenhali [1], Ahmed AlEbri [1], Hend AlKetbi [1], Abdulla AlAli [1], Shehab AlDahmani [1], Felix Vega [1], Chaouki Kasmi [1]
[1] *Technology Innovation Institute (United Arab Emirates)*

Exploring the Impact of Scaling Variations of Virtual Cathode Oscillators on Frequency and Efficiency
Moza Mohamed [1], Felix Vega [1], Mae Almansoori [1], Ernesto Neira [1], Kasmi Chaouki [1]
[1] *Technology Innovation Institute (United Arab Emirates)*

A Study of an Integrated 4 x 3 SWO Box System as a HPEM Resonant Source
Mae AlMansoori [1], Moza Mohamed [1], Edrees AlMansoori [1], Luciano Prado [1], Ernesto Niera [1], Abdul Baba [1], Felix Vega [1], Chaouki Kasmi [1]
[1] *Technology Innovation Institute (United Arab Emirates)*

Characterizing the Uniformity of the Electric Field Distribution of an Indoor NEMP Simulator installed in a Semi-Anechoic Chamber
Felix Vega [1], Ali Yaqoob [1], Chaouki Kasmi [1], David Martinez [1], Islem Yahi [1], Edrees AlMansoori [1], Hamad AlYahyaee [1]
[1] *Technology Innovation Institute (United Arab Emirates)*

SESSION F07
Room 206

Radio Frequency Interference (RFI) Issues in Microwave Remote Sensing (Paolo de Matthaeis, Albin Gasiewski)
Session Chairs: De Matthaeis Paolo, Goddard Space Flight Center, United States
Tao Mingliang, Northwestern Polytechnical University, China

Signal Model and Influence Analysis of Spaceborne SAR Images in the Presence of Mutual Terrain-Scattered Interference
Huanyu Sun [1], Mingliang Tao [1], Yanyang Liu [2], Jia Su [1], Ling Wang [1]
[1] *Northwestern Polytechnical University (China);* [2] *Shanghai Institute of Satellite Engineering (China)*

Sources of L-Band RFI Determined from Kurtosis Using the SMAP Radiometer
David Le Vine [1], Paolo De Matthaeis [1]
[1] *Goddard Space Flight Center (United States)*

Machine Learning Investigations for the Detection of 5G RFI in Microwave Radiometry
Edward Kim [1], Alexandra BRINGER [1]
[1] *NASA (United States)*

Improved Location Accuracy of L-Band Interference Sources Through Multiple Observations on L1C Products of the SMOS Satellite
Ekhi Uranga [1], Álvaro Llorente [1], Judit González [1], Antonio De la Fuente [1]
[1] *ISDEFE (Spain)*

SESSION G05-6
Room 204

Advances in Irregularities and Scintillation Studies (Luca Spogli, Yuichi Otsuka, Kshitija Deshpande, P. T. Jayachandran) (Part 6)
Session Chairs: Jayachandran P. T., University of New Brunswick, Canada

Recent advances in L-band SAR observation of ionospheric irregularities from low to high latitudes
Hiroatsu Sato [1], Jun Su Kim [2], Yuichi Otsuka [3]
[1] *DLR Institute for Solar-Terrestrial Physics (Germany);* [2] *DLR Microwaves and Radar Institute (Germany);* [3] *Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan)*

Multi-instrumental Monitoring of Equatorial Ionospheric Irregularities Using COSMIC-2 Observations
Irina Zakharenkova [1], Iurii Cherniak [1], John Braun [1], Qian Wu [1], Sergey Sokolovskiy [1]
[1] *UCAR (United States)*

Spatio-Temporal Scales of Plasma Density in Topside Ionosphere
Jaroslav Urbar [1], Luca Spogli [2], Lucilla Alfonsi [1], Claudio Cesaroni [1]
[1] *Institute of Atmospheric Physics of the Czech Academy of Sciences (Czech Republic);* [2] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy)*

SPC* Analysis of Performance in the Retrieval of 2-D Ionospheric Irregularity Maps in the Biomass Mission
Felipe Betancourt Payan [1], Marc Rodriguez Cassola [1], Pau Prats Iraola [1], Gerhard Krieger [1]
[1] *Deutsches Zentrum fuer Luft- und Raumfahrt (DLR) (Germany)*

SESSION GH1-1

Room 101

Meteors, collisional EMPs, and other Highly-Transient Space Plasma Events (Jorge L. Chau, Meers M. Oppenheim, Takuji Nakamura) (Part 1)
Session Chairs: Obenberger Kenneth, Air Force Research Laboratory, United States
Vierinen Juha, UiT The Arctic University of Norway, Norway

SPCFinalist* Analysis of Electromagnetic Waves Generated From Simulated Hypervelocity Impact Plasmas for Spacecraft Threat Assessment
Raymond Lau [1], Nicolas Lee [1], Sigrid Elschot [1]
[1] *Stanford University (United States)*

Radar, radio and optical observations of long duration meteors over northern Germany
Jorge Chau [1], Matthias Clahsen [1], Olaf Wucknitz [2], Kenneth Obenberger [3], Tobia Carozzi [4], Mariusz Pozoga [5], Christian Vocks [6], Joern Kuensemoeller [7], Matthias Hoeft [8], Gerd Baumgarten [1]
[1] *Leibniz Institute of Atmospheric Physics (Germany);* [2] *Max Planck Institute for Radio Astronomy (Germany);* [3] *Air Force Research Laboratory (United States);* [4] *Onsala Space Observatory (Sweden);* [5] *Polish Academy of Sciences (Poland);* [6] *Leibniz-Institut für Astrophysik (Germany);* [7] *University of Bielefeld (Germany);* [8] *Thueringer Landesternwarte Tautenburg (Germany)*

High time and spatial resolution meteor wind observations using an MF radar at Syowa station (69S, 39E), Antarctic
Masaki Tsutsumi [1]
[1] *National Institute of Polar Research (Japan)*

(Invited)Dust Ejecta in Impact Plasmas
Alex Fletcher [1], Chris Crabtree [1], Gurudas Ganguli [1], Sigrid Elschot [2]
[1] *Naval Research Laboratory (United States);* [2] *Stanford University (United States)*

SESSION H02-6

Small Hall

Wave-particle interactions and radiation belt dynamics (Vania Jordanova, David Hartley, Yoshi Miyoshi) (Part 6)
Session Chairs: Miyoshi Yoshizumi, Nagoya University, Japan
Hanzelka Miroslav, Boston University, United States

Understanding the Simultaneous Dropout of Radiation Belt Electrons and Ring Current Protons
Weichao Tu [1], Xingzhi Lyu [1], Qianli Ma [2], Wen Li [1], Luisa Capannolo [1]
[1] *West Virginia University (United States);* [2] *Boston University (United States)*

Examination of Radiation Belt Dynamics during Substorm Clusters: Magnetic Local Time Variation and Intensity of Precipitating Fluxes
Craig J. Rodger [1], Mark A. Clilverd [2], Aaron T. Hendry [1], Colin Forsyth [3]
[1] *University of Otago (New Zealand);* [2] *British Antarctic Survey (United Kingdom);* [3] *UCL Mullard Space Science Laboratory (United Kingdom)*

(Invited)On the Role of the Last Closed Drift Shell and ULF-Wave Radial Diffusion in Driving Fast and Repeatable Radiation Belt Electron Loss
Leonid Olifer [1], Ian Mann [1], Louis Ozeke [1], Seth Claudepierre [2], Dan Baker [3], Harlan Spence [4], Steve Morley [5]
[1] *University of Alberta (Canada);* [2] *University of California (United States);* [3] *University of Colorado (United States);* [4] *University of New Hampshire (United States);* [5] *Los Alamos National Laboratory (United States)*

Wave amplitude dependence of electron precipitation for pulsating aurora: Test-particle simulation
Shinji Saito [1], Kazuteru Takahashi [2], Yoshizumi Miyoshi [1]
[1] *National Institute of Information and Communications Technology (Japan);* [2] *Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan)*

SESSION J01-1

Mid-sized Hall A

New telescopes and major upgrades to existing telescopes (Di Li, Rob Beswick, Anna Bonaldi) (Part 1)
Session Chairs: Zhang Xiaohang, Zhejiang Laboratory, China

The DSA-2000: Status and Design
Francois Kapp [1]
[1] *Caltech (United States)*

The Observational Capabilities of the Square Kilometer Array
Maria Grazia Labate [1], Luca Stringhetti [1], Gerhard Swart [1], Shinichiro Asayama [1], Robert Laing [1], Joseph McMullin [1]
[1] *SKA Observatory (United Kingdom)*

The next-generation Event Horizon Telescope
Sheperd Doeleman [1], Lindy Blackburn [1], Garret Fitzpatrick [1], Michael Johnson [1], Aaron Oppenheimer [1], Dominic Pesce [1], Jonathan Weintroub [1]
[1] *Center for Astrophysics - Harvard & Smithsonian (United States)*

The Next Generation Cosmic Microwave Background Experiment -- CMB-S4
John Kovac [1]
[1] *Harvard University (United States)*

SESSION J13-1
Room 105

Use of the radio spectrum and radio astronomy: risks and opportunities (Ashley Vanderlay, Federico DiVruno, Masatoshi Ohishi) (Part 1)

Session Chairs: Ohishi Masatoshi, National Astronomical Observatory of Japan, Japan
Di Vruno Federico, SKAO, United Kingdom

A Proposed Radio Environment Monitoring System of Ali Observatory
Haiyan Zhang [1], Yu Wang [2]
[1] *National Astronomical Observatories - Chinese Academy of Sciences (China);* [2] *Zhejiang Laboratory (China)*

UHF Band RFI Measurements at VERA Four Stations in Japan
Takuya Akahori [1], Sota Ikebe [2], Toshio Terasawa [1], Mareki Honma [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *The University of Tokyo (Japan)*

Large Satellite Constellations and Radio Astronomy
Tomas Gergely [1], Darrel Emerson [2], Liese Van Zee [3], Federico Di Vruno [4], Gyula Jozsa [5], Benjamin Winkel [1]
[1] *Retired (United States);* [2] *University of Arizona (United States);* [3] *Indiana University (United States);* [4] *SKAO (United Kingdom);* [5] *MPIfR (Germany)*

Large Satellite Constellations and the Next-Generation Ground-Based Cosmic Microwave Background Survey, CMB-S4
Darcy Barron [1], Amy Bender [2], Ian Birdwell [1], John Carlstrom [1], Aman Chokshi [1], Jacques Delabrouille [1], Allen Foster [1], John Kovac [1], Scott Paine [1], Alexander Pollak [1]
[1] *University of New Mexico (United States);* [2] *University of Chicago (United States)*

SESSION K10-1
Room 201-202

Occupational exposure assessment and numerical dosimetry - part 1 (Jolanta Karpowicz, Sachiko Yamaguchi-Sekino, Simona D'Agostino)

Session Chairs: Yamaguchi-Sekino Sachiko, NICT, Japan
D' Agostino Simona, SAPIENZA UNIVERSITY OF ROME, Italy

Survey of Delivery Outcomes Among Female MRI Workers in Japan
Sachiko Yamaguchi-Sekino [1], Noriko Kojimahara [2]
[1] *NICT (Japan);* [2] *Shizuoka Graduate University of Public Health (Japan)*

(Invited)A cohort study on the use of commercial induction heating cookers by pregnant women and the birth weight of their children
Yasuto Sato [1], Masao Taki [2], Noriko Kojimahara [1]
[1] *Shizuoka Graduate University of Public Health (Japan);* [2] *Tokyo Metropolitan University (Japan)*

(Invited)Occupational Exposure of Therapeutic Staff in Deep Transcranial Magnetic Stimulation
Mai Lu [1], Shoogo Ueno [2]
[1] *Lanzhou Jiaotong University (China);* [2] *The University of Tokyo (Japan)*

YSA* Possible differences in exposure from TMS treatment between male and female operators
Simona D' Agostino [1], Micol Colella [1], Rosaria Falsaperla [2], Micaela Liberti [1], Francesca Apollonio [1]
[1] *Sapienza University of Rome (Italy);* [2] *INAIL - Department of Occupational and Environmental Medicine (Italy)*

SESSION WGDJEH-1

Conference Hall (Tutorials)

Women in Radio Science Invited Talks - Part 1 (Sana Salous)
Session Chairs: Salous Sana, Durham University, United Kingdom

(Invited)Multi-domain CAD Solutions for Energy Autonomous RF/microwave Systems
Alessandra Costanzo [1]
[1] *Alma Mater Studiorum Università di Bologna (Italy)*

(Invited)Space Weather Effects on GNSS Signals at Equatorial and Low Latitudes
Archana Bhattacharyya [1]
[1] *Indian Institute of Geomagnetism (India)*

(Invited)The SKAO: a new observatory to explore the radio sky
Chiara Ferrari [1]
[1] *Université Côte d'Azur - Observatoire de la Côte d'Azur - CNRS (France)*

(Invited)Polar Cusp Dynamics – An Ionospheric Perspective
Anthea Coster [1]
[1] *MIT Haystack Observatory (United States)*

08:40-09:40

SESSION B18-1

Mid-sized Hall B

Quantum techniques for electromagnetics (Amir Boag, Alex Krasnok, Paolo Rocca) (Part 1)
Session Chairs: Boag Amir, Tel Aviv University, Israel
Hadad Yakir, Tel-Aviv University, Israel

New concept of terahertz sensing based on higher-order topological phase
Zihao Yu [1], Junjie Hou [1], Hai Lin [1], Jing Jin [1], Yangjie Liu [2]
[1] *Central China Normal University (China);* [2] *Hubei University (China)*

(Invited)Nonlocal Antenna Theory and the Problem of Directivity in Quantum Radiating Systems: Fundamental Considerations
Said Mikki [1]
[1] *Zhejiang University (China)*

(Invited)Retarded Electromagnetic Potentials in Large Nano Structures
Amir Boag [1], Matan Shapira [1], Lomakin Vitaliy [2], Amir Natan [1]
[1] *Tel Aviv University (Israel);* [2] *University of California San Diego (United States)*

09:40-10:20

SESSION B09-2

Room 104

Machine Learning and Optimization Techniques in Electromagnetics: new trends and novel applications (Sembiam R. Rengarajan, Ahmad Hoorfar, Christos Christodoulou) (Part 2)
Session Chairs: Rengarajan Sembiam R., California State University, United States

Applications of Deep Learning Algorithms for RFEH, WPT and SWIPT Systems: A Review
Debanjali Sarkar [1], Anjani Kumar [2], Taimoor Khan [1], Sembiam R. Rengarajan [1]
[1] *VIT-AP University (India);* [2] *National Institute of Technology Silchar (India)*

Antenna Computer-Aided Design with Machine Learning
Pawan Jaiswal [1], Rajarshi Bhattacharya [1]
[1] *National Institute of Technology (India)*

09:40-10:40

SESSION A17

Room 102

Precision Metrology - Practice, Education and Prospects (Amitava Sen Gupta, Demetrios Matsakis)
Session Chairs: Matsakis Demetrios, Masterclock, Inc., United States

Teaching Relativity and Quantum Mechanics with Creative Writing
Demetrios Matsakis [1], Sarah Pleydell [2]
[1] *Masterclock (United States);* [2] *University of Maryland (United States)*

Geodetic measurements and quantitative evaluation for reduced gravitational redshift uncertainty of NICT optical frequency standards
Ryuichi ICHIKAWA [1], Hidekazu HACHISU [1], Mamoru SEKIDO [1], Tetsuya IDO [1], Yoshifumi HIRAOKA [2], Eiichirou HARIMA [1], Shuntaro FUKAYA [1], Koji MATSUO [1], Masahiro NAKASHIMA [1], Yuichi AOYAMA [1], Akihisa HATTORI [1], Yoichi FUKUDA [1]
[1] *National Institute of Information and Communications Technology (Japan);* [2] *Geospatial Information Authority of Japan (Japan)*

A history of R&D on the optical frequency standards in NICT
Mizuhiko Hosokawa [1]
[1] *Nationa Institute of Information and Communications Technology (Japan)*

SESSION B13-2

Main Hall A (General Lectures)

Mathematical modelling of EM problems (Paul Smith, George Uslenghi) (Part 2)
Session Chairs: Smith Paul, Macquarie University, Australia
Uslenghi Piergiorgio L.E., University of Illinois at Chicago, United States

(Invited)The Spectral Theory of Transients (STT): A Unified Formulation
Ehud Heyman [1]
[1] *Tel Aviv University (Israel)*

YS* Waveguide-Floquet Mapping Based on Surface Susceptibilities for Metasurface Unit Cell Characterization
Debidas Kundu [1], Mohamed K. Emara [2], Leandro Rufail [1], Shulabh Gupta [1]
[1] *Indian Institute of Technology Roorkee (India);* [2] *Carleton University (Canada)*

Complex-Source Beam Representation of the Fields Radiated by a GaussianWindow
Ludger Klinkenbusch [1], Christine Letrou [2], Giuliano Manara [3]
[1] *Kiel University (Germany);* [2] *Télécom Sud Paris (France);* [3] *University of Pisa (Italy)*

SESSION B18-2

Mid-sized Hall B

Quantum techniques for electromagnetics (Amir Boag, Alex Krasnok, Paolo Rocca) (Part 2)
Session Chairs: Boag Amir, Tel Aviv University, Israel
Hadad Yakir, Tel-Aviv University, Israel

Symplectic FDTD Algorithm for Semiclassical Quantum Electromagnetic Model
Wei E. I. Sha [1], Guoda Xie [2], Zhixiang Huang [1]
[1] *Zhejiang University (China);* [2] *Anhui University (China)*

(Invited)A Quantum Model of a Dissipative-Dispersive Josephson Traveling-Wave Parametric Amplifier Including Impedance-Mismatch-Induced Reflections
Michael Haider [1], Yongjie Yuan [1], Christian Jirauschek [1]
[1] *Technical University of Munich (Germany)*

(Invited)Quantum-inspired Optimization for Smart Electromagnetic Environments
Qi Jian Lim [1], Charles Ross [1], Gabriele Gradoni [2], Zhen Peng [1]
[1] *University of Illinois at Urbana-Champaign (United States);* [2] *University of Nottingham (United Kingdom)*

SESSION C03-2

Room 108

Emerging Technologies for Radar & Communications (Kumar Vijay Mishra, Amir Zaghloul) (Part 2)
Session Chairs: Bojja Venkatakrishnan Satheesh, Florida International University, United States

Sea-Surface Floating Small Target Detection based on Time-Frequency-Polarization Feature Using BP Neural Network
Chenhong Liu [1], Jia Su [1], Dan Fang [1], Yifei Fan [1], Mingliang Tao [1]
[1] *Northwestern Polytechnical University (China)*

A Robust Method of Emitter Signal Deinterleaving Approach Based on Point Cloud Detection
Yifei Liu [1], Mingliang Tao [1], Shuting Tang [1], Jian Xie [1], Ling Wang [1]
[1] *Northwestern Polytechnical University (China)*

Design and Evaluation of mmWave Backscatter Tag System for Internet of Things Applications
Fathul Muin [1], Tommi Hariyadi [1], Seong-OOk Park [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

SESSION D04-3

Room 107

Microwave/millimeter-wave/THz and photonic systems for Beyond 5G/6G communications (Isao Morohashi, Hwang-Seok Chung) (Part 3)
Session Chairs: Morohashi Isao, National Institute of Information and Communications Technology (NICT), Japan
Kanno Atsushi, Nagoya Institute of Technology, Japan

Design and Implementation of a Wideband Class-B Continuous Mode GaN MMIC Power Amplifier
Hwann_Kaeo Chiou [1], Shiuan-Jiun Huang [1], Hsin-Chieh Lin [1]
[1] *National Central University (Taiwan)*

300-GHz-Band Power Combiner-Radiator Complex Designed for Arrayed Photomixers
Hussein Ssali [1], Ming Che [1], Kazutoshi Kato [1]
[1] *Kyushu University (Japan)*

YSA* Cost-Effective and Power-Efficient Beamforming Remote Antenna Units for Millimeterwave Distributed Antenna Systems
Olivier Caytan [1], Arno Moerman [1], Laura Van Messem [1], Kamil Yavuz Kapusuz [1], Bram Hoflack [1], Igor Lima de Paula [1], Joris Van Kerrebrouck [1], Guy Torfs [1], Piet Demeester [1], Sam Lemey [1], Hendrik Rogier [1]
[1] *Ghent University - imec (Belgium)*

SESSION EFGH-1

Room 207

Natural Electromagnic Noise & Radio Sensing Applications in Terr. & Planetary Environments (Yasuhide Hobara, Colin Price, Martin Fullekrug, Tomoo Ushio) (Part 1)
Session Chairs: Price Colin, Tel Aviv University, Israel

Observations of summer thunderstorms with X-band dual polarized phased array weather radar and LF/MF band lightning location system
Hiroshi Kikuchi [1], Eiichi Yoshikawa [2], Yoshitaka Nakamura [3], Takeshi Morimoto [4], Tomoo Ushio [5], Yasuhide Hobara [1]
[1] *The University of Electro Communications (Japan);* [2] *Japan aerospace exploration agency (Japan);* [3] *Kobe City College of Technology (Japan);* [4] *Kinki University (Japan);* [5] *Osaka University (Japan)*

Updates to the Earth Networks Total Lightning Network
Elizabeth DiGangi [1], Yanan Zhu [1], Jeff Lapierre [1], Michael Stock [2]
[1] *AEM (United States);* [2] *CIWRO/NSSL (United States)*

YSA* Total Lightning Distribution and Heavy Rainfall Characteristics Associated With Multicellular Thunderstorms
Debrupa Mondal [1], Yasuhide Hobara [1], Hiroshi Kikuchi [2], Jeff Lapierre [3]
[1] *University of Electro-Communications (Japan);* [2] *Center for Space Science and Radio Engineering - UEC (Japan);* [3] *Earth Networks (United States)*

SESSION F06-1

Room 206

COST CA20120 INTERACT: Measurement & Modelling of Radio Waves Propagation for Indoor Communications (Sławomir J. Ambroziak, Kamran Sayrafian) (Part 1)

Session Chairs: Ambroziak Slawomir, Gdansk University of Technology, Poland

(Invited)YSA* Channel Impulse Response Measurements at mmWave Band in Office and Conference Rooms

Monika Drozdowska [1], Slawomir Ambroziak [2], Krzysztof Cwalina [1], Piotr Rajchowski [1], Narcis Cardona [1]
[1] *Universitat Politecnica de Valencia (Spain);* [2] *Gdansk University of Technology (Poland)*

Multipath Extraction and Cluster Identification from an Indoor Measurement at 300 GHz

Minseok Kim [1], Anirban Ghosh [2], Riku Takahashi [1], Kosuke Shibata [1]
[1] *Niigata University (Japan);* [2] *Physical Research Laboratory Ahmedabad (India)*

(Invited)YSA* Calibrated measurements of the EMF enhancement in the downlink of a 6G distributed antenna array testbed

Sergei Shikhantsov [1], Haolin Li [1], Sam Aerts [2], Olivier Caytan [1], Guy Torfs [1], Piet Demeester [1], Luc Martens [1], Wout Joseph [1]
[1] *Ghent University (Belgium);* [2] *The Hague University of Applied Sciences (Netherlands)*

SESSION G14-1

Room 204

The high-latitude ionosphere (Lucilla Alfonsi, Nicolas Bergeot, Giorgiana De Franceschi, Changsup Lee) (Part 1)

Session Chairs: Lee Changsup, Korea Polar Research Institute, South Korea
Alfonsi Lucilla, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

Observations of polar mesosphere summer echoes at 69° in the Arctic and Antarctica - an update

Ralph Latteck [1], Damian J. Murphy [2]
[1] *Leibniz-Institute of Atmospheric Physics (Germany);* [2] *Australian Antarctic Division (Australia)*

A spring-fall asymmetry observed in the mesosphere and lower ionosphere

Liliana Macotela [1], Jorge Chau [2], Mark Clilverd [3], Daniela Banyś [4], Pekka Verronen [5]
[1] *Univeristy of Bath (United Kingdom);* [2] *Leibniz-Institute for Atmospheric Physics (Germany);* [3] *British Antarctic Survey (United Kingdom);* [4] *Institute for Solar-Terrestrial Physics (Germany);* [5] *Sodankylä Geophysical Observatory (Finland)*

YSA* Momentum Flux Characteristics and Intermittency of Gravity Waves over Northern Norway using MAARSY

Priyanka Ghosh [1], Toralf Renkwitz [1], Victor Avsarkisov [1], Jorge L. Chau [1]
[1] *Leibniz Institute of Atmospheric Physics (IAP) (Germany)*

SESSION GH2-1

Room 101

Plasma Instabilities in the Ionosphere (Rob Pfaff, Erhan Kudeki) (Part 1)

Session Chairs: Pfaff Rob, NASA Goddard Space Flight Center, United States
Klenzing Jeff, Goddard Space Flight Center, United States

Overview of the Plasma Wave Environment on the Endurance Sounding Rocket

Aaron Breneman [1], Glyn Collinson [1], Rob Pfaff [1], Alex Glocer [1], Aroh Barajatya [2], James Clemmons [3]
[1] *NASA Goddard Space Flight Center (United States);* [2] *Embry Riddle Aeronautical University (United States);* [3] *University of New Hampshire (United States)*

Rocket observations of Alfvén waves amplified by the ionospheric feedback instability

Hassanali Akbari [1], Robert Pfaff [1], James Clemmons [2], Henry Freudenreich [1], Douglas Rowland [1], Steven Martin [1], Anatoly Streltsov [3]
[1] *NASA Goddard Space Flight Center (United States);* [2] *University of New Hampshire (United States);* [3] *Embry Riddle Aeronautical University (United States)*

Examining the relevance of different instability mechanisms in causing ionospheric cusp irregularities based on sounding rocket data and numerical simulations

Andres Spicher [1], Andreas Kvammen [1], James LaBelle [2], Matthew Zettergren [3], John W. Bonnell [4], Roger Roglans [1], Chrystal Moser [1], Stephen A. Fuselier [1], Scott Bounds [1], Lasse B. N. Clausen [1], Francesca Di Mare [1], Connor A. Feltman [1], Yaqi Jin [1], Craig Kletzing [1], Wojciech J. Miloch [1], Jøran I. Moen [1], Kjellmar Oksavik [1], Rhyan Sawyer [1], Toru Takahashi [1], Tim K. Yeoman [1]
[1] *UiT - The Arctic University of Norway (Norway);* [2] *Dartmouth College (United States);* [3] *Embry Riddle Aeronautical University (United States);* [4] *Space Sciences Laboratory - University of California Berkeley (United States)*

SESSION H02-7

Small Hall

Wave-particle interactions and radiation belt dynamics (Vania Jordanova, David Hartley, Yoshi Miyoshi) (Part 7)
Session Chairs: Miyoshi Yoshizumi, Nagoya University, Japan
Hanzelka Miroslav, Boston University, United States

A significant correction to the 50-year-old theory for calculation of quasilinear diffusion coefficients used in heliophysics

Gregory Cunningham [1]
[1] *Los Alamos National Laboratory (United States)*

EMIC-driven electron trapped flux dropouts at sub-MeV, relativistic, and ultra-relativistic energies: results from POES and GPS

Aaron Hendry [1], Craig Rodger [1], Mark Clilverd [2], Steven Morley [3]
[1] *University of Otago (New Zealand);* [2] *British Antarctic Survey (United Kingdom);* [3] *Los Alamos National Laboratory (United States)*

A statistical study of structured Electromagnetic Ion Cyclotron (EMIC) waves in the inner magnetosphere using Arase observations

Chae-Woo Jun [1], Yoshizumi Miyoshi [1], Satoko Nakamura [1], Masafumi Shoji [1], Tomo Hori [1], Chao Yue [2], Jacob Bortnik [3], Larry Lyons [1], Yoshiya Kasahara [1], Shoya Matsuda [1], Yasumasa Kasaba [1], Fuminori Tsuchiya [1], Masahiro Kitahara [1], A. Kumamoto [1], Kazushi Asamura [1], IKu Shinohara [1], Ayako Matsuoka [1], Shoichiro Yokota [1]
[1] *Nagoya University (Japan);* [2] *Peking University (China);* [3] *University of California (United States)*

SESSION J01-2

Mid-sized Hall A

New telescopes and major upgrades to existing telescopes (Di Li, Rob Beswick, Anna Bonaldi) (Part 2)
Session Chairs: Asayama Shin' ichiro, SKA Observatory, United Kingdom

(Invited)The Next-Generation Very Large Array – Project Update

Tony Beasley [1], Eric Murphy [1], Rob Selina [1], Willem Esterhuyse [1], William Hojnowski [1]
[1] *National Radio Astronomy Observatory (United States)*

The ALMA Wideband Sensitivity Upgrade

John Carpenter [1], Crystal Brogan [2], Daisuke Iono [1], Tony Mroczkowski [1], Alvaro Gonzalez [1], Phil Jewell [1], Martin Zwaan [1], Sean Dougherty [1]
[1] *Joint ALMA Observatory (Chile);* [2] *NRAO (United States)*

Innovations in LOFAR: An overview of improvements of the LOFAR telescope

Wim Van Cappellen [1], Carla Baldovin Saavedra [1], Boudewijn Hut [1], André Gunst [1], Arno Schoenmakers [1], Sander Ter Veen [1]
[1] *ASTRON (Netherlands)*

SESSION J13-2

Room 105

Use of the radio spectrum and radio astronomy: risks and opportunities (Ashley Vanderlay, Federico DiVruno, Masatoshi Ohishi) (Part 2)
Session Chairs: Ohishi Masatoshi, National Astronomical Observatory of Japan, Japan
Di Vruno Federico, SKAO, United Kingdom

Spectrum management at the Owens Valley Radio Observatory

Gregory Hellbourg [1]
[1] *California Institute of Technology (United States)*

Spectrum Characterization and Sharing Activities at the Hat Creek Radio Observatory

David DeBoer [1], Kevin Gifford [2], Arvind Aradhya [1], Andrew Clegg [1], Wael Farah [1], Cole Forrester [1], Mark Lofquist [1], Alexander Pollak [1], Mark Ruzindana [1], Andrew Siemion [1], Zeraki-Tobias Stover [1], Stefan Tschimben [1], Georgiana Weihe [1]
[1] *University of California (United States);* [2] *University of Colorado (United States)*

RFI Issues for the next generation Very Large Array (ngVLA)

Bryan Butler [1], Urvashi Rau [1], Rob Selina [1], Chris De Pree [1]
[1] *NRAO (United States)*

SESSION K10-2

Room 201-202

Occupational exposure assessment and numerical dosimetry - part 2 (Jolanta Karpowicz, Sachiko Yamaguchi-Sekino, Simona D'Agostino)

Session Chairs: Yamaguchi-Sekino Sachiko, NICT, Japan
D' Agostino Simona, SAPIENZA UNIVERSITY OF ROME, Italy

EMF exposure assessment through an online application: time and frequency domain data acquisition and processing

Moreno Comelli [1], Nicola Zoppetti [1]

[1] *CNR (Italy)*

Monitoring of the inter-season variability of the pattern of RF electromagnetic exposure of workers managing the large city park

Jolanta Karpowicz [1]

[1] *Central Institute for Labour Protection - National Research Institute (CIOP-PIB) (Poland)*

Challenges in the evaluation of the biophysical effects of electromagnetic exposure in the palms of the surgical treatment team

Jolanta Karpowicz [1], Patryk Zradziński [1], Krzysztof Gryz [1]

[1] *Central Institute for Labour Protection - National Research Institute (CIOP-PIB) (Poland)*

SESSION WGDJEH-2

Conference Hall (Tutorials)

Women in Radio Science Invited Talks - Part 2 (Sana Salous)

(Invited)Lightning on giant gas planets discovered by radio receivers: Four decades of investigation

Ivana Kolmašová [1], Ondřej Santolík [1], Masafumi Imai [2], William S. Kurth [3], George B. Hospodarsky [1], Scott J. Bolton [1], John E. P. Connerney [1]

[1] *Institute of Atmospheric Physics of the Czech Academy of Sciences (Czechia);* [2] *National Institute of Technology (KOSEN) - Niihama College (Japan);* [3] *University of Iowa (United States)*

(Invited)Stars in the Yard: a Challenge of a Japanese Housewife in the 1950's

Takuji Nakamura [1]

[1] *National Institute of Polar Research (Japan)*

(Invited)Global Navigation Satellite Systems: Going Beyond Position, Navigation and Timing

Suelynn Choy [1]

[1] *RMIT University (Australia)*

11:00-12:00

SESSION GENERAL LECTURE 2

Main Hall A (General Lectures)

The History of Radio Astronomy: celebrating 90 years of innovation and discovery (Ron Ekers)

Session Chairs: Wijnholds Stefan J., ASTRON, Netherlands

The History of Radio Astronomy: celebrating 90 years of innovation and discovery

Ron Ekers [1]

[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)*

13:20-14:20

SESSION B02-9

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (Part 9)

Session Chairs: Michel Andrea, University of Pisa, Italy
Bhattacharyya Somak, Indian Institute of Technology(BHU) Varanasi India, India

SPC* A Null Steering Antenna with Constant Accuracy and Wide Field-of-View for Use with Amplitude-Only Direction Finding

Jo Tamura [1], Hiroyuki Arai [1]

[1] *Yokohama National University (Japan)*

Wideband Superdirective Array Antenna with Beam steering capabilities
Abdellah Touhami [1], Ala Sharaiha [2], Sylvain Collardey [1]
[1] *Institut d'Electronique et des Technologies du numéRique (IETR), Univ. Rennes (France);* [2] *Institut d'Electronique et des Technologies du numéRique (IETR) - Univ. Rennes (France)*

Dielectric Superstrate Driven Design of MM-Wave Beam Scanning Antenna
Chandreyee Sarkar [1], Faraz Ahmad [1], Debatosh Guha [2], Raj Mittra [3]
[1] *Birla Institute of Technology (India);* [2] *University of Calcutta (India);* [3] *University of Central Florida (United States)*

SESSION B14-1
Main Hall A (General Lectures)

Materials in electromagnetics (Andrey Osipov, Paul Smith) (Part 1)
Session Chairs: Osipov Andrey, German Aerospace Center, Germany
Smith Paul, Macquarie University, Australia

A Reduced-Height AMC Plane Acting As an HIS in the Multi-Antenna System
Sungtek Kahng [1], Inyeol Moon [2], Jiyeon Jang [1], Yejin Lee [1], Jaewon Koh [1], Yejune Seo [1]
[1] *Incheon National University (South Korea);* [2] *NISSHA Korea Inc. (South Korea)*

YSA* Miniature Broadband Electromagnetic Wave Absorber for X-band Signals
Musa Hussain [1], Hijab Zahra [2], Arslan Kiyani [1], Syed Muzahir Abbas [1]
[1] *Bahria University Islamabad Campus (Pakistan);* [2] *Macquarie University (Australia)*

Improvement of Field Uniformity in Microwave Heating Cavity Using beam-splitting Metasurface
Liping Yan [1], Zhongyin Peng [1], Chengrong Wang [1], Xiang Zhao [1], Changjun Liu [1]
[1] *Sichuan University (China)*

SESSION Commission C Tutorial
Conference Hall (Tutorials)

Multi-Port Based High-Frequency Measurement Technology
Toshiyuki Yakabe [1]
[1] *The University of Electro-Communications (Japan)*

SESSION D08-1
Room 107

RFID and Harmonic Transponders (Valentina Palazzi, Smail Tedjini) (Part 1)

YSA* Dual-Band Dual-Polarized Antenna Design for Polarization-Insensitive Up-link Power Transmission and Down-link Harmonic Backscatters
Hao Zhang [1]
[1] *Northwestern Polytechnical University (China)*

(Invited)Trends in the Exploitation of Harmonics in UHF RFID
Dahmane Allane [1], Yvan Duroc [2], Smail Tedjini [1]
[1] *Grenoble Alpes University (France);* [2] *Univ Lyon, Université Claude Bernard Lyon 1, NSA Lyon, Ecole Centrale de Lyon (France)*

(Invited)Influence of snow melting surrounding an RFID tag
Mathieu Le Breton [1], Smail Tedjini [2], Romain Ponchut [3], Éric Larose [1]
[1] *Géolithe (France);* [2] *LCIS - Université Grenoble Alpes (France);* [3] *ISTerre-CNRS-Université Grenoble Alpes (France)*

SESSION EFGH-2
Room 207

Natural Electromagnic Noise & Radio Sensing Applications in Terr. & Planetary Environments (Yasuhide Hobara, Colin Price, Martin Fullekrug, Tomoo Ushio) (Part 2)
Session Chairs: Hobara Yasuhide, The University of Electro Communications, Japan

The Search for Gamma Ray Burst Signatures in Extremely Low Frequency Magnetic Measurements
Mark Golkowski [1], Jerzy Kubisz [2], Janusz Mlynarczyk [1], Michal Ostrowski [1], Volodymyr Marchenko [1], Adam Michalec [1], Zenon Nieckarz [1], Michael Rycroft [1], Andrew Klekociuk [1], Anirban Guha [1], Paul Nicholson [1]
[1] *University of Colorado Denver (United States);* [2] *Jagiellonian University (Poland)*

SPC* Experimental investigation of high-altitude propagation of low frequency radio transmissions
Tomasz Miś [1], Józef Modelski [1]
[1] *Warsaw University of Technology (Poland)*

A system identification approach to modelling waves in the inner magnetosphere
Richard Boynton [1], Balikhin Michael [1]
[1] *University of Sheffield (United Kingdom)*

SESSION F06-2

Room 206

COST CA20120 INTERACT: Measurement & Modelling of Radio Waves Propagation for Indoor Communications (Sławomir J. Ambroziak, Kamran Sayrafian) (Part 2)
Session Chairs: Ambroziak Slawomir, Gdansk University of Technology, Poland

(Invited)MmWave Indoor Human Blockage Measurements and Modeling at 26, 62, and 70 GHz Bands
Sana Salous [1], Amar Al-Jazri [1]
[1] *Durham University (United Kingdom)*

A Novel Channel Characterization Method Based on Ray Tracing for Human Fall Scenario
Xinyi Shan [1], Ke Guan [1], Hao An [1], Danping He [1], Xiping Wang [1], Fei Qin [2], Xiaodong Sun [1], Dajie Jiang [1], Jianzhi Li [1]
[1] *Beijing Jiaotong University (China);* [2] *VIVO Mobile Communication Co.Ltd. (China)*

(Invited)Analysis of Variance on Design parameters of Reverberation Chambers
Kodai Yaguchi [1], Takahiro Aoyagi [1]
[1] *Tokyo Institute of Technology (Japan)*

SESSION G14-2

Room 204

The high-latitude ionosphere (Lucilla Alfonsi, Nicolas Bergeot, Giorgiana De Franceschi, Changsup Lee) (Part 2)
Session Chairs: De Franceschi Giorgiana, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy
Alfonsi Lucilla, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

SPCFinalist* Observations of Kilometer-Scale Instabilities in the Polar Summer Mesosphere Resembling Varicose Mode Flows
Jennifer Hartisch [1], Jorge L. Chau [1], Ralph Latteck [1], Toralf Renkwitz [1], Miguel Urco [1], Marius Zecha [1]
[1] *Leibniz Institute of Atmospheric Physics (Germany)*

(Invited)Monitoring the ionospheric dynamics over the Indian Antarctic Research Station, Bharati: Progress and future plans
Shreedevi Porunakatu Radhakrishna [1], Raj Kumar Choudhary [2], Ardra K P [3], Sunil R [4], Yoshizumi Miyoshi [1], Luca Spogli [5]
[1] *Institute for Space Earth Environment Research (Japan);* [2] *Space Physics Laboratory - VSSC (India);* [3] *NIT Trichy (India);* [4] *Department of Physics - Charles University (Czechia);* [5] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy)*

Maps of foF2 and hmF2 obtained from a high-latitude all-sky airglow imager
Michael Negale [1], Vince Eccles [1], Jeffrey Holmes [2], Keisuke Hosokawa [3], Kazuo Shiokawa [4]
[1] *Space Dynamics Laboratory (United States);* [2] *Air Force Research Laboratory (United States);* [3] *University of Electro-Communications (Japan);* [4] *Nagoya University (Japan)*

SESSION H02-8

Small Hall

Wave-particle interactions and radiation belt dynamics (Vania Jordanova, David Hartley, Yoshi Miyoshi) (Part 8)
Session Chairs: Hartley David, University of Iowa, United States

YSA* Scattering of Sub-Relativistic Electrons by Oblique EMIC Waves through Nonlinear Fractional Resonances
Miroslav Hanzelka [1], Wen Li [1], Qianli Ma [1], Luisa Capannolo [1]
[1] *Boston University (United States)*

Proton precipitation at sub-auroral latitudes during 27 May 2017 storm and its association to EMIC waves: Global modelling and multi-instrument observations
Shreedevi Porunakatu Radhakrishna [1], Yiqun Yu [2], Yoshizumi Miyoshi [1], Xingbin Tian [1], Sandeep Kumar [1], Minghui Zhu [1], Satoko Nakamura [1], Chae-Woo Jun [1], Masafumi Shoji [1], Kazuo Shiokawa [1], Vania Jordanova [1], Tomoaki Hori [1], Kazushi Asamura [1], Iku Shinohara [1], Shoichiro Yokota [1], Satoshi Kasahara [1], Kunihiro Keika [1], Ayako Matsuoka [1], Martin Connors [1], Akira Kadokura [1]
[1] *Institute for Space Earth Environment Research (Japan);* [2] *School of Space and Environment Beihang University (China)*

Electron flux variability due to EMIC wave-induced scattering
Lunjin Chen [1]
[1] *The University of Texas at Dallas (United States)*

SESSION J01-3

Mid-sized Hall A

New telescopes and major upgrades to existing telescopes (Di Li, Rob Beswick, Anna Bonaldi) (Part 3)
Session Chairs: Asayama Shin' ichiro, SKA Observatory, United Kingdom

Solar Submillimeter Telescope next generation

Carlos Guillermo Giménez de Castro [1], Jean-Pierre Raulin [1], Adriana Valio [1], Emilia Correia [1], Paulo José de Aguiar Simões [1], Sérgio Szpigel [1]
[1] *Mackenzie Presbyterian University (Brazil)*

The Giant Radio Array for Neutrino Detection

Jianli Zhang [1]
[1] *NAOC - CAS (China)*

Progress Report of Mingantu Observing Station of NSSC

Yihua Yan [1]
[1] *National Space Science Center - Chinese Academy of Sciences (China)*

SESSION J13-3

Room 105

Use of the radio spectrum and radio astronomy: risks and opportunities (Ashley Vanderlay, Federico DiVruno, Masatoshi Ohishi) (Part 3)
Session Chairs: Ohishi Masatoshi, National Astronomical Observatory of Japan, Japan
Di Vruno Federico, SKAO, United Kingdom

NRAO Radio Spectrum Monitoring and Research Activities - 2023

Anthony Beasley [1], Christopher De Pree [1], Harvey Liszt [1], Sheldon Wasik [1]
[1] *National Radio Astronomy Observatory (United States)*

CRAF - Quo vadis?

Michael Lindqvist [1]
[1] *Chalmers University of Technology (Sweden)*

Recent Activities of the Spectrum Management Office at the National Astronomical Observatory of Japan

Masaaki Hiramatsu [1], Masatoshi Ohishi [1]
[1] *National Astronomical Observatory of Japan (Japan)*

SESSION K03-1

Room 102

Monitoring and manipulating cells and tissues with EMF - part 1 (Lluis Mir, Francesca Apollonio)
Session Chairs: Mir Lluis M., CNRS, Gustave Roussy, Université Paris Saclay, France
Apollonio Francesca, SAPIENZA UNIVERSITY OF ROME, Italy

Lightning, Evolution and Biology

Colin Price [1], Earle Williams [2], Ilin Nikolay [3], Evgeny Mareev [1], Marina Grinberg [1], Vladimir Sukhov [1], Vladimir Vodeneev [1]
[1] *Tel Aviv University (Israel);* [2] *MIT (United States);* [3] *Institute of Applied Physics (Russia)*

Cells Electroporation With Subnanosecond Pulsed Electric Fields

Leslie Vallet [1], Njomza Ibrahimi [2], Laurent Ariztia [1], Franck Andre [1], Antoine Silvestre De Ferron [1], Marc Rivaletto [1], Bucur Novac [1], Laurent Pecastaing [1], Lluis M. Mir [1]
[1] *CNRS - Gustave Roussy - Université Paris Saclay (France);* [2] *Université de Pau et des pays de l'Adour (France)*

(Invited)Anti-inflammatory effect of microsecond pulses for spinal cord injury treatment

Innamorati Giorgia [1], Camilla Codazzi [2], Paola Giardullo [1], Francesca Camera [1], Caterina Merla [1], Leslie Vallet [1], Franck André [1], Fontana Sara [1], Laura Caramazza [1], Noemi Dolciotti [1], Maria Pedraza [1], Moreno Manzano Victoria [1], Paolo Marracino [1], Claudia Consales [1]
[1] *Tor Vergata University of Rome (Italy);* [2] *Sapienza University of Rome (Italy)*

SESSION KB-1

Room 201-202

Electromagnetic/optical imaging and sensing for biomedical applications - part 1 (Puyan Mojabi, Shouhei Kidera, Satheesh Bojja Venkatakrishnan, Erdem Topsakal)

Session Chairs: Kidera Shouhei, University of Electro-Communications, Japan
Bojja Venkatakrishnan Satheesh, Florida International University, United States

Deep Learning Based Three-dimensional Permittivity Reconstruction with Skin Surface Rejection for Microwave Breast Imaging

Peixian Zhu [1], Shouhei Kidera [1]

[1] *University of Electro-Communications (Japan)*

(Invited)mm-Wave MIMO FM-CW Radar based Vital Signals Monitoring and Estimation of Heartbeat and Respiration Rates using Two-Wave models

Moriyama Toshifumi [1]

[1] *Nagasaki University (Japan)*

(Invited)On numerical calibration-based techniques for microwave imaging devices

David Orlando Rodriguez-Duarte [1], Cristina Origlia [1], Jorge Alberto Tobon Vasquez [1], Francesca Vipiana [1]

[1] *Politecnico di Torino (Italy)*

SESSION B09-3

Room 104

Machine Learning and Optimization Techniques in Electromagnetics: new trends and novel applications (Sembiam R. Rengarajan, Ahmad Hoorfar, Christos Christodoulou) (Part 3)

Session Chairs: Rengarajan Sembiam R., California State University, United States

Reconstruction of Noisy Superoscillations Based on Machine Learning

Yosef Ben Ezra [1]

[1] *Holon Institute of Technology (Israel)*

(Invited)Artificial Neural Network for Radar-based Respiration Detection

Panagiota Kontou [1], Chang Huan [1], Souheil Ben Smida [1], Dimitris E. Anagnostou [1]

[1] *Heriot-Watt University (United Kingdom)*

SESSION GH2-2

Room 101

Plasma Instabilities in the Ionosphere (Rob Pfaff, Erhan Kudeki) (Part 2)

Session Chairs: Spicher Andres, UiT the Arctic University of Norway, Norway
Akbari Hassan, NASA/Goddard Space Flight Center, United States

YSA* A Model of the Auroral Electrojet Dynamics based on Planetary K-Index

Mehmet Baran Ökten [1], Zehra Can [1]

[1] *Yildiz Technical University (Turkey)*

Large Amplitude Alfven Waves and Non-Linear, Steepened “Spikey” Electric and Magnetic Fields observed within the High Latitude Ionosphere with the Dynamics Explorer-2 Satellite

Rob Pfaff [1], Harri Laakso [1], Hassan Akbari [1]

[1] *NASA Goddard Space Flight Center (United States)*

14:20-15:00

SESSION B02-10

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (Part 10)

Session Chairs: Michel Andrea, University of Pisa, Italy
Bhattacharyya Somak, Indian Institute of Technology(BHU) Varanasi India, India

YS* A Circular Conformal Vivaldi Antenna Array with Suppressed Sidelobes

Lakhindar Murmu [1], Ali Maifuz [1]

[1] *International Institute of Information technology (India)*

YS* Time-Modulated Antenna Array with Beam Steering Based on Single-Pole Double-Throw Switches and Four-State Phase Shifters
Grzegorz Bogdan [1], Yevhen Yashchyshyn [1], Roberto Maneiro-Catoira [2], Luis Castedo [1]
[1] *Warsaw University of Technology (Poland);* [2] *CITIC Research Center - University of A Coruña (Spain)*

SESSION GH2-3

Room 101

Plasma Instabilities in the Ionosphere (Rob Pfaff, Erhan Kudeki) (Part 3)
Session Chairs: Akbari Hassan, NASA/Goddard Space Flight Center, United States
Breneman Aaron, NASA Goddard Space Flight Center, United States

The effect of Planetary Waves on the day-to-day variability of equatorial plasma bubbles
Jeff Klenzing [1], Jonathon Smith [1], Guiping Liu [1], Sarah McDonald [2], Preeti Bhaneja [1], Alexa Halford [1]
[1] *Goddard Space Flight Center (United States);* [2] *Naval Research Laboratory (United States)*

Multi-sensor Analysis of Apparent Arecibo-Local Ionospheric Response to a Minor Solar Wind Pressure Pulse Event
Salih Mehmed Bostan [1], Julio V. Urbina [2], John D. Mathews [1], Ross L. Dinsmore [1], Robert M. Robinson [1]
[1] *Bursa Technical University (Turkey);* [2] *Penn State University (United States)*

14:20-15:20

SESSION B09-4

Room 104

Machine Learning and Optimization Techniques in Electromagnetics: new trends and novel applications (Sembiam R. Rengarajan, Ahmad Hoorfar, Christos Christodoulou) (Part 4)
Session Chairs: Rengarajan Sembiam R., California State University, United States

(Invited)Enhancing Microwave Imaging by Preprocessing Data with Learning-Based Strategies
Alessandro Fedeli [1], Valentina Schenone [1], Matteo Pastorino [1], Andrea Randazzo [1]
[1] *University of Genoa (Italy)*

YSA* A Multi-branch Deep Learning Architecture for Microwave-Ultrasound Breast Imaging
Vahab Khoshdel [1], Joe LoVetri [1], Pedram Mojabi [2]
[1] *University of Manitoba (Canada);* [2] *University of Calgary (Canada)*

Insights on Quantum Computing Operators for EM Optimization
Riccardo Zich [1], Eleonora Zich [2], Riccardo Zich [1]
[1] *Politecnico di Milano (Italy);* [2] *Politecnico di Torino (Italy)*

SESSION B14-2

Main Hall A (General Lectures)

Materials in electromagnetics (Andrey Osipov, Paul Smith) (Part 2)
Session Chairs: Osipov Andrey, German Aerospace Center, Germany
Smith Paul, Macquarie University, Australia

Investigation of Electromagnetic Energy Harvesting in Simple Square Patch Metasurface with Lumped Resistors
Erik Madyo Putro [1], Satoshi Yagitani [1], Mitsunori Ozaki [1], Tomohiko Imachi [1]
[1] *Kanazawa University (Japan)*

Semi-transparent Spherical Shells as Omnidirectional Retroreflectors
Andrey Osipov [1]
[1] *German Aerospace Center (Germany)*

Analysis of Nonlinear Effects in Ferroelectric Materials Using Phase Field Simulations in Open Source Finite Elements Software
Daniel Sjöberg [1]
[1] *Lund University (Sweden)*

SESSION C07

Room 108

Security for Communications (Yves Louet, Hiren KD Sarma)

Session Chairs: Louet Yves, CentraleSupélec, Université Paris Saclay, Rennes Campus, France

Key Technologies of 5G Wireless Communication Network Physical Layer Based on Information Security Early Warning Model

Yifeng He [1], Yinyu Wei [1], Jiadong Cao [1]
[1] *Xi'an Institute of Space Radio Technology (China)*

Machine Learning-based RFID Real-time RF Fingerprint Authentication System

Yu-Chen Huang [1], Ching-Hsiang Kung [1], Shu He Yang [1], Ping Chun Wei [1], Helio Augusto Muzamane [1], Hsin-Chin Liu [1]
[1] *National Taiwan University of Science and Technology (Taiwan)*

RF Fingerprint Using Machine Learning Against NFC/ HF RFID Cloning Attacks

Shu He Yang [1], Ching-Hsiang Kung [1], Yu-Chen Huang [1], Helio Augusto Muzamane [1], Hsin-Chin Liu [1]
[1] *National Taiwan University of Science and Technology (Taiwan)*

SESSION Commission J Tutorial

Conference Hall (Tutorials)

Instrumentation and the detection of 21cm signals from the infant Universe

Cathryn M. Trott [1]
[1] *Curtin University (Australia)*

SESSION D08-2

Room 107

Harmonic Transponders (Valentina Palazzi, Smail Tedjini) (Part 2)

Harmonic 4-PAM modulator for wireless harmonic transponders

Ricardo Torres [1], Valentina Palazzi [2], Ricardo Correia [3], Nuno Borges Carvalho [1]
[1] *University of Aveiro (Portugal);* [2] *University of Perugia (Italy);* [3] *Sinuta (Portugal)*

Passive Harmonic Vibration Sensor based on Amplitude Modulation for Industrial Application

Valentina Palazzi [1], Federico Alimenti [1], Mezzanotte Paolo [1], Bonafoni Stefania [1], Roselli Luca [1]
[1] *University of Perugia (Italy)*

SESSION EAB-1

Room 207

Wave Chaos of Complex Systems (Gabriele Gradoni, Steve Anlage, Luca Bastianelli) (Part 1)

Session Chairs: Gradoni Gabriele, University of Nottingham, United Kingdom
Anlage Steven, University of Maryland, United States
Bastianelli Luca, CNIT c/o Universita` Politecnica delle Marche, Italy

(Invited)Excursions and Excess of Power in Stochastic Fields

Luk Arnaut [1]
[1] *Queen Mary University London (United Kingdom)*

(Invited)The Elastic Enhancement Factor in the Regime of Semi-Poisson Statistics

Leszek Sirko [1], Małgorzata Białous [1], Leszek Sirko [1]
[1] *Institute of Physics Polish Academy of Sciences (Poland)*

(Invited)Extension of the Random Coupling Model to the Time Domain and Experimental Tests in Chaotic Scattering Systems

Steven Anlage [1], Thomas Antonsen [1]
[1] *University of Maryland (United States)*

SESSION F04-1

Room 206

Subsurface sensing/ GPR (Motoyuki Sato, Lorenzo Capineri) (Part 1)

Session Chairs: Sato Motoyuki, Tohoku University, Japan

Consideration of Electromagnetic Wave Propagation Inside the Great Pyramid in Egypt

Motoyuki Sato [1], Anwer S. Abd El-Hameed [2]
[1] *Tohoku University (Japan);* [2] *Electric Research Institute (Egypt)*

3D Joint Inversion of Multi-physics Data Using Deep Learning Techniques
Yanyan Hu [1], Xiaolong Wei [1], Xuqing Wu [1], Jiajia Sun [1], Jiefu Chen [1], Yueqin Huang [2]
[1] *University of Houston (United States);* [2] *Cyentech Consulting LLC (United States)*

Corrosion Estimation of Rebar in Concrete Using Ground Penetrating Radar
Masahiko Nishimoto [1], Yoshihiro Naka [2], Kohichi Ogata [1]
[1] *Kumamoto University (Japan);* [2] *University of Miyazaki (Japan)*

SESSION G14-3

Room 204

The high-latitude ionosphere (Lucilla Alfonsi, Nicolas Bergeot, Giorgiana De Franceschi, Changsup Lee) (Part 3)
Session Chairs: Lee Changsup, Korea Polar Research Institute, South Korea
De Franceschi Giorgiana, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

Antarctic Geospace and ATmosphere reseArch AGATA
Lucilla Alfonsi [1], Nicolas Bergeot [2]
[1] *INGV (Italy);* [2] *Royal Observatory of Belgium (Belgium)*

(Invited)Plasma structuring and irregularities in the polar ionosphere
Wojciech Miloch [1]
[1] *University of Oslo (Norway)*

(Invited)Polar Ionospheric TEC Enhancement Observation Using GNSS-R
Yang Wang [1], Y. Jade Morton [1]
[1] *University of Colorado at Boulder (United States)*

SESSION H02-9

Small Hall

Wave-particle interactions and radiation belt dynamics (Vania Jordanova, David Hartley, Yoshi Miyoshi) (Part 9)
Session Chairs: Hartley David, Department of Physics and Astronomy, United States
Li Li, School of Earth and Space Sciences, China

Fine Inner Structure of Whistler Mode Quasiperiodic Emissions
Frantisek Nemec [1], Ondřej Santolík [2], George B. Hospodarsky [3], William S. Kurth [1]
[1] *Charles University (Czech Republic);* [2] *Institute of Atmospheric Physics of the Czech Academy of Sciences (Czechia);* [3] *University of Iowa (United States)*

Energy Transfer from Magnetosonic Waves to Electromagnetic Ion Cyclotron Waves through Heating of Cold Ions
Kazushi Asamura [1], Masafumi Shoji [2], Yoshizumi Miyoshi [1], Yoshiya Kasahara [1], Yasumasa Kasaba [1], Atsushi Kumamoto [1], Fuminori Tsuchiya [1], Shoya Matsuda [1], Ayako Matsuoka [1], Mariko Teramoto [1], Yoichi Kazama [1], Iku Shinohara [1]
[1] *JAXA (Japan);* [2] *Nagoya University (Japan)*

Magnetosonic Waves Observed by the Van Allen Probe-A Satellite: The Chirikov Resonance Overlap Criterion
Rongxin Tang [1]
[1] *Nanchang University (China)*

SESSION K03-2

Room 102

Monitoring and manipulating cells and tissues with EMF - part 2 (Lluis Mir, Francesca Apollonio)
Session Chairs: Mir Lluis, Université Paris-Saclay, Institut Gustave Roussy, CNRS, France
Apollonio Francesca, SAPIENZA UNIVERSITY OF ROME, Italy

In-Flow Forward Scattering Analysis of Biological Cells
Greg Bridges [1], Behnam Arzhang [1], Emerich Kovacs [1], Elham Salimi [1], Douglas Thomson [1]
[1] *University of Manitoba (Canada)*

Relevance of Dielectric Properties in Bulk Impedance Measurement of Cell Cultures
Elham Salimi [1], Douglas Thomson [1], Greg Bridges [1]
[1] *University of Manitoba (Canada)*

(Invited)Interests of Microwave Dielectric Spectroscopy for biological characterizations
Katia Grenier [1], Y. Kozhemyakin [2], B. Cerdan [1], A. Calvel [1], Y. Li [1], D. Dubuc [1], O. Peytral-Rieu [1]
[1] *LAAS-CNRS (France);* [2] *Université de Toulouse (France)*

SESSION KB-2

Room 201-202

Electromagnetic/optical imaging and sensing for biomedical applications - part 2 (Puyan Mojabi, Shouhei Kidera, Satheesh Bojja Venkatakrishnan, Erdem Topsakal)

Session Chairs: Kidera Shouhei, University of Electro-Communications, Japan
Bojja Venkatakrishnan Satheesh, Florida International University, United States

3D Imaging of Turbid Medium from Single-shot Transillumination Image - For macroscopic imaging of animal body -
Koichi Shimizu [1]
[1] *Xidian Univeristy (China)*

Terahertz Surface Plasmon Resonance with Dirac Electron Systems for Bio-Medical Applications
Hinano Sugimoto [1], Kana Nishimura [1], Mayuko Takahashi [1], Hitoshi Tabata [1]
[1] *The University of Tokyo (Japan)*

A Multi-Input-Multi-Output Sensing Radar with Nonlinear Tag for In-Body Implant Localization
Jyun-Yan Lai [1], Cheng-Zhen He [1], Shih-Cheng Lin [1], Sheng-Fuh Chang [1]
[1] *National Chung Cheng University (Taiwan)*

15:40-17:00

SESSION B15

Main Hall A (General Lectures)

Metamaterial concepts for electromagnetics (Dimitrios Sounas, Andrea Alu, Dimitrios Tzarouchis)

Session Chairs: Tzarouchis Dimitrios, Meta Materials Inc., United States

Near-zero reflection by Parity-time symmetry in rectangular waveguides emulating Epsilon-Near-Zero media
Victor Pacheco-Peña [1], Joseph A Riley [1], Martin Nicolussi [1]
[1] *Newcastle University (United Kingdom)*

Reconfigurability of Wired Antennas Enabled by Conformal Metasurfaces
Stefano Vellucci [1], Michela Longhi [1], Alessio Monti [2], Mirko Barbuto [1], Davide Ramaccia [1], Luca Stefanini [1], Zahra Hamzavi-Zarghani [1], Muhammad Khalid [1], Alessandro Toscano [1], Filiberto Bilotti [1]
[1] *Niccolò Cusano University (Italy);* [2] *Roma Tre University (Italy)*

(Invited)Temporal switching for pulsed wave applications
Amir Shlivinski [1], Yakir Hadad [2]
[1] *Ben Gurion University of the Negev (Israel);* [2] *Tel Aviv University (Israel)*

Scattering suppression by mantle cloak composed of strip conductors
Shuhei Ozawa [1], Hiroshi Hashiguchi [1], Naobumi Michishita [1], Hisashi Morishita [1], Kiyoshi Sakimoto [2], Teruki Miyazaki [1], Masato Tadokoro [1]
[1] *National Defense Academy (Japan);* [2] *The Yokohama Rubber Co. Ltd. (Japan)*

SESSION J11-1

Room 105

Time-domain radio astronomy (Ben Stappers, Rob Fender, Vikram Ravi) (Part 1)

Session Chairs: Ng Cherry, University of Toronto, Canada

Short-term variability observation with the Yamaguchi Interferometer
Kenta Fujisawa [1]
[1] *Yamaguchi University (Japan)*

Pulsar and Fast Radio Bursts (FRB) searches with NenuFAR
Cherry Ng [1]
[1] *CNRS (France)*

Multi-Wavelength Campaigns to tackle the Magnetar-FRB Connection
Maura Pilia [1], Matteo Trudu [1], Davide Pellicciari [1], Gianni Bernardi [1], Andrea Possenti [1]
[1] *INAF (Italy)*

YSA* Uncovering the Origins of Fast Radio Bursts Using Local Universe CHIME Discoveries
Mohit Bhardwaj [1]
[1] *Carnegie Mellon University (United States)*

15:40-17:20

SESSION B02-11

Mid-sized Hall B

Antenna theory, design, and measurement (Andrea Michel, Debatosh Guha, Silvio Hrabar) (Part 11)

Session Chairs: Michel Andrea, University of Pisa, Italy
Ferrando-Bataller Miguel, Universitat Politècnica de València, Spain

YS* Wideband Compact Substrate Integrated Waveguide Slot Antenna

Kundan Kumar [1], Lakhindar Murmu [2], Shruti Priya [3], Swapnil Shekhar [1], Santanu Dwari [4]
[1] *Sant Longowal Institute of Engineering and Technology (India);* [2] *International Institute of Information technology (India);* [3] *Institute for Plasma Research (India);* [4] *Indian Institute of Technology (ISM) (India)*

Substrate Integrated Waveguide Double-Slot Antenna Arrays for Ku-band Geostationary Satellite Communication

Sung-Nien Hsieh [1], En-Wei Chou [1], Ding-Bing Lin [1]
[1] *National Taiwan University of Science and Technology (Taiwan)*

Cavity-Backed Antenna Embedded Sequential Rotated Quarter Wave Resonator

Phanuphong Boontamchauy [1], Ryuji Kuse [1], Takeshi Fukusako [1]
[1] *Kumamoto University (Japan)*

Analysis of cavity back antennas with characteristic modes

Miguel Ferrando-Bataller [1], Jaime Molins-Benlliure [1], Marta Cabedo-Fabrés [1], Carlos Peñafiel-Ojeda [2]
[1] *Universitat Politècnica de València (Spain);* [2] *Universidad Nacional de Chimborazo (Ecuador)*

A Dual Polarized Shared Aperture Compact Unit Cell Element for Antenna Array Applications

Ömer Bayraktar [1]
[1] *Aselsan (Turkey)*

SESSION C10

Room 108

Wireless Power Transfer (Satoshi Tsukamoto, Yves Louet)

Session Chairs: TSUKAMOTO Satoshi, Tohoku University,
Louet Yves, CentraleSupélec, Université Paris Saclay, Rennes Campus, France

Leakage losses of a capacitive power transfer parallel four plate coupler

Cedric Lecluyse [1], Thomas Vander Beke [1], Simon Ravyts [1], Ben Minnaert [2], Michael Kleemann [1]
[1] *KU Leuven (Belgium);* [2] *University of Antwerp (Belgium)*

Automated Test Setup for Capacitive Power Transfer Coupler Impedance Measurements

Cedric Lecluyse [1], Simon Ravyts [1], Michael Kleemann [1], Ben Minnaert [2], Kiran Peirens [1], Peter Bracke [1]
[1] *KU Leuven (Belgium);* [2] *University of Antwerp (Belgium)*

Effect of the Shielding for Opened Windows of the Reusable Vehicle Test for 5.8-GHz-Band Microwave Power Transmission

Satoshi Yoshida [1], Kenjiro Nishikawa [2]
[1] *Ryukoku Univ. (Japan);* [2] *Kagoshima University (Japan)*

YS* 920 MHz band rectenna with the CNT-TFT GAD

Tsukasa Hirai [1], Ashuya Takemoto [2], Naoki Sakai [1], Kenta Noguchi [1], Shinji Horii [1], Kenji Itoh [1]
[1] *Kanazawa Institute of Technology (Japan);* [2] *Toray Industries Inc. (Japan)*

YSA* A Series-fed Patch Array Antenna for Bessel Beam Generation

Gopika R [1], Chinmoy Saha [1]
[1] *Indian Institute of Space Science and Technology (India)*

SESSION D03

Room 107

Electronics and photonic systems for vehicular applications (Atsushi Kanno, Atsushi Matsumoto)
Session Chairs: Kanno Atsushi, Nagoya Institute of Technology, Japan
MATSUMOTO ATSUSHI, The National Institute of Information and Communications Technology, Japan

Proof of Principle Experiment on Si-Photonics-Based In-Vehicle Optical Network (SiPhON)

Hiroyuki Tsuda [1], Ryogo Kubo [1], Tatsuo Furuya [1], Yutaka Hoshiyama [1], Masayuki Iwase [2], Masahito Morimoto [1], Yasushi Amamiya [1], Yongwi Kim [1], Yoshiaki Nakano [1], Takuo Tanemura [1], Masayuki Murata [1], Shinichi Arakawa [1], Naokatsu Yamamoto [1], Atsushi Matsumoto [1], Ryo Takahashi [1]
[1] *Keio University (Japan);* [2] *Furukawa Electric Co. Ltd. (Japan)*

(Invited)Sensor Fusion Technologies for Automated Driving using LiDAR and Camera

Toshio Ito [1]
[1] *Shibaura Institute of Technology (Japan)*

Reliability Analysis of Si-Photonics-Based In-Vehicle Optical Network (SiPhON)

Shin'chi Arakawa [1], Masayuki Murata [1]
[1] *Osaka University (Japan)*

Study on adaptive routing with SDN for TCP throughput and fairness

Hayato Ito [1]
[1] *Nagoya Institute of Technology (Japan)*

An Evaluation on Appropriate to Scheduler of MPTCP for Throughput-Based Congestion Control for WebQoE

Takeshi Kato [1]
[1] *Nagoya Institute of Technology (Japan)*

SESSION E08

Room 207

Electromagnetic interference at PCB, package, and chip level: Signal and Power Integrity (Francesco de Paulis, Riccardo Trinchero)
Session Chairs: Trinchero Riccardo, Politecnico di Torino, Italy
Carobbi Carlo, Università degli Studi di Firenze, Italy

YSA* Efficient Implementation of the Vector-Valued Kernel Ridge Regression for the Parametric Modeling of the Frequency-Response of a High-Speed Link

Nastaran Soleimani [1], Riccardo Trinchero [1]
[1] *Politecnico di Torino (Italy)*

YS* Long-Term Reliability of PDN Design Based on Decap Aging and Temperature

Maurizio Di Nella [1], Carlo Olivieri [1], Francesco De Paulis [1]
[1] *University of L'Aquila (Italy)*

Broadband Characterization of Vertical Interconnection in Printed Circuit Boards

Chien-Chang Huang [1], Pin-Xian Liu [1], Yu-Chen Liu [1]
[1] *Yuan Ze University (Taiwan)*

Cable Height Dependence in Radiated Immunity Evaluation of Automotive Ethernet 100BASE-T1

Tohlu Matsushima [1], Akito Kagawa [1], Yusuke Yano [2], Yuki Fukumoto [1]
[1] *Kyushu Institute of Technology (Japan);* [2] *Nagoya Institute of Technology (Japan)*

SESSION F04-2

Room 206

Subsurface sensing/ GPR (Motoyuki Sato, Lorenzo Capineri) (Part 2)
Session Chairs: Sato Motoyuki, Tohoku University, Japan

SPC* Using NDVI to Monitor Wildfire Activity

Dustin Horton [1], Joel T. Johnson [1], Mohammad Al-Khaldi [1], Jeonghwan Park [2], Rajat Bindlish [1]
[1] *The Ohio State University (United States);* [2] *NASA Goddard Space Flight Center (United States)*

Introduction of GPR sensor to Ukraine for Humanitarian Demining

Motoyuki Sato [1], Gennadiy Pochanin [2]
[1] *Tohoku University (Japan);* [2] *National Academy of Sciences of Ukraine (Ukraine)*

Humanitarian detection of Landmines and Unexploded Ordnances using Airborne GPR
Asilah Almesmari [1], Sultan Abu Ghazal [1], John J. Pantoja [1], Adamo Banelli [1], Felix Vega [1], Chaouki Kasmi [1]
[1] *Technology Innovation Institute (United Arab Emirates)*

Subsurface Imaging of Road Pavement by Full Polarimetric MIMO GPR
Ryuma Saito [1], Motoyuki Sato [2]
[1] *ALISys Co. Ltd. (Japan);* [2] *Tohoku University (Japan)*

REC-F04-02 Discrete Tomography Approach for Subsurface Object Detection by Artificial Neural Network
Oleksandr Dumin [1], Lorenzo Capineri [2], Oleksandr Pryshchenko [1], Vadym Plakhtii [1]
[1] *V.N.Karazin Kharkiv National University (Ukraine);* [2] *University of Florence (Italy)*

SESSION G05-7
Room 204

Advances in Irregularities and Scintillation Studies (Luca Spogli, Yuichi Otsuka, Kshitija Deshpande, P. T. Jayachandran) (Part 7)
Session Chairs: Spogli Luca, Istituto Nazionale di Geofisica e Vulcanologia, Italy

Ionospheric scintillation impact on the performance of communication satellites
Dmytro Vasylyev [1], Arthur Ferreira [1], Martin Kriegel [1], Volker Wilken [1], Jens Berdermann [1]
[1] *German Aerospace Center/Institute for Solar-Terrestrial Physics (Germany)*

Equinoctial asymmetry of GPS scintillation occurrence and drift velocities at post-sunset in Southeast Asia
Yuichi Otsuka [1], Prayitno Abadi [2], Kornyanat Hozumi [3], Alif Almahi [4]
[1] *Nagoya University (Japan);* [2] *Indonesian National Research and Innovation Agency (BRIN) (Indonesia);* [3] *National Institute of Information and Communications Technology (Japan);* [4] *Sumatera Institute of Technology (Indonesia)*

Forecasting Convective Instability in the Equatorial Ionosphere using ICON
David Hysell [1], Aaron Kirchman [1], Brian Harding [2], Roderick Heelis [3], Scott England [4]
[1] *Cornell University (United States);* [2] *Space Sciences Laboratory - University of California Berkeley (United States);* [3] *William B. Hanson Center for Space Sciences - University of Texas at Dallas (United States);* [4] *Aerospace and Ocean Engineering - Virginia Polytechnic Institute and State Univer (United States)*

Modeling Plasma Bubble Occurrence with growin
Jonathon Smith [1], Jeffrey Klenzing [1], Joseph Huba [2]
[1] *NASA Goddard Space Flight Center (United States);* [2] *Syntek Technologies (United States)*

(Invited)Multi-Scale Simulation of Equatorial Plasma Bubbles with GAIA Model
Tatsuhiro Yokoyama [1], Hidekatsu Jin [2], Hiroyuki Shinagawa [1]
[1] *Kyoto University (Japan);* [2] *National Institute of Information and Communications Technology (Japan)*

SESSION GH1-2
Room 101

Meteors, collisional EMPs, and other Highly-Transient Space Plasma Events (Jorge L. Chau, Meers M. Oppenheim, Takuji Nakamura) (Part 2)
Session Chairs: Tsutsumi Masaki, National Institute of Polar Research, Japan
Nakamura Takuji, National Institute of Polar Research, Japan

D-region Ionospheric Response to a Fire Ball Using VLF/LF Transmitter Signals
Hiroyo Ohya [1], Takeru Suzuki [1], Fuminori Tsuchiya [2], Kazuo Shiokawa [3], Hiroyuki Nakata [1]
[1] *Chiba University (Japan);* [2] *Tohoku University (Japan);* [3] *Nagoya University (Japan)*

Combining LWA Observations of MRAs with a SIMONe Radar and Optical Cameras
Kenneth Obenberger [1], Jeffrey Holmes [2], Jorge Chau [3], Logan Cordonnier [4], Gregory Taylor [1], Savin Varghese [1]
[1] *Air Force Research Laboratory (United States);* [2] *Air Force Research Laboratory - Kirtland Air Force Base (United States);* [3] *Leibniz Institute of Atmospheric Physics (Germany);* [4] *University of New Mexico (United States)*

Radar and Optical Simultaneous Observations of Geminids Faint Meteors
Shinsuke Abe [1], Mari Hasegawa [1], Ryo Ohsawa [2], Daniel Kastinen [1], Johan Kero [1], Takuji Nakamura [1], Yasunori Fujiwara [1], Koji Nishimura [1], Jun-ich Watanabe [1], Tomoko Arai [1]
[1] *Nihon University (Japan);* [2] *National Astronomical Observatory of Japan (Japan)*

(Invited)Radar meteor fluxes
Margaret Campbell-Brown [1]
[1] *University of Western Ontario (Canada)*

Radar observations during the 2022 Geminids meteor shower
Juha Vierinen [1], Devin Huyghebaert [1], Ingrid Mann [1], Tinna Gunnarsdottir [1], Daniel Kastinen [2], Johann Kero [1], Ingemar Häggström [1], Jussi Markkanen [1], Jorge L Chau [1], Ralph Latteck [1], Ilkka Virtanen [1], Antti Kero [1]
[1] *University of Tromsø (Norway);* [2] *IRF (Sweden)*

SESSION H06
Small Hall

Analysis of natural boundary layers in terrestrial and planetary environments: Macro/micro scale kinetic approaches (Bertrand Lembège, Hui Zhang, Philippe Escoubet)
Session Chairs: Keiling Andreas, University of California-Berkeley, United States

ULF Waves and Field-Aligned Currents in the Subauroral Zone
Anatoly Streltsov [1], Evgeny Mishin [2]
[1] *Embry Riddle Aeronautical University (United States);* [2] *Air Force Research Laboratory (United States)*

Quantifying the global spatial and temporal behavior of kinetic Alfven waves in the auroral zone
Andreas Keiling [1]
[1] *University of California-Berkeley (United States)*

Energy Partition of Thermal and Nonthermal Particles during Magnetic Reconnection
Masahiro Hoshino [1]
[1] *The University of Tokyo (Japan)*

(Invited)Simultaneous macroscale and microscale wave–ion interaction in near-earth space plasmas
QG Zong [1]
[1] *Peking University (China)*

SESSION J01-4
Mid-sized Hall A

New telescopes and major upgrades to existing telescopes (Di Li, Rob Beswick, Anna Bonaldi) (Part 4)
Session Chairs: Asayama Shin' ichiro, SKA Observatory, United Kingdom

Development of Kinetic Inductance Detectors Array for the Space High-Cadence Observing TeraHertz Telescope (SHOT)
Lihui Yang [1], Shiling Yu [2], Yue Hong [1], Yu Wang [1], Mingzhu Zhang [1], Yanru Song [1], Yiwen Wang [1], Xiaohang Zhang [1], Ran Duan [1], Yi Feng [1], Di Li [1]
[1] *Zhejiang Laboratory (China);* [2] *National Astronomical Observatories - Chinese Academy of Sciences (China)*

The Sardinia Radio Telescope Metrology System
Alessandro Attoli [1], Sergio Poppi [1], Franco Buffa [1], Giampaolo Serra [2], Antonietta A. R. Fara [1], Pasqualino Marongiu [1], Giannina Sanna [3], Francesco Gaudiomonte [1], Mauro Pili [1], Tonino Pisanu [1], Gian Paolo Vargiu [1], Davide Fierro [1]
[1] *INAF (Italy);* [2] *ASI-Agenzia Spaziale Italiana (Italy);* [3] *UNICA-Università degli Studi di Cagliari (Italy)*

Phased Array Receiver and Backend for FAST
Ran Duan [1]
[1] *NAOC (China)*

The Effelsberg Direct Digitisation System
Ewan Barr [1], Gundolf Wieching [2], Amit Bansod [1], Jan Behrend [1], Niclas Esser [1], Christoph Kasemann [1], Tobias Winchen [1], Jason Wu [1]
[1] *MPIfR (Germany);* [2] *Max-Planck-Institut für Radioastronomie (Germany)*

Progress in the Design of the Atacama Large Aperture Submillimeter Telescope
Tony Mroczkowski [1], Claudia Cicone [2], Matthias Reichert [3], Patricio Gallardo [1], Hans Kaercher [1], Daniel Bok [1], Erik Dahl [1], Pierre Dubois-dit-Bonclaude [1], Martin Timpe [1], Thomas Zimmerer [1], Simon Dicker [1], Mike Macintosh [1], Pamela Klaassen [1], Michael Niemack [1], Richard Hills [1]
[1] *European Southern Observatory (Germany);* [2] *Institute of Theoretical Astrophysics - University of Oslo (Norway);* [3] *OHB Digital Connect (Germany)*

SESSION K01

Room 201-202

Biological effects and related mechanisms of EMF exposure (Florence Poulletier de Gannes, Myrtill Simko)
Session Chairs: Apollonio Francesca, SAPIENZA UNIVERSITY OF ROME, Italy
Mir Lluis, Université Paris-Saclay, Institut Gustave Roussy, CNRS, France

Stress Response in Young Male Rats Following Brief Systemic Exposure to 5G Millimeter Waves

Akiko Matsumoto [1], Ikumi Endo [1], Etsuko Ijima [2], Akimasa Hirata [1], Sachiko Kodera [1], Masayoshi Ichiba [1], Mikiko Tokiya [1], Takashi Hikage [1], Hiroshi Masuda [1]
[1] *Saga University School of Medicine (Japan);* [2] *Kurume University School of Medicine (Japan)*

Effects of high intensity local exposure to 26.5 GHz-millimeter-waves on glial cells in rat brain

Hiroshi Masuda [1], Etsuko Ijima [1], Takashi Hikage [2], Kun Li [3], Sachiko Kodera [4], Akimasa Hirata [1], Tatsuya Ishitake [1]
[1] *Kurume University School of Medicine (Japan);* [2] *Hokkaido University (Japan);* [3] *Kagawa University (Japan);* [4] *Nagoya Institute of Technology (Japan)*

Evaluation of biological effects by exposure to 60 GHz millimeter wave in reconstructed human tissue model

Masateru Ikehata [1], Yukihisa Suzuki [2], Toshio Kamijyo [1], Alfred Kik [1], Sachiko Yoshie [1], Takafumi Tasaki [1], Masami Kojima [1], Hiroshi Sasaki [1]
[1] *Railway Technical Research Institute (Japan);* [2] *Tokyo Metropolitan University (Japan)*

Novel 5G FR2 Exposure Systems for In Vitro, In Vivo and Provocation Studies

Myles Capstick [1], Erdem Ofli [2], Cosimo Fortunato [1], Beyhan Kochali [1], Mischa Sabathy [1], Isaac Alonson Marin [1], Niels Kuster [1]
[1] *IT'IS Foundation (Switzerland);* [2] *ZMT Zurich Med Tech (Switzerland)*

Effects of Microwave Irradiation on Growth in E. coli Cultivation

Shokichi Ohuchi [1], Ryunosuke Baba [1]
[1] *Kyushu Inst Tech (Japan)*

SESSION K12

Room 102

Biomedical applications of static and low frequency EMF (Micol Colella, Masaki Sekino, Akimasa Hirata)
Session Chairs: Colella Micol, SAPIENZA UNIVERSITY OF ROME, Italy
Yamaguchi-Sekino Sachiko, NICT, Japan

SPC* Effect of DC and ELF electric field exposure on RBC movement in whole blood

Miki Kanemaki [1], Hisae Shimizu [2], Hiroshi Inujima [1], Takeo Miyake [1], Koichi Shimizu [3]
[1] *Waseda University (Japan);* [2] *Hokkaido University of Science (Japan);* [3] *Xidian University (China)*

YS* Comparison between isotropic and anisotropic head model in TMS dosimetry

Micol Colella [1], Alessandra Paffi [1], Letizia Bellizzi [2], Filippo Carducci [1], Francesca Apollonio [1], Micaela Liberti [1]
[1] *Sapienza University of Rome (Italy);* [2] *Sentech srl (Italy)*

Well-Controlled Neuromodulation by Temporal Interference: Hardware and Planning Tool

Myles Capstick [1], Esra Neufeld [1], Antonino Cassara [1], Niels Kuster [1]
[1] *IT'IS Foundation (Switzerland)*

Fast and accurate optimization of targeted neurostimulation using a generalized activating function

Javier Garcia Ordonez [1], Niels Kuster [1], Taylor H Newton [1], Morgane Burkhardt [1], Antonino Cassara [1], Esra Neufeld [1]
[1] *IT'IS Foundation (Switzerland)*

SESSION WCF

Conference Hall (Tutorials)

Wireless communication, sensing and power transfer: radio propagation, signal processing and system design - joint session with COST action INTERACT (G. Ghiaasi, Y. Miao, A. G. Armada)
Session Chairs: Miao Yang, University of Twente, Netherlands

YSA* Efficient Uncertainty Quantification of Deterministic Wireless Channel Models Using Polynomial Chaos Expansion

Xingqi Zhang [1]
[1] *University of Alberta (Canada)*

Study on Rician K-factor Estimation from Time-Variant Channel Frequency Response for Performance Evaluation of Deterministic Wireless Channel Emulator

Nopphon Keerativoranan [1], Jun-ichi Takada [1]
[1] *Tokyo Institute of Technology (Japan)*

Millimetre-Wave Channel Characterization based on Directional Measurements at 39 GHz and 70 GHz in a Street Canyon Scenario
Sana Salous [1], Mohamed Abdulali [1]
[1] *Durham University (United Kingdom)*

Measurement of the Dynamic Radio Channel at Sub-THz Band Affected by Human Body Shadowing
CheChia Kang [1], Xin Du [1], Jun-ichi Takada [1]
[1] *Tokyo Institute of Technology (Japan)*

16:00-17:00

SESSION BD

Room 104

Wireless technologies for extreme environments (Simone Genovesi, Valentina Palazzi, Giuliano Manara)
Session Chairs: Weiss Steven, The Johns Hopkins University, United States
Palazzi Valentina, University of Perugia, Italy

A 6.78 MHz Inductive WPT System Enabling Predictive Maintenance in Industrial Harsh Environments
Raffaele Salvati [1], Valentina Palazzi [1], Luca Roselli [1]
[1] *University of Perugia (Italy)*

Dispersive Effects in Wide-Band Wireless Links Operating in Long Corridors
Yosef Pinhasi [1], Gad Pinhasi [1], Ori Glikstein [1], Yehuda Taragin [1]
[1] *Ariel University (Israel)*

(Invited)Design of an Integrated Rectenna on Multi-layer High-Resistivity Silicon Substrate
Simone Trovarello [1], Martino Aldrigo [2], Diego Masotti [1], Mircea Dragoman [1], Alessandra Costanzo [1]
[1] *University of Bologna (Italy);* [2] *IMT-Bucharest (Romania)*

08:20-09:00

SESSION D11

Room 107

Recent Advances in Electronics and Photonics (Open Session) (Naoki Shinohara, Atsushi Kanno)

Session Chairs: Kanno Atsushi, Nagoya Institute of Technology, Japan
Shinohara Naoki, Kyoto University, Japan

YSA* Analyses of Pulse-Shaped Signals based on Two-Dimensional Probability Distributions

Tomoya Fukami [1], Hirobumi Saito [2], Akira Hirose [1]

[1] *The University of Tokyo (Japan);* [2] *Waseda University (Japan)*

A 400 W Continuous Wave Power Amplifier in L-Band with single GaN Transistor

Bharathidasan Sugumaran [1], Oliver Silva [1], Felix Vega [1], Chaouki Kasmi [1]

[1] *Technology Innovation Institute (United Arab Emirates)*

08:20-09:20

SESSION FAB

Room 206

Deep learning in Artificial Electromagnetic Materials (Willie Padilla, Dimitris Tzarouchis, Pedro Cruz)

Session Chairs: Tzarouchis Dimitrios, Meta Materials Inc., United States
Padilla Willie, Duke University, United Kingdom

(Invited)Design of a Meta-Atom for Ultrasensitive Terahertz Microfluidic Chips

Kazunori Serita [1], Masayoshi Tonouchi [1]

[1] *Osaka University (Japan)*

(Invited)Artificial Neural Network for DOA Estimation via Programmable Metasurfaces

Lei Zhang [1], Xiao Qing Chen [1], Tie Jun Cui [1]

[1] *Southeast University (China)*

SPC* Temporal differentiation by neural network designed multilayer metamaterial

Tony Knightley [1], Alex Yakovlev [1], Victor Pacheco-Peña [1]

[1] *Newcastle University (United Kingdom)*

08:20-09:40

SESSION B07-1

Mid-sized Hall B

Advanced algorithms in computational electromagnetics (Shinichiro Ohnuki, Vladimir Okhmatovski, Qing Huo Liu) (Part 1)

Session Chairs: Ohnuki Shinichiro, Nihon University, Japan
Okhmatovski Vladimir, UNIVERSITY OF MANITOBA, United States
Liu Qing Huo, Department of Electrical and Computer Engineering, Duke University (UK)

(Invited)Fast Computation of Modified Green's Functions for Reflective Shield-Based Generalized Source Integral Equations

Yossi Dahan [1], Yaniv Brick [1]

[1] *Ben Gurion University of the Negev (Israel)*

Error Analysis of Sommerfeld Integrals for Microstrip Antenna Problems

Deb Chatterjee [1], Kalyan Durbhakula [2]

[1] *University of Missouri at Kansas City (United States);* [2] *University of Missouri at Kansas City (United States)*

Physics-Informed Neural Network Analysis of an Electromagnetic Interaction Problem Including a Uniform Beam Charge Density

Kazuhiro Fujita [1]

[1] *Saitama Institute of Technology (Japan)*

H-matrix Acceleration of Locally Corrected Nystrom Method

Vladimir Okhmatovski [1], Omid Babazadeh [1], Emrah Sever [2], Reza Gholami [3], Constantine Sideri [4], Ian Jeffrey [1]

[1] *University of Manitoba (United States);* [2] *Aselsan (Turkey);* [3] *Siemens-EDA (United States);* [4] *University of Southern California (United States)*

SESSION B29-1

Room 104

Reconfigurable Intelligent Surfaces (RIS) and their Applications (Filippo Costa, Fu Liu) (Part 1)

Session Chairs: Bojja Venkatakrishnan Satheesh, Florida International University, United States
Chen Pai-Yen, University of Illinois Chicago,

(Invited)Spatial Multiplexing in Near Field MIMO Channels with Reconfigurable Intelligent Surfaces

Marco Di Renzo [1]

[1] *CNRS & CentraleSupelec - Paris-Saclay University (France)*

YS* Programmable Metasurface-Based Wideband Antenna for High-Gain Beam-Steering and Pattern-Reconfigurability Applications

Wahaj Abbas Awan [1], Niamat Hussain [2], Seong Gyoon Park [3], Nam Kim [1]

[1] *Chungbuk National University (South Korea);* [2] *Sejong University (South Korea);* [3] *Kongju National University (South Korea)*

Moiré metasurfaces: low-cost solution for dynamic beamforming

Shuo Liu [1]

[1] *Southeast University (China)*

SESSION C03-3

Room 108

Emerging Technologies for Radar & Communications (Kumar Vijay Mishra, Amir Zaghloul) (Part 3)

Session Chairs: Yasmeen Kainat, Indraprastha Institute of Information Technology, India

Radar Signal Deinterleaving Method Exploiting Correlation of Multi-parameter Time Series

Shuting Tang [1], Mingliang Tao [1], Jian Xie [1], Yifei Fan [1], Ling Wang [1]

[1] *Northwestern Polytechnical University (China)*

Weak Moving Target Detection Based on Multi-Frame Coherent Integration Algorithm

Guonan Cui [1], Jia Su [1], Yifei Fan [1], Xiangyang Liu [1], Mingliang Tao [1], Ling Wang [1]

[1] *Northwestern Polytechnical University (China)*

Near-Field 3D Phase Compensation Method for Distributed Radar System based on Parallel Implementation Architecture

Zhengyi Zhang [1], Jia Su [1], Mingliang Tao [1], Yifei Fan [1], Ling Wang [1]

[1] *Northwestern Polytechnical University (China)*

SESSION EAB-2

Room 207

Wave Chaos of Complex Systems (Gabriele Gradoni, Steve Anlage, Luca Bastianelli) (Part 2)

Session Chairs: Gradoni Gabriele, University of Nottingham, United Kingdom
Anlage Steven, University of Maryland, United States
Bastianelli Luca, CNIT c/o Universita` Politecnica delle Marche, Italy

(Invited)Selected Properties of Microwave Networks with Orthogonal and Symplectic Symmetries

Leszek Sirko [1], Omer Farooq [1], Afshin Akhshani [1], Małgorzata Białous [1], Szymon Bauch [1], Michał Ławniczak [1]

[1] *Institute of Physics Polish Academy of Sciences (Poland)*

Ray transport and chaos detection in cavities via dynamic indicators

Gabriele Gradoni [1], Federico Panichi [2], Giorgio Turchetti [1]

[1] *University of Surrey (United Kingdom);* [2] *University of Bologna (Italy)*

Time Reversal for Evaluating the Influence of Scattering Objects on Chaotic Environments

Luca Bastianelli [1], Emanuel Colella [2], Valter Mariani Primiani [1], Gabriele Gradoni [1], Franco Moglie [1]

[1] *CNIT c/o Universita Politecnica delle Marche (Italy);* [2] *Universita Politecnica delle Marche (Italy)*

(Invited)YSA* Statistical Characterization of Cavity Quality Factor due to Aperture Leakage

Shen Lin [1]

[1] *UIUC (United States)*

SESSION G09-1

Room 101

HF Radars for Science and Surveillance (Manuel Cervera, Joe Malins, Kate Zawdie) (Part 1)
Session Chairs: Malins Joseph, Air Force Research Laboratory, United States

Towards empirical model of HF propagation at very high latitudes
Pasha Ponomarenko [1], Kathryn McWillliams [1], Sasha Koustov [1]
[1] *University of Saskatchewan (Canada)*

HF Beacons and Ionospheric Specification -- Sensitivity Analysis and Automatic Differentiation
David Hysell [1]
[1] *Cornell University (United States)*

Remote Sensing Surface Explosions with an Ionospheric Doppler Radar
Kenneth Obenberger [1], Fransiska Dannemann Dugick [2], Daniel Bowman [1], Sasha Egan [1]
[1] *Air Force Research Laboratory (United States);* [2] *Sandia National Laboratories (United States)*

The importance of considering ionospheric variance for over-the-horizon radar performance modelling
Manuel Cervera [1], Danielle Edwards [1]
[1] *Defence Science and Technology Group (Australia)*

SESSION G14-4

Room 204

The high-latitude ionosphere (Lucilla Alfonsi, Nicolas Bergeot, Giorgiana De Franceschi, Changsup Lee) (Part 4)
Session Chairs: Alfonsi Lucilla, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy
Lee Changsup, Korea Polar Research Institute, South Korea

Temporal and spatial evolution of total electron content enhancements and depletions during substoms
Atsuki Shinbori [1], Yuichi Otsuka [1], Takuya Sori [1], Michi Nishioka [2], Septi Perwitasari [1]
[1] *Nagoya University (Japan);* [2] *National Institute of Information and Communications Technology (Japan)*

(Invited)What happens when the ionosphere almost disappears in the polar region?
Geonhwa Jee [1], Yujin Cho [1], Young-Bae Ham [1], Hyuck-Jin Kwon [1], Changsup Lee [1], Eunsol Kim [1], Khan-Hyuk Kim [2], Nikolay Zabotin [3]
[1] *Korea Polar Research Institute (South Korea);* [2] *Kyung Hee University (South Korea);* [3] *University of Colorado/NOAA (United States)*

How does the Morphology of the Aurora Affect High-Latitude Plasma Irregularities?
Magnus Ivarsen [1], Yaqi Jin [1], Jaeheung Park [2]
[1] *University of Oslo (Norway);* [2] *Korea Astronomy and Space Science Institute (South Korea)*

Statistical studies of plasma structuring in the auroral ionosphere by in-situ measurements
Lisa Buschmann [1], Andres Spicher [2], Lasse B.N. Clausen [1], Wojciech J. Miloch [1]
[1] *University of Oslo (Norway);* [2] *UiT - The Arctic University of Norway (Norway)*

SESSION H01-1

Small Hall

Open session (Jyrki Manninen, Craig J. Rodger) (Part 1)
Session Chairs: Manninen Jyrki, Sodankylä Geophysical Observatory, Oulu University, Finland

High Frequency part of Radio & Plasma Wave Investigation (RPWI) aboard JUICE from Japan: Post launch status and its expected sciences for Jupiter and Icy Moons
Yasumasa Kasaba [1], Yasumasa Kasaba [1]
[1] *Tohoku University (Japan)*

YSA* Quantifying the Effects of Electron Shot Noise on a Current Biased Antenna
Winry Ember [1], Marc Pulupa [2], Stuart D. Bale [1]
[1] *UC Berkeley (United States);* [2] *UC Berkeley Space Sciences Lab (United States)*

Propagation of Ultra-Wideband Signals in Plasma Media
Yosef Pinhasi [1], Gad Pinhasi [1], Yosef Golovachev [2]
[1] *Ariel University (Israel);* [2] *The Jerusalem College of Technology (Israel)*

SESSION J01-5

Mid-sized Hall A

New telescopes and major upgrades to existing telescopes (Di Li, Rob Beswick, Anna Bonaldi) (Part 5)
Session Chairs: Asayama Shin' ichiro, SKA Observatory, United Kingdom

The 40-m Thai National Radio Telescope and a future South-East Asian VLBI Network

Koichiro Sugiyama [1], Phrudth Jaroenjittichai [1], Apichat Leckngam [1], Wiphu Rujopakarn [1], Boonrucksar Soonthornthum [1], Busaba H. Kramer [2], Taufiq Hidayat [3], Zamri Zainal Abidin [4], Juan Carlos Algaba [1], Pham Ngoc Diep [1], Saran Poshyachinda [1]
[1] National Astronomical Research Institute of Thailand (Thailand); [2] Max Planck Institut für Radioastronomie (Germany); [3] Institut Teknologi Bandung (Indonesia); [4] University of Malaya (Malaysia)

Proposed Qi Lu radio telescope array for FRB accurate positioning

Mingzhu Zhang [1]
[1] Zhejiang Laboratory (China)

Hawaii Fast Radio Burst Outrigger Station

Derek Kubo [1], Ming-Tang Chen [1]
[1] ASIAA (United States)

SESSION K06

Room 201-202

Human exposure assessments at extremely low & intermediate frequencies (Kenichi Yamazaki, Ilkka Laakso, Yinliang Diao)
Session Chairs: Yamazaki Kenichi, Central Research Institute of Electric Power Industry, Japan
Laakso Ilkka, Aalto University, Finland
Diao Yinliang, South China Agricultural University, China

Calculation of Internal Electric Field Induced by Simultaneous Exposure to Uniform ELF Electric and Magnetic Fields in Consideration of Phase Difference

Yoichi Sekiba [1], Akimasa Hirata [1], Kenichi Yamazaki [2]
[1] Nagoya Institute of Technology (Japan); [2] Central Research Institute of Electric Power Industry (Japan)

Evaluation of Internal Electric Fields in Human Head Exposed to Non-uniform Magnetic Fields in the Vicinity of Power Lines

Takeo Shiina [1], Yoichi Sekiba [2], Kenichi Yamazaki [1]
[1] Central Research Institute of Electric Power Industry (Japan); [2] Denryoku Computing Center (Japan)

Reducing Staircasing Error for Assessment of Low-frequency Magnetic Exposure

Yinliang Diao [1], Junqing Lan [2]
[1] South China Agricultural University (China); [2] Chengdu University of Information Technology (China)

Calibrated Induced E-field Measurement System for Frequencies from 20 Hz to 100 kHz

Ninad Chitnis [1], Oliver Munz [1], Sven Kühn [1], Niels Kuster [1]
[1] IT'IS Foundation (Switzerland)

08:20-10:40

SESSION FCEGH

Conference Hall (Tutorials)

Workshop on Radio Science and Engineering of Disaster Risk Reduction and Management - Part 1 (Tullio Tanzi, Madhu Chandra, Giuliano Manara, Yasuhide Hobara)
Session Chairs: Tanzi Tullio, Institut Mines-Télécom, France
Ando Makoto, Tokyo Institute of Technology, Japan

Use of Information and Communication Technologies for Disaster Management: Lessons Learned from the Great East Japan Earthquake and Tsunami in 2011

Yuko Murayama [1]
[1] Tsuda University (Japan)

08:40-09:20

SESSION J11-2

Room 105

Time-domain radio astronomy (Ben Stappers, Rob Fender, Vikram Ravi) (Part 2)
Session Chairs: Pilia Maura, INAF, Italy

Does the Magnetar XTE J1810-197 Scintillate at Low Radio Frequencies?
Visweshwar Ram Marthi [1], Yogesh Maan [1]
[1] *Tata Institute of Fundamental Research (India)*

Imaging Pulsar Scintillation Screens Using Earth-Space VLBI
Daniel Baker [1], Ue-Li Pen [1]
[1] *Academia Sinica Institute of Astronomy and Astrophysics (Taiwan)*

08:40-09:40

SESSION H05

Room 102

Machine learning techniques and their application to plasma waves (Drew Turner, Katariina Nykyri, David Malaspina, Xiangning Chu)
Session Chairs: Turner Drew, Johns Hopkins Applied Physics Laboratory, United States
Malaspina David, Laboratory for Atmospheric and Space Physics, United States

(Invited)Tracking the Upper Hybrid Resonance Emission in the Inner Magnetosphere using a Convolutional Neural Network
Shoya Matsuda [1], Tatsuhito Hasegawa [2], Atsushi Kumamoto [3], Fuminori Tsuchiya [1], Yoshiya Kasahara [1], Yoshizumi Miyoshi [1], Yasumasa Kasaba [1], Ayako Matsuoka [1], Iku Shinohara [1]
[1] *Kanazawa University (Japan);* [2] *University of Fukui (Japan);* [3] *Tohoku University (Japan)*

Study on the Segmentation of Plasma Waves using a Deep Learning Approach
Takashi Itoh [1], Shoya Matsuda [1], Yoshiya Kasahara [1], Yoshizumi Miyoshi [2], Iku Shinohara [3]
[1] *Kanazawa University (Japan);* [2] *Nagoya University (Japan);* [3] *ISAS / JAXA (Japan)*

YSA* Data-Driven Representations of Ion-Kinetic Distribution Functions
Trevor Bowen [1], B.D.G. Chandran [2], Stuart Bale [1], Alfred Mallet [1], Jaye Verniero [3], Kris Klein [4], Jonathan Squire [5]
[1] *University of California Berkeley (United States);* [2] *University of New Hampshire (United States);* [3] *NASA Goddard Space Flight Center (United States);* [4] *Univeristy of Arizona (United States);* [5] *University of Otago (New Zealand)*

09:40-10:20

SESSION EJGF-1

Room 207

Machine learning & signal processing to analyze & mitigate EMI and RFI (Virginie Deniau, R. Trinchero, Kevin Vinsen, Kaushal Bush, Hariharan Krishnan, Paolo de Matthaeis) (Part 1)
Session Chairs: Trinchero Riccardo, Politecnico di Torino, Italy
Vinsen Kevin,

RFI Detection with Spiking Neural Networks
Nicholas Pritchard [1], Andreas Wicenec [1]
[1] *University of Western Australia (Australia)*

Mitigation of self-generated interference via spatial nulling with ASKAP
Liroy Lourenco [1], Aaron Chippendale [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)*

SESSION G06-1

Room 204

Advances in Machine Learning methods for ionospheric modelling (Claudio Cesaroni, Ivan Galkin, Jade Morton) (Part 1)
Session Chairs: Galkin Ivan, Space Science Laboratory, University of Massachusetts, United States
Cesaroni Claudio, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

Equatorial Plasma Bubble Detection using the Convolutional Neural Network (CNN) and Support Vector Machine (SVM)
Pornchai Supnithi [1], Thananphat Thanakulketsarat [1], Lin Min Min Myint [1], Kornyanat Hozumi [2]
[1] *King Mongkut's Institute of Technology Ladkrabang (Thailand);* [2] *National Institute of Information and Communications Technology (Japan)*

YSA* SPC* A Stacked Machine Learning Model for the vertical Total Electron Content Forecasting
Eric Nana Asamoah [1]
[1] *University of Salento (Italy)*

09:40-10:40

SESSION B07-2

Mid-sized Hall B

Advanced algorithms in computational electromagnetics (Shinichiro Ohnuki, Vladimir Okhmatovski, Qing Huo Liu) (Part 2)
Session Chairs: Ohnuki Shinichiro, Nihon University, Japan
Okhmatovski Vladimir, UNIVERSITY OF MANITOBA, United States
Liu Qing Huo, Department of Electrical and Computer Engineering, Duke University, UK

YSA* A Feature-based Inversion Method for Brain Stroke Microwave Imaging
Rui Guo [1], Zhichao Lin [1], Jingyu Xin [1], Maokun Li [1], Fan Yang [1], Shenheng Xu [1], Aria Abubakar [2]
[1] *Tsinghua University (China);* [2] *SLB (United States)*

FDTD Analysis of Doppler Shift Caused by Moving Antennas Above Rough Surface
Takuji Arima [1], Toru Uno [1]
[1] *Tokyo University of Agriculture and Technology (Japan)*

Full-wave Simulation of Reconfigurable Intelligent Surface with Sub-linear Complexity
Qi Jian Lim [1], Hong-Wei Gao [2], Zhen Peng [1]
[1] *University of Illinois at Urbana-Champaign (United States);* [2] *Beijing Institute of Technology (China)*

SESSION B29-2

Room 104

Reconfigurable Intelligent Surfaces (RIS) and their Applications (Filippo Costa, Fu Liu) (Part 2)
Session Chairs: Bojja Venkatakrishnan Satheesh, Florida International University, United States
Chen Pai-Yen, University of Illinois Chicago,

(Invited)YS* Full-phase control millimetre wave metasurface element enabled by air-bridged Schottky diodes
Evangelos Vassos [1], Alexandros Feresidis [1]
[1] *University of Birmingham (United Kingdom)*

A Broadband Ka-Band Reconfigurable Reflectarray Utilizing Dumbbell-Shaped Unit Cells
Pei-Hua Wang [1], YUAN CHUN LIN [1], Ting Hao Shin [1], Shih-Cheng Lin [1], Sheng-Fuh Chang [1]
[1] *National Chung Cheng University (Taiwan)*

YSA* A 1-Bit Coding Reconfigurable Metasurface Reflector for Circularly Polarized Wave Beam Steering from Linearly Polarized Incidence
Debidas Kundu [1], Shulabh Gupta [2]
[1] *Indian Institute of Technology Roorkee (India);* [2] *Carleton University (Canada)*

SESSION D09-1

Room 107

Electronic and photonic technologies for electromagnetic field measurement and their applications (Hiroshi Murata, Yusuf Nur Wijayanto) (Part 1)
Session Chairs: Murata Hiroshi, Mie University, Japan
Wijayanto Yusuf Nur, Telkom University, Indonesia

Integrated Electro-optic Sensor for RS105 Nuclear Electromagnetic Pulses
Dong Joon Lee [1], Young-Pyo Hong [1], In-June Hwang [1], Tae-Weon Kang [1]
[1] *Korea Research Institute of Standards and Science (South Korea)*

375-GHz-Band Antenna-Coupled Optical Modulators Using Electro-Optic Polymer Waveguides and Metamaterial Antenna Arrays
Takahiro Kaji [1], Isao Morohashi [1], Toshiki Yamada [1], Akira Otomo [1]
[1] *National Institute of Information and Communications Technology (Japan)*

YSA* 28GHz-Band Antenna-Coupled Electrode Electro-Optic Modulator for Receiving Two Orthogonal Polarization Components Simultaneously
Shunsuke Nakamori [1], Yui Otagaki [1], Masahiro Sato [2], Masatoshi Onizawa [1], Satoru Kurokawa [1], Hiroshi Murata [1]
[1] *Mie University (Japan);* [2] *SEIKOH GIKEN Co.Ltd (Japan)*

SESSION G09-2
Room 101

HF Radars for Science and Surveillance (Manuel Cervera, Joe Malins, Kate Zawdie) (Part 2)
Session Chairs: Cervera Manuel, Defence Science and Technology Group, Australia
Malins Joseph, Air Force Research Laboratory, United States

Seasonal Variation in Surface Backscatter Coefficients at High Frequencies
Danielle Edwards [1], Manuel Cervera [1]
[1] *Defence Science and Technology Group (Australia)*

HF Bistatic Radar Experiments with HAARP, UNM-LWA and OVRO-LWA for Planetary and Near-Earth Asteroid Science
Mark Haynes [1], Paul Bernhardt [2], Lance Benner [1], Jessica Matthews [1], Mike McCarrick [1], Whitham Reeve [1], Evans Callis [1], Tracy Coon [1], Jayce Dowell [1], Greg Taylor [1], Charles Elachi [1], Gregg Hallinan [1], Ivey Davis [1], Larry D' Addario [1], Joseph Lazio [1]
[1] *Jet Propulsion Laboratory (United States);* [2] *University of Alaska - HAARP (United States)*

SuperDARN Hokkaido Pair of radars – Past Achievements and Future Perspectives
Nishitani Nozomu [1]
[1] *Nagoya University (Japan)*

SESSION H01-2
Small Hall

Open session (Jyrki Manninen, Craig J. Rodger) (Part 2)
Session Chairs: Rodger Craig J., University of Otago, New Zealand

Analysis of Two-Band VLF Spectra Observed by Van Allen Probe B
David Shklyar [1], Elena Titova [2], Andris Lyubchich [1]
[1] *Space Research Institute of RAS (Russia);* [2] *Polar Geophysical Institute (Russia)*

YSA* Significance of Kappa Distributed Electrons on Electrostatic Solitary Waves in Saturn's Magnetosphere
Steffy Sara Varghese [1], Ioannis Kourakis [1]
[1] *Khalifa University (United Arab Emirates)*

Dependence of VLF Chorus Parameters on the Observation Location in the Presence of Geomagnetic Field Distortions
Andrei Demekhov [1]
[1] *Institute of Applied Physics RAS (Russia)*

SESSION H07-1
Room 102

Active experiments and radio sounding (Vikas Sonwalkar, Amani Reddy, Paul Bernhardt, Robert Moore) (Part 1)
Session Chairs: Moore Robert, University of Florida, United States
Bernhardt Paul, University of Alaska - HAARP, United States

Whistler Waves from an Artificial Ion Ring in the Ionosphere: Nonlinear Scattering, Energy Conversion Efficiency, and Propagation into the Magnetosphere
Alex Fletcher [1], Chris Crabtree [1], Gurudas Ganguli [1], Rualdo Soto Chavez [1], Carl Siefring [1]
[1] *Naval Research Laboratory (United States)*

New model simulations of multi-frequency HF beacon signal absorption for direct observation of D and E-region constituents
Alireza Mahmoudian [1], M. J. Kosch [2], P.A. Bernhardt [3]
[1] *Institute of Geophysics - University of Tehran (Iran);* [2] *SANSA (South Africa);* [3] *University of Alaska (United States)*

(Invited)Space Object Identification by Measurements of Orbit-Driven Waves (SOIMOW)
Paul Bernhardt [1], Scott Lauchie [2], Howarth Andrew [3], George Morales [4]
[1] University of Alaska at Fairbanks (United States); [2] DRDC Ottawa Research Centre (Canada); [3] University of Calgary (Canada); [4] UCLA (United States)

SESSION J01-6

Mid-sized Hall A

New telescopes and major upgrades to existing telescopes (Di Li, Rob Beswick, Anna Bonaldi) (Part 6)
Session Chairs: Zhang Xiaohang, Zhejiang Laboratory, China

SKA Science Commissioning and Verification Plan
Shin'ichiro Asayama [1], Robert Laing [1], Maciej Serylak [1], Justin Jonas [1]
[1] SKA Observatory (United Kingdom)

SKA Regional Center Development in Switzerland
Emma Tolley [1]
[1] Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland)

Engineering Operations Planning for SKA-Low: Challenges and Opportunities
Angela Teale [1]
[1] CSIRO/SKAO (Australia)

SESSION J11-3

Room 105

Time-domain radio astronomy (Ben Stappers, Rob Fender, Vikram Ravi) (Part 3)
Session Chairs: Pilia Maura, INAF, Italy

YSA* Search for long-period pulsars with the GMRT: Discovery of nulling in two pulsars
Shubham Singh [1], Jayanta Roy [1], Bhaswati Bhattachryya [1], Shyam Sunder Sharma [1], Ujjwal Panda [1]
[1] National Centre for Radio Astrophysics (NCRA-TIFR) (India)

In-field phasing for the GMRT and its application for time domain astronomy
Sanjay Kudale [1], Jayanta Roy [1], Jayaram Chengalur [1]
[1] National Centre for Radio Astrophysics (India)

Adaptive Compression of Transient Radio Astronomy Signals
Mugundhan Vijayaraghavan [1], Gary Hovey [1], Oskar Andersson [1], Eric Bergdahl [1]
[1] Onsala Space Observatory (Sweden)

SESSION K16

Room 201-202

Nanoparticles for EM biomedical applications: from diagnosis to treatment (organised by MyWAVE network) (Lourdes Farrugia, Laura Caramazza)
Session Chairs: Farrugia Lourdes, University of Malta, Malta
Caramazza Laura, Sapienza University of Rome, Italy

(Invited)Lipid-based magnetic nanoparticles for glioma treatment: Towards a personalized approach
Gianni Ciofani [1]
[1] Istituto Italiano di Tecnologia (Italy)

(Invited)Radiolabeled Magnetic AMF-Responsive Nanoparticles as Gamechangers in Cancer Therapy
Kristina Djanashvili [1], Alexandra Maier [1], Rogier van Oossanen [2], Antonia Denkova [1], Robin Nadar [1], Gerard C. van Rhoon [1]
[1] Delft University of Technology (Netherlands); [2] Erasmus MC Cancer Institute (Netherlands)

Liposomes-based Drug Delivery Nanosystems Activated by EM fields
Laura Caramazza [1], Alessandra Paffi [1], Patrizia Paolicelli [1], Stefania Petralito [1], Micaela Liberti [1], Francesca Apollonio [1]
[1] University Sapienza of Rome (Italy)

10:00-10:40

SESSION C03-4

Room 108

Emerging Technologies for Radar & Communications (Kumar Vijay Mishra, Amir Zaghloul) (Part 4)
Session Chairs: Hirokawa Jiro, TOKYO INSTITUTE OF TECHNOLOGY, Japan

SPC* Novel Dual-polarized MIMO Antennas in 60-GHz AiP Module for Full Polarimetric Radar
Tzu Ming Huang [1], Yi-Cheng Lin [1]
[1] *National Taiwan University (Taiwan)*

YSA* Picosecond Non-Line-of-Sight Wireless Time and Frequency Synchronization for Coherent Distributed Aperture Antenna Arrays
Jason Merlo [1], Jeffrey Nanzer [1]
[1] *Michigan State University (United States)*

11:00-12:00

SESSION B06-1

Mid-sized Hall B

Propagation and scattering: advances, trends and new applications (Danilo Erricolo, Guido Lombardi, Robert Burkholder) (Part 1)
Session Chairs: Manara Giuliano, University of Pisa, Italy
Klinkenbusch Ludger, Kiel University, Germany

(Invited)Design of Spatially-Dispersive Beam-Steering Metasurfaces
Alessio Monti [1], Stefano Vellucci [2], Michela Longhi [1], Mirko Barbuto [1], Zahra Hamzavi-Zarghani [1], Muhammad Khalid [1], Davide Ramaccia [1], Luca Stefanini [1], Alù Andrea [1], Alessandro Toscano [1], Filiberto Bilotti [1]
[1] *Roma Tre University (Italy);* [2] *Niccolò Cusano University (Italy)*

(Invited)On the Requirements on Reflective Intelligent Surfaces in THz NLOS Backhaul Links
Thomas Kuerner [1], Bo Kum Jung [1], Christoph Herold [1]
[1] *TU Braunschweig (Germany)*

Metasurface-Based Tapes for Efficient Transmission of High-Frequency Signals
Kota Suzuki [1], Haruki Homma [1], Ashif Fathnam [1], Yoshiki Ashikaga [2], Yasushi Tsuchiya [1], Sendy Phang [1], Hiroki Wakatschi [1]
[1] *Nagoya Institute of Technology (Japan);* [2] *Teraoka Seisakusyo Co. Ltd. (Japan)*

SESSION BK1

Room 104

AI/ML applications to biomedical technologies (Asimina Kiourti, Cecilia Occhiuzzi)
Session Chairs: Bianco Giulio Maria, University of Rome Tor Vergata, Italy

YS* A Convex Optimized Estimator of the Laplacian Operator for Bioelectric Simulations
Francisco-Manuel Melgarejo-Meseguer [1], Laura Martínez-Mateu [1], Sergio Muñoz-Romero [1], Francisco-Javier Gimeno-Blanes [2], Arcadi García-Alberola [3], José-Luis Rojo-Álvarez [1]
[1] *Universidad Rey Juan Carlos (Spain);* [2] *Universidad Miguel Hernández (Spain);* [3] *Hospital Universitario Virgen de la Arrixaca (Spain)*

YSA* Machine Learning with Wearable RFID Grid for Monitoring Fetal Movements
Giulio Maria Bianco [1], Viola Bedotti [1], Sara Amendola [2], Gaetano Marrocco [1], Cecilia Occhiuzzi [1]
[1] *University of Rome Tor Vergata (Italy);* [2] *Radio6ense (Italy)*

A Pipeline for Modeling the Subject-Specific Effects of Neurostimulation: From Head Models to Network Activity
Fariba Karimi [1], Niels Kuster [2], Taylor H. Newton [1], Melanie Steiner [1], Javier Garcia Ordonez [1], Esra Neufeld [1]
[1] *IT'IS Foundation/ETH Zurich (Switzerland);* [2] *IT'IS Foundation (Switzerland)*

SESSION C06-1

Room 108

6G and future wireless systems (Haijun Zhang, Satoshi Tsukamoto) (Part 1)

Session Chairs: TSUKAMOTO Satoshi, Tohoku University,
Zhang Haijun, University of Science and Technology Beijing, China

SPC* Double CRC-Aided Erasure Demodulation on M-ary Chirp Spread Spectrum Signal

Ando Eiku [1], Sanada Yukitoshi [1]

[1] *Keio University (Japan)*

Transmission performance of 4K high resolution real-time video streaming signal for a local 5G uplink

Hideaki Matsue [1], Takamasa Nishizima [1], Hiroki Urasawa [1], Ryota Bairaku [1], Hayato Soya [1], Kazuhiro Mayaguchi [1]

[1] *Suwa University of Science (Japan)*

Intelligent Building Design for Wireless Performance

Andrés Alayón Glazunov [1]

[1] *Linköping University (Sweden)*

SESSION D09-2

Room 107

Electronic and photonic technologies for electromagnetic field measurement and their applications (Hiroshi Murata, Yusuf Nur Wijayanto) (Part 2)

Session Chairs: Murata Hiroshi, Mie University, Japan
Wijayanto Yusuf Nur, Telkom University, Indonesia

Overview of nondestructive testing by using electromagnetic waves in the field of cultural heritage

Kaori Fukunaga [1], Ilaria Catapano [2], Costanza Cucci [3], Marcello Picollo [1]

[1] *NICT (Japan);* [2] *Institute for the Electromagnetic Sensing of the Environment - CNR (Italy);* [3] *Institute of Applied Physics Nello Carrara - CNR (Italy)*

Improvement of Long-Term Stability of Phase Measurement in Electrooptic Field Visualization System for Antenna Measurement in 300-GHz Band

Kento Ishihara [1], Yusuke Tanaka [1], Shintaro Hisatake [1]

[1] *Gifu University (Japan)*

YSA* FRPM Pipeline Remote Sensing by Microwave Using Radio-over-Pipewall (RoP) and Radio-over-Fiber (RoF) Techniques

Kento Katagiri [1], Tadahiro Okuda [2], Masaya Hazama [1], Yui Otagaki [1], Hiroshi Murata [1]

[1] *Mie University (Japan);* [2] *Kurimoto Ltd. (Japan)*

YSA* New Signal Processing Technique Using Optical Phase Modulator and Optical Fiber Dispersion Effect

Naoki Ueda [1], Yui Otagaki [1], Hiroshi Murata [1]

[1] *Mie University (Japan)*

SESSION EJGF-2

Room 207

Machine learning & signal processing to analyze & mitigate EMI and RFI (Virginie Deniau, R. Trinchero, Kevin Vinsen, Kaushal Bush, Hariharan Krishnan, Paolo de Matthaeis) (Part 2)

Session Chairs: Trinchero Riccardo, Politecnico di Torino, Italy
Vinsen Kevin, University of Western Australia, Australia

YSA* Spectral Kurtosis applied to tied-array beamformer for pulsar observations

Vereese Van Tonder [1], Ludwig Schwardt [2], Jacki Gilmore [1], Alexander Faustmann [1], Sarah Buchner [1]

[1] *Stellenbosch University (South Africa);* [2] *South African Radio Astronomy Observatory (South Africa)*

YS* RFI detection using cross-polarization coherence for dual-and full-polarimetric Synthetic Aperture radar

Akira Uozumi [1], Ryo Natsuaki [2], Akira Hirose [1]

[1] *A.Hirose and R.Natsuaki Lab. (Japan);* [2] *The University of Tokyo (Japan)*

Design and Implementation of Time-varying Wideband Interference Suppression Algorithm via GPU

Shuzhi Song [1], Jia Su [1], Yanyun Gong [1], Tao LI [1], Yifei Fan [1], Ling Wang [1]

[1] *Northwestern Polytechnical University (China)*

SESSION F03-1

Room 206

Remote Sensing of Earth and Planetary Atmospheres (Animesh Maitra, Tomoo Ushio) (Part 1)
Session Chairs: Nishimura Koji, Kyoto University,
Kitahara Daichi, Osaka University, Japan

Evaluation on Correlation between M-curve and Overreach Duct Propagation from Korea to Japan in V-Low Band
Rikito Tateishi [1], Makoto Kobayashi [1], Koichi Shin [1], Masahiro Nishi [1]
[1] *Hiroshima City University (Japan)*

Ideas for Radar Data Denoising and Fusion Based on Image Processing Techniques
Daichi Kitahara [1], Yuuki Wada [1], Tomoaki Mega [1], Eiichi Yoshikawa [2], Hiroshi Kikuchi [3], Tomoo Ushio [1]
[1] *Osaka University (Japan);* [2] *Japan Aerospace Exploration Agency (Japan);* [3] *The University of Electro-Communications (Japan)*

(Invited)Impact of Global Teleconnections on Lightning activities over the Northwest Himalayan Regions
Rohit Chakraborty [1], Deepanshu Aggarwal [2], Raju Attada [1], Arindam Chakraborty [1]
[1] *Indian Institute of Science (India);* [2] *Indian Institute of Science Education and Research Mohali (India)*

SESSION FCEGH

Conference Hall (Tutorials)

Workshop on Radio Science and Engineering of Disaster Risk Reduction and Management - Part 2 (Tullio Tanzi, Madhu Chandra, Giuliano Manara, Yasuhide Hobara)
Session Chairs: Tanzi Tullio, Institut Mines-Télécom, France
Ando Makoto, Tokyo Institute of Technology, Japan

(Invited)Development of Ionosphere-Based Methods for Disaster Risk Assessment in Near-Real-Time
Elvira Astafyeva [1], Boris Maletckii [1], Quentin Brissaud [2], Michela Ravanelli [3], Saúl Sanchez Juarez [4], I. Seim Kavlie [5]
[1] *IPGP (France);* [2] *NORSAR (Norway);* [3] *Université Paris Cité (France);* [4] *INPE (Brazil);* [5] *University of Oslo (Norway)*

(Invited)Opportunistic Use of Microwave Satellite Signals for Early Flooding Detection and Real-Time Rainfall Field Reconstruction
Giacomo Bacci [1], Fabiola Sapienza [1], Filippo Giannetti [1]
[1] *University of Pisa (Italy)*

SESSION G06-2

Room 204

Advances in Machine Learning methods for ionospheric modelling (Claudio Cesaroni, Ivan Galkin, Jade Morton) (Part 2)
Session Chairs: Cesaroni Claudio, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy
Morton Y. Jade, University of Colorado Boulder, United States

(Invited)Spatiotemporal Sequence Prediction of Global Ionospheric Total Electron Content Map Based on Deep Learning Recurrent Neural Network
Peng Liu [1], Tatsuhiro Yokoyama [1], Mamoru Yamamoto [1]
[1] *Kyoto University (Japan)*

Machine Learning assisted Characterization of Ionospheric Scintillation Signatures in High Latitudes according to Irregularities
Anna-Marie Bals [1], Kshitija B. Deshpande [1]
[1] *Embry Riddle Aeronautical University (United States)*

(Invited)Plasma Frequency Determination from In-situ Wave Receivers
Yi-Jiun Su [1], John Carilli [2]
[1] *Air Force Research Laboratory (United States);* [2] *Air Force Research Laboratory - Kirtland Air Force Base (United States)*

SESSION G15-1

Room 101

Techniques, Methods and Issues for Real Time Ionospheric Modeling (Jonah Colman, Sean Elvidge, Keith Groves) (Part 1)
Session Chairs: Colman Jonah, Air Force Research Lab, United States

YSA* SPCFinalist* Online Determination of GNSS Differential Code Biases using Rao-Blackwellized Particle Filtering
Benjamin Reid [1]
[1] *University of New Brunswick (Canada)*

IGS Real-Time Service for Ionosphere Modeling and Monitoring
Ningbo Wang [1], Manuel Hernandez-Pajares [2], Andrzej Krankowski [3]
[1] *Aerospace Information Research Institute (AIR) - Chinese Academy of Sciences (China);* [2] *Universitat Politècnica de Catalunya (Spain);* [3] *University of Warmia and Mazury in Olsztyn (Poland)*

YSA* Traveling Ionospheric Disturbances detection: a TEC detrending techniques comparison and a study of their impact on extracted parameters
Marco Guerra [1], Claudio Cesaroni [2], Luca Spogli [1], Mattia Crespi [1]
[1] *Università "La Sapienza" (Italy);* [2] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy)*

SESSION H07-2
Room 102

Active experiments and radio sounding (Vikas Sonwalkar, Amani Reddy, Paul Bernhardt, Robert Moore) (Part 2)
Session Chairs: Moore Robert, University of Florida, United States
Bernhardt Paul, University of Alaska - HAARP, United States

Applications of short duration HF pulses to study initial plasma processes after HF turn-on
Brenton Watkins [1], Spencer Kuo [2]
[1] *University of Alaska at Fairbanks (United States);* [2] *New York University (United States)*

Mutual impedance experiments and quasi-thermal noise spectroscopy in magnetised space plasma
Pietro Dazzi [1], Pierre Henri [2], Karine Issautier [3], Luca Bucciantini [4], Federico Lavorenti [5], Gaetan Wattieaux [6]
[1] *LPC2E (CNRS) - LESIA (Obs. de Paris) (France);* [2] *Lab. Lagrande - OCA (CNRS) - LPC2E (CNRS) (France);* [3] *LESIA (Obs. de Paris) (France);* [4] *LPP (CNRS) - LPC2E (CNRS) (France);* [5] *Lab. Lagrange - OCA (CNRS) - Univ. of Pisa (Italy);* [6] *LAPLACE - Univ. Toulouse (France)*

Joint EISCAT HF heater facility - Suomi 100 cubesat ionospheric measurements
Esa Kallio [1], Antti Kero [2], Anita Aikio [1], Ari-Matti Harri [1], Riku Jarvinen [1], Kirsti Kauristie [1], Antti Kestilä [1], Olli Knuuttila [1], Petri Koskimaa [1], Leo Nyman [1], Jouni Rynö [1], Heikki Vanhamäki [1], Erik Varberg [1]
[1] *Aalto University - School of Electrical Engineering (Finland);* [2] *University of Oulu (Finland)*

SESSION HJ-1
Small Hall

Radio emission from the Sun, Heliosphere, and Planets (Pietro Zucca, Patrick Galopeau, Natchimuthuk Gopalswamy) (Part 1)
Session Chairs: Zucca Pietro, ASTRON, Netherlands
Galopeau Patrick H. M., LATMOS-CNRS, UVSQ Université Paris-Saclay, France
Gopalswamy Nat, NASA Goddard Space Flight Center, Greenbelt, Maryland, United States

Deep Space Weather forecasting using radio sounding experiments with VLBI radio telescopes during the Martian solar conjunction
Guifré Molera Calvés [1], Jasper Edwards [1], Maoli Ma [2], Noor Md. Said [3], Giuseppe Cimo [1], Pradyumna Kummamuru [1]
[1] *University of Tasmania (Australia);* [2] *Shanghai Astronomical Observatory (China);* [3] *Joint Institute for VLBI in Europe (Netherlands)*

SESSION J01-7
Mid-sized Hall A

New telescopes and major upgrades to existing telescopes (Di Li, Rob Beswick, Anna Bonaldi) (Part 7)
Session Chairs: Asayama Shin' ichiro, SKA Observatory, United Kingdom

Reflector Antenna Optimization of ngVLA 6-m antenna
Hiroaki Imada [1], Alvaro Gonzalez [1], Robert Lehmensiek [2], Wes Grammer [1], Robert Selina [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *National Radio Astronomy Observatory (United States)*

Configuration Design for Large N Arrays
David Woody [1]
[1] *Caltech (United States)*

The Large Submillimeter Telescope: Overview and revised requirements for science cases
Kotaro Kohno [1], Ryohei Kawabe [2], Yoichi Tamura [1], Akio Taniguchi [1], Ray Furuya [1], Tatsuya Takekoshi [1], Shun Ishii [1], Tai Oshima [1], Seiichi Sakamoto [1]
[1] *University of Tokyo (Japan);* [2] *National Astronomical Observatory of Japan (Japan)*

SESSION J02-1

Room 105

Spaceborne Radio Astronomy (Leonid Gurvits, Cristina Garcia Miró) (Part 1)
Session Chairs: García Miró Cristina, Yebes Observatory, Spain

(Invited)DSL: A Microsatellite Array for Ultra-low-frequency Radio Imaging
Jingye Yan [1], Li Deng [1], Lin Wu [1], Leonid Gurvits [3,4], Xuelei Chen [2], Ji Wu [1]
[1] National Space Science Center, Chinese Academy of Sciences (China); [2] National Astronomical Observatories, Chinese Academy of Sciences (China); [3] Joint Institute for VLBI ERIC (The Netherland); [4] Delft University of Technology (The Netherlands)

The Frontier in 21-cm Cosmology from the Farside of the Moon
Nivedita Mahesh [1], Jack Burns [2]
[1] Caltech (United States); [2] CU Boulder (United States)

(Invited)Ultra Long Wavelength Astronomy - NCLE and an outlook for future missions
Mark Bentum [1]
[1] ASTRON (Netherlands)

SESSION KB-3

Room 201-202

Electromagnetic/optical imaging and sensing for biomedical applications - part 3 (Puyan Mojabi, Shouhei Kidera, Satheesh Bojja Venkatakrishnan, Erdem Topsakal)
Session Chairs: Mojabi Puyan, University of Manitoba, Canada

YS* Determining bone position from wearable antennas using microwave imaging: A feasibility study
Vignesh Radhakrishnan [1], Peter Ellison [1], Samadhan Patil [1], Adar Pelah [1], Martin Robinson [1]
[1] University of York (United Kingdom)

YS* Complex-domain Pulse-wave Synchronous Feature Extraction For Millimeter-wave Adaptive Glucose Concentration Estimation: Proposal and Preliminary Experiments
Lena Azuma [1], Ryo Natsuaki [1], Akira Hirose [1]
[1] The University of Tokyo (Japan)

YS* Near field positioning system based on anisotropic magneto resistive sensor for knee prosthesis
Lauris Copin [1], Sylvain Dutrieux [2], Arnaud Vena [1], Brice Sorli [1], Stéphane Naudi [1]
[1] CNRS/IES/University Montpellier (France); [2] BoneTag (France)

13:20-14:20

SESSION B06-2

Mid-sized Hall B

Propagation and scattering: advances, trends and new applications (Danilo Erricolo, Guido Lombardi, Robert Burkholder) (Part 2)
Session Chairs: Manara Giuliano, University of Pisa, Italy
Klinkenbusch Ludger, Kiel University, Germany

A feasibility study of AI-based classification of concealed threats at mm-Waves
Maha El Abed [1], Jérome Lanteri [2], Jean-Yves Dauvignac [1], Claire Migliaccio [1]
[1] Université Côte d'Azur/LEAT/CNRS (France); [2] LEAT (France)

Effects of Multiple Human Body Shadowing on Indoor Propagation Characteristics in Local-5G Frequency Band
Kosuke Ushimaru [1], Takashi Hikage [1], Manabu Omiya [1]
[1] Hokkaido University (Japan)

YS* Study on Electromagnetic Scattering Characteristics of Kelvin Ship Wake
Yinyu Wei [1], Yifeng He [1], Xiaosong Zheng [1]
[1] Xi'an Institute of Space Radio Technology (China)

SESSION B23-1

Room 107

Millimeter-wave antennas/5G communications and beyond (Jiro Hirokawa, Elias Alwan) (Part 1)
Session Chairs: Sato Hiroyasu, Tohoku university, Japan

Maximum Permissible Transmission Line Loss to Meet a Target Gain for a Corporate-Fed Uniform Rectangular Array
Christopher Hynes [1], Rodney Vaughan [1]
[1] *Simon Fraser University (Canada)*

Design of a Pillbox Reflector based Millimeter-Wave Multi-beam OAM antenna
Yuanxi Cao [1], Yan Sen [1], JIanxing Li [1], Chen Juan [1]
[1] *Xi'an Jiaotong University (China)*

Phased Array of Dielectric Tapered Antenna at 300 GHz band
Ryusei Sakai [1], Towa Ohno [1], Keizo Inagaki [2], Atsushi Kanno [1], Norihiko Sekine [1], Ayumu Yabuki [1], Junichi Nakajima [1], Shintaro Hisatake [1]
[1] *Gifu University (Japan);* [2] *National Institute of Information and Communications Technology (Japan)*

SESSION B29-3

Room 104

Reconfigurable Intelligent Surfaces (RIS) and their Applications (Filippo Costa, Fu Liu) (Part 3)
Session Chairs: Chen Pai-Yen, University of Illinois Chicago,

RIS Designs Based on Stacked FSS Elements
Wen-Jiao Liao [1], Shang-Fei Wang [1], Yuan-Chang Hou [2]
[1] *National Taiwan University of Science and Technology (Taiwan);* [2] *National Ilan University (Taiwan)*

Mechatronic Shape-Shifting Reflector Platform for Dynamic Beam-steering
Keigan Macdonell [1], Debidas Kundu [1], Leandro Rufail [1], Shulabh Gupta [1]
[1] *Carleton University (Canada)*

(Invited)End-to-end mutual-impedance model for wireless communications assisted by reconfigurable intelligent surfaces
Gabriele Gradoni [1], Sergio Terranova [2], Keisuke Konno [3]
[1] *University of Surrey (United Kingdom);* [2] *University of Nottingham (United Kingdom);* [3] *Tohoku University (Japan)*

SESSION C06-2

Room 108

6G and future wireless systems (Haijun Zhang, Satoshi Tsukamoto) (Part 2)
Session Chairs: TSUKAMOTO Satoshi, Tohoku University,
Zhang Haijun, University of Science and Technology Beijing, China

The Influence of the Radio Channel on Precision of Position Estimation of the User Terminal Using the NB-IoT Radio Interface
Piotr Rajchowski [1], Krzysztof K. Cwalina [1], Jaroslaw Sadowski [1]
[1] *Gdansk University of Technology (Poland)*

Analysis of the Wilkinson Coupler Under Different Input Conditions
Satoshi Tanaka [1], Takeshi Yoshida [1], Shuhei Amakawa [1], Minoru Fujishima [1]
[1] *Hiroshima University (Japan)*

SINR Performance of Distributed MIMO Mobile Channel Using Null-Space Expansion
Taiki Matsuyama [1], Makoto Taromaru [1], Hidekazu Murata [2], Tatsuhiko Iwakuni [3], Daisei Uchida [1], Naoki Kita [1]
[1] *Fukuoka University (Japan);* [2] *Yamaguchi University (Japan);* [3] *NTT Corporation (Japan)*

SESSION Commission G Tutorial

Conference Hall (Tutorials)

The International Reference Ionosphere - A Commission G Success Story
Dieter Bilitza [1]
[1] *George Mason University (United States)*

SESSION EJGF-3

Room 207

Machine learning & signal processing to analyze & mitigate EMI and RFI (Virginie Deniau, R. Trinchero, Kevin Vinsen, Kaushal Bush, Hariharan Krishnan, Paolo de Matthaeis) (Part 3)

Session Chairs: Trinchero Riccardo, Politecnico di Torino, Italy
Vinsen Kevin, University of Western Australia, Australia

Detecting and Mitigating Radio Frequency Interference Artifacts via Tensor Decomposition of Multi-Temporal SAR Images

Siqi Lai [1], Yanyang Liu [2], Mingliang Tao [1], Jia Su [1], Ling Wang [1]
[1] *Northwestern Polytechnical University (China);* [2] *Shanghai Institute of Satellite Engineering (China)*

Interference Type Recognition in Spaceborne SARs Image Based on Deep CNN Model

Jiawang Li [1], Mingliang Tao [1], Yanyang Liu [2], Huanyu Sun [1], Siqi Lai [1], Jia Su [1]
[1] *Northwestern Polytechnical University (China);* [2] *Shanghai Institute of Satellite Engineering (China)*

Spatial filter based RFI mitigation on FAST

Yu Wang [1], Yinghui Zheng [2], Zheng Zheng [1], Haiyan Zhang [1], Fei Liu [1], Ran Duan [1], Di Li [1]
[1] *Zhejiang Laboratory (China);* [2] *National Astronomical Observatories of China (China)*

SESSION HJ-2

Small Hall

Radio emission from the Sun, Heliosphere, and Planets (Pietro Zucca, Patrick Galopeau, Natchimuthuk Gopalswamy) (Part 2)

Session Chairs: Zucca Pietro, ASTRON, Netherlands
Galopeau Patrick H. M., LATMOS-CNRS, UVSQ Université Paris-Saclay, France
Gopalswamy Nat, NASA Goddard Space Flight Center, Greenbelt, Maryland, United States

YSA* SPC* First Ever Measurement of Quiet Sun Magnetic Field at Higher Coronal Heights Using Spectro-Polarimetric Radio Observation with SKA Precursor

Devojyoti Kansabanik [1], Surajit Mondal [2], Divya Oberoi [3]
[1] *Tata Institute of Fundamental Research (India);* [2] *Center for Solar-Terrestrial Research - New Jersey Institute of Technology (United States);* [3] *National Centre for Radio Astrophysics (India)*

Separating fundamental and harmonic emission in LOFAR solar type III radio burst images

Christian Vocks [1], Pietro Zucca [2], Mario Bisi [3], Bartosz Dabrowski [4], Diana Morosan [1], Peter Gallagher [1], Andrzej Krankowski [1], Jasmina Magdalenic [1], Gottfried Mann [1], Christophe Marque [1], Barbara Matyjasiak [1], Hanna Rothkaehl [1]
[1] *Leibniz-Institute for Astrophysics Potsdam (Germany);* [2] *ASTRON (Netherlands);* [3] *RAL Space (United Kingdom);* [4] *University of Warmia and Mazury (Poland)*

Source Sizes of Type II Radio Bursts with LOFAR Interferometric Observations

Anshu Kumari [1], Diana Morosan [2], Emilia Kilpua [1], Farhad Daei [1], Peijin Zhang [1], Pietro Zucca [1]
[1] *NASA Goddard Space Flight Center (United States);* [2] *University of Helsinki (Finland)*

SESSION J02-2

Room 105

Spaceborne Radio Astronomy (Leonid Gurvits, Cristina Garcia Miró) (Part 2)

Session Chairs: Gurvits Leonid, Joint Institute for VLBI ERIC, Netherlands

(Invited)RadioAstron highlights

Yuri Kovalev [1]
[1] *MPIfR (Germany)*

The Implementation of the Sun Radio Interferometer Space Experiment (SunRISE)

Joseph Lazio [1], Justin Kasper [2], Andrew Romero-Wolf [1], James Lux [1], Tim Neilson [3], Lynn Wilson [4]
[1] *Jet Propulsion Laboratory - California Institute of Techology (United States);* [2] *University of Michigan (United States);* [3] *Space Dynamics Laboratory - Utah State University (United States);* [4] *NASA Goddard Space Flight Center (United States)*

(Invited)Space VLBI in China: Current Status and Perspectives

Weimin Zheng [1], Bo Zhang [2], Tao An [1], Lei Liu [1], Zhiqiang Shen [1], Xiaoyu Hong [1], Minfeng Gu [1]
[1] *Shanghai Astronomical Observatory - Chinese Academy of Sciences (China);* [2] *Shanghai Astronomical Observatory (China)*

SESSION J04-1

Mid-sized Hall A

Antennas and receivers (Douglas Hayman, Jacki Gilmore, Pietro Bolli, David Davidson) (Part 1)
Session Chairs: Gilmore Jacki, Stellenbosch University, South Africa
Hayman Douglas, CSIRO, Australia

(Invited)Approaches to High Dynamic Range Imaging - Application to the ngVLA
Sridharan Tirupati Kumara [1], Sanjay Bhatnagar [1], Preshanth Jagannathan [1], Kumar Golap [1]
[1] *National Radio Astronomy Observatory (United States)*

(Invited)Calibrating Phased Array Feeds for the ASKAP Telescope
Aaron Chippendale [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)*

Radio Frequency Interference Monitoring for the Square Kilometre Array
Paul Van der Merwe [1], Abraham Otto [1]
[1] *Square Kilometre Array Observatory (Australia)*

SESSION KE-1

Room 201-202

EMC for biomedical and healthcare devices - part 1 (Jianqing Wang, Takashi Hikage, Carlo Carobbi)
Session Chairs: Wang Jianqing, Nagoya Institute of Technology, Japan

The Independence of AIMD Lead Transfer Functions on the Trajectory Shapes
Zuo Ziyu [1], Wang Qinyang [1], Coco Zijin Xu Xu [2], Zheng Jianfeng [1], Kumar Ananda [3], Kainz Wolfgang [4], Ji Chen [1]
[1] *Univ of Houston (United States);* [2] *Stephen F Austin High school (United States);* [3] *FDA (United States);* [4] *HPC for MRI Safety (United States)*

Numerical Analysis of EMI Characteristics of Active Implantable Medical Devices in 3G/4G and 5G sub-6GHz bands using finite element method
Funa Tsumura [1], Shuhei Waki [1], Takashi Hikage [1], Manabu Yamamoto [1]
[1] *Hokkaido University (Japan)*

A Simulation Model for EMC Compliance Assessment of Induction Cooktops for Cardiac Implanted Electronic Devices
Tommaso Campi [1], Cecilia Vivarelli [2], Eugenio Mattei [1], Wassim Boumerdassi [1], Matteo Rotellini [1], Giorgio Tatangelo [1], Mauro Feliziani [1]
[1] *University of L'Aquila (Italy);* [2] *Italian National Institute of Health (Italy)*

14:00-14:20

SESSION F03-2

Room 206

Remote Sensing of Earth and Planetary Atmospheres (Animesh Maitra, Tomoo Ushio) (Part 2)
Session Chairs: Nishimura Koji, Kyoto University,
Kitahara Daichi, Osaka University, Japan

YSA* SPC* Characterization of NPF and its precursors in a semi-urban location in North-East India
Barlin Das [1], Binita Pathak [1], Lakhima Chutia [2], Tamanna Subba [3], Pradip Bhuyan [1]
[1] *Dibrugarh University (India);* [2] *University of Iowa (United States);* [3] *Brookhaven National Laboratory (United States)*

14:20-15:20

SESSION B23-2

Room 107

Millimeter-wave antennas/5G communications and beyond (Jiro Hirokawa, Elias Alwan) (Part 2)
Session Chairs: Hirokawa Jiro, TOKYO INSTITUTE OF TECHNOLOGY, Japan

Design of Transition between Dielectric Tube Supported Transmission Line and TE10 Rectangular Hollow Metal Waveguide in 300 GHz Bands
Takuma Kinoshita [1], Futoshi Kuroki [1]
[1] *National Institute of Technology - Kure College (Japan)*

Low-loss Design of Dielectric-tube-supported Metal Rod Transmission Line at THz Frequencies
Yuki Shinhama [1], Futoshi Kuroki [1], Kazuya Miyamoto [2]
[1] *National Institute of Technology - Kure College (Japan);* [2] *Miyamoto Device Development Co. Ltd. (Japan)*

Design of BPF Using Dielectric – tube Supported Metal Transmission Line for Beyond 5G Applications at 300GHz
Mototsugu Ohtani [1], Takuma Kinoshita [1], Futoshi Kuroki [1]
[1] *National Institute of Technology - Kure College (Japan)*

SESSION B29-4

Room 104

Reconfigurable Intelligent Surfaces (RIS) and their Applications (Filippo Costa, Fu Liu) (Part 4)
Session Chairs: Chen Pai-Yen, University of Illinois Chicago,

Analytical Study of Scattering Performance of Scatterers Covered by Dielectric Slab
Keisuke Konno [1], Qiang Chen [1]
[1] *Tohoku University (Japan)*

Coupled Resonator Metasurface Supercell for Independent Control of Orthogonal Polarizations with Enhanced Complex Reflectance
Mohamed Emara [1], Leandro Rufail [1], Shulabh Gupta [1]
[1] *Carleton University (Canada)*

YS* Near Field Optimization Algorithm for Reconfigurable Intelligent Surface
Emanuel Colella [1], Luca Bastianelli [1], Franco Moglie [1], Valter Mariani Primiani [1]
[1] *Università Politecnica delle Marche - CNIT (Italy)*

SESSION C03-5

Room 108

Emerging Technologies for Radar & Communications (Kumar Vijay Mishra, Amir Zaghloul) (Part 5)
Session Chairs: Lin Cissi Ying-tsen, National Central University, Taiwan

Bit Error Rate Performance Improvement of MIMO Linear Receiver Using Null-Space Expansion over Time-Variant Channels
Yuki Ohi [1], Hayato Sugai [1], Makoto Taromaru [2], Tatsuhiko Iwakuni [3], Daisei Uchida [1], Naoki Kita [1]
[1] *Yamaguchi University (Japan);* [2] *Fukuoka University (Japan);* [3] *NTT Corporation (Japan)*

SPC* Antenna Design Optimization using GAN-based Surrogate Model
Kainat Yasmeen [1], Kumar Vijay Mishra [2], A V Subramanyam [1], Shobha Sundar Ram [1]
[1] *Indraprastha Institute of Information Technology (India);* [2] *CCDC Army Research Laboratory (United States)*

The Miniature Software-Defined Radio (MSDR) and the Satellite Automatic Identification System Instrument (SAISI) CubeSat
Cissi Lin [1], Jesse Ciou [1], Tung-Jun Lin [1], Loren Chang [1]
[1] *National Central University (Taiwan)*

SESSION Commission H Tutorial

Conference Hall (Tutorials)

(Invited)Multiple roles of plasma waves in geospace: Arase observations
Yoshizumi Miyoshi [1]
[1] *Nagoya University (Japan)*

SESSION EACFJ

Room 207

Spectrum management and Utilization (Tasso Tzioumis, José Pedro Borrego)
Session Chairs: Tzioumis Tasso, CSIRO,
Borrego José Pedro, ANACOM,

The planned difficulties of Sea Surface Temperature measurements in band 6.9 and 7.3 GHz
Thibaut Caillet [1]
[1] *Agence National des Frequences (France)*

Conditions (technically and regularly) for finding a new access to SST measurements in the microwave area: band sharing is the way
Thibaut Caillet [1]
[1] *Agence National des Frequences (France)*

Rate region and Interference impact analysis for spectrum sharing in 6G NTN-TN networks
Hao-Wei Lee [1], Stephanie Liao [2], Chun-Chia Chen [1], I-Kang Fu [1], Hung-Yu Wei [1]
[1] *National Taiwan University (Taiwan);* [2] *MediaTek inc. (Taiwan)*

SESSION F03-3

Room 206

Remote Sensing of Earth and Planetary Atmospheres (Animesh Maitra, Tomoo Ushio) (Part 3)

Session Chairs: Nishimura Koji, Kyoto University,
Kitahara Daichi, Osaka University, Japan

YSA* Calibration of Pi-SAR2 Polarimetric Observation Data Using ABCI

Yuya Arima [1], Toshifumi Moriyama [2], Yoshio Yamaguchi [3], Ryosuke Nakamura [1], Chiaki Tsutsumi [1], Shoichiro Kojima [4]
[1] National Institute of Advanced Industrial Science and Technology (AIST) (Japan); [2] Nagasaki University (Japan); [3] Niigata University (Japan); [4] National Institute of Information and Communications Technology (Japan)

Development of Boundary Layer Observation Apparatus for VHF Atmosphere Radar

Koji Nishimura [1], Yuan Wang [1], Hiroyuki Hashiguchi [1], Taishi Hashimoto [2], Masaki Tsutsumi [1], Toru Sato [1], Kaoru Sato [1]
[1] Kyoto University (Japan); [2] National Institute of Polar Research (Japan)

Estimating the Cross-Radial Wind Velocity based on the Spectral Observation Theory for Atmospheric Radar

Koji Nishimura [1], Erlu Chuai [1], Hiroyuki Hashiguchi [1]
[1] Kyoto University (Japan)

SESSION G08-1

Room 101

New results and contemporary developments in incoherent scatter radar (Philip Erickson, Roger Varney, Dave Hysell, Anders Tjulin) (Part 1)

Session Chairs: Hysell David, Cornell University, United States
Erickson Philip, MIT Haystack Observatory, United States

A Case for a New Multifrequency, Multistatic, Radar and Radio Observatory in Puerto Rico and the U.S. Virgin Islands

Brett Isham [1], Christiano Brum [2], Jason Kooi [3], Namir Kassim [1], Joseph Helmbolt [1], Juha Vierinen [1], Michel Blanc [1], Wlodek Kofman [1]
[1] Interamerican University of Puerto Rico (United States); [2] University of Central Florida (United States); [3] U.S. Naval Research Laboratory (United States)

EISCAT_3D Imaging Techniques for Ionospheric Incoherent Scatter Spectra Reconstruction

Devin Huyghebaert [1], Björn Gustavsson [1], Juha Vierinen [1], Andres Spicher [1], Andreas Kvammen [1], Matthew Zettergren [2]
[1] UiT - The Arctic University of Norway (Norway); [2] Embry Riddle Aeronautical University (United States)

(Invited)UHF incoherent scatter radar observations of the equatorial F-region at the Jicamarca Radio Observatory

Fabiano Rodrigues [1], Marco Milla [2], Danny Scipion [3], Joab Apaza [1], Karim Kuyeng [1], Jonas Sousasantos [1], Carlos Padin [1]
[1] The University of Texas at Dallas (United States); [2] Pontificia Universidad Católica del Perú (Peru); [3] Geophysical Institute of Peru - Jicamarca Radio Observatory (Peru)

SESSION G10-1

Room 204

International Beacon Satellite Studies (Andrzej Krankowski, Bruno Nava, Seebany Datta-Barua) (Part 1)

Session Chairs: Krankowski Andrzej, Space Radio-Diagnostics Research Center, University of Warmia and Mazury in Olsz, Poland
Nava Bruno, The Abdus Salam International Centre for Theoretical Physics, Italy

International Committee on Global Navigation Satellite Systems: Space Weather

Sharafat Gadimova [1]
[1] UNOOSA (Austria)

Advanced methodology development for Real-Time Multi-constellation (BDS, Galileo and GPS) Ionosphere Services – a bilateral project report

Kacper Kotulak [1], Adam Froń [1], Paweł Flisek [1], Ningbo Wang [2], Zishen Li [1], Andrzej Krankowski [1]
[1] University of Warmia and Mazury (Poland); [2] Aerospace Information Research Institute (AIR) (China)

Effects of CME and CIR induced geomagnetic storm over Brazilian low-latitude ionosphere.

Stella Pires de Moraes Santos [1], Bruno Nava [2], Cláudia Maria Nicoli Cândido [3], Fabio Becker Guedes [1]
[1] Instituto Nacional de Pesquisas Espaciais (Brazil); [2] ICTP (Italy); [3] Universidade do Vale do Paraíba (Brazil)

SESSION J02-3

Room 105

Spaceborne Radio Astronomy (Leonid Gurvits, Cristina Garcia Miró) (Part 3)
Session Chairs: Gurvits Leonid, Joint Institute for VLBI ERIC, Netherlands

(Invited)Latest Advances in THz Heterodyne Receivers for Space Probes
Martina Wiedner [1], Yan Delorme [1], Jean-Michel Krieg [1], Andrey Baryshev [2], Victor Belitsky [3], Vincent Desmaris [1], Anna DiGiorgio [1], Juan-Daniel Gallego [1], Maryvonne Gerin [1], Paul Goldsmith [1], Frank Helmich [1], Willem Jellema [1], André Laurens [1], Imran Mehdi [1], Christophe Risacher [1]
[1] Observatoire de Paris (France); [2] Kapteyn Astronomical Institut (Netherlands); [3] GARD (Sweden)

(Invited)A space VLBI mission at sub-mm wavelengths
Zsolt Paragi [1]
[1] Joint Institute for VLBI ERIC (JIVE) (Netherlands)

Observing the Black Hole Photon Ring - Science and Engineering Concept for the Event Horizon Explorer Space-VLBI Mission
Sridharan Tirupati Kumara [1], Peter Kurczynski [2], Michael Johnson [3], Sheperd Doeleman [1], Eliad Peretz [1], Jade Wang [1]
[1] National Radio Astronomy Observatory (United States); [2] Goddard Space Flight Center - NASA (United States); [3] Center for Astrophysics - Harvard & Smithsonian (United States)

SESSION J04-2

Mid-sized Hall A

Antennas and receivers (Douglas Hayman, Jacki Gilmore, Pietro Bolli, David Davidson) (Part 2)
Session Chairs: Gilmore Jacki, Stellenbosch University, South Africa
Hayman Douglas, CSIRO, Australia

Evaluation of alternative SKA-Low station layouts
David Davidson [1], Randall Wayth [1], Daniel Ung [1]
[1] Curtin University (Australia)

Aperture efficiency of beamforming with mutual coupling in SKA-Low stations
Randall Wayth [1], David Davidson [2], Daniel Ung [1]
[1] ICRAR - Curtin University (Australia); [2] International Centre for Radio Astronomy Research (ICRAR) - Curtin University (Australia)

Differentially Rotated SKALA4.1 Antennas in Vogel Configurations
Tobia Carozzi [1], Pietro Bolli [2], Ravi Subrahmanyan [3], Robert Braun [4]
[1] Onsala Space Observatory - Chalmers University (Sweden); [2] Italian National Institute for Astrophysics (Italy); [3] Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia); [4] SKA Observatory - Jodrell Bank (United Kingdom)

SESSION KE-2

Room 201-202

EMC for biomedical and healthcare devices - part 2 (Jianqing Wang, Takashi Hikage, Carlo Carobbi)
Session Chairs: Chen Ji, Univ of Houston, United States

Exposure assessment of human exposure to electromagnetic radiation from WPT system for implantable medical device
Seoneui Hong [1], Jangyong Ahn [2], Seungyoung Ahn [1], Hyung-Do Choi [1]
[1] Electronics and Telecommunications Research Institute (South Korea); [2] Korea Advanced Institute of Science and Technology (KAIST) (South Korea)

SAR Evaluation for Bandwidth-enhanced Implant Communication System With Pre-emphasis Technique
Lijia Liu [1], Hiroaki Takagi [1], Jingjing Shi [2], Jianqing Wang [1]
[1] Nagoya Institute of Technology (Japan); [2] Northeastern university (China)

New Centre/Surround Retinex-like Method for Low-Count Poisson Image Denoising
Elena Pavlyukova [1], Vyacheslav Antsiperov [1]
[1] Kotelnikov IRE RAS (Russia)

15:40-16:40

SESSION Commission A ECR Tutorial

Main Hall A (General Lectures)

Introduction to Electromagnetic Compatibility/Interference (EMC/I), Measurements, Regulatory Authorities & Standards

Nosherwan Shoaib [1]
[1] *National University of Sciences and Technology (NUST) (Pakistan)*

16:40-17:40

SESSION Commission B ECR Tutorial

Main Hall A (General Lectures)

Computing with Metamaterials: How to solve equations using electromagnetic waves

Dimitrios Tzarouchis [1]
[1] *Meta Materials Inc. (United States)*

08:20-09:40

SESSION B07-3

Mid-sized Hall B

Advanced algorithms in computational electromagnetics (Shinichiro Ohnuki, Vladimir Okhmatovski, Qing Huo Liu) (Part 3)

Session Chairs: Ohnuki Shinichiro, Nihon University, Japan
Okhmatovski Vladimir, UNIVERSITY OF MANITOBA, United States
Liu Qing Huo, Department of Electrical and Computer Engineering, Duke University, United Kingdom

(Invited)SPCFinalist* Quasi-Helmholtz Projectors for High-Order Basis Functions: Definitions, Computational Strategies, Applications

Johann Bourhis [1], Adrien Merlini [2], Francesco P. Andriulli [1]

[1] *Politecnico di Torino (Italy);* [2] *École nationale supérieure Mines-Télécom Atlantique Bretagne Pays de la Loire (France)*

Analysis of a Terahertz Polarizer Using the Three-Dimensional Semi-Implicit FDTD Method

Hiroto Miyao [1], Jun Shibayama [1], Jun Yamauchi [1], Hisamatsu Nakano [1]

[1] *Hosei University (Japan)*

Multidimensional Optical Diffraction using Tensor Train Decompositions

Pandhittaya Noikorn [1], Sherif Sherif [1]

[1] *University of Manitoba (Canada)*

Physics-Informed Graph Neural Network for Electromagnetic Simulations

Jiefu Chen [1], Yawei Su [1], Shubin Zeng [2], Xuqing Wu [1], Yueqin Huang [1]

[1] *University of Houston (United States);* [2] *Cyentech Consulting LLC (United States)*

SESSION B11-1

Room 107

Inverse scattering and imaging - In memoriam of Matteo Pastorino (Matteo Pastorino, Shouhei Kidera, Raffaele Solimene, Andrea Randazzo) (Part 1)

Session Chairs: Randazzo Andrea, University of Genoa, Italy

Contrast Source Enhanced Radar and Inverse Scattering Scheme for Microwave Stratified Ground Media Imaging

Shouhei Kidera [1], Yoshihiro Yamauchi [1]

[1] *University of Electro-Communications (Japan)*

(Invited)Gradient based Inverse Scattering Algorithm using Energy Functional with reduced observation points

Moriyama Toshifumi [1]

[1] *Nagasaki University (Japan)*

Combining Wave Physics and Deep Learning to Solve Inverse Scattering Problems

Rui Guo [1], Zhichao Lin [1], Hongyu Zhou [1], Maokun Li [1], Fan Yang [1], Shenheng Xu [1], Aria Abubakar [2]

[1] *Tsinghua University (China);* [2] *SLB (United States)*

REC-B11-02 A filtering strategy to improve the MUSIC-based approach performances

Maria Antonia Maisto [1], Angela Dell' Aversano [2], Brancaccio Adriana [1], Raffaele Solimene [1]

[1] *Università della Campania- L. Vanvitelli (Italy);* [2] *Università degli studi della Campania- Luigi Vanvitelli (Italy)*

SESSION EBC

Room 207

Wave modelling of novel wireless systems (Gabriele Gradoni, Luca Bastianelli)

Session Chairs: Gradoni Gabriele, University of Nottingham, United Kingdom
Bastianelli Luca, CNIT c/o Universita` Politecnica delle Marche, Italy

(Invited)SPCFinalist* Heuristic Quantum Optimization for Engineering Reconfigurable Intelligent Surfaces in Smart Radio Environments

Qi Jian Lim [1], Zhen Peng [1], Gabriele Gradoni [2]

[1] *University of Illinois at Urbana-Champaign (United States);* [2] *University of Nottingham (United Kingdom)*

(Invited)Modeling and Optimizing Reconfigurable Intelligent Surfaces in Wireless Environments

Marco Di Renzo [1]

[1] *CNRS & CentraleSupelec - Paris-Saclay University (France)*

Sherrington-Kirkpatrick Hamiltonian model of meta-surfaces in complex environments

Gabriele Gradoni [1], Sergio Terranova [2], Emanuel Colella [3], Qi Jian Lim [4], Charles Ross [1], Zhen Peng [1]
[1] *University of Surrey (United Kingdom);* [2] *University of Nottingham (United Kingdom);* [3] *Universita Politecnica delle Marche (Italy);* [4] *University of Illinois at Urbana-Champaign (United States)*

Beyond 5G mm-wave Wireless Systems With Reconfigurable Intelligent Surfaces

Luca Bastianelli [1], Davide Micheli [2], Riccardo Diamanti [1], Emanuel Colella [1], Valter Mariani Primiani [1], Franco Moglie [1], Gabriele Gradoni [1], Andrea Allasia [1], Maurizio Crozzoli [1], Michele Colombo [1]
[1] *CNIT c/o Universita Politecnica delle Marche (Italy);* [2] *TIM S.p.A. (Italy)*

SESSION F02-1

Room 206

Remote sensing of precipitation (Venkata Chandrasekar, Tomoo Ushio) (Part 1)

Session Chairs: Chandrasekaran Venkatachalam, Colorado State University, United States
Ushio Tomoo, Osaka University, Japan

YSA* Investigation of the Evolution of the Height Profiles of Rain Microphysical Parameters: A Seasonal Comparison at a Tropical Location

Gargi Rakshit [1], Rohit Chakraborty [2], Animesh Maitra [3]
[1] *India Meteorological Department (India);* [2] *Indian Institute of Science (India);* [3] *University of Calcutta (India)*

SPC* Analysis of Dual-polarization Parameters in Isolate Thunderstorms Obtained by Multi-Parameter Phased Array Weather Radar

Shuo Wang [1], Yuuki Wada [1], Syugo Hayashi [2], Tomoo Ushio [1], Venkatachalam Chandrasekaran [3]
[1] *Osaka University (Japan);* [2] *Meteorological Research Institute - Japan Meteorological Agency (Japan);* [3] *Colorado State University (United States)*

Overview of X-Band radar deployments in the Advanced Quantitative Precipitation Information (AQPI) System

V. Chandrasekar [1], Robert Cifelli [2], Sounak Biswas [1]
[1] *Colorado State University (United States);* [2] *NOAA Physical Sciences Laboratory (United States)*

Sensitivity of Surface Temperatures towards Lightning over the Indian Subcontinent

Rohit Chakraborty [1], Arindam Chakraborty [1]
[1] *Indian Institute of Science (India)*

SESSION G10-2

Room 204

International Beacon Satellite Studies (Andrzej Krankowski, Bruno Nava, Seebany Datta-Barua) (Part 2)

Session Chairs: Krankowski Andrzej, Space Radio-Diagnostics Research Center, University of Warmia and Mazury in Olsz, Poland
Nava Bruno, The Abdus Salam International Centre for Theoretical Physics, Italy

(Invited)Measurement of radio wave scintillation through radio telescopes

Biagio Forte [1], Richard Fallows [2], Mario M. Bisi [1], Pawel Flisek [1], Kacper Kotulak [1]
[1] *University of Bath (United Kingdom);* [2] *RAL Space - United Kingdom Research and Innovation (UKRI) - Science & Technology (United Kingdom)*

(Invited)Next-Generation of Beacon Sensors for Ionosphere Imaging and Scintillation Science

Romina Nikoukar [1], Matthew D. Zettergren [2], Robert E. Erlandson [1], Edward L. Reynolds [1], Christopher Haskins [1], Justin D. Bradfield [1], Avinash Sharma [1]
[1] *Johns Hopkins University Applied Physics Laboratory (United States);* [2] *Embry Riddle Aeronautical University (United States)*

Tracing ionospheric irregularities generated during geomagnetic storms using ground-based GNSS observations and LEO polar orbiting satellites

Iurii Cherniak [1], Irina Zakharenkova [1], Andrzej Krankowski [2]
[1] *UCAR (United States);* [2] *University of Warmia and Mazury in Olsztyn (Poland)*

Dual-Band Beacon (DBB) experiment of total electron content (TEC) from COSMIC-2 and Sounding Rocket

Mamoru Yamamoto [1]
[1] *Kyoto University (Japan)*

SESSION G16

Room 101

The crucial role of integrated research infrastructures for monitoring and modelling the upper atmosphere (Anna Belehaki, Lucilla Alfonsi, Mamoru Ishii)

Session Chairs: Alfonsi Lucilla, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy
Mamoru Ishii, National Institute of Information and Communications Technology, Japan

(Invited)Understanding Multi-scale Ionospheric Physics Using A Ground-based Distributed Array Of Instruments.

P. T. Jayachandran [1], P. T. Jayachandran [1]

[1] *University of New Brunswick (Canada)*

Results of multiinstrumental observations of traveling ionospheric disturbances triggered by different sources over Europe

Petra Koucká Knížová [1], Dalia Obrazová [1], Jaroslav Chum [1], Sergii V. Panasenko [2], Ivan Galkin [1], Kateryna D. Aksonova [1], Jan Rusz [1], Daniel Kouba [1], Oleksandr V. Bogomaz [1], Taras G. Zhivolup [1], Alexander V. Koloskov [1]

[1] *Institute of Atmospheric Physics of the Czech Academy of Sciences (Czech Republic);* [2] *Institute of Ionosphere (Ukraine)*

(Invited)EISCAT_3D and related Japanese activities

Satonori Nozawa [1], Yasunobu Ogawa [2], Taishi Hashimoto [1], Koji Nishimura [1], Keisuke Hosokawa [1], Hiroshi Miyaoka [1]

[1] *Nagoya University (Japan);* [2] *National Institute of Polar Research (Japan)*

SESSION H09-1

Room 102

Small Satellites and observations of the space environment (Robert Marshall, David Malaspina) (Part 1)

Session Chairs: Malaspina David, University of Colorado, United States
Marshall Robert, University of Colorado Boulder, United States

The RADiation Impacts on Climate and Atmospheric Loss Satellite (RADICALS) Mission

Leonid Olifer [1], Andrew W. Yau [2], Andrew D. Howarth [1], Michael Lipsett [1], David Barona [1], Greg Enno [1], Ian Mann [1], Christopher Cully [1], Robert Fedosejevs [1], Robert Zee [1], David Milling [1], Robert Rankin [1], Martin Connors [1], Kathryn McWilliams [1], William Ward [1], Robyn Fiori [1], Louis Ozeke [1]

[1] *University of Alberta (Canada);* [2] *University of Calgary (Canada)*

Evidence of quasilinear and nonlinear precipitation of radiation belt electrons into Earth's atmosphere from the ELFIN CubeSats

Drew Turner [1], Vassilis Angelopoulos [2]

[1] *Johns Hopkins Applied Physics Laboratory (United States);* [2] *University of California (United States)*

The LAMP-2 Sounding Rocket Mission: Understanding the Three-Dimensional Structure of Pulsating Aurora

Allison Jaynes [1], Marc Lessard [2], Kazushi Asamura [1], Keisuke Hosokawa [1], Yoshizumi Miyoshi [1], Takeshi Sakanoi [1], Hyomin Kim [1], Kristina Lynch [1], Geoff McHarg [1], Christine Gabrielse [1], Stephen Kaeppler [1], Chrystal Moser-Gauthier [1], Jodie McLennan [1]

[1] *University of Iowa (United States);* [2] *University of New Hampshire (United States)*

(Invited)The DUCHESS Mission: Quantifying Ducted Chorus Waves' Contribution to Radiation Belt Dynamics

Xiao-Jia Zhang [1], Vassilis Angelopoulos [2], Anton Artemyev [1], Ethan Tsai [1]

[1] *The University of Texas at Dallas (United States);* [2] *University of California (United States)*

SESSION J08-1

Room 105

21-cm Cosmology: Dark Ages, Cosmic Dawn and the Epoch of Re-ionization (Eloy de Lera Acedo, Anastasia Fialkov) (Part 1)

Session Chairs: Bevins Harry, University of Cambridge, United Kingdom
Anstey Dominic, University of Cambridge, United Kingdom

(Invited)Radio science with 21-cm cosmology: opening a new window on the Universe

Rennan Barkana [1]

[1] *Tel Aviv University (Israel)*

The Evolution of Galaxies with the Square Kilometre Array

Tsutomu Takeuchi [1], Takuya Akahori [2]

[1] *Nagoya University (Japan);* [2] *National Astronomical Observatory of Japan (Japan)*

Constraints on Superconducting Cosmic Strings from 21-cm Cosmology

Thomas Gessey-Jones [1], Harry Bevins [1], Simon Pochinda [1], Anastasia Fialkov [1], Eloy De Lera Acedo [1], William Handley [1], Rennan Barkana [2]

[1] *University of Cambridge (United Kingdom);* [2] *Tel Aviv University (Israel)*

YSA* Imprints of early Universe galaxy formation on the 21-cm signal
Sambit Kumar Giri [1]
[1] *Stockholm University (Sweden)*

SESSION J14-1

Mid-sized Hall A

Observatory reports, latest news and general discussion (Douglas Bock, Stefan J. Wijnholds) (Part 1)
Session Chairs: Bock Douglas, CSIRO, Australia
Wijnholds Stefan J., ASTRON, Netherlands

ALMA - an observatory report
Sean Dougherty [1]
[1] *ALMA (Chile)*

The Australia Telescope National Facility
Douglas Bock [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)*

The International LOFAR Telescope: A premier low-frequency radio facility for the 2030s and beyond
Irene Bonati [1], Rene Vermeulen [1]
[1] *ASTRON (Netherlands)*

The GMRT : Current Status, New Results and Plans for the Future
Yashwant Gupta [1]
[1] *National Centre for Radio Astrophysics (India)*

SESSION K17-1

Room 201-202

Image-guided techniques for medical treatment based on EMF - part 1 (Koichi Ito, Kagayaki Kuroda, Yuanjin Zheng)
Session Chairs: Kuroda Kagayaki, Graduate School of Engineering, Tokai University, Japan
Kokuryo Daisuke, Kobe University, Japan
ITO Koichi, Chiba University, Japan

Noninvasive MR Thermometry of Fat under Thermal Treatment using Spin-Spin Relaxation Times of Methylene and Methyl Signals
Daiki Endo [1], Tomoyuki Tajima [2], Shohei Matsuhara [1], Yoshiki Watanabe [1], Kagayaki Kuroda [1]
[1] *Graduate School of Engineering - Tokai University (Japan);* [2] *Alivas Inc. (Japan)*

(Invited)A proposal of Focal Point Prediction Method using Compressed Sensing Technique
Daisuke Kokuryo [1], Yusuke Nakagawa [1], Toshiya Kaihara [1], Butada Fujii [1], Etsuko Kumamoto [1]
[1] *Kobe University (Japan)*

Proposal of Semi-Automatic Blood Vessel Tracking Method Considering Displacement from Respiratory Movement
Kakeru Shiraishi [1], Daisuke Kokuryo [1], Toshiya Kaihara [1], Nobutada Fuji [1], Ruriko Watanabe [1], Etsuko Kumamoto [1]
[1] *Kobe University (Japan)*

SESSION HJ-3

Small Hall

Radio emission from the Sun, Heliosphere, and Planets (Pietro Zucca, Patrick Galopeau, Natchimuthuk Gopalswamy) (Part 3)
Session Chairs: Zucca Pietro, ASTRON, Netherlands
Galopeau Patrick H. M., LATMOS-CNRS, UVSQ Université Paris-Saclay, France
Gopalswamy Nat, NASA Goddard Space Flight Center, Greenbelt, Maryland, United States

YS* Solar Radio Spectro-polarimetry (50 - 500 MHz) : Design, Development and Characterization of a Cross-Polarized Log-Periodic Dipole antenna
Anshu Kumari [1], Gireesh G. V. S. [2], Kathiravan C. [1], Mugundhan V. [1], Indrajit V. Barve [1], Ramesh R. [1], Christian Monstein [1]
[1] *NASA Goddard Space Flight Center (United States);* [2] *Indian Institute of Astrophysics (India)*

Solar Cycle Variation of Prominence Eruption Speeds Observed by the Nobeyama Radioheliograph
Seiji Yashiro [1], Nat Gopalswamy [2], Sachiko Akiyama [1], Pertti Makela [1]
[1] *The Catholic University of America (United States);* [2] *NASA Goddard Space Flight Center (United States)*

Routine Characterization of Coronal Mass Ejections Using Gyrosynchrotron Emission
Divya Oberoi [1], Devojyoti Kansabanik [2], Surajit Mondal [3]
[1] *Tata Institute of Fundamental Research (India);* [2] *National Centre for Radio Astrophysics (India);* [3] *New Jersey Institute of Technology (United States)*

09:00-09:40

SESSION B08-1
Room 104

Mathematical methods in electromagnetics (Kazuya Kobayashi, Yury Shestopalov, Martina Bevacqua, Santi Pavone) (Part 1)
Session Chairs: Kobayashi Kazuya, Chuo University, Japan
Du Xin, Tokyo Institute of technology, Japan
Fujita Keisuke, Maebashi Institute of Technology, Japan
Nagasaka Takashi, Ashikaga University, Japan

Closed form solutions of the Helmholtz equation by the method of random rays
Bair Budaev [1]
[1] *University of California (United States)*

(Invited)Comparative RCS Study of Two Parallel-Plate Waveguide Cavities with Material Loading – Dedicated to the 100 Anniversary of Victor P. Shestopalov
Kazuya Kobayashi [1]
[1] *Chuo University (Japan)*

09:20-10:40

SESSION C06-3
Room 108

6G and future wireless systems (Haijun Zhang, Satoshi Tsukamoto) (Part 3)
Session Chairs: TSUKAMOTO Satoshi, Tohoku University,
Zhang Haijun,

A MAP Detector for a Novel SSB FSK Continuous Phase Modulation
Abhishek Kumar [1], Haïfa Farès [2], Yves Louet [1]
[1] *CentraleSupélec - Université Paris Saclay (France);* [2] *CentraleSupélec, Université Paris Saclay, Rennes Campus (France)*

A Simplified Deep-Learning-based Phase Noise Tolerant Radio-Over-Fiber Receiver
Guo Hao Thng [1], Said Mikki [1]
[1] *The Zhejiang University-University of Illinois at Urbana-Champaign (ZJU-UIUC) In (China)*

Measurement of Power Delay Profile for Local 5G System
Takashi Shiba [1], Tomoyuki Furuichi [1], Noriharu Suematsu [1]
[1] *Tohoku University (Japan)*

Concept of Using Liquid Metal to Design Reconfigurable Intelligent Surface
Ryan Banks [1], Quang Nguyen [1], Amir Zaghloul [1]
[1] *Virginia Tech (United States)*

09:40-10:20

SESSION B08-2
Room 104

Mathematical methods in electromagnetics (Kazuya Kobayashi, Yury Shestopalov, Martina Bevacqua, Santi Pavone) (Part 2)
Session Chairs: Kobayashi Kazuya, Chuo University, Japan
Du Xin, Tokyo Institute of technology, Japan
Fujita Keisuke, Maebashi Institute of Technology, Japan
Nagasaka Takashi, Ashikaga University, Japan

(Invited)Image Detection Via Through-the-Wall Radar Data
Aihua Wood [1], Daniel Pomerico [1]
[1] *AFIT (United States)*

(Invited)Eigenmode Analysis of THz Plasmonic Waveguides with Dirac Semimetals
Jun Shibayama [1], Junji Yamauchi [1], Hisamatsu Nakano [1]
[1] *Hosei University (Japan)*

09:40-10:40

SESSION B07-4

Mid-sized Hall B

Advanced algorithms in computational electromagnetics (Shinichiro Ohnuki, Vladimir Okhmatovski, Qing Huo Liu) (Part 4)
Session Chairs: Ohnuki Shinichiro, Nihon University, Japan
Okhmatovski Vladimir, UNIVERSITY OF MANITOBA, United States
Liu Qing Huo, Department of Electrical and Computer Engineering, Duke University, United Kingdom

(Invited)Calderon preconditioning for the EFIE using collocation and the isogeometric BEM
Kazuki Niino [1]
[1] *Kyoto University (Japan)*

A Study on Magneto-Metasurface for THz Isolator
Mio Taniguchi [1], Akito Iguchi [1], Yasuhide Tsuji [1]
[1] *Muroran Institute of Technology (Japan)*

SPC* On a Novel Multi-Kernel Hierarchical Compression Scheme of Boundary Element Matrices
Damiano Franzò [1], Simon Adrian [2], Adrien Merlini [3], Francesco P. Andriulli [1]
[1] *Politecnico di Torino (Italy);* [2] *Universität Rostock (Germany);* [3] *IMT Atlantique (France)*

SESSION B11-2

Room 107

Inverse scattering and imaging - in Memoriam of Matteo Pastorino (Matteo Pastorino, Shouhei Kidera, Raffaele Solimene, Andrea Randazzo) (Part 2)
Session Chairs: Randazzo Andrea, University of Genoa, Italy

Effect of Conductivity on Permittivity Distribution Estimation of a Layered Medium by Using AI
Qijin Sun [1], Tomonori Tsuburaya [1], Zhiqi Meng [1]
[1] *Fukuoka University (Japan)*

Simultaneous Exploitation of Multifrequency Data in Variable-Exponent Electromagnetic Imaging with Finite-Element Modeling
Valentina Schenone [1], Matteo Pastorino [1], Alessandro Fedeli [1], Claudio Estatico [1], Andrea Randazzo [1]
[1] *University of Genoa (Italy)*

YS* Investigation of Range-Correlated Features in Fourier Domain Artifacts Measured Using a Dynamic Antenna Array
Daniel Chen [1], Jeffrey Nanzer [1]
[1] *Michigan State University (United States)*

SESSION EFGH-3

Room 207

Natural Electromagnic Noise & Radio Sensing Applications in Terr. & Planetary Environments (Yasuhide Hobara, Colin Price, Martin Fullekrug, Tomoo Ushio) (Part 3)
Session Chairs: Ushio Tomoo, Osaka University, Japan

(Invited)ELF Radio Waves in the Service of Studying the Lithosphere-Atmosphere-Ionosphere System
Tamás Bozóki [1], Gabriella Sátori [1], Earle Williams [2], Ernő Prácser [1], Karolina Szabóné André [1], Péter Steinbach [1], István Bozsó [1], András Horváth [1], Lukács Kuslits [1], Máté Timkó [1], Anirban Guha [1], Yakun Liu [1], József Bór [1]
[1] *Institute of Earth Physics and Space Science (EPSS) (Hungary);* [2] *Massachusetts Institute of Technology (United States)*

(Invited)High-Frequency Emission from Sprites
Sebastien Celestin [1], Thomas Farges [2], Jean-Mathias Griessmeier [1]
[1] *LPC2E - University of Orleans - CNRS (France);* [2] *CEA / DAM / DIF (France)*

Observations of 50/60 Hz Power Line Radiation in the Low Latitude Ionosphere Detected by the Electric Field Instrument on the C/NOFS Satellite
Rob Pfaff [1], Scott Boardsen [1], Fernando Simoes [1]
[1] *NASA Goddard Space Flight Center (United States)*

SESSION F02-2

Room 206

Remote sensing of precipitation (Venkata Chandrasekar, Tomoo Ushio) (Part 2)
Session Chairs: Chandrasekaran Venkatachalam, Colorado State University, United States

Investigation of Orographic Z-R Relationships for Three Locations in India
Nitig Singh [1], Soumen Datta [2], Vaibhav Tyagi [1], Saurabh Das [1], Udaya Kumar Sahoo [3], Shyam Sundar Kundu [1]
[1] *Indian Institute of Technology Indore (India);* [2] *IIT Indore (India);* [3] *North Eastern Space Applications Centre (India)*

YSA* Validation and calibration of radar reflectivity measurements between ground-based weather radars and space-borne radar GPM over the East Coast and Southern Peninsula region, India
Shruti Saini [1], Subrata Kumar Das [1], Abhishek Jha [2]
[1] *Indian Institute of Tropical Meteorology (India);* [2] *Society of Applied Microwave Electronics Engineering & Research (India)*

Remote Sensing of Clouds and Precipitation Processes using Small Satellite Constellations: Perspectives from the 3-Year TEMPEST-D On-orbit Demonstration and Follow-on Missions
Steven Reising [1], V. Chandrasekar [1], Christian D. Kummerow [1], Shannon T. Brown [2], Chandrasekar Radhakrishnan [1], Chia-Pang Kuo [1], Richard Schulte [1], Todd C. Gaier [1], Sharmila Padmanabhan [1]
[1] *Colorado State University (United States);* [2] *NASA/Caltech Jet Propulsion Laboratory (United States)*

SESSION G08-2

Room 101

New results and contemporary developments in incoherent scatter radar (Philip Erickson, Roger Varney, Dave Hysell, Anders Tjulin) (Part 2)
Session Chairs: Erickson Philip, MIT Haystack Observatory, United States
Tjulin Anders,

(Invited)Modeling AMISR-14 perpendicular-to-B and lower-hybrid line spectral measurements at the magnetic equator
Marco Milla [1], Fabiano Rodrigues [2], Karim Kuyeng [3], Joab Apaza [1], Danny Scipión [1]
[1] *Pontificia Universidad Católica del Perú (Peru);* [2] *The University of Texas at Dallas (United States);* [3] *Instituto Geofísico del Perú (Peru)*

(Invited)Using novel incoherent scatter radar methods to resolve the drivers of F-region plasma density variations
Lindsay Goodwin [1], Gareth Perry [1], Magnus Ivarsen [2]
[1] *New Jersey Institute of Technology (United States);* [2] *University of Oslo (Norway)*

Incoherent Scatter Analysis at Jicamarca
David Hysell [1]
[1] *Cornell University (United States)*

SESSION GHE-1

Room 204

Seismo Electromagnetics (Lithosphere-Atmosphere-Ionosphere Coupling) (Sergey Pulinets, Claudio Cesaroni, Mala Bagiya Dario Sabbagh, Yasu Hobara, Hanna Rothkaehl) (Part 1)
Session Chairs: Sabbagh Dario, Istituto Nazionale di Geofisica e Vulcanologia, Italy

(Invited)Pre-earthquake signals from space
Angelo De Santis [1], Loredana Perrone [1]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy)*

Ionospheric Earthquake Precursors and Ionospheric Storms Observed by FORMOSAT-5/AIP and GIM TEC
JANNYENQ LIU [1], Fu-Yuan Chang [1], Yuh-Ing Chen [1], Chi-Kuang Chao [1]
[1] *National Central University (Taiwan)*

Criticality Analysis of VLF Subionospheric Propagation Data Prior to Recent (2021-2022), Strong (M ≥ 5.5), Earthquakes Occurred in the Southeastern Mediterranean
Dimitrios Z. Politis [1], Stelios M. Potirakis [1], Sudipta Sasmal [2], Debrupa Mondal [3], Yasuhide Hobara [1], Masashi Hayakawa [1]
[1] *University of West Attica (Japan);* [2] *Institute of Astronomy Space and Earth Science (India);* [3] *University of Electro-Communications (Japan)*

SESSION H09-2

Room 102

Small Satellites and observations of the space environment (Robert Marshall, David Malaspina) (Part 2)

Session Chairs: Malaspina David, University of Colorado, United States
Marshall Robert, University of Colorado Boulder, United States

(Invited)The Sun Radio Interferometer Space Experiment (SunRISE)

Justin Kasper [1], Joseph Lazio [2], Andrew Romero-Wolf [1], James Lux [1], Tim Neilson [1], Lynn Wilson [1]

[1] University of Michigan (United States); [2] Jet Propulsion Laboratory - California Institute of Techology (United States)

REC-H09-01 Interplanetary Shock Three-Dimensional Tomography Based on Small Satellites

Li Deng [1], Jingye Yan [1], Lin Wu [1], Xinhua Zhao [1], Fang Shen [1]

[1] National Space Science Center - Chinese Academy of Sciences (China)

Foresail - CubeSat platform and missions to higher orbits

Jaan Praks [1], Petri Niemelä [1], Marius Anger [1], Anton Fetzer [1], Bruce Clayhills [1], Kiril Cheremetiev [1], Ville Lunden [1], Nemanja Jovanovic [1], Rami Vainio [2], Pekka Janhunen [3], Emilia Kilpua [4], Minna Palmroth [1]

[1] Aalto University (Finland); [2] Univesity of Turku (Finland); [3] Finnish Meteorological Institute (Finland); [4] University of Helsinki (Finland)

SESSION HJ-4

Small Hall

Radio emission from the Sun, Heliosphere, and Planets (Pietro Zucca, Patrick Galopeau, Natchimuthuk Gopalswamy) (Part 4)

Session Chairs: Zucca Pietro, ASTRON, Netherlands
Galopeau Patrick H. M., LATMOS-CNRS, UVSQ Université Paris-Saclay, France
Gopalswamy Nat, NASA Goddard Space Flight Center, Greenbelt, Maryland, United States

RFI Mitigation in the Analysis of Jupiter Decameter Radio Bursts at the Timescales from Milliseconds to Hours

Volodymyr Riabov [1], Galina Litvinenko [2], Vyacheslav Zakharenko [1], Victoria Yatsyna [1], Sergei Yerin [1], Philippe Zarka [1], Laurent Lamy [1]

[1] Future University Hakodate (Japan); [2] Institute of Radio Astronomy (Ukraine)

Progress on Solar Radio Burst Observations with MUSER

Wei Wang [1], Yihua Yan [1], Linjie Chen [1], Zhichao Zhou [1], Chengming Tan [1]

[1] NSSC (China)

Type III Radio Bursts from Solar Eruptions and their Connection to GLE and SGRE Events

Nat Gopalswamy [1], Anshu Kumari [1], Pertti Mäkelä [2]

[1] NASA Goddard Space Flight Center (United States); [2] The Catholic University of America (United States)

SESSION J08-2

Room 105

21-cm Cosmology: Dark Ages, Cosmic Dawn and the Epoch of Re-ionization (Eloy de Lera Acedo, Anastasia Fialkov) (Part 2)

Session Chairs: Bevins Harry, University of Cambridge, United Kingdom
Anstey Dominic, University of Cambridge, United Kingdom

(Invited)Progress in preparation of a 21cm global spectrum experiment from the lunar Orbit

Xuelei Chen [1], Fengquan Wu [1], Yidong Xu [1], Yuan Shi [2], Shijie Sun [1], Jiacong Zhu [1], Cong Zhang [1]

[1] National Astronomical Observatories - Chinese Academy of Sciences (China); [2] Shanghai Jiaotong University (China)

REC-J08-04 SEAMS: A space mission dedicated to ultra-low frequency radio observations

Abhirup Datta [1], Harsha Tanti [1], S. Ananthakrishnan [2], D. C. Gharpure [1]

[1] Indian Institute of Technology Indore (India); [2] S. P. Pune University (India)

SESSION J14-2

Mid-sized Hall A

Observatory reports, latest news and general discussion (Douglas Bock, Stefan J. Wijnholds) (Part 2)

Session Chairs: Wijnholds Stefan J., ASTRON, Netherlands
Bock Douglas, CSIRO, Australia

Present status and future directions of Onsala Space Observatory, Sweden

Michael Lindqvist [1]

[1] Chalmers University of Technology (Sweden)

The Greenland Telescope: Thule Operations
Ming-Tang Chen [1], Keiichi Asada [1], Satoki Matsushita [1], Philippe Raffin [1], Chih-Chiang Han [1], Paul T. P. Ho [1], George Nystrom [1], Bill Liu [1], Locutus Chih-Wei Huang [1], Pierre Martin-Cocher [1], Derek Kubo [1], Kuan-Yu Liu [1], Timothy Norton [2], Nimesh Patel [1], Yun Yi Koay [1], Cristina Romero-Canizales [1], Makoto Inoue [1]
[1] *Academia Sinica (Taiwan);* [2] *Center for Astrophysics - Harvard & Smithsonian (United States)*

The Yebes Observatory: a bridge between the Earth and the Universe
Cristina García Miró [1]
[1] *Yebes Observatory (Spain)*

SESSION K17-2

Room 201-202

Image-guided techniques for medical treatment based on EMF - part 2 (Koichi Ito, Kagayaki Kuroda, Yuanjin Zheng)
Session Chairs: Kuroda Kagayaki, Graduate School of Engineering, Tokai University, Japan
Kokuryo Daisuke, Kobe University, Japan
ITO Koichi, Chiba University, Japan

(Invited)Investigation of MRI RF-induced Heating of Lead Wire by Different Thickness of Cap
Satoshi Yatsushiro [1], Takashi Yokawa [2], Kagayaki Kuroda [1]
[1] *Tokai University (Japan);* [2] *BioView Inc. (Japan)*

RF B1+ field homogenization over the whole brain in 7T MRI
Kyoungsub Yoon [1], Hansol Noh [1], Sunkyu Yu [1], Namkyoo Park [1]
[1] *Seoul National University (South Korea)*

Research Progress in 2022 on Low-field Portable MRI
Shaoying Huang [1], Ting-Ou Liang [1], Wenwei Yu [2]
[1] *Singapore University of Technology and Design (Singapore);* [2] *Chiba University (Japan)*

11:00-12:00

SESSION GENERAL LECTURE 3

Main Hall A (General Lectures)

Space weather disturbances in electrical power networks - preparing for an extreme event (Craig Rodger)
Session Chairs: Santolik Ondrej, Institute of Atmospheric Physics of the Czech Academy of Sciences, Czech Republic

Space weather disturbances in electrical power networks - preparing for an extreme event
Craig J. Rodger [1]
[1] *University of Otago (New Zealand)*

13:20-14:20

SESSION B19-1

Mid-sized Hall B

Theory and Applications (Dimitrios Tzarouchis, Victor Pacheco-Peña, Filipa Prudencio) (Part 1)
Session Chairs: Tzarouchis Dimitrios, Meta Materials Inc., United States
Pacheco-Peña Victor, Newcastle University, United Kingdom

YSA* Using Babinet's principle in plasmonics for dielectric sensing
Joseph Arnold Riley [1], Michal Horák [2], Vlastimil Křápek [1], Victor Pacheco-Peña [1]
[1] *Newcastle University (United Kingdom);* [2] *Brno University of Technology (Czechia)*

(Invited)Reflective Intelligent Surfaces: Enabling Reconfigurability with Composite Vortices
Mirko Barbuto [1], Zahra Hamzavi-Zarghani [2], Michela Longhi [1], Alessio Monti [1], Khalid Muhammad [1], Davide Ramaccia [1], Luca Stefanini [1], Stefano Vellucci [1], Andrea Alù [1], Filiberto Bilotti [1], Alessandro Toscano [1]
[1] *Niccolò Cusano University (Italy);* [2] *Roma Tre University (Italy)*

(Invited)Euler Classes, Zak Phases, and Surface States of Nodal Photonic Crystals
Sang Soon Oh [1]
[1] *Cardiff University (United Kingdom)*

SESSION B22

Room 107

Additive Manufacturing, Novel composites and Metastructures (Eduardo Roja, Satheesh Bojja Venkatakrishnan, Karu Esselle) + B30 : Open Session (John Volakis, Henrik Wallen)

Session Chairs: Volakis John L., Florida International University, United States
Wallén Henrik, Aalto University, Finland

YSA* Hilbert Hotel: An experimental realization in polarization topological vortex beam

Anirban Ghosh [1]
[1] *Physical Research Laboratory Ahmedabad (India)*

Dielectric-only Folded Reflectarray

Massaccesi Andrea [1], Mazzinghi Agnese [2], Freni Angelo [1], Beccaria Michele [1], Pirinoli Paola [1]
[1] *Politecnico di Torino (Italy);* [2] *University of Florence (Italy)*

A 94-GHz SLA-enabled bandpass filter for monopulse radar in space debris detection

David Santiago [1], Adrián Tamayo-Domínguez [2], Mikel Laso [1], Txema Lopetegi [1], José Manuel Fernández-González [1], Ramón Martínez [1], Arregui Iván [1]
[1] *UPNA ESQ3150012G (Spain);* [2] *Universidad Politécnica de Madrid (Spain)*

SESSION C06-4

Room 108

6G and future wireless systems (Haijun Zhang, Satoshi Tsukamoto) (Part 4)

Session Chairs: TSUKAMOTO Satoshi, Tohoku University,
Zhang Haijun, University of Science and Technology Beijing, China

A study on shadowing caused by a metallic object placed near LCX antenna of 920MHz-band RFID system

Eisai Nagahari [1], Tomoyuki Furuichi [1], Takashi Shiba [1], Noriharu Suematsu [1]
[1] *Tohoku University (Japan)*

Noise Figure Measurement of 60 GHz Band Amplifiers at Cryogenic Temperatures

Yasunori Suzuki [1], Hiroshi Okazaki [1], Mizuki Motoyoshi [2], Tomoyuki Furuichi [1], Noriharu Suematsu [1]
[1] *NTT DOCOMO Inc. (Japan);* [2] *Tohoku University (Japan)*

Radio Channel Configuration by Sub-THz Band Linearizer for 6G Mobile Communication Systems

Yasunori Suzuki [1], Hiroshi Okazaki [1], Hiroshi Hamada [1], Satoshi Suyama [1]
[1] *NTT DOCOMO Inc. (Japan)*

SESSION Commission F Tutorial

Conference Hall (Tutorials)

Development and Observation of the Phased Array Radar - New Frontier in Weather Radar -

Tomoo Ushio [1], Yuuki Wada [1], Eiichi Yoshikawa [2]
[1] *Osaka University (Japan);* [2] *Japan Aerospace Exploration Agency (Japan)*

SESSION EFGH-4

Room 207

Natural Electromagnic Noise & Radio Sensing Applications in Terr. & Planetary Environments (Yasuhide Hobara, Colin Price, Martin Fullekrug, Tomoo Ushio) (Part 4)

Session Chairs: Price Colin, Tel Aviv University, Israel

POTEKA Observation / Prediction Technology on the Ground Surface and the Probability of Multidisciplinary Application of Remote Sensing Technology

Hisato Iwashita [1]
[1] *Meisei Electric Co. Ltd. (Japan)*

Rapid Building of a Low-Cost VLF Electromagnetic Field Antenna Based on Mature Printed Circuit Board Technology and Its Application

Shaoyang Wang [1], Mingli Chen [1], Yaping Du [1]
[1] *The Hong Kong Polytechnic University (Hong Kong)*

YSA* Modeling Atmosphere-Ionosphere Coupling on Gravity Waves during 2019 Typhoon 15 and 19 using FDTD Method

Antrisha Daneraici Setiawan [1], Shu Hirai [1], Hiroshi Kikuchi [1], Yasuhide Hobara [1]
[1] *The University of Electro-Communications (Japan)*

SESSION G15-2

Room 101

Techniques, Methods and Issues for Real Time Ionospheric Modeling (Jonah Colman, Sean Elvidge, Keith Groves) (Part 2)
Session Chairs: Colman Jonah, Air Force Research Lab, United States

Extending the Real-Time Assimilative Model of the Ionosphere into the D-Region

Sergey Fridman [1], L. J. Nickisch [1], Mark Hausman [1], Joseph Malins [2]
[1] *NorthWest Research Associates (United States);* [2] *Air Force Research Laboratory (United States)*

Validating and Improving a Realistic Ionospheric Truth Model for Observing System Simulation Experiments of HF Propagation

Joe Hughes [1], Ian Collett [1], Junk Wilson [1], Geoff Crowley [1], Jonah Colman [2], Russell Landry [1]
[1] *Orion Space Solutions (United States);* [2] *Air Force Research Laboratory (United States)*

SESSION GHE-2

Room 204

Seismo Electromagnetics (Lithosphere-Atmosphere-Ionosphere Coupling) (Sergey Pulinets, Claudio Cesaroni, Mala Bagiya Dario Sabbagh, Yasu Hobara, Hanna Rothkaehl) (Part 2)
Session Chairs: Cesaroni Claudio, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

Numerical Analysis of Polarized Anomalous Electromagnetic Diffraction via the Ground Surface Plasma Wave Associated with Earthquakes

Masafumi Fujii [1]
[1] *University of Toyama (Japan)*

Common periodicities of geomagnetic indices and global seismicity after Halloween storms and during solar cycles 23 and 24

Wojciech Jarmolowski [1], Pawel Wielgosz [1], Anna Krypiak-Gregorczyk [1], Beata Milanowska [1]
[1] *University of Warmia and Mazury in Olsztyn (Poland)*

Characteristics of Geomagnetic and Pre-Seismic Electron Density Changes in Ionosphere, Japan

Katsumi Hattori [1], Rui Song [1], Chie Yoshino [1], Jann-Yenq Liu [2]
[1] *Chiba University (Japan);* [2] *National Central University (Taiwan)*

SESSION H08-1

Small Hall

Computer simulations in space plasmas (Yohei Miyake, Esa Kallio) (Part 1)
Session Chairs: Miyake Yohei, Kobe university, Japan

Study of atmospheric ion escape from exoplanet TOI-700 d

Tomoaki Nishioka [1], Kanako Seki [1], Ryoya Sakata [1], Kazuhiro Yamamoto [1], Naoki Terada [2], Shotaro Sakai [1], Hiroyuki Shinagawa [1], Akifumi Nakayama [1]
[1] *The University of Tokyo (Japan);* [2] *Tohoku University (Japan)*

Effects of an intrinsic magnetic field on ion escape from Mars based on newly developed multifluid MHD model simulations

Ryoya Sakata [1], Kanako Seki [2], Naoki Terada [1], Shotaro Sakai [1], Hiroyuki Shinagawa [3]
[1] *Tohoku University (Japan);* [2] *The University of Tokyo (Japan);* [3] *National Institute of Information and Communications Technology (Japan)*

Numerical Analysis of Intense Surface Charging inside Deep Cavities on the Moon

Jin Nakazono [1], Yohei Miyake [1]
[1] *Kobe University (Japan)*

SESSION H09-3

Room 102

Small Satellites and observations of the space environment (Robert Marshall, David Malaspina) (Part 3)
Session Chairs: Malaspina David, University of Colorado, United States
Marshall Robert, University of Colorado Boulder, United States

(Invited)Remote observation for Helium ion in the plasmasphere by EUV telescope onboard nano-spacecraft

Kazuo Yoshioka [1], Masaki Kuwabara [2], Go Murakami [3], Ichiro Yoshikawa [1]
[1] *The University of Tokyo (Japan);* [2] *Rikkyo University (Japan);* [3] *Institute of Space and Astronautical Science (ISAS/JAXA) (Japan)*

On the future NanoMagSat LEO nanosatellite constellation observations of space environment

Gauthier Hulot [1], Pierdavide COÏSSON [1], Robin DUCHÊNE [1], Jean-Michel LÉGER [2], Thomas JAGER [1], Lasse B.N. CLAUSEN [1], John L. JORGENSEN [1], Florian DECONINCK [1]
[1] *Université Paris Cité - Institut de physique du globe de Paris - CNRS (France);* [2] *CEA-Leti, Université Grenoble Alpes - MINATEC (France)*

The CASSIOPE Enhanced Polar Outflow Probe (e-POP) Small Satellite Mission: Scientific Objectives and Data Products

Andrew Yau [1], Harry Gordon James [1], Andrew Howarth [1]
[1] *University of Calgary (Canada)*

SESSION J08-3

Room 105

21-cm Cosmology: Dark Ages, Cosmic Dawn and the Epoch of Re-ionization (Eloy de Lera Acedo, Anastasia Fialkov) (Part 3)

Session Chairs: Bevins Harry, University of Cambridge, United Kingdom
Anstey Dominic, University of Cambridge, United Kingdom

(Invited)Joint analysis constraints on the physics of the first galaxies from upper limits on the 21-cm power spectrum and sky-averaged signal

Harry Bevins [1], Stefan Heimersheim [1], Irene Abril-Cabezas [1], Anastasia Fialkov [1], Eloy De Lera Acedo [1], William Handley [1], Saurabh Singh [2], Rennan Barkana [3]
[1] *University of Cambridge (United Kingdom);* [2] *Raman Research Institute (India);* [3] *Tel Aviv University (Israel)*

(Invited)Initial Results from the Analysis of Sky Measurements by the MIST Global 21-cm Experiment

Raul Monsalve [1]
[1] *University of California Berkeley (United States)*

Bayesian recovery of the excess radio background from HERA data

Katrine A. Glasscock [1], Philip Bull [1]
[1] *University of Manchester (United Kingdom)*

SESSION J14-3

Mid-sized Hall A

Observatory reports, latest news and general discussion (Douglas Bock, Stefan J. Wijnholds) (Part 3)

Session Chairs: Bock Douglas, CSIRO, Australia
Wijnholds Stefan J., ASTRON, Netherlands

(Invited)A New Age of Commensality in Radio Surveys

Di Li [1], Yu Wang [2], Xiaohang Zhang [1]
[1] *National Astronomical Observatories - Chinese Academy of Sciences (China);* [2] *Zhejiang Laboratory (China)*

The Effelsberg 100-m Radio Telescope: Current Status and Outlook

Alex Kraus [1], Uwe Bach [1], Michael Kramer [1]
[1] *Max-Planck-Institut für Radioastronomie (Germany)*

Tianma Radio Telescope

Bin Li [1], Zhiqiang Shen [1]
[1] *Shanghai Astronomical Observatory - Chinese Academy of Sciences (China)*

SESSION KE-3

Room 201-202

EMC for biomedical and healthcare devices - part 3 (Jianqing Wang, Takashi Hikage, Carlo Carobbi)

Session Chairs: Carobbi Carlo, Università degli Studi di Firenze, Italy

A New Way of Approaching Electromagnetic Disturbance With/From Medical Devices: Wireless Communication Failures

Eisuke Hanada [1], Takato Kudou [2]
[1] *Saga University (Japan);* [2] *Oita University (Japan)*

A Novel Reconfigurable Electromagnetic Bandgap Structure for Wide-Band Noise Suppression on Printed Circuit Boards
Na Sun [1], Dan Shi [1]
[1] *Beijing University of Posts and Telecommunications (China)*

Analysis of Medical Devices EMC Problems due to Leakage Magnetic Field generated in Wireless Charging System of Electric Vehicle
Jaewon Rhee [1], Jangyong Ahn [1], Haerim Kim [1], Changmin Lee [1], Seungyoung Ahn [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

SESSION B08-3

Room 104

Mathematical methods in electromagnetics (Kazuya Kobayashi, Yury Shestopalov, Martina Bevacqua, Santi Pavone) (Part 3)

Session Chairs: Kobayashi Kazuya, Chuo University, Japan
Du Xin, Tokyo Institute of technology, Japan
Fujita Keisuke, Maebashi Institute of Technology, Japan
Nagasaka Takashi, Ashikaga University, Japan

(Invited)Consideration of Inside Response Waveforms by Plane Grating in Dispersion Medium
Ryosuke Ozaki [1], Chun Wang [1], Tsuneki Yamasaki [1]
[1] *Nihon University (Japan)*

(Invited)Topology Optimization of Optical and Millimeter-wave Circuit Devices Using Finite Element Method and Function Expansion Method
Yasuhide Tsuji [1], Akito Iguchi [1], Keita Morimoto [2], Tatsuya Kashiwa [3]
[1] *Muroran Institute of Technology (Japan);* [2] *University of Hyogo (Japan);* [3] *Kitami Institute of Technology (Japan)*

14:20-15:20

SESSION B08-4

Room 104

Mathematical methods in electromagnetics (Kazuya Kobayashi, Yury Shestopalov, Martina Bevacqua, Santi Pavone) (Part 4)

Session Chairs: Kobayashi Kazuya, Chuo University, Japan
Du Xin, Tokyo Institute of technology, Japan
Fujita Keisuke, Maebashi Institute of Technology, Japan
Nagasaka Takashi, Ashikaga University, Japan

Analysis of a Metal Sphere Using the Three-Dimensional DCP-FDTD Method
Kazuma Takeya [1], Tetsuya Iwamoto [1], Jun Shibayama [1], Junji Yamauchi [1], Hisamatsu Nakano [1]
[1] *Hosei University (Japan)*

(Invited)A Regularization Approach in Lebesgue Spaces for Antenna Array Diagnostics
Valentina Schenone [1], Matteo Pastorino [1], Alessandro Fedeli [1], Claudio Estatico [1], Andrea Randazzo [1]
[1] *University of Genoa (Italy)*

(Invited)A review of analytical regularization methods for 2D electromagnetic problems: E-polarization case
Paul Smith [1], Elena Vinogradova [1]
[1] *Macquarie University (Australia)*

SESSION B19-2

Mid-sized Hall B

Theory and Applications (Dimitrios Tzarouchis, Victor Pacheco-Peña, Filipa Prudencio) (Part 2)

Session Chairs: Tzarouchis Dimitrios, Meta Materials Inc., United States
Pacheco-Peña Victor, Newcastle University, United Kingdom

(Invited)Optical Theorem and Active Scatterers
Ari Sihvola [1], Henrik Wallén [1], Pasi Ylä-Oijala [1]
[1] *Aalto University (Finland)*

YSA* Parameter ranges and limitations on using gold nanoparticles for radio frequency-based hyperthermia treatment of cancer
Mariana Dalarsson [1], Brage Boe Svendsen [1], Balwan Rana [1]
[1] *KTH Royal Institute of Technology (Sweden)*

Travelling-Wave Spacetime Crystals
Filipa Prudêncio [1], Mário Silveirinha [1]
[1] *Instituto de Telecomunicações (Portugal)*

SESSION B23-3
Room 107

Millimeter-wave antennas/5G communications and beyond (Jiro Hirokawa, Elias Alwan) (Part 3)
Session Chairs: Hirokawa Jiro, TOKYO INSTITUTE OF TECHNOLOGY, Japan

Design of Intelligent Reflect Surface Using Liquid Crystals
Hiroyasu Sato [1]
[1] *Tohoku university (Japan)*

Penrose-Inspired Irregular Subarrays-based Phased Arrays with Less Energy-Hungry for Future 6G Wireless Communications
Francesco Dicandia [1], Simone Genovesi [2], Giuliano Manara [1]
[1] *CNR (Italy);* [2] *Università di Pisa (Italy)*

Deployment of Millimeter-Wave Reconfigurable Intelligent Surface in An Indoor Scenario Based on Ray-Tracing Simulation
Wei-Lun Hsu [1], Chien Jui Huang [1], You-Cheng Chen [1], Shih-Cheng Lin [1], Sheng-Fuh Chang [1]
[1] *National Chung Cheng University (Taiwan)*

SESSION C06-5
Room 108

6G and future wireless systems (Haijun Zhang, Satoshi Tsukamoto) (Part 5)
Session Chairs: TSUKAMOTO Satoshi, Tohoku University,
Zhang Haijun, University of Science and Technology Beijing, China

SPC* Deep Learning Aided Beam Prediction in Dual-Band Multi-Cell Massive MIMO System
Chenjie Xie [1], Li You [1]
[1] *Southeast University (China)*

Impact of Multiple Detection Terminals on the Error Performance in Collaborative MIMO Reception Systems
Hayato Sugai [1], Hayato Sugai [1], Daisuke Murayama [2], Toshiro Nakahira [1], Takatsune Moriyama [1]
[1] *Yamaguchi University (Japan);* [2] *NTT Corporation (Japan)*

LSTM-based In-band full-duplex NOMA-OFDM Receiver with Non-linear SI Estimation/Cancellation
Abhiranjan Singh [1], Seemanti Seemanti Saha [1]
[1] *NIT Patna (India)*

SESSION Commission K Tutorial
Conference Hall (Tutorials)

Session Chairs: Apollonio Francesca, SAPIENZA UNIVERSITY OF ROME, Italy

(Invited)Energy-Autonomous Wearable Sensors for Biomedical Sensing
Alessandra Costanzo [1]
[1] *Alma Mater Studiorum Università di Bologna (Italy)*

SESSION EFGH-5
Room 207

Natural Electromagnic Noise & Radio Sensing Applications in Terr. & Planetary Environments (Yasuhide Hobara, Colin Price, Martin Fullekrug, Tomoo Ushio) (Part 5)
Session Chairs: Hobara Yasuhide, The University of Electro Communications, Japan

Prediction of Downbursts Using Machine Learning of Total Lightning and Ground Precipitation Data in Japan
Yasuhide Hobara [1], Shiho Miyashita [1], Hiroshi Kikuchi [1], Jeff Lapierre [2]
[1] *The University of Electro-Communications (Japan);* [2] *Earth Networks (United States)*

Estimation of lightning strokes count from measurements of VLF atmospherics during the eruption of Hunga Tonga-Hunga Ha'apai volcano on Jan. 15, 2022
Alexander Shvets [1], Yasuhide Hobara [1], Masashi Hayakawa [2], Alisa Shvets [3], Oleksandr Koloskov [4], Yuri Yampolsky [5]
[1] *The University of Electro-Communications (Japan);* [2] *Hayakawa Institute of Seismo Electromagnetics (Japan);* [3] *O.Ya. Usikov Institute for Radio Physics and Electronics (Ukraine);* [4] *University of New Brunswick (Canada);* [5] *Institute of Radio Astronomy of NAS of Ukraine (Ukraine)*

SESSION G07-1

Room 101

Science with Modern Ionosondes and Associated Instrumentation and Models (Ivan Galkin, John Bosco Habarulema, Pornchai Supnithi) (Part 1)
Session Chairs: Habarulema John Bosco, South African National Space Agency, South Africa
Galkin Ivan, Space Science Laboratory, University of Massachusetts, United States

On the use and calculation of MUF(3000)F2 for 3D ionospheric model validation
David Themens [1], Ioanna Tsagouri [2], Ben Reid [3], Sean Elvidge [1]
[1] *University of Birmingham (United Kingdom);* [2] *National Observatory of Athens (Greece);* [3] *University of New Brunswick (Canada)*

Comparison between Equatorial Spread F (ESF) and ROTI index during Equatorial Plasma Bubble Events at Chumphon Station, Thailand
Pornchai Supnithi [1], Phimmasone Thammavongsy [1], Lin Min Min Myint [1], Kornyanat Hozumi [2]
[1] *King Mongkut's Institute of Technology Ladkrabang (Thailand);* [2] *National Institute of Information and Communications Technology (Japan)*

SESSION GHE-3

Room 204

Seismo Electromagnetics (Lithosphere-Atmosphere-Ionosphere Coupling) (Sergey Pulinets, Claudio Cesaroni, Mala Bagiya Dario Sabbagh, Yasu Hobara, Hanna Rothkaehl) (Part 3)
Session Chairs: Cesaroni Claudio, Istituto Nazionale di Geofisica e Vulcanologia (INGV), Italy

Far-field Lithosphere-Atmosphere-Ionosphere Coupling Associated with the Hunga Tonga-Hunga Ha'apai Volcano Eruption
Chieh-Hung Chen [1], Yang-Yi Sun [1], Kai Lin [1]
[1] *China University of Geosciences (China)*

Disturbances of electron density measured by Swarm over different tectonic plate edges with respect to long-term earthquake records
Wojciech Jarmolowski [1], Pawel Wielgosz [1], Manuel Hernandez Pajares [2], Heng Yang [1], Beata Milanowska [1], Anna Krypiak-Gregorczyk [1], Enric Monte-Moreno [1], Alberto Garcia-Rigo [1], Victoria Graffigna [1], Roger Haagmans [1]
[1] *University of Warmia and Mazury in Olsztyn (Poland);* [2] *Universitat Politecnica de Catalunya (Spain)*

Direct Ionosphere Tomography disclosing potential footprint of Samos 2020 Tsunami, exclusively based on GNSS carrier phase measurements
Manuel Hernandez Pajares [1], Lucilla Alfonsi [2], Claudio Cesaroni [3], German Olivares-Pulido [4], Heng Yang [5], Charon Vadas [6]
[1] *Universitat Politècnica de Catalunya (Spain);* [2] *INGV (Italy);* [3] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy);* [4] *UPC-IonSAT (Spain);* [5] *Yangtze Normal University (China);* [6] *NorthWest Research Associates (United States)*

SESSION H03-1

Room 102

Multi-point observations and modeling for comprehensive understandings of the inner magnetosphere (Yoshiya Kasahara, Jean-Francois Ripoll, Jyrki Manninen) (Part 1)
Session Chairs: Kasahara Yoshiya, Kanazawa University, Japan

Energetic Electron Precipitation Driven by Magnetospheric Waves: ELFIN CubeSat Observations and Simulations
Wen Li [1], Luisa Capannolo [1], Xiaochen Shen [1], Murong Qin [1], Longzhi Gan [1], Qianli Ma [1], Miroslav Hanzelka [1], Vassilis Angelopoulos [2], Anton Artemyev [1], Xiaojia Zhang [1]
[1] *Boston University (United States);* [2] *University of California (United States)*

Inner Magnetospheric Whistler Waves (Chorus, Hiss, Lightning Whistlers): Statistics and Spatial Distributions For Radiation Belt Physics
David Malaspina [1], Jean-Francois Ripoll [2], Melanie Cosmides [1], Thomas Farges [1]
[1] *University of Colorado (United States);* [2] *CEA / DAM / DIF (France)*

(Invited)Multi-Platform Observations of a Strong Substorm Injection During a CIR
Geoffrey Reeves [1]
[1] *Los Alamos National Laboratory (United States)*

SESSION H08-2

Small Hall

Computer simulations in space plasmas (Yohei Miyake, Esa Kallio) (Part 2)
Session Chairs: Miyake Yohei, Kobe university, Japan

Computer Simulations on Single-Spacecraft Interferometry Technique Using Monopole Electric Field Sensors
Ibuki Fukasawa [1], Yohei Miyake [2], Hideyuki Usui [1], Koshiro Kusachi [1], Satoshi Kurita [1], Hirotsugu Kojima [1]
[1] *Kyoto University (Japan);* [2] *Kobe University (Japan)*

A simulation study for the design of the multi-needle Langmuir probe instrument
Chun-Sung Jao [1]
[1] *National Cheng Kung University (Taiwan)*

Quantum numerical computation of the classical kinetic equation by quantum computer: new method for the Boltzmann equation in 6D collisionless plasma
Higuchi Hayato [1], Juan Pedersen [2], Akimasa Yoshikawa [1]
[1] *Kyushu University (Japan);* [2] *The University of Tokyo (Japan)*

SESSION J04-3

Mid-sized Hall A

Antennas and receivers (Douglas Hayman, Jacki Gilmore, Pietro Bolli, David Davidson) (Part 3)
Session Chairs: Davidson David, ICRAR/Curtin University, Australia
Gilmore Jacki, Stellenbosch University, South Africa

Development of the LOFAR2.0 Advanced HBA Frontend
Paulus Kruger [1], Mark Ruiter [1], Carla Baldovin [1], Boudewijn Hut [1]
[1] *ASTRON (Netherlands)*

Development of a combined VLBI K-, Q-, and W-band receiver for Effelsberg
Christoph Kasemann [1], Gundolf Wieching [1], Stefan Heyming [1], Patrik Pütz [1]
[1] *Max-Planck-Institut für Radioastronomie (Germany)*

(Invited)High Frequency LNA Considerations for Future Highly Integrated Receivers
William McGenn [1], Claudio Jarufe [2], Franks Elle [1], Long Jiang [1], Amy Suddards [1], Gary Fuller [1], Danielle George [1]
[1] *University of Manchester (United Kingdom);* [2] *National Radio Astronomy Observatory (United States)*

SESSION J08-4

Room 105

21-cm Cosmology: Dark Ages, Cosmic Dawn and the Epoch of Re-ionization (Eloy de Lera Acedo, Anastasia Fialkov) (Part 4)
Session Chairs: Bevins Harry, University of Cambridge, United Kingdom
Anstey Dominic, University of Cambridge, United Kingdom

YS* Improved Foreground Modelling for Bayesian 21 cm Power Spectrum Estimation with BayesEoR
Jacob Burba [1], Peter Sims [2], Jonathan Pober [3]
[1] *University of Manchester (United Kingdom);* [2] *McGill University (Canada);* [3] *Brown University (United States)*

Probing the Cosmic Dawn with the OVRO-LWA Stage III
Ruby Byrne [1], Gregg Hallinan [1]
[1] *California Institute of Technology (United States)*

Impact of beam systematics on the OVRO-LWA science cases: 21-cm cosmology & Exoplanet studies.
Nivedita Mahesh [1], OVRO-LWA Collaboration [2]
[1] *Caltech (United States);* [2] *California Institute of Technology (United States)*

14:40-15:20

SESSION F01

Room 206

Remote Sensing Image Processing with Deep Learning (Si-Wei Chen, Le-Yuan Fang)
Session Chairs: Sato Motoyuki, Tohoku University, Japan

YSA* Surface Roughness and Spectral Analysis Using Airborne Lidar Digital Elevation Models (DEMs) for Modeling and Calibration/Validation of GNSS-R Land Returns
Tianlin Wang [1], Joel Johnson [1], Alexandra Bringer [2], Yuchan Yi [1], Mohammad Al-Khaldi [1]
[1] The Ohio State University (United States); [2] NASA Goddard Space Flight Center (United States)

Reducing Instrument Power Using Machine Learning Calibration
John Bradburn [1], Mustafa Aksoy [2], Paul Racette [3]
[1] University at Albany (United States); [2] University at Albany, SUNY (United States); [3] NASA Goddard Space Flight Center (United States)

15:40-17:00

SESSION B08-5

Room 104

Mathematical methods in electromagnetics (Kazuya Kobayashi, Yury Shestopalov, Martina Bevacqua, Santi Pavone) (Part 5)
Session Chairs: Kobayashi Kazuya, Chuo University, Japan
Du Xin, Tokyo Institute of technology, Japan
Fujita Keisuke, Maebashi Institute of Technology, Japan
Nagasaka Takashi, Ashikaga University, Japan

SPCFinalist* The Full-Wave Alternative to Eddy-Current Solvers: on a Low-Frequency and Dense-Discretization Stable PMCHWT Equation for Dielectric and Conductive Media
Viviana Giunzioni [1], Adrien Merlini [2], Francesco P. Andriulli [1]
[1] Politecnico di Torino (Italy); [2] IMT Atlantique (France)

SPC* Reduction of Anisotropy in Numerical Dispersion in the Explicit Finite-Difference Time-Domain Method with Laplacian
Harune Sekido [1], Takayuki Umeda [1]
[1] Nagoya University (Japan)

(Invited)Recent Advancements of Graphene-based Metasurfaces in Terahertz Frequencies
Somak Bhattacharyya [1], Sambit Kumar Ghosh [1]
[1] IIT (BHU) (India)

SPC* Resonance-free single-current inverse source formulations based on Steklov-Poincaré mappings
Paolo Ricci [1], Adrien Merlini [2], Francesco P. Andriulli [1]
[1] Politecnico di Torino (Italy); [2] IMT Atlantique (France)

SESSION F05-1

Room 206

Open session (Tullio Tanzi, Motoyuki Sato) (Part 1)
Session Chairs: Sato Motoyuki, Tohoku University, Japan
Tanzi Tullio, Institut Mines-Télécom, France

P-band Signals of Opportunity Remote Sensing of Mountainous Snowpack
Simon Yueh [1], Rashmi Shah [1], Javier Bosch-Lluis [1], Julian Chaubell [1], Garth Franklin [1], Xiaolan Xu [1], Steve Margulis [2], Kelly Elder [3], Manuela Girotto [4], Adrian Harpold [5], Hans-Peter Marshall [6]
[1] California Institute of Technology (United States); [2] The University of California at Los Angeles (United States); [3] United States Forest Service (United States); [4] The University of California at Berkeley (United States); [5] University of Reno (United States); [6] Boise State University (United States)

Scattering power decomposition of dual-polarization SAR data: application to PALSAR-2 and Sentinel-1 data
Sugimoto Ryu [1], Nakamura Ryosuke [1], Tsutsumi Chiaki [1], Yamaguchi Yoshio [2]
[1] National Institute of Advanced Industrial Science and Technology (Japan); [2] Niigata University (Japan)

YSA* On Spatiotemporal Swath Width of the Lunar-Based SAR Earth Observation under Orbital Perturbations
Zhen Xu [1], Kun-Shan Chen [2]
[1] *Shantou University (China);* [2] *Guilin University of Technology (China)*

A study on suppression of aircraft clutter using range-Doppler walk correction in Ocean Radar
Akira Matsuda [1], Hiroyoshi Yamada [1], Satoshi Fujii [2], Yasunori Osana [1], Toru Uno [1]
[1] *Niigata University (Japan);* [2] *University of The Ryukyus (Japan)*

SESSION J08-5

Room 105

21-cm Cosmology: Dark Ages, Cosmic Dawn and the Epoch of Re-ionization (Eloy de Lera Acedo, Anastasia Fialkov) (Part 5)
Session Chairs: Bevins Harry, University of Cambridge, United Kingdom
Anstey Dominic, University of Cambridge, United Kingdom

Modelling beam uncertainties in global 21cm experiments through Bayesian data analysis
Dominic Anstey [1], Eloy De Lera Acedo [1], Will Handley [1]
[1] *University of Cambridge (United Kingdom)*

Antenna temperature uncertainty arising from the REACH ground plane design
John Cumner [1], Eloy De Lera Acedo [1]
[1] *University of Cambridge (United Kingdom)*

Continuously field-calibrated radiometer for the detection of the cosmic dawn
Luke McKay [1], Ravi Subrahmanyan [1], Aaron Chippendale [1], Ron Ekers [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia)*

The REACH Digital Backend
Alessio Magro [1], Riccardo Chiello [2], Nima Razavi-Ghods [3], Ian L. V. Roque [1], Steve H. Carey [1], John Ely [1], Eloy De Lera Acedo [1], Kristian Zarb Adami [1]
[1] *University of Malta (Malta);* [2] *University of Oxford (United Kingdom);* [3] *Cavendish Laboratory - University of Cambridge (United Kingdom)*

15:40-17:20

SESSION B12

Room 107

Electromagnetic methods for direct and inverse scattering involving stratified media - In Memoriam of Prof. Matteo Pastorino (Matteo Pastorino, Giuseppe Schettini, Cristina Ponti)
Session Chairs: Randazzo Andrea, University of Genoa, Italy

(Invited)Filter inverse design by inhomogeneous space and time profiles
Ohad Silbiger [1], Yakir Hadad [1]
[1] *Tel Aviv University (Israel)*

Quantitative Imaging of Targets Embedded in a Layered Environment by a VLS-FE Nonlinear Inversion Method
Valentina Schenone [1], Alessandro Fedeli [1], Claudio Estatico [1], Matteo Pastorino [1], Andrea Randazzo [1]
[1] *University of Genoa (Italy)*

(Invited)YSA* Experimental Evaluation of Forward and Inverse Solvers for Metasurface Design
Mario Phaneuf [1], Max Kelly [1], Puyan Mojabi [1]
[1] *University of Manitoba (Canada)*

A Study on Eigenmode Analysis of Electromagnetic Wave Propagation in Post-Wall Waveguide
Koki Watanabe [1], Vakhtang Jandieri [2]
[1] *Fukuoka Institute of Technology (Japan);* [2] *University of Duisburg-Essen (Germany)*

(Invited)CWA modeling of a matching layer in a on-body coupling system
Ludovica Tognolatti [1], Giuseppe Schettini [1], Andrea Randazzo [2], Cristina Ponti [1]
[1] *Roma Tre University (Italy);* [2] *University of Genoa (Italy)*

SESSION BC

Mid-sized Hall B

Integrated communications, sensing and computing for beyond-5G communications (Andrea Michel, Giacomo Bacci, Hiren Kumar Deva Sarma)

Session Chairs: Bacci Giacomo, University of Pisa, Italy
Michel Andrea, University of Pisa, Italy

(Invited)Holographic Integrated Sensing and Communications
Marco Di Renzo [1]
[1] *CNRS & CentraleSupelec - Paris-Saclay University (France)*

(Invited)A Flexible Dual-Band Metasurface Antenna for Biomedical Applications
Somak Bhattacharyya [1], Diptiranjan Samantaray [2]
[1] *IIT (BHU) (India);* [2] *Vignan's Institute of Information Technology (India)*

(Invited)YSA* Tropospheric Propagation Modeling for Opportunistic Rain Sensing using Current and Future Broadcast and Broadband Satellites
Fabiola Sapienza [1], Giacomo Bacci [1], Filippo Giannetti [1], Attilio Vaccaro [2], Vincenzo Lottici [1]
[1] *University of Pisa (Italy);* [2] *MBI srl (Italy)*

(Invited)REC-BC-01 Multiple-access Schemes for Radar-enabled Backscatter Communications (RadBackCom)
Xiaodong Wang [1]
[1] *Columbia Univ. (United States)*

(Invited)Antenna System Architecture(s) for Joint Communication and Sensing
Ulf Johannsen [1], Kevin Van Hastenberg [1], Elmine Meyer [1], Bart Smolders [1]
[1] *Eindhoven University of Technology (Netherlands)*

SESSION C01

Room 108

Low-Cost GNSS Receivers (Dinesh Manandhar, Anindya Bose)

Session Chairs: Manandhar Dinesh, Center for Spatial Information Science, at the University of Tokyo, Japan
Bose Anindya, The University of Burdwan, India

YSA* GPS-based verticality approximation of an experimental fully-airborne VLF antenna
Tomasz Miś [1], Józef Modelski [1]
[1] *Warsaw University of Technology (Poland)*

Ionospheric monitoring using low-cost GNSS receivers
Bruno Nava [1], Anton Kashcheyev [2]
[1] *ICTP (Italy);* [2] *University of New Brunswick (Canada)*

Decimeter-level GNSS Positioning using Smartphones
Nobuaki Kubo [1], Yao Ningzhi [1], Kaito Kobayashi [1], Tomohiro Ozeki [1]
[1] *Tokyo University of Marine Science and Technology (Japan)*

(Invited)Evaluation of low-cost GNSS receiver and Multi-GNSS Advanced Demonstration Tool for Orbit and Clock Analysis (MADOCA) Precise Point Positioning (PPP) for water level monitoring
Rosalie Reyes [1], Dinesh Manandhar [2], Rey Mark Alfante [1], Ellariza Fredeluces [1], Roel Bahia [1]
[1] *University of the Philippines (Philippines);* [2] *Center for Spatial Information Science (Japan)*

YSA* Possibility of Centimeter Positioning Accuracy with Ambiguity Resolution from Android GNSS Raw Measurements
Yize Zhang [1], Junping Chen [1], Bin Wang [1], Weijie Tan [1], Jiexian Wang [2]
[1] *Shanghai Astronomical Observatory (China);* [2] *Tongji University (China)*

SESSION G07-2

Room 101

Science with Modern Ionosondes and Associated Instrumentation and Models (Ivan Galkin, John Bosco Habarulema, Pornchai Supnithi) (Part 2)

Session Chairs: Supnithi Pornchai, King Mongkut's Institute of Technology Ladkrabang, Thailand

(Invited)Large Scale Traveling Ionospheric Disturbances during geomagnetic storms in the Australian region
Amol Kishore [1], Sushil Kumar [1], Vickal Kumar [2]
[1] *University of the South Pacific (Fiji);* [2] *Space Weather Services (Australia)*

(Invited)Radio and optical investigation of role of E-F region coupling on the generation of nighttime MSTIDs
Sivakandan Mani [1], Jorge Chau [2], Jens Mielich [1], Carlos Martinis [1], Yuichi Otsuka [1]
[1] *Universität Rostock (Germany);* [2] *Leibniz Institute of Atmospheric Physics at the University of Rostock (Germany)*

Deep learning for ionogram parameters scaling at polar region ionosphere
Ruslan Sherstyukov [1], Alexander Kozlovsky [1], Thomas Ulich [1], Samson Moges [1]
[1] *Oulu university (Finland)*

Combination of GNSS Radio Occultation and Ionosondes observations for improvement of Earth's ionosphere monitoring
Iurii Cherniak [1], Irina Zakharenkova [1], John Braun [1], Qian Wu [1], Jan-Peter Weiss [1]
[1] *UCAR (United States)*

YS* Traveling Ionospheric Disturbances induced by the 2022 Hunga Tonga–Hunga Ha'apai Volcano Eruption
Tien-Chi Liu [1], Cissi Ying-tsen Lin [1], Jann-Yenq Liu [1], Po-Han Lee [1], Chi-Yen Lin [1]
[1] *National Central University (Taiwan)*

SESSION GHE-4

Room 204

Seismo Electromagnetics (Lithosphere-Atmosphere-Ionosphere Coupling) (Sergey Pulinets, Claudio Cesaroni, Mala Bagiya Dario Sabbagh, Yasu Hobara, Hanna Rothkaehl) (Part 4)
Session Chairs: Hobara Yasuhide, The University of Electro Communications, Japan

YS* SPC* Can we characterize Traveling Ionospheric Disturbances in noisy GNSS data in Near Real-Time?
Boris Maletckii [1], Elvira Astafyeva [2]
[1] *IPGP - CNRS - Université Paris Cité (France);* [2] *IPGP (France)*

(Invited)Ionospheric seismology and volcanology
Kosuke Heki [1]
[1] *Hokkaido University (Japan)*

Ionospheric response to the 2022 Tonga volcanic eruption based on global navigation satellite system-total electron content data
Atsuki Shinbori [1], Yuichi Otsuka [1], Takuya Sori [1], Michi Nishioka [2], Septi Perwitasari [1], Takuo Tsuda [1], Nozomu Nishitani [1]
[1] *Nagoya University (Japan);* [2] *National Institute of Information and Communications Technology (Japan)*

(Invited)YSA* The variometric approach for the monitoring of natural hazard-induced ionospheric perturbations
Michela Ravanelli [1], Giovanni Occhipinti [1], Elvira Astafyeva [1], Mattia Crespi [2]
[1] *Université Paris Cité (France);* [2] *Sapienza University of Rome (Italy)*

On the altitude of GNSS detection of co-seismic ionospheric disturbances
Elvira Astafyeva [1], Boris Maletckii [1], Saúl Sanchez Juarez [2], Pavel Inchin [1], Quentin Brissaud [1], E. Alam Kherani [1], Eurico De Paula [1]
[1] *IPGP (France);* [2] *INPE (Brazil)*

SESSION H03-2

Room 102

Multi-point observations and modeling for comprehensive understandings of the inner magnetosphere (Yoshiya Kasahara, Jean-Francois Ripoll, Jyrki Manninen) (Part 2)
Session Chairs: Ripoll Jean-Francois, CEA/DAM/DIF, France

Influence of Temperature of Energetic Electrons on Wave Normal Angle for Chorus Emissions
Jih-Hong Shue [1], Ling-Hsiao Lyu [1], Yasuhiro Nariyuki [2], Yuto Katoh [3], Jacob Bortnik [4], Yoshiya Kasahara [5]
[1] *National Central University (Taiwan);* [2] *University of Toyama (Japan);* [3] *Tohoku University (Japan);* [4] *University of California (United States);* [5] *Kanazawa University (Japan)*

(Invited)Study of the propagation of different VLF emissions from multi-point observations in northern Finland
Claudia Martinez-Calderon [1], Jyrki Manninen [2], Kazuo Shiokawa [1], Mitsunori Ozaki [1], Ondrej Santolik [1], Tauno Turunen [1]
[1] *Nagoya University (Japan);* [2] *Sodankylä Geophysical Observatory - Oulu University (Finland)*

Ring-shaped expanding pulsating aurora: simultaneous observations with Arase

Keisuke Hosokawa [1], Satoshi Kurita [2], Yoshizumi Miyoshi [3], Shin-Ichiro Oyama [1], Yasunobu Ogawa [1], Mitsunori Ozaki [1], Yoshiya Kasahara [1], Yasumasa Kasaba [1], Satoshi Yagitani [1], Shoya Matsuda [1], Fuminori Tsuchiya [1], Atsushi Kumamoto [1], Iku Shinohara [1], Ryoichi Fujii [1]
[1] University of Electro-Communications (Japan); [2] Research Institute for Sustainable Humanosphere - Kyoto University (Japan); [3] Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan)

VLF bursty-patches observed at PWING stations

Jyrki Manninen [1], Claudia Martinez-Calderon [2], Kazuo Shiokawa [1]
[1] University of Oulu (Finland); [2] Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan)

Constraining the Size and Duration of Microburst-producing Chorus Regions: A Statistical Study of Low- and High-Altitude Observations

Aaron Breneman [1], Sadie Elliott [2], Chris Colpitts [1], Joshua Pettit [1], Cynthia Cattell [1], Alexa Halford [1], Mykhaylo Shumko [1], John Sample [1], Arlo Johnson [1], Yoshi Miyoshi [1], Yoshi Kasahara [1], Christopher Cully [1], Satoka Nakamura [1], Takefumi Mitani [1], Tomo Hori [1], Iku Shinohara [1], Kazuo Shiokawa [1], Shoya Matsuda [1], Martin Connors [1], Ozaki Mitsunori [1], Jyrki Manninen [1], Robyn Millan [1], Kelly Cantwell [1]
[1] NASA Goddard Space Flight Center (United States); [2] University of Minnesota (United States)

SESSION H08-3

Small Hall

Computer simulations in space plasmas (Yohei Miyake, Esa Kallio) (Part 3)

Session Chairs: Kallio Esa, Aalto University, Finland

Formation of Double Layer in Two-Dimensional Current Carrying Plasma

Takayuki Umeda [1], Ryouta Ikeba [1]
[1] Nagoya University (Japan)

3D Topology of the Transient Bifurcation on the Verge of Substorm Onset

Peikun Xiong [1], Shigeru Fujita [2], Masakazu Watanabe [3], Takashi Tanaka [1], Dongsheng Cai [1]
[1] University of Tsukuba (Japan); [2] Research Organization of Information and Systems (Japan); [3] Kyushu University (Japan); [1] Kyushu University (Japan)

Simulation of Whistler Mode Waves in Magnetospheric Ducts Using FDTD

Raahima Khatun-E-Zannat [1], Vijay Harid [1], Mark Golkowski [1], Oleksiy Agapitov [2]
[1] University of Colorado Denver (United States); [2] Space Science Laboratory - University of California (United Staes)

Microstructure of magnetic island in collisionless reconnection

Yumeng Fan [1], Shuichi Matsukiyo [1], Seiji Zenitani [2]
[1] Kyushu University (Japan); [2] Kobe university (Japan)

YSA* Formation of zebra stripes of electrons in response to the intensification of Region 1 field-aligned currents

Megha Pandya [1], Yusuke Ebihara [2], Takashi Tanaka [1], Jerry Manweiler [1]
[1] NASA Goddard Space Flight Center (United States); [2] Kyoto University (Japan)

SESSION J04-4

Mid-sized Hall A

Antennas and receivers (Douglas Hayman, Jacki Gilmore, Pietro Bolli, David Davidson) (Part 4)

Session Chairs: Davidson David, ICRAR/Curtin University, Australia
Hayman Douglas, CSIRO, Australia

A Cryo-PAF for the Effelsberg 100 m telescope

Stefan Heyminck [1]
[1] Max Planck Institute for Radio Astronomy (Germany)

Toward Electronically Reconfigurable Rims for Reflectors in Radio Astronomy

Sean Hum [1], Steven Ellingson [2], R. Michael Buehrer [1]
[1] University of Toronto (Canada); [2] Virginia Tech (United States)

Wideband LNA with 11K Average Noise, 0.7 to 2 GHz, at 25C

Sander Weinreb [1], Kiran Shila [1], Jun Shi [2], Hamdi Mani [3]
[1] Caltech (United States); [2] National Space Science Center (China); [3] CryoElec (United States)

(Invited)ALMA Band 6v2 receiver development status
Alessandro Navarrini [1], Joseph G. Lambert [1], Anthony R. Kerr [1], John Effland [1], Philip Dindo [1], Kamaljeet S. Saini [1], Robert Lehmensiek [1], Dustin Vaselaar [1], Alec Handy [1], Benjamin Casto [1], Pablo Astudillo [1], Arthur W. Lichtenberger [2], Michael Cyberey [1], Patricio Mena [1], Claudio Jarufe [1], Bert Hawkins [1]
[1] *NRAO (United States);* [2] *IFAB - University of Virginia (United States)*

Design of the DSA-2000 5m Diameter Antennas
David Woody [1], Paul Rasmussen [1], Andres Cikota [1], Matt Fleming [2], Michael White [1], Jonas Flygare [1]
[1] *Caltech (United States);* [2] *Minex Engineering (United States)*

SESSION K09
Room 201-202

Monitoring EMF exposure from emerging technologies; general public & worker's environments (Joe Wiart, Teruo Onishi, Theodoros Samaras)
Session Chairs: Wiart Joe, LTCI, Telecom Paris, Institut Polytechnique de Paris, France
Onishi Teruo, NICT, Japan

(Invited)Monitoring of EMF exposure levels in Japan
Teruo Onishi [1], Liu Sen [1], Kazuhiro Tobita [1], Miwa Ikuyo [1], Kaoru Esaki [1], Kazuhisa Kamegai [1], Masao Taki [1], Soichi Watanabe [1]
[1] *NICT (Japan)*

Change of radiofrequency electromagnetic exposure of children from 2020 to 2021: A report from Hokkaido Study
Keiko Yamazaki [1], Naomi Tamura [1], Chihiro Miyashita [1], Toshio Yoshikawa [1], Atsuko Ikeda-Araki [1], Takashi Hikage [1], Manabu Omiya [1], Masahiro Mizuta [2], Miwa Ikuyo [3], Kazuhiro Tobita [1], Teruo Onishi [1], Masao Taki [1], Soichi Watanabe [1], Reiko Kishi [1]
[1] *Hokkaido University (Japan);* [2] *The Institute of Statistical Mathematics (Japan);* [3] *National Institute of Information and Communications Technology (Japan)*

Monitoring to EMF exposure in France with autonomous probes and in situ measurements
Ourouk Jawad [1], Emmanuelle Conil [1], Jean-Benoît Agnani [1], Shanshan Wang [2], Joe Wiart [1]
[1] *Agence nationale des fréquences (ANFR) (France);* [2] *Chaire C2M - LTCI - Telecom Paris (France)*

RF Electromagnetic Fields Exposure Monitoring using Drive Test and Sensors in a French City
Shanshan Wang [1], Joe Wiart [2], Wassim Ben Chikha [1], Yarui Zhang [1], Jiang Liu [1], Emmanuelle Conil [3], Ourouk Jawad [1], Lamine Ourak [1]
[1] *Telecom Paris - IP Paris (France);* [2] *Télécom Paris (France);* [3] *Agence nationale des fréquences (ANFR) (France)*

Impact of Sampling Frequency on the Performance of DEVIN: A personal EM UL Exposimeter
Taghrid Mazloum [1], Joe Wiart [2], Serge Bories [1], David Dassonville [1]
[1] *CEA-LETI (France);* [2] *Télécom Paris (France)*

SESSION KD
Room 207

Smart IoT for Body Area Networks (Lorenzo Mucchi, Hirokazu Tanaka, Daisuke Anzai)
Session Chairs: Tanaka Hirokazu, Hiroshima City University, Japan
Anzai Daisuke, Nagoya Institute of Technology, Japan

YS* Analytical Channel Model for On-Body Antenna at 60 GHz
Kun Li [1], Giulia Sacco [2], Bernard Uguen [1], Maxim Zhadobov [1]
[1] *The University of Electro-Communications (Japan);* [2] *CNRS/IETR - University of Rennes (France)*

(Invited)A Study on Respiratory Rate Measurement Using Wearable CO2 Sensors
Mitsuhiro Fukuda [1], Ryosuke Omoto [2], Takunori Shimazaki [1], Daisuke Anzai [1]
[1] *METS Inc. (Japan);* [2] *Nagoya Institute of Technology (Japan)*

(Invited)A Study on Heat Strain Estimation Based on Unsupervised Learning Using Wearable Sensors
Ryosuke Omoto [1], Takunori Simazaki [2], Daisuke Anzai [1]
[1] *Nagoya Institute of Technology (Japan);* [2] *Jikei University of Health Care Sciences (Japan)*

(Invited)Experimental Evaluation of Initial Connection Time in SmartBANs
Tatsuki Hiramatsu [1], Hirokazu Tanaka [1]
[1] *Hiroshima City University (Japan)*

A Study on Cross-layer Performance Evaluation of Wireless Body Area Network Utilizing Super Orthogonal Convolutional Code
Kento Takabayashi [1], Hirokazu Tanaka [2], Katsumi Sakakibara [3]
[1] *Toyo University (Japan);* [2] *Hiroshima City University (Japan);* [3] *Okayama Prefectural University (Japan)*

08:20-09:40

SESSION B07-5

Mid-sized Hall B

Advanced algorithms in computational electromagnetics (Shinichiro Ohnuki, Vladimir Okhmatovski, Qing Huo Liu) (Part 5)

Session Chairs: Ohnuki Shinichiro, Nihon University, Japan
Okhmatovski Vladimir, UNIVERSITY OF MANITOBA, United States
Liu Qing Huo,

Numerical Dispersion Analysis of the Iterated Crank-Nicolson-Based FDTD Method

Akira Kawahara [1], Jun Shibayama [1], Junji Yamauchi [1], Hisamatsu Nakano [1]
[1] *Hosei University (Japan)*

(Invited)Vector Electric Filed Integral Equations Combined with Orthogonality of Modes for Analysis of Two-dimensional Slab Waveguide for H-wave Incidence

Masahiro Tanaka [1]
[1] *Gifu University (Japan)*

Verification of Plasmon Modes by Separating Electromagnetic Field Components in the Wavenumber Space

Keigo Takagi [1], Seiya Kishimoto [1], Tokuei Sako [1], Shinichiro Ohnuki [1]
[1] *Nihon University (Japan)*

Function Expansion Based Topology Optimization Utilizing Bayesian Optimization

Md Iquebal Hossain Patwary [1], Akito Iguchi [1], Yasuhide Tsuji [1], Tatsuya Kashiwa [2]
[1] *Muroran Institute of Technology (Japan);* [2] *Kitami Institute of Technology (Japan)*

SESSION B08-6

Room 104

Mathematical methods in electromagnetics (Kazuya Kobayashi, Yury Shestopalov, Martina Bevacqua, Santi Pavone) (Part 6)

Session Chairs: Kobayashi Kazuya, Chuo University, Japan
Du Xin, Tokyo Institute of technology, Japan
Fujita Keisuke, Maebashi Institute of Technology, Japan
Nagasaka Takashi, Ashikaga University, Japan

SPC* Arbitrary order analogue differentiation using transmission line techniques

Ross G. MacDonald [1], Alex Yakovlev [1], Victor Pacheco-Peña [1]
[1] *Newcastle University (United Kingdom)*

SPC* Pynoza: A Python framework for the time-domain multipole expansion of electromagnetic fields in Cartesian coordinates

Elias Le Boudec [1], Farhad Rachidi [1], Marcos Rubinstein [2], Nicolas Mora [3], Felix Vega [4]
[1] *Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland);* [2] *University of Applied Sciences of Western Switzerland (Switzerland);* [3] *Universidad Nacional de Colombia (Colombia);* [4] *Technology Innovation Institute (United Arab Emirates)*

(Invited)Modified Wheeler cap method using a quarter-wave transformer

Kouta Chiba [1], Keisuke Fujita [1]
[1] *Maebashi institute of technology (Japan)*

(Invited)YS* Design of Simulation Parameters in Angular spectrum Domain for Two-dimensional Mirror Kirchhoff Approximation and Split Step Parabolic Equation

Xin Du [1], Jun-ichi Takada [1]
[1] *Tokyo Institute of Technology (Japan)*

SESSION B28

Room 107

Stochastic methods and machine learning for electromagnetics (Steven Mark Anlage, Raphaël Pestourie, Danilo Erriolo)

Session Chairs: Anlage Steven, University of Maryland, United States

Deterministic-Stochastic Modeling of Current Diffusion Equation (CDE) for Plasma Confinement

Dragan Poljak [1], Anna Susnjara [1]
[1] *University of Split (Croatia)*

(Invited)Use of Reconfigurable Intelligent Surfaces to Manipulate Fields in Complex Enclosed Scattering Environments
Steven Anlage [1], Thomas Antonsen [1]
[1] *University of Maryland (United States)*

SESSION C05

Room 108

Satellite Systems & positioning (Sanat K Biswas, Amitava Sen Gupta)
Session Chairs: Biswas Sanat K.,
Sen Gupta Amitava, The North Cap University, HUDA Sector 23-A, Gurgaon, India

Theoretical Error Equation for FOA Based Localization by a Single Moving Observation Platform Considering Orbital Error
Takeshi Amishima [1]
[1] *Meiji University (Japan)*

Design of Inter-satellite Ranging and Clock Synchronization of Formation Satellites
Li Zhou [1]
[1] *National Space Science Center - Chinese Academy of Sciences (China)*

Design considerations of navigation satellite constellation for low Earth orbit
Jaan Praks [1], Zainab Saleem [1], Mayank Sharma [1], Kaan Celikbilek [2], Fabricio Prol [1], Shika Sharma [1], Heidi Kuusniemi [1], Luca Ferranti [1], Elena Simona Lohan [1], Christina Pinell [1], Sanna Kaasalainen [1], Zahidul Bhuiyan [1]
[1] *Aalto University (Finland);* [2] *Tampere University (Finland)*

SESSION F05-2

Room 206

Open session (Tullio Tanzi, Motoyuki Sato) (Part 2)
Session Chairs: Sato Motoyuki, Tohoku University, Japan
Tanzi Tullio, Institut Mines-Télécom, France

Microwave Emission Variability from Sea-Ice Induced by Parameters Uncertainty - A Model Study
Ying Yang [1], Kun-Shan Chen [2]
[1] *Nanjing University of Science and Technology (China);* [2] *Guilin University of Technology (China)*

Investigation of atmospheric effects in MIMO type 79 GHz GB-SAR interferometric monitoring
Yuta Izumi [1], Ryuma Saito [2], Jun Fujiwara [1], Motoyuki Sato [1]
[1] *Muroran Institute of Technology (Japan);* [2] *Tohoku University (Japan)*

(Invited)First results from trials on combined active-passive SAR imaging
Artur Gromek [1], Damian Gromek [1], Piotr Jerzy Samczyński [1]
[1] *Warsaw University of Technology (Poland)*

Calibration Assessments of The NASA CSDA Spaceborne GNSS-R Dataset
Mohammad Al-Khaldi [1], Darren McKague [2], Joel Johnson [1], Anthony Russel [1], Dorina Twigg [1]
[1] *The Ohio State University (United States);* [2] *University of Michigan (United States)*

SESSION G02-1

Room 204

Novel radio instruments and techniques for Space Weather model validation and testing (David R. Themens, Ningbo Wang, Maria-Theresia Walach) (Part 1)
Session Chairs: Themens David, University of Birmingham, United Kingdom
Wang Ningbo, Aerospace Information Research Institute (AIR), Chinese Academy of Sciences (CAS, China

YSA* SPCFinalist* On the use of SuperDARN Ground Backscatter Measurements for Ionospheric Propagation Model Validation
Joshua Ruck [1], David Themens [1]
[1] *Space Environment and Radio Engineering (SERENE) - University of Birmingham (United Kingdom)*

Near-Real-Time DORIS data for validating and combining GNSS generated ionospheric maps
Ningbo Wang [1], Denise Dettmering [2], Zishen Li [1], Ang Liu [1], Michael Schmidt [1]
[1] *Aerospace Information Research Institute (AIR) - Chinese Academy of Sciences (China);* [2] *Deutsches Geodätisches Forschungsinstitut (DGFI-TUM) - Technische Universität München (Germany)*

(Invited)YSA* SPC* Modelling the Ionospheric Alfvén Resonator Harmonic Frequency Separation at Eskdalemuir, UK
Rosie Hodnett [1], Timothy Yeoman [2], Ciarán Beggan [1], Darren Wright [1]
[1] University of Leicester (United Kingdom); [2] University of Leicester (United Kingdom)

Evaluation of Commercial GNSS Receivers for Ionospheric Scintillation Monitoring
Theodore Beach [1], Keith Groves [1], Christopher Bridgwood [1], Matthew Proctor [1]
[1] Boston College (United States)

SESSION H03-3

Small Hall

Multi-point observations and modeling for comprehensive understandings of the inner magnetosphere (Yoshiya Kasahara, Jean-Francois Ripoll, Jyrki Manninen) (Part 3)
Session Chairs: Manninen Jyrki, Sodankylä Geophysical Observatory, Oulu University, Finland

(Invited)Localized mesospheric ozone destruction induced by magnetospheric EMIC waves
Ozaki Mitsunori [1], Shiokawa Kazuo [2], Kataoka Ryuho [1], Mlynczak Martin [1], Paxton Larry [1], Connors Martin [1], Yagitani Satoshi [1], Otsuka Yuichi [1], Nakahira Satoshi [1], Mann Ian [1]
[1] Kanazawa University (Japan); [2] Nagoya University (Japan)

Ionospheric height-dependent electron density modulation caused by EMIC wave-driven proton precipitation
Yiqun Yu [1], Xingbin Tian [1]
[1] Beihang University (China)

Numerical Model Simulations of the Low-Energy Plasma Density and Composition in the Inner Magnetosphere
Naomi Maruyama [1]
[1] University of Colorado at Boulder (United States)

Developing Chorus Wave Model Using Van Allen Probe and Arase Data
Dedong Wang [1], Yuri Shprits [1], Ting Feng [2], Thea Lepage [3], Ingo Michaelis [1], Geoffrey Reeves [4], Ondrej Santolik [5], Yoshizumi Miyoshi [6], Yoshiya Kasahara [1], Atsushi Kumamoto [1], Shoya Matsuda [1], Ayako Matsuoka [1], Satoko Nakamura [1], Iku Shinohara [1], Fuminori Tsuchiya [1]
[1] Helmholtz Centre Potsdam German Research Centre for Geosciences - GFZ (Germany); [2] Department of Geophysics - Wuhan University (China); [3] Luleå University of Technology (Sweden); [4] Los Alamos National Laboratory (United States); [5] Institute of Atmospheric Physics of the Czech Academy of Sciences (Czechia); [6] Nagoya University (Japan); [1] Nagoya University (Japan)

SESSION H04-1

Room 102

Radio diagnostics of space weather plasma processes (Mauro Messerotti, Tomoko Nakagawa, Yasuhide Hobara, David Themens) (Part 1)
Session Chairs: Nakagawa Tomoko, Tohoku Institute of Technology, Japan

Basic study on possible generation region of chorus waves in Mercury's magnetosphere
Takeru Kondo [1], Mitsunori Ozaki [1], Satoshi Yagitani [1]
[1] Kanazawa University (Japan)

(Invited)REC-H04-02 Cause and Effects of Relativistic Electron Precipitation at CALET onboard ISS01
Ryuho Kataoka [1], Alessandro Bruno [2], Blum Lauren [1], Georgia De Nolfo [1], Satoshi Nakahira [1], Shoko Miyake [1], Shoji Torii [1]
[1] NIPR (Japan); [2] NASA Goddard Space Flight Center (United States)

MUSER Imaging-Spectroscopic Observations of Solar Radio Bursts for Space Weather
Yihua Yan [1], Wei Wang [1], Linjie Chen [1], Lihong Geng [1], Zhijun Chen [1], Chengming Tan [1]
[1] National Space Science Center - Chinese Academy of Sciences (China)

Solar UV/EUV effect on the Jovian upper atmosphere and radiation belt
Hajime Kita [1], Hiroaki Misawa [2], Fuminori Tsuchiya [1], Chihiro Tao [1], Yasumasa Kasaba [1]
[1] Tohoku Institute of Technology (Japan); [2] Tohoku University (Japan)

SESSION J04-5

Mid-sized Hall A

Antennas and receivers (Douglas Hayman, Jacki Gilmore, Pietro Bolli, David Davidson) (Part 5)
Session Chairs: Davidson David, ICRAR/Curtin University, Australia
Gilmore Jacki, Stellenbosch University, South Africa

YS* Beam Modeling of Reflector Antennas across Elevation
Mariet Venter [1], Dirk De Villiers [1]
[1] Stellenbosch University (South Africa)

Tri-band receivers for the INAF radio telescopes: from procurement to acceptance tests
Pietro Bolli [1], Seog-Tae Han [2], Jihoon Choi [1], Alessandro Orfei [1], Ignazio Porceddu [1], Do-Young Byun [1], Alessandro Cattani [1], Moon-Hee Chung [1], Franco Fiocchi [1], Francesco Gaudiomonte [1], Do-Heung Je [1], Adelaide Ladu [1], Jung-Won Lee [1], Moon-Hee Lee [1], Sung-Mo Lee [1], Sergio Mariotti [1], Pasqualino Marongiu [1], Tonino Pisanu [1], Marco Poloni [1], Juri Roda [1], Alessandro Scalambra [1], Renata Schirru [1], Paul F. Goldsmith [1]
[1] *Italian National Institute for Astrophysics (Italy);* [2] *Korean Astronomy and Space Institute (South Korea)*

YS* SPC* The Optical Design of the Canadian Galactic Emission Mapper Radio Telescope: Minimizing Polarization Systematics with an Optimized Hat Feed Design
Joshua MacEachern [1]
[1] *University of British Columbia (Canada)*

Development of Radio Astronomy Receiver Components by Metal 3D Printer
Keiko Kaneko [1], Ryo Sakai [1], Takafumi Kojima [1], Yoshinori Uzawa [1], Alvaro Gonzalez [1]
[1] *National Astronomical Observatory of Japan (Japan)*

SESSION K07-1
Room 201-202

Recent progress & new frontiers in RF exposure assessment - part 1 (Tongning Wu, Kun Li, Giulia Sacco)
Session Chairs: Li Kun, The University of Electro-Communications, Japan
Sacco Giulia, CNRS/IETR, University of Rennes, France

SPC* Prediction of Maximum Temperature Rise on Skin Surface for Local Exposure at 10–90 GHz
Ante Kapetanovic [1], Dragan Poljak [2], Kun Li [3]
[1] *FESB - University of Split (Croatia);* [2] *University of Split (Croatia);* [3] *Kagawa University (Japan)*

On the Use of Planar Skin Models in High Frequency Dosimetry Assessment
Mario Cvetkovic [1], Dragan Poljak [1]
[1] *FESB - University of Split (Croatia)*

YSA* Near field Exposure Assessment of Complex Anatomical Structures in 5G Bands
Giulia Sacco [1], Ante Kapetanović [2], Dragan Poljak [1], Maxim Zhadobov [1]
[1] *IETR - UMR CNRS 6164 (France);* [2] *University of Split (Croatia)*

Computation of Whole-Body-Average SAR for Plane-Wave Exposures below 30 GHz
Yinliang Diao [1]
[1] *South China Agricultural University (China)*

08:40-09:40

SESSION K14-1
Room 207

Rehabilitative and healthcare applications of EMF - part 1 (Jose Gomez-Tames, Asimina Kiourti, Koichi Ito)
Session Chairs: Gomez-Tames Jose, Chiba University, Japan
Rodriguez-Duarte David Orlando, Politecnico di Torino, Italy

(Invited)A low-complexity microwave scanner for cerebrovascular diseases monitoring
David Orlando Rodriguez-Duarte [1], Cristina Origlia [1], Jorge Alberto Tobon Vasquez [1], Rosa Scapaticci [2], Giovanna Turvani [1], Mario Roberto Casu [1], Lorenzo Crocco [1], Francesca Vipiana [1]
[1] *Politecnico di Torino (Italy);* [2] *IREA-CNR, National Research Council of Italy (Italy)*

Is Laplacian indispensable to Magnetic Resonance Electrical Property Tomography (MREPT) - An analysis from the perspective of Reconstruction Error Compensation Neural Networks
Ruian Qin [1], Wenwei Yu [1], Adan Jafet Garcia Inda [1], Zhongchao Zhou [1], Yukihiro Enomoto [1], Tianyi Yang [1], Nevrez Imamoglu [2], Jose Gomez-Tames [3], Shaoying Huang [4]
[1] *Chiba University (Japan);* [2] *Digital Architecture Research Center - National Institute of Advanced Industrial (Japan);* [3] *Center for Frontier Medical Engineering - Chiba University (Japan);* [4] *Engineering Product Development Department (Singapore)*

SPC* Effect of CP trajectory on image reconstruction in O-space imaging
Yifeng Jiang [1], Jose Gomez-Tames [2], Shaoying Huang [1], Wenwei Yu [1]
[1] *Chiba University (Japan);* [2] *Center for Frontier Medical Engineering - Chiba University (Japan)*

09:40-10:40

SESSION B07-6

Mid-sized Hall B

Advanced algorithms in computational electromagnetics (Shinichiro Ohnuki, Vladimir Okhmatovski, Qing Huo Liu) (Part 6)

Session Chairs: Ohnuki Shinichiro, Nihon University, Japan
Okhmatovski Vladimir, UNIVERSITY OF MANITOBA, United States
Liu Qing Huo,

Accuracy Verification of Multiscale Analysis for Interaction Between Electromagnetic Fields and Magnetization

Yuta Ito [1], Takumi Yasuda [1], Seiya Kishimoto [1], Shinichiro Ohnuki [1]
[1] *Nihon University (Japan)*

Optimal Design of Photonic Devices Using Coordinate Transformation Finite Element Beam Propagation Method

Haonan Chen [1], Takumi Kimura [1], Akito Iguchi [1], Yasuhide Tsuji [1]
[1] *Muroran Institute of Technology (Japan)*

A Study on Accelerating 2D FD-FDTD Methods for Various Types of Recuesive Convolution Schemes Implemented with the Drude-Lorentz Model by GPU Parallel Computing

Yukihisa Suzuki [1], Atsushi Sugimoto [1], Jun Shibayama [2], Jerdvisanop Chakarothai [3]
[1] *Tokyo Metropolitan University (Japan);* [2] *Hosei University (Japan);* [3] *National Institute of Information and Communications Technology (Japan)*

SESSION B08-7

Room 104

Mathematical methods in electromagnetics (Kazuya Kobayashi, Yury Shestopalov, Martina Bevacqua, Santi Pavone) (Part 7)

Session Chairs: Kobayashi Kazuya, Chuo University, Japan
Du Xin, Tokyo Institute of technology, Japan
Fujita Keisuke, Maebashi Institute of Technology, Japan
Nagasaka Takashi, Ashikaga University, Japan

YS* Wideband Spherical Helix Antenna with Multi-mode Excitation

Takuma Shimada [1], Mina Nishie [2], Keisuke Noguchi [1], Keisuke Fujita [1]
[1] *Maebashi Institute of Technology (Japan);* [2] *Kanazawa Institute of Technology (Japan)*

REC-B08-03 Wiener-Hopf Analysis of the H-polarized Plane Wave Diffraction by a Semi-Infinite Parallel-Plate Waveguide with Five-Layer Material Loading

Kewen He [1], Kazuya Kobayashi [1]
[1] *Chuo University (Japan)*

Diffraction by a Semi-Infinite Parallel-Plate Waveguide with Material Loading: The Case of H Polarization

Tong Zhang [1], Kazuya Kobayashi [1]
[1] *Chuo University (Japan)*

SESSION C08

Room 108

Aerial Communications and V2X Communication (Seemanti Saha, Rajarshi Bhattacharya)

Session Chairs: Seemanti Saha Seemanti, NIT Patna, India
Bhattacharya Rajarshi, National Institute of Technology, India

Vehicular multi-antenna characteristics on type of installation

Kazuma Tomimoto [1], Ryo Yamaguchi [1]
[1] *Softbank corporation (Japan)*

Stationarity Evaluation of High-mobility sub-6 GHz and mmWave non-WSSUS Channels

Danilo Radovic [1], Faruk Pasic [1], Markus Hofer [2], Herbert Groll [1], Christoph F. Mecklenbräucker [1], Thomas Zemen [1]
[1] *TU Wien/Institute of Telecommunication (Austria);* [2] *AIT Austrian Institute of Technology GmbH (Austria)*

Robust Converged UAV Path Planning Using Q-learning Based Sheep Flock Optimization Algorithm with Cauchy Operator

Seemanti Saha [1], Vikash Kumar [1]
[1] *NIT Patna (India)*

SESSION F05-3

Room 206

Open session (Tullio Tanzi, Motoyuki Sato) (Part 3)

Session Chairs: Sato Motoyuki, Tohoku University, Japan
Tanzi Tullio, Institut Mines-Télécom, France

On The Monitoring Of Inland Water Dynamics Using Level-1 Delay-Doppler Maps from NASA's CYGNSS Mission

Mohammad Al-Khaldi [1], Joel Johnson [1], Nicholas Brendle [1], Steven Chan [2], George Hajj [1]
[1] *The Ohio State University (United States);* [2] *NASA Jet Propulsion Laboratory (United States)*

Finite Element Storm Surge Simulations Using CYGNSS

Mohammad Al-Khaldi [1], Joel Johnson [1], Ethan Kubatko [1], Younghun Kang [1], Suranjan Nepal [1], Aaron Sines [1]
[1] *The Ohio State University (United States)*

REC-F05-01 Effects Of Tropospheric Turbulence On Radio Signal Data Passing Atmospheric Communication Links

Irina Bronfman [1], Yehuda Ben-Shimol [1], Nathan Blaunstein [1]
[1] *Ben Gurion University (Israel)*

SESSION G02-2

Room 204

Novel radio instruments and techniques for Space Weather model validation and testing (David R. Themens, Ningbo Wang, Maria-Theresia Walach) (Part 2)

Session Chairs: Themens David, University of Birmingham, United Kingdom
Wang Ningbo, Aerospace Information Research Institute (AIR), Chinese Academy of Sciences (CAS, China

SPC* Horizontal Inhomogeneity in the D-region Ionosphere During a X-class Solar Flare Using OCTAVE VLF/LF Observations

Masaharu Nakayama [1], Hiroyo Ohya [1], Fuminori Tsuchiya [2], Kazuo Shiokawa [3], Kenro Nozaki [4], Hiroyuki Nakata [1]
[1] *Chiba University (Japan);* [2] *Graduate School of Science - Tohoku University (Japan);* [3] *Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan);* [4] *The University of Electro-Communications (Japan)*

(Invited)Validation of ionospheric electron content models vs ground-GNSS, LEO-GNSS, LEO-altimeter, ground-ionosonde and radio-astronomy external measurements

Manuel Hernandez Pajares [1], Raul Orus-Perez [2], Roma-Dollase David [3], Gabriel O.Jerez [4], Nataliya K. Porayko [5], Maaijke Mevius [6], Caterina Tiburzi [7], Alberto Garcia-Rigo [8]
[1] *Universitat Politècnica de Catalunya (Spain);* [2] *ESA/ESTEC (Netherlands);* [3] *IEEC (Spain);* [4] *UNESP (Brazil);* [5] *Max-Planck-Institut für Radioastronomie (Germany);* [6] *ASTRON (Netherlands);* [7] *INAF (Italy);* [8] *UPC-IonSAT (Spain)*

First-year Results from a Space-based Sporadic E Detector

Bruce Fritz [1], Kenneth Dymond [1], Andrew Nicholas [1], Scott Budzien [1], Andrew Stephan [1]
[1] *U.S. Naval Research Laboratory (United States)*

SESSION H03-4

Small Hall

Multi-point observations and modeling for comprehensive understandings of the inner magnetosphere (Yoshiya Kasahara, Jean-Francois Ripoll, Jyrki Manninen) (Part 4)

Session Chairs: Kasahara Yoshiya, Kanazawa University, Japan

A drift kinetic simulation of internally driven ULF waves based on multi-point spacecraft observations in the ionosphere and the magnetosphere

Kazuhiro Yamamoto [1], Seki Kanako [1], Takanobu Amano [1], Aoi Nakamizo [2], Yoshizumi Miyoshi [3], Tomotsugu Yamakawa [1]
[1] *Graduate School of Science - The University of Tokyo (Japan);* [2] *National Institute of Information and Communications Technology (Japan);* [3] *Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan)*

Statistical Features of Plasma Wave Spectra Derived from 6 Years Observation by PWE/OFA on board the Arase

Yoshiya Kasahara [1], Keita Hayashi [1], Shoya Matsuda [1], Yoshizumi Miyoshi [2], Ayako Matsuoka [1], Jean-Francois Ripoll [1], David M. Malaspina [1], Satoko Nakamura [1], Iku Shinohara [1]
[1] *Kanazawa University (Japan);* [2] *Nagoya University (Japan)*

Characteristics of plasma transport energization in the inner magnetosphere: Long-term observations by Arase/MEP-i

Kunihiro Keika [1], Kanako Seki [1], Satoshi Kasahara [1], Shoichiro Yokota [2], Yoshizumi Miyoshi [3], Tomoaki Hori [1], Iku Shinohara [1], Ayako Matsuoka [1]
[1] *The University of Tokyo (Japan);* [2] *Osaka University (Japan);* [3] *Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan)*

SESSION H04-2

Room 102

Radio diagnostics of space weather plasma processes (Mauro Messerotti, Tomoko Nakagawa, Yasuhide Hobara, David Themens) (Part 2)

Session Chairs: Nakagawa Tomoko, Tohoku Institute of Technology, Japan

First Investigations of Plasma Waves around Mercury during the 1st and 2nd Flybys observed by PWI aboard BepiColombo Mio spacecraft

Yasumasa Kasaba [1]

[1] *Tohoku University (Japan)*

Observations of Conjugate LF/MF/HF Radio Emissions of Auroral Origin

James LaBelle [1], David McGaw [1], Kovacs Terrence [1], Anton Kashcheyev [2], PT Jayachandran [1]

[1] *Dartmouth College (United States);* [2] *University of New Brunswick (Canada)*

(Invited)SuperDARN – A Powerful tool for diagnosing the geospace environment

Nishitani Nozomu [1]

[1] *Nagoya University (Japan)*

SESSION J04-6

Mid-sized Hall A

Antennas and receivers (Douglas Hayman, Jacki Gilmore, Pietro Bolli, David Davidson) (Part 6)

Session Chairs: Hayman Douglas, CSIRO, Australia
Davidson David, ICRAR/Curtin University, Australia

On the Performance of Quadruple-Ridged Flared Horns for the ngVLA radio telescope

Robert Lehmensiek [1], Dirk De Villiers [2]

[1] *NRAO (United States);* [2] *Stellenbosch University (South Africa)*

SPC* Initial design and analysis of 15–29 GHz feed system for SKA Band 6

Yasumasa Yamasaki [1], Shin' ichiro Asayama [2], Alice Pellegrini [1], Yusuke Kono [1], Hideyuki Kobayashi [1], Hiroyuki Nakanishi [1], Hideo Ogawa [1], Toshikazu Onishi [1]

[1] *Osaka Prefecture University (Japan);* [2] *SKA Observatory (United Kingdom)*

An Ultra-wideband Feed Horn for the Green Bank Telescope

Steven White [1]

[1] *Green Bank Observatory (United States)*

SESSION K07-2

Room 201-202

Recent progress & new frontiers in RF exposure assessment - part 2 (Tongning Wu, Kun Li, Giulia Sacco)

Session Chairs: Li Kun, The University of Electro-Communications, Japan
Sacco Giulia, CNRS/IETR, University of Rennes, France

Intercomparison of Spatially Averaged Absorbed Power Density above 10 GHz

Kun Li [1], Giulia Sacco [2], Sachiko Kodera [3], Dragan Poljak [1], Yinliang Diao [1], Kensuke Sasaki [1], Anna Susnjara [1], Alexander Prokop [1], Kenji Taguchi [1], Jingtian Xi [1], Shuai Zhang [1], Ming Yao [1], Maxim Zhadobov [1], Walid El Hajj [1], Akimasa Hirata [1]

[1] *The University of Electro-Communications (Japan);* [2] *IETR - UMR CNRS 6164 (France);* [3] *Nagoya Institute of Technology (Japan)*

YSA* Uncertainty Quantification of Epithelial/Absorbed Power Density in 1-layered Planar Skin Model with Uncertain Tissue Electric Properties

Anna Šušnjara [1], Dragan Poljak [1]

[1] *University of Split (Croatia)*

Assessment of Absorbed Power Density for Curved Body Models

Yujiro Kushiyama [1], Tomoaki Nagaoka [1]

[1] *National Institute of Information and Communications Technology (Japan)*

SESSION K14-2

Room 207

Rehabilitative and healthcare applications of EMF - part 2 (Jose Gomez-Tames, Asimina Kiourti, Koichi Ito)

Session Chairs: Gomez-Tames Jose, Chiba University, Japan
Rodriguez-Duarte David Orlando, Politecnico di Torino, Italy

Cortical Electric Fields Differences in Transcranial Electrical Stimulation Protocols

Jose Gomez-Tames [1], Kanata Yatsuda [1]
[1] *Chiba University (Japan)*

Development of a Corticospinal Excitability Model During Non-Invasive Brain Stimulation

Jose Gomez-Tames [1], Wenwei Yu [1]
[1] *Chiba University (Japan)*

Identification of optimal transcutaneous electrical stimulation waveforms for pain relief

Yukihiro Enomoto [1], Wenwei Yu [1], Ema Oba [1], Adan Jafet Garcia Inda [1], Zhongchao Zhou [1], Ruian Qin [1], Nevrez İmamoğlu [2], Jose Gomez-Tames [1], Shaoying Huang [3]
[1] *Chiba University (Japan);* [2] *National Institute of Advanced Industrial Science and Technology (Japan);* [3] *Singapore University of Technology and Design (Singapore)*

11:00-12:00

SESSION Public Lecture

Main Hall A (General Lectures)

Harmonization of Scientific, Commercial, and Other Radio Uses with Regulatory Science for SDGs (Ryuji Kohno)

Session Chairs: Kobayashi Kazuya, Chuo University, Japan

Harmonization of Scientific, Commercial, and Other Radio Uses with Regulatory Science for SDGs

Ryuji Kohno [1]
[1] *Yokohama National University (Japan)*

Commission A Poster Session

Main Hall B (Posters)

P-A01-02 Micro area intelligent wireless channel power measurement system
Zhongyu Liu [1], Qi Yao [1], Lixin Guo [1]
[1] *Xidian University (China)*

P-A03-01 Investigating the influence of distance on the reflected signal with FMCW radar towards permittivity measurement
Hang Song [1], Mingxia Wan [1], Jun-ichi Takada [1]
[1] *Tokyo Institute of Technology (Japan)*

P-A03-02 Development and Demonstration of Accurate Free Space Measurement System at Millimeter/Submillimeter-wave Band
Ryo Sakai [1], Alvaro Gonzalez [1], Keiko Kaneko [1], Hiroaki Imada [1], Takafumi Kojima [1], Norihiko Sekine [2], Yoshinori Uzawa [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *National Institute of Information and Communications Technology (Japan)*

P-A08-01 Higher order integrators for relativistic equations of motion for charged particles
Riku Ozaki [1]
[1] *Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan)*

P-A09-01 Design of Verification Standards for S-parameter Measurements from 220 GHz to 330 GHz
Liu Jie [1], Yang Chuntao [1], Ma Hongmei [1], Cheng Chunyue [1], Chen Ting [1]
[1] *Beijing Institute of Radio Metrology and Measurement (China)*

P-A13-01 Removing Light Shift in Ramsey-Coherent Population Trapping Resonance with Different Free Evolution Time
Masahiro Fukuoka [1], Hiroyuki Gamou [1], Shigeyoshi Goka [1]
[1] *Tokyo Metropolitan University (Japan)*

P-A16-01 Path length stabilization in optical fibers using a superheterodyne receiver architecture
Michael Kazda [1], Burghard Lipphardt [1], Niklas Kuhrmeyer [1], Nils Huntemann [1]
[1] *Physikalisch-Technische Bundesanstalt (Germany)*

Commission B Poster Session

Main Hall B (Posters)

P-B01-03 Dynamics of the Voltage Distribution Over Cascaded Diodes
Eden Tafa Tulu [1], Marcus Stiemer [1], Klaus Hoffmann [1], Jörn Hänel [2], Müter Ulf [1]
[1] *Helmut Schmidt University / University of the Federal Armed Forces (Germany);* [2] *Philips Gmbh (Germany)*

P-B02-02 A Partial-Annular Directional Antenna with Simple Structure for Limited Space
Wei Luo [1], Zihao Wang [1], Qiang Chen [2]
[1] *Chongqing University of Posts and Telecommunications (China);* [2] *Tohoku University (Japan)*

P-B02-03 A 300 GHz Resonant Cavity Antenna using a Frequency Selective Surface on a Quartz Substrate
Zhao Hong Tu [1], Yu-Hsiang Cheng [1]
[1] *National Taiwan University (Taiwan)*

P-B02-04 Investigation of Printed Folded Dipole Antenna With Ground Plane for Robust Characteristics
Hiroshi Hashiguchi [1], Naobumi Michishita [1], Hisashi Morishita [1], Takehiro Iwamoto [2], Masao Sakuma [3]
[1] *National Defense Academy (Japan);* [2] *Idemitsu Kosan Co. Ltd. (Japan);* [3] *Sakuma Antenna Co. Ltd. (Japan)*

P-B02-05 A Study of Multiplexing Efficiency of Small Base Station with Different MIMO Antenna Placements
Wenfu Fu [1], Bo Xu [2], Sailing He [1]
[1] *KTH Royal Institute of Technology (Sweden);* [2] *Ericsson Research (Sweden)*

P-B02-06 A Compact Wideband Bidirectional Dielectric Resonator Antenna Array Based on Back-to-Back structure
Daotong Li [1], Linsong Shi [2], Daotong Li [1], Jiaxin Wang [1], Qiang Chen [1]
[1] *Tohoku University (Japan);* [2] *Chongqing University (China)*

P-B02-07 Compact Low-Impedance Coax Vias for E-band Radar Applications
Guan Yo Lin [1], Ruey Beei Wu [1]
[1] *National Taiwan University (Taiwan)*

P-B02-08 Dual Band MIMO Monopole Antenna System for 5G Laptops
Chih-Kuo Lee [1], Shu-Chuan Chen [1], Jo-Yen Nieh [1], Kuan-Yi Li [2]
[1] *Chung Cheng Institute of Technology - National Defense University (Taiwan);* [2] *National Yunlin University of Science and Technology (Taiwan)*

P-B03-01 Generating photonic hooks using dual-dielectric designs
Joseph Arnold Riley [1], Oleg V. Minin [2], Igor V. Minin [1], Victor Pacheco-Peña [1]
[1] *Newcastle University (United Kingdom);* [2] *National Research Tomsk Polytechnic University (Russia)*

P-B03-02 Controlling Transmission Through Random Media: Channels and Modes
Valentin Freilikher [1]
[1] *Bar Ilan University (Israel)*

P-B05-01 Characteristics of the propagation of Dirac-type waves for arbitrary temporal variations of various parameters
Kihong Kim [1], Seulong Kim [1]
[1] *Ajou University (South Korea)*

P-B07-01 Pulse Reflection Response for Dispersive Medium with Lossless Dielectric Layer and Perfectly Conducting Strips
Chun Wang [1], Ryosuke Ozaki [1], Tsuneki Yamasaki [1]
[1] *Nihon University (Japan)*

P-B07-03 A Study on Sub-Wavelength Grating Nonradiative Dielectric Waveguide for Single Mode Transmission
Keisuke Kazama [1], Akito Iguchi [1], Yasuhide Tsuji [1]
[1] *Muroran Institute of Technology (Japan)*

P-B11-01 Experimental Study on Contrast Source Inversion Based Complex Permittivity Reconstruction for Microwave Nondestructive Road Evaluation
Katsuyoshi Suzuki [1], Shouhei Kidera [1]
[1] *University of Electro-Communications (Japan)*

P-B13-01 A review of analytical regularization methods for 2D electromagnetic problems: H-polarization case
Paul Smith [1], Elena Vinogradova [1]
[1] *Macquarie University (Australia)*

(Invited)P-B13-02 Scattering from a half oblate spheroidal cavity with DPS and DNG layers illuminated by a magnetic dipole
Anastasiia Rozhkova [1], Ermanno Citraro [2], Danilo Erricolo [1], Piergiorgio L.E. Uslenghi [1], Francesco Andriulli [1]
[1] *University of Illinois Chicago (United States);* [2] *Politecnico di Torino (Italy)*

P-B14-02 A Planar Linear-to-Circular Polarizer
Fu-Chiarng Chen [1], Chun-Hao Hsun [1]
[1] *National Yang Ming Chiao Tung University (Taiwan)*

P-B14-03 Simplified Equivalent Circuit Models for Waveform-Selective Metasurfaces Responding to Repeated Pulses
Ryuho Miyamoto [1], Ashif Fathnan [1], Hiroki Wakatsuchi [1]
[1] *Nagoya Institute of Technology (Japan)*

P-B15-02 Generation of Microwave Bottle Beam by a Reflective Metasurface
Menglan Lin [1], Badreddine Ratni [2], Peihan Qi [1], Jianjia Yi [1], André De Lustrac [1], Shah Nawaz Burokur [1]
[1] *Xidian University (China);* [2] *Univ Paris Nanterre (France)*

P-B15-04 A compact wireless sensor for material characterization based on spoof localized surface plasmons
Yujie Hua [1], Huaqing Fan [1], Baiyun Wang [1], Wenxuan Tang [1]
[1] *Southeast University (China)*

P-B15-05 Dual-Polarized Metagrating Absorbers
Zhen Tan [1], Jianjia Yi [1], Badreddine Ratni [2], Shah Nawaz Burokur [1]
[1] *Xi'an Jiaotong University (China);* [2] *Univ Paris Nanterre (France)*

P-B15-06 YS* Time-Varying Metasurfaces for Target Recognition
Xiaoyi Wang [1], Zhen Wang [1], Mei Song Tong [1]
[1] *Tongji University (China)*

P-B17-01 A Compact Reconfigurable Microwave Passive Component with Four Functions
Yo-Shen Lin [1], Jing-Hui Zhuang [1]
[1] *National Central University (Taiwan)*

P-B23-01 Beamforming Transmitter for Millimeter-wave Band using Phase Detector System
Ye-Eun Chi [1], Jinki Park [1], Seong-Ook Park [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

P-B23-02 Liquid Crystal-Based Linear Array Element Control for Tunable Polarization RLSA Antenna Design
Jinki Park [1], Ye-Eun Chi [1], Seong-Ook Park [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

P-B28-01 Super-resolution of Ray-tracing Channel Simulation via Attention Mechanism based Deep Learning Model
Haoyang Zhang [1], Xinyi Shan [1], Danping He [1], Xiping Wang [1], Wenbin Wang [1], Yunhao Cheng [1], Ke Guan [1]
[1] *Beijing Jiaotong University (China)*

P-B29-01 SPC* A High-Gain Reflective Metasurface Constructed by Programmable Subwavelength Phase Units
Zhen Wang [1], Mei Song Tong [1]
[1] *Tongji University (China)*

P-BK-01 Maintenance-Free Metasurface-Based Sensing
Masaya Tashiro [1], Akira Uchiyama [2], Yuta Sugiura [3], Ashif Fathnan [1], Hiroki Wakatsuchi [1]
[1] *Nagoya Institute of Technology (Japan);* [2] *Osaka University (Japan);* [3] *Keio University (Japan)*

Commission D Poster Session

Main Hall B (Posters)

P-D03-01 MIMO Transmission Technique over a Multimode Optical Fiber for High-Capacity In-Vehicle and Short-Distance Optical Networks
Atsushi Kanno [1]
[1] *Nagoya Institute of Technology (Japan)*

P-D04-02 Multisection 3-dB Ultra-Broadband Directional Coupler Composed of Coupled-Line Sections Designed in PCB and MMIC Technologies
Krzysztof Wincza [1], Robert Smolarz [1], Artur Rydosz [1], Slawomir Gruszczynski [1]
[1] *AGH University of Science and Technology (Poland)*

P-D04-04 A V-Band Cascode PA with Dual-Adaptive-Bias Technique in 65-nm CMOS
Lin Kun-You [1], Zi-Hao Fu [1], Chen Kuan-Wei [1], Yei Jia-Wei [1]
[1] *National Taiwan University (Taiwan)*

P-D04-05 Impacts of reentry plasma sheaths on the radiation performance of THz array antenna
Rongxin Tang [1], Kai Yuan [1], Ziyang Zhao [1]
[1] *Nanchang University (China)*

P-D04-06 Millimeter-wave Class-F Power Amplifier in E-mode GaAs pHEMT Process
Lin Kun-You [1], Zi-Hao Fu [1], Yei Jia-Wei [1], Huang Hong-Yuan [1]
[1] *National Taiwan University (Taiwan)*

P-D10-01 A Novel Signal Source Amplitude Adjustment Method Based on Noise Floor Region Judgment
Fenglin Shi [1], Shaoxiong Cai [1], Yaoyao Li [1], Ling Chen [1], Donglin Su [1]
[1] *Beihang University (China)*

P-D11-01 Growth of high quality AlN films on 2D TMDc for next-generation electronic and optical devices applications
Wei-Chun Chen [1], Kun-An Chiu [1], Yu-Wei Lin [1], Che-Chin Chen [1], Hung-Pin Chen [1], Fong-Zhi Chen [1]
[1] *Taiwan Instrument Research Institute - National Applied Research Laboratories (Taiwan)*

Commission G Poster Session

Main Hall B (Posters)

P-G02-01 Investigation of the Orientation Angle of HF Waves Using the Radio Receiver Instrument on e-POP/Swarm-E
E. Ceren Eyiguler [1], Donald W. Danskin [1], Andrew D. Howarth [2], Warren Holley [1], Kuldeep Pandey [1], Robert G. Gillies [1], Andrew W. Yau [1], Glenn C. Hussey [1]
[1] *University of Saskatchewan (Canada);* [2] *University of Calgary (Canada)*

P-G02-02 The Ellipticity Polarization State of Transionospheric Radio Waves Using Swarm-E/e-POP RRI Satellite Observations and Modeling
Kuldeep Pandey [1], E. Ceren Eyiguler [1], Donald W. Danskin [1], Robert G. Gillies [1], Andrew W. Yau [1], Glenn C. Hussey [1]
[1] *University of Saskatchewan (Canada)*

P-G02-04 Mesoscale D-region ionospheric imaging with an array of VLF receivers
Robert Marshall [1], James Cannon [1], Forrest Gasdia [1]
[1] *University of Colorado at Boulder (United States)*

P-G03-01 Electric field roles in day-to-day variations of sporadic E layers at geomagnetic mid-latitudes
Satoshi Andoh [1], Akinori Saito [2], Hiroyuki Shinagawa [1]
[1] *National Institute of Information and Communications Technology (Japan);* [2] *Graduate School of Science - Kyoto University (Japan)*

P-G03-03 IONORING: a service for nowcasting and forecasting Total Electron Content over Italy
Emanuele Pica [1], Claudio Cesaroni [1], Luca Spogli [1], Giorgiana De Franceschi [1]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy)*

P-G03-04 Observation of sporadic E using aeronautical navigation radio for instrument landing system
Shumpei Tabuchi [1], Keisuke Hosokawa [1], Susumu Saito [2], Jun Sakai [1], Ichiro Tomizawa [1], Toru Takahashi [1], Hiroyuki Nakata [1]
[1] *The University of Electro-Communications (Japan);* [2] *Electronic Navigation Research Institute (Japan)*

P-G03-05 Dynamics of mid-latitude sporadic-E and its impact on HF propagation in the North American sector
Bharat Kunduri [1], Philip Erickson [2], Joseph Baker [1], Ruohoniemi J. Michael [1], Sterne Kevin [1], Galkin Ivan [3]
[1] *Virginia Tech (United States);* [2] *MIT Haystack Observatory (United States);* [3] *University of Massachussetts (United States)*

P-G03-06 Observation of Global Ionosphere Responses to the Hunga Tonga-Hunga Ha'apai Eruption
Charles Lin [1], P. K. Rajesh [1], Jia-Ting Lin [1], Shih-Ping Chen [1], Jong-Min Choi [1]
[1] *National Cheng Kung University (Taiwan)*

P-G03-08 Strategy of ionospheric research and operation in NICT
Takuya Tsugawa [1], Mamoru Ishii [1], Hidekatsu Jin [1], Michi Nishioka [1], Kornyanat Hozumi [1]
[1] *National Institute of Information and Communications Technology (Japan)*

P-G04-01 Yearly Variations of Global Ion Density Distributions Observed by Advanced Ionospheric Probe Onboard FORMOSAT-5 Satellite
Chi-Kuang Chao [1]
[1] *National Central University (Taiwan)*

P-G04-03 YSA* First results from reconstruction of simulated ionospheric electron density distribution over the Indian region using tomography technique
Ajay Potdar [1], Ambili KM [2], Rajkumar Choudhary [1]
[1] *Vikram Sarabhai Space Centre - Indian Space Research Organization (India);* [2] *VSSC - ISRO (India)*

P-G04-06 Satellite-based electron density background definition and comparison with IRI-2016 model at mid-latitudes under different solar conditions
Dario Sabbagh [1], Alessandro Ippolito [1], Dedalo Marchetti [2], Loredana Perrone [1], Angelo De Santis [1], Saioa Arquero Campuzano [3], Gianfranco Cianchini [1], Alessandro Piscini [1]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy);* [2] *College of Instrumentation and Electrical Engineering - Jilin University (China);* [3] *Department of Earth Physics and Astrophysics, Complutense University (Spain)*

P-G05-05 Propagation disturbances in the auroral and polar ionospheres investigated through EISCAT/ESR and their effects on positioning
Biagio Forte [1], Habila M. John [2], Ivan Astin [1], Alex Arnold [3], Tom Allbrook [1], Ingemar Häggström [1], Bruno C. Vani [1]
[1] *University of Bath (United Kingdom);* [2] *Blackpool and the Fylde College (United Kingdom);* [3] *Independent Researcher (United Kingdom);*

P-G05-07 YS* Feasibility of a Swarm-based proxy for amplitude scintillation on GNSS signals
Rayan Imam [1], Luca Spogli [1], Lucilla Alfonsi [1], Claudio Cesaroni [1], Yaqi Jin [2], Lasse Clausen [1], Alan Wood [1], Wojciech Miloch [1]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy);* [2] *University of Oslo (Norway)*

P-G05-08 Characteristics of Ionospheric Scintillations in Chengdu, China
Shucan Ge [1], Hailong Li [2], Song Zhang [1], Jinghua Li [1], Lin Meng [1]
[1] *China Research Institute of Radiowave Propagation (China);* [2] *University of Electronic Science and Technology of China (China);*

P-G05-10 The Ionospheric Scintillation in China Low Latitude from Dense GNSS network
Donghe Zhang [1], Hongyu Gao [1]
[1] *Peking University (China)*

P-G07-02 Spread F Studies using Digisonde instruments
Preeti Bhaneja [1], Terry Bullett [2], Jeff Klenzing [3]
[1] *USRA/NASA-GSFC (United States);* [2] *NOAA/NCEI (United States);* [3] *NASA Goddard Space Flight Center (United States)*

P-G09-01 A Wide-Band High-Frequency Antenna Array for Radar and Radio Imaging of the Ionosphere
Brett Isham [1], Terence Bullett [2], Bjorn Gustavsson [3], Emil Polisensky [4], Vasyl Belyey [5], Christiano Brum [6], Christopher Fallen [7], Jan Bergman [8], Arturs Stramkals [9]
[1] *Interamerican University of Puerto Rico (United States);* [2] *University of Colorado (United States);* [3] *University of Tromsø (Norway);* [4] *U.S. Naval Research Laboratory (United States);* [5] *Private researcher (Norway);* [6] *University of Central Florida (United States);* [7] *U.S. Air Force Research Laboratory (United States);* [8] *Swedish Institute of Space Physics (Sweden);* [9] *Uppsala University (Sweden)*

P-G09-02 Improving radar remote sensing measurements of D region electron densities at polar latitudes
Toralf Renkwitz [1], Antti Kero [2], Werner Singer [1], Ralph Latteck [1]
[1] *Leibniz Institute of Atmospheric Physics (Germany);* [2] *Sodankylä Geophysical Observatory (Finland)*

P-G12-01 Study on the Relationship between the Characteristics of Equatorial Magnetic Field and Equatorial Spread F Occurrences
Lin Min Min Myint [1], Pornchai Supnithi [1], Phimmasone Thammavongsy [1], Kornyanat Hozumi [2]
[1] *King Mongkut's Institute of Technology Ladkrabang (Thailand);* [2] *National Institute of Information and Communications Technology (Japan)*

P-G12-02 Nighttime ionospheric disturbances and irregularities due to solar eclipse at June solstice in 2020
Yang-Yi Sun [1]
[1] *China University of Geosciences (China)*

P-G12-03 Near Real-time Equatorial Plasma Bubble Monitoring System using GNSS at the Low Latitude Region in ASEAN
Lin Min Min Myint [1], Napat Tongkasem [1], Supnithi Pornchai [1], Kornyanat Hozumi [2], Donekeo Lakanchanh [3], Thayheng Nhem [4]
[1] *King Mongkut's Institute of Technology Ladkrabang (Thailand);* [2] *National Institute of Information and Communications Technology (Japan);* [3] *National University of Laos (Laos);* [4] *Cambodia Academy of Digital Technology (Cambodia)*

P-G12-04 VLF Observations of the 2021-2022 Hunga Tonga-Hunga Ha'apai Eruption
Jarod Guzik [1], Robert Moore [1]
[1] *University of Florida (United States)*

P-G14-01 Fast Eastward flows of summer D-region echoes during substorm expansion phase observed by SuperDARN radar
Yong Ha Kim [1], Young-Sook Lee [1], Ram Singh [1], Young-Sil Kwak [2], Mark Lester [3]
[1] *Chungnam National University (South Korea);* [2] *Korea Astronomy and Space Science Institute (South Korea);* [3] *University of Leicester (United Kingdom)*

P-G14-02 Polar thermospheric responses to geomagnetic effects
Changsup Lee [1], Geonhwa Jee [1], Qian Wu [2], Young-bae Ham [1], Jieun Kim [1], Jeong-Han Kim [1]
[1] *Korea Polar Research Institute (South Korea);* [2] *National Center for Atmospheric Research (United States)*

P-G14-03 Simulation-based Analysis of the Impact of Large-Scale Field-Aligned Density Duct on HF Radio Wave Propagation
Naeem Danish [1], Dong-Hun Lee [1]
[1] *Kyung Hee University (Republic of Korea)*

P-G15-01 YS* Ionospheric Tomography Model Driven by Dynamic Measured Data and Its Multi-GNSS Verification
Yun Sui [1], Haiyang Fu [1], Feng Xu [1], Denghui Wang [2], Shaojun Feng [1], Yaqiu Jin [1]
[1] *Fudan University (China);* [2] *Qianxun Spatial Intelligence Inc. (China)*

P-G15-02 ARctic Over-The-Horizon Radar ONtic (AROTHRON) Model of the High-Latitude Ionosphere
James Eccles [1], John Retterer [2], Jeffrey Holmes [3]
[1] *Space Dynamics Laboratory (United States);* [2] *Institute for Scientific Research/Boston College (United States);* [3] *Air Force Research Laboratory (United States)*

P-G15-03 Generation of Realizations of Electron Density for Numerical Electromagnetic Propagation Simulations

Dennis Knepp [1], Vladimir Sotnikov [2]
[1] *NorthWest Research Associates (United States);* [2] *Air Force Research Laboratory (United States)*

P-G15-04 The Challenges of Using F10.7 Operationally

Sean Elvidge [1], David Themens [1], Elizabeth Donegan-Lawley [1], Matthew Brown [1]
[1] *University of Birmingham (United Kingdom)*

P-G15-05 Development of Ionospheric 3D Tomography with Data from GNSS-TEC and Ionosonde

Mamoru Yamamoto [1], Taisei Nozaki [1], Nicholas Ssessanga [2], Susumu Saito [3]
[1] *Kyoto University (Japan);* [2] *University of Oslo (Norway);* [3] *Electronic Navigation Research Institute - National Institute of Maritime ()*

P-G16-01 Pan-Arctic GNSS INfrastructure for Atmospheric science: state of the art of the PAGINA project

Vincenzo Romano [1], Claudio Cesaroni [1], P. T. Jayachandran [2], Kauristie Kirsti [3], Sara Mainella [1], Carlo Marcocci [1], Emanuele Pica [1], Luca Spogli [1]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy);* [2] *University of New Brunswick (Canada);* [3] *Finnish Meteorological Institute (Finland)*

P-G17-03 First- and second-order multi station statistics of mesospheric and lower thermospheric winds over South America related to the 2022 Hunga Tonga–Hunga Ha'apai eruption

Jorge Chau [1], Facundo Poblet [1], Juha Vierinen [2], Juan Federico Conte [1], Jose Suclupe [1], Alan Liu [3], Rodolfo Rodriguez [4]
[1] *Leibniz Institute of Atmospheric Physics (Germany);* [2] *UiT - The Arctic University of Norway (Norway);* [3] *Embry Riddle Aeronautical University (United States);* [4] *Universidad de Piura (Peru)*

P-G17-04 Whether sudden stratospheric warming effects are seen in the mid-latitude thermosphere of the opposite hemisphere?

Loredana Perrone [1], Andrey Mikhailov [2]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy);* [2] *IZMIRAN-INGV (Russia)*

P-G17-05 Study of global behavior of ionosphere effects of moderate geomagnetic storms using high time resolution global ionosphere maps (GIMs)

Yenca Migoya-Orué [1], Sandro Radicella [2], Saioa A. Campuzano [3], Gracia Rodríguez-Caderot [3], Miguel Herraiz-Sarachaga [1]
[1] *The Abdus Salam International Centre for Theoretical Physics (ICTP) (Italy);* [2] *Boston College (United States);* [3] *Complutense Univerity of Madrid (Spain)*

P-G17-06 Analysis of ionospheric corrections for single-frequency GNSS spaceborne applications

Bin Wang [1], Junping Chen [1], Yize Zhang [1], Weijie Tan [1]
[1] *Shanghai Astronomical Observatory - Chinese Academy of Sciences (China)*

P-G17-07 Effects of RFIs on GNSS Ionspheric Scintillation Indices: a case study

Emanuele Pica [1], Alex Minetto [2], Claudio Cesaroni [1], Fabio Dovis [1]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy);* [2] *Politecnico di Torino (Italy)*

P-G17-08 T-FORS: a project to develop TID forecasting systems

Tobias Verhulst [1], Anna Belehaki [2], Luca Spogli [3], Claudio Cesaroni [1], David Altadill [1], Ivan Galkin [1], Dalia Buresova [1], Sivakandan Mani [1], Stefan Unger [1], Veronika Barta [1], Philippe Brouard [1]
[1] *Royal Meteorological Institute of Belgium (Belgium);* [2] *National Observatory of Athens (Greece);* [3] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy)*

P-G17-10 The solar and geomagnetic origin of the long-term trends in the ionospheric/thermospheric variability over Rome since 1976

Dario Sabbagh [1], Luca Spogli [1], Loredana Perrone [1], Claudio Cesaroni [1], Carlo Scotto [1]
[1] *Istituto Nazionale di Geofisica e Vulcanologia (INGV) (Italy)*

P-G17-12 Periodicities in TEC during summer night-time Spread F over Nicosia

Haris Haralambous [1], Krishnendu Paul [1], Christina Oikonomou [1]
[1] *Frederick Research Center (Cyprus)*

P-G17-14 The Geospace Dynamics Constellation (GDC) NEMISIS Investigation

Mark B. Moldwin [1], Eftyhia Zesta [2], Meghan Burleigh [1], Seebany Datta-Barua [1], Michael Hartinger [1], Alex Hoffman [1], Denny Oliveira [1], Aaron Ridley [1], Mojtaba Akhavan-Tafti [1], Deirdre Wendel [1], Shasha Zou [1], Ryan Barnhart [1], Todd Bonalski [1], Greg Dechaine [1], Cole Heckathorn [1], Dennis Lee [1], Fernando Saca [1], Bryan Shores [1], Jon Van Noord [1]
[1] *University of Michigan (United States);* [2] *NASA Goddard Space Flight Center (United States)*

P-GH1-01 Discoveries in Micrometeroid Science Enabled by the Detection of Impact-Generated Plasmas using Electric Field Instruments on Spacecraft

David Malaspina [1], Lynn Wilson [2], Alexandru Toma [1], Jamey Szalay [3], Pulupa Marc [4], Adel Al-Ghazwi [1], Stuart Bale [1], Shivank Chadda [1], Thierry Dudok de Wit [1], Mark Hervig [1], Veerle Sterken [1]
[1] University of Colorado (United States); [2] NASA Goddard Space Flight Center (United States); [3] Princeton University (United States); [4] University of California (United States)

P-GH1-02 A machine-learning approach for detecting and analyzing meteor echoes (MADAME)

Yanlin Li [1], Freddy Galindo [1], Julio Urbina [1], Qihou Zhou [2], Tai-Yin Huang [1]
[1] The Pennsylvania State University (United States); [2] Miami University (United States)

P-GH1-04 Amateur Radio Observations of Meteors in Japan: History over a Quarter Century

Takuji Nakamura [1], Kazuhiro Suzuki [2], Sumio Nakane [1], Yasunori Fujiwara [1], Masayoshi Ueda [1], Makoto Abo [1], Masa-yuki Yamamoto [1], Toshio Terasawa [1], Tadas Nakamura [1]
[1] National Institute of Polar Research (Japan); [2] Nippon Meteor Society (Japan)

P-GH2-01 Plasma wave observations by the LFAS/WFC onboard the SS-520-3 sounding rocket

Takahiro Zushi [1], Satoshi Kurita [2], Keigo Ishisaka [1], Yoshiya Kasahara [1], Mitsunori Ozaki [1], Satoshi Yagitani [1], Yuto Katoh [1], Takumi Abe [1], Keisuke Hosokawa [1], Yasunobu Ogawa [1], Yoshifumi Saito [1], Hirotsugu Kojima [1]
[1] National institute of Technology - Nara College (Japan); [2] Research Institute for Sustainable Humanosphere (Japan)

P-GH2-02 Solar flare-induced gradient drift instability observed by SuperDARN HF radars

Shibaji Chakraborty [1], Nozomu Nishitani [2], Joseph Baker [1], Pavlo Ponomarenko [3], J. Michael Ruohoniemi [1]
[1] Virginia Tech (United States); [2] Nagoya University (Japan); [3] University of Saskatchewan (Canada)

P-GH2-03 DC Electric Field Measurement during MSTID Occurrence by S-520-32 Sounding Rocket

Miyuki Matsuyama [1], Keigo Ishisaka [1], Yuki Ahihara [2], Mamoru Yamamoto [3], Atsushi Kumamoto [4], Hidetaka Shirasawa [5], Takumi Abe [6]
[1] Toyama Prefectural University (Japan); [2] National institute of Technology - Nara College (Japan); [3] Research Institute for Sustainable Humanosphere - Kyoto University (Japan); [4] Tohoku University (Japan); [5] Tokai University (Japan); [6] Japan Aerospace Exploration Agency, Institute of Space and Astronautical Science (Japan)

P-GH2-04 DC Electric Field Observations in the Polar Cusp Region by SS-520-3 Sounding Rocket

Keigo Ishisaka [1], Miyuki Matsuyama [1], Takahiro Zushi [2], Satoshi Kurita [3], Makoto Tanaka [1], Hirotsugu Kojima [1], Takumi Abe [1], Yoshifumi Saito [1]
[1] Toyama Prefectural University (Japan); [2] National institute of Technology - Nara College (Japan); [3] Research Institute for Sustainable Humanosphere - Kyoto University (Japan)

P-GH2-05 Analysis of VLF Band Waves near the Sq Current System observed by S-310-44 Sounding Rocket

Taketoshi Miyake [1], Ryuichiro Nakamura [1], Keigo Ishisaka [1], Takumi Abe [2], Atsushi Kumamoto [3], Makoto Tanaka [4]
[1] Toyama Prefectural University (Japan); [2] JAXA/ISAS (Japan); [3] Tohoku University (Japan); [4] Tokai University (Japan)

P-GH2-06 Ionospheric variability observed in connection to mesoscale systems above Europe

Petra Koucká Knížová [1], Kateřina Potužníková [1], Kateřina Podolská [1], Dalia Burešová [1], Zbyšek Mošna [1], Daniel Kouba [1], Jaroslav Chum [1], Patrick Hannawald [2], Sabine Wüst [1], Michael Bittner [1]
[1] Institute of Atmospheric Physics of the Czech Academy of Sciences (Czech Republic); [2] German Aerospace Center - German Remote Sensing Data Center (Germany)

P-GHE-01 Detection of Electromagnetic Precursors of Earthquakes Mediated by the Terrestrial Ground Surface Plasma Wave

Masafumi Fujii [1]
[1] University of Toyama (Japan)

P-GHE-06 Atmospheric Electric Field Anomaly Just around the Time of Earthquakes

Yasuhide Hobara [1], Mako Watanabe [1], Hiroshi Kikuchi [1], Takuo Tsuda [1], Masashi Hayakawa [2]
[1] The University of Electro-Communications (Japan); [2] Hayakawa Institute of Seismo Electromagnetics (Japan)

Commission K Poster Session

Main Hall B (Posters)

P-K01-01 Effects of exposure to a 28 GHz wave on the blood flow in the skin of human volunteers

Sanae Matsufuji [1], Miyako Inoue [1], Etsuko Ijima [1], Tatsuya Ishitake [1], Sachiko Kodera [2], Akimasa Hirata [1], Akiko Matsumoto [1], Hiroshi Masuda [1]
[1] *Kurume University School of Medicine (Japan);* [2] *Nagoya Institute of Technology (Japan)*

P-K01-02 28 GHz exposure of rat dorsal skin modulates body temperature and distal blood flow

Etsuko Ijima [1], Tatsuya Ishitake [1], Sachiko Kodera [2], Akimasa Hirata [1], Akiko Matsumoto [1], Takashi Hikage [1], Hiroshi Masuda [1]
[1] *Kurume University (Japan);* [2] *Nagoya Institute of Technology (Japan)*

P-K01-03 Histological effects of high intensity local exposure to 26.5 GHz-millimeter waves on dorsal skin in rat

Naomi Kamizawa [1], Etsuko Ijima [1], Tatsuya Ishitake [1], Akiko Nagai [2], Takashi Hikage [3], Kun Li [4], Hiroshi Masuda [1]
[1] *Kurume University (Japan);* [2] *Aichi Gakuin University (Japan);* [3] *Hokkaido University (Japan);* [4] *Kagawa University (Japan)*

P-K01-04 Effects of local exposure to 26.5 GHz-millimeter wave on neuronal cells in rat brain

Emi Hidaka [1], Etsuko Ijima [1], Yukina Tsuruta [1], Tatsuya Ishitake [1], Akiko Nagai [2], Takashi Hikage [3], Kun Li [4], Hiroshi Masuda [1]
[1] *Kurume University School of Medicine (Japan);* [2] *Aichi Gakuin University (Japan);* [3] *Hokkaido University (Japan);* [4] *Kagawa University (Japan)*

P-K01-05 Temperature elevation during back skin exposure to 28 GHz wave in human volunteer

Sanae Matsufuji [1], Miyako Inoue [1], Etsuko Ijima [1], Sachiko Kodera [2], Tatsuya Ishitake [1], Akimasa Hirata [1], Akiko Matsumoto [1], Hiroshi Masuda [1]
[1] *Kurume University School of Medicine (Japan);* [2] *Nagoya Institute of Technology (Japan)*

P-K01-07 Effects of 4G mobile phone frequency (2350MHz) on liver, kidney, testis and blood parameters of male Wistar rat

Rohit Gautam [1], Sonali Pardhiya [1], Jay Prakash Nirala [1], Priyanka Sarsaiya [1], Paulraj Rajamani [1]
[1] *Jawaharlal Nehru University (India)*

P-K05-01 Plane-wave Arrival Angle Dependency of Whole-body Averaged SAR for Epidemiological Research on Children's Health in Cellular Frequency bands

Kaito Sugimura [1], Sakura Tsuruga [1], Takashi Hikage [1], Keiko Yamazaki [1], Atsuko Ikeda-Araki [1], Chihiro Miyashita [1], Naomi Tamura [1], Reiko Kishi [1]
[1] *Hokkaido University (Japan)*

P-K06-01 Frequency Response of Human Body Impedance in the MF to VHF Band

Hikaru Konta [1], Toshihiro Komatsuzaki [1], Ken Sato [2], Yoshitsugu Kamimura [1]
[1] *Utsunomiya University (Japan);* [2] *National Institute of Technology - Hachinohe collage (Japan)*

P-K07-01 Reliability of the thermal sensation threshold induced by the exposure to millimeter waves

Akiko Yuasa [1], Shintaro Uehara [2], Kazuki Ushizawa [1], Sachiko Kodera [3], Yoshitsugu Kamimura [1], Akimasa Hirata [1], Yohei Otaka [1]
[1] *Fujita Health University School of Medicine (Japan);* [2] *Fujita Health University School of Health Sciences (Japan);* [3] *Nagoya Institute of Technology (Japan)*

P-K08-01 High-resolution temperature imaging in a tissue-equivalent phantom using fluorescence thermoprobe

Shota Yamazaki [1], Tomoaki Nagaoka [1], Maya Mizuno [2]
[1] *National Institute of Information and Communications Technology (Japan);* [2] *NICT (Japan)*

P-K08-02 Evaluation of Complex Measurement Systems Using A Gaussian Process Interpolation Approach

Mark Douglas [1], Nitin Jain [2], Niels Kuster [1], Cedric Bujard [1], Esra Neufeld [1], Joe Wiart [3]
[1] *IT'IS Foundation (Switzerland);* [2] *BNN SPEAG (India);* [3] *Télécom Paris (France)*

P-K09-01 Radiofrequency Exposure Measuremets on a 28 GHz Band 5G Base Station

Sen Liu [1], Naoto Tsuchiya [2], Teruo Onishi [1], Masao Taki [1], Soichi Watanabe [1], Yukihisa Suzuki [1]
[1] *NICT (Japan);* [2] *TMU (Japan)*

P-K09-02 Measurements of magnetic fields from Wireless Chargers operating at intermediate frequencies

Kaoru Esaki [1], Teruo Onishi [1], Masao Taki [1], Soichi Watanabe [1]
[1] *National Institute of Information and Communications Technology (Japan)*

P-K09-03 RF exposure levels in a house of the different surrounding environments in Japan

Miwa Ikuyo [1], Teruo Onishi [1], Masao Taki [1], Soichi Watanabe [1]
[1] *National Institute of Information and Communications Technology (Japan)*

P-K09-05 NextGEM Practical Guidelines for RF-EMF exposure awareness and preventive actions: goals, definitions, and procedure

Maarten Velghe [1], Mathieu Pruppers [1], Sam Aerts [2], Erdall Korkmaz [1], Andreas Gavrielides [1], Olga Zeni [1], Maria R. Scarfi [1], Eduardo Soudah [1], Fulvio Schettino [1], Marco D. Miglior [1], Francisco Vargas [1], Raquel Ramirez-Vazquez [1], Loek Colussi [1], Mats-Olof Mattsson [1], Myrtill Simko [1], Dan Baaken [1], Nikolaos Petroulakis [1], John Bolte [1]
[1] National Institute for Public Health and the Environment (RIVM) (Netherlands); [2] The Hague University of Applied Sciences (Netherlands);

P-K10-01 TMS treatment exposure for workers: focus on operator hand

Simona D' Agostino [1], Micol Colella [1], Rosaria Falsaperla [2], Micaela Liberti [1], Francesca Apollonio [1]
[1] Sapienza University of Rome (Italy); [2] INAIL - Department of Occupational and Environmental Medicine (Italy)

P-K10-02 Laboratory and simulation studies on electromagnetic hazards related to the use of radiofrequency energy transmission devices

Jolanta Karpowicz [1], Patryk Zradziński [1]
[1] Central Institute for Labour Protection - National Research Institute (CIOP-PIB) (Poland)

(Invited)P-K11-01 Development of a New RFA Heating Applicator using a Bimetal

Ryuta Maeta [1], Yuya Iseki [1]
[1] National Institute of Technology - Hachinohe collage (Japan)

(Invited)P-K11-02 Measurement of effective thermal conductivity around blood vessels in different skin tissues

Mizuki Sasaki [1], Kojiro Kurosawa [1], Yuya Iseki [1], Takuma Kogawa [1], Takashi Nonaka [1], Yasushi Hosokawa [1], Miyo Yokota [1], Fuhui Guo [1], Takahiro Okabe [1], Shigenao Maruyama [1]
[1] National Institute of Technology - Hachinohe collage (Japan)

P-K11-03 Comparison of Microwave Breast Hyperthermia Applicators with FORA Dipole: Circular, Linear and Cross Arrays

Lourdes Farrugia [1], Iman Farhat [1], Gulsah Yildiz [2], Yilmaz Tuba [1], Ibrahim Akduman [1], Charles Sammut [1]
[1] University of Malta (Malta); [2] Istanbul Technical University (Turkey)

P-K12-01 Optimization of Electrode Positions for Multi-Electrodes tES for Deep Brain Stimulations

Hidetaka Nishimoto [1], Sachiko Kodera [1], Akimasa Hirata [1]
[1] Nagoya Institute of Technology (Japan)

P-K12-02 Computer-Aided Fast Brain Function Mapping by Transcranial Magnetic Stimulation

Sachiko Kodera [1], Akimasa Hirata [1], Keigo Hikita [1], Keita Iijima [1], Shoogo Ueno [2]
[1] Nagoya Institute of Technology (Japan); [2] The University of Tokyo (Japan)

P-K13-01 Examining the Feasibility of Flexible Coaxial-Probe-based Dielectric Sensing of Tissue Properties

Emily Porter [1], Ali Farshkaran [1], Andrew Fry [1]
[1] University of Texas at Austin (United States)

P-K14-01 SnO2-based sensor for H2S detection in exhaled human breath

SZAFRANIAK BARTŁOMIEJ [1], ŁUKASZ FUŚNIK [1], Dominik Grochala [1], ANNA PALECZEK [1], Justyna Grochala [2], Krzysztof Wincza [1], Artur Rydosz [1]
[1] AGH University of Science and Technology (Poland); [2] Jagiellonian University Medical College (Poland)

(Invited)P-K14-02 A Novel Transcranial Interfering Electric Field Stimulation Device for Neuro- Rehabilitation: A Pilot Test in a Stroke Animal Model

Chun-Wei Wu [1], Bor-Shing Lin [2], Yu-Ting Li [3], Chih-Wei Peng [1]
[1] Taipei Medical University (Taiwan); [2] National Taipei University (Taiwan); [3] National Applied Research Laboratories (Taiwan)

P-KA-01 Absorbed Power Density Assessments for 28 GHz Human Exposure Using Inverse Source Technique; Cross-Comparison of Several Phantoms

Daisuke Nishihara [1], Tomoaki Nagaoka [2], Rasyidah Hanan Binti Mohd Baharin [1], Kensuke Sasaki [1], Ryosuke Suga [1], Osamu Hashimoto [1]
[1] Aoyama Gakuin University (Japan); [2] National Institute of Information and Communications Technology (Japan)

P-KB-01 Contrast Source Inversion Enhanced Radar and Complex Permittivity Reconstruction Approach for Microwave Breast Imaging

Mutsuki Nakajima [1], Shouhei Kidera [1]
[1] University of Electro-Communications (Japan)

P-KE-01 Electromagnetic Disturbance Issues in 400 MHz Wireless Medical Telemetry Systems and Its Countermeasures for Safety Operation

Ishida Kai [1], Kiyotaka Fujii [2], Hanada Eisuke [3]
[1] *Junshin Gakuen University (Japan);* [2] *Kitasato University (Japan);* [3] *Saga University (Japan)*

P-KE-02 Novel Wireless Power Transmission System for Implantable Bio-robotic Organ

Junqing Lan [1], Yinliang Diao [2], Ruoyue Wei [1], Xinwei Tang [1]
[1] *Chengdu University of Information Technology (China);* [2] *South China Agricultural University (China)*

Commission C Poster Session

Main Hall B (Posters)

P-C02-01 Throughput Prediction with Support Vector Regression for 5G Network
Bo Wei [1], Hang Song [2], Jiro Katto [1]
[1] *Waseda University (Japan);* [2] *Tokyo Institute of Technology (Japan)*

P-C02-02 Deep Learning-Aided NOMA Codebook Design with Improved Performance
Hsuan-Jung Su [1], Hsiang-Yu Liu [1], Yasuhiro Takano [2]
[1] *National Taiwan University (Taiwan);* [2] *Chitose Institute of Science and Technology (Japan)*

P-C03-01 FMCW Proximity sensor that minimizes the influence of leakage signal.
Kim Hansol [1], Dong-Sik Ko [2], Ju-hye Kim [1], Seong-Ook Park [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea);* [2] *Poongsan Defense R&D Institute (South Korea);*
[1] *Poongsan Defense R&D Institute (South Korea)*

P-C03-02 Micro Doppler Extraction for classification Using X-Band Chirp pulse Radar
JuHong Park [1], SeongOok Park [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

P-C03-03 Linear Chirp Pulse Radar System Design and Detecting Ability Verification for Small Drone Detection
Kyung-Bin Bae [1], Eun-Seong Kim [1], Seong-Ook Park [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

P-C03-04 Drone Classification Model Using AI Algorithm
JunSung Park [1], SeongOok Park [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

P-C03-05 C-band NLFM Pulse Radar System Design and Predistortion Technique to detect SDR based Transponder
Changyu Lee [1], Kyungbin Bae [1], Ashish Singh [1], Seong-Ook Park [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

PC03-06 Drone Detection and Speed Estimation Algorithm through Singular Vector in LFM Chirp Pulse Radar
Yooho Jang [1], SeongOok Park [1]
[1] *Korea Advanced Institute of Science and Technology (KAIST) (South Korea)*

P-C06-01 Millimeter Wave (30 – 300 GHz) Virtual Connected Vector Network Analyzer
Ryo Yamaguchi [1], Hozen Toshiki [1], Tomimoto Kazuma [1], Miyashita Masayuki [1], Yabuki Ayumu [1]
[1] *SoftBank Corp. (Japan)*

P-C07-01 Detection of Hidden Wireless Eavesdroppers based on their Backscattering Characteristics
An Jie [1], Wang Zhendong [1], Zhang Qianyun [1]
[1] *Beihang University (China)*

(Invited)P-C08-01 A UAV-mounted base station management system for mobile user coverage network
Dilip Mandloi [1], Rajeev Arya [1], Seemanti Saha [1]
[1] *National Institute of Technology Patna (India)*

P-C10-01 SPC* Investigation on High-efficient Saturation Operation of Doherty-Outphasing Hybrid Power Amplifier for WPT applications
Daisuke Yasunobu [1], Ren Furumoto [1], Kenjiro Nishikawa [1]
[1] *Kagoshima University (Japan)*

P-C10-02 Test Count Reduction Algorithm for Determining the Optimal Phase in Wireless Power Transfer using Bayesian Optimization
Lee Young-Seok [1], Nam Sangwook [1]
[1] *Seoul National University (South Korea)*

Commission E Poster Session

Main Hall B (Posters)

P-E01-01 Optimization identification algorithm of characteristic parameters of electromagnetic emission elements
Jiayi Wu [1], Donglin Su [1], Hui Xu [1]
[1] *Beihang University (China)*

P-E02-02 A Normalized Site Attenuation Automatic Measurement Method for OATS
Peiran Liu [1], Shaoxiong Cai [1], Yaoyao Li [1], Donglin Su [1]
[1] *Beihang (China)*

P-E02-03 An RFID-based Sensing System for Visual Monitoring of Electromagnetic Radiation
Zhongyi Liu [1], Jiaxin Zhang [1], Lingnan Song [1], Yutong Jiang [1], Donglin Su [1]
[1] *Beihang University (China)*

P-E02-04 Research on the Influence of UAV-borne Electromagnetic Environment Monitoring System on Electromagnetic Environment Test Data
Jiaxin Zhang [1], Lilin Li [1], Jiayuan Wang [1]
[1] *Beihang University (China)*

P-E02-05 Performance Evaluation of Broadband Metasurface Absorber for On-Site Electromagnetic Noise Visualization
Akihiro Tatsuta [1], Shinkuro Fujino [1], Shinichi Tanimoto [1], Satoshi Yagitani [2], Taiga Miyai [1], Shota Nakamura [1]
[1] *Panasonic Connect Co., Ltd. (Japan);* [2] *Kanazawa University (Japan)*

(Invited)P-E02-06 A New Method for Hopping Filter Based on Frequency Segmentation Design
Liu Dingrui [1], Dingrui Liu [1], Yanhua Peng [1], Hui Xu [1]
[1] *Beihang University (China)*

P-E05-01 Wideband Mutual Coupling Reduction in mm-wave Aperture-coupled Stacked Patch Antenna Arrays using a Novel Mushroom-like Resonator
Ji- Gang Chen [1], Lin Yi-Ting [1], Chou Chiu-Chih [2], Wu Tzong-Lin [1]
[1] *National Taiwan University (Taiwan);* [2] *National Central University (Taiwan)*

P-E05-02 A Spectrum Interference Prediction Method for Multiple Transmitters and Receivers
Houpu Xiao [1], Yaoyao Li [1], Shaoxiong Cai [1], Youwei Meng [1], Shijian Zhang [1]
[1] *Beihang University (China)*

P-E05-03 A simulation tool to interpret error rates in LoRa systems under frequency-sweeping jamming
Artur Nogueira de São José [1], Virginie Deniau [1], Alexandre Boé [2], Eric Pierre Simon [1]
[1] *Université Gustave Eiffel (France);* [2] *Université de Lille (France)*

P-E08-01 Pattern Combination Based Field and Source Modeling for Multi-Conductor Radiation
Wei-Jen Chen [1], Ruey-Beei Wu [1]
[1] *National Taiwan University (Taiwan)*

P-E08-03 YS* Mitigate Voltage Regulator Switching Noise Coupling in the Frequency and Time Domain
Cheng-Yi Zhuang [1], Zi-Yang Xu [1], Ding-Bing Lin [1], Nick K. H. Huang [2], Jim Lai [1]
[1] *National Taiwan University of Science and Technology (Taiwan);* [2] *Hewlett Packard Enterprise (Taiwan)*

P-E08-04 Super-resolution magnetic dipole moment from Near Field Scanning by Finite-Impulse-Response Filter
Jung-Ting Kao [1], Min-Hsu Tsai [1], Ruey-Beei Wu [1]
[1] *Taiwan University (Taiwan)*

P-E09-01 Radiated Power Prediction Model Based on Antenna Response Under the Complex Electromagnetic Environment
Youwei Meng [1], Yaoyao Li [1], Shaoxiong Cai [1], Hao Chen [1], Donglin Su [1]
[1] *Beihang University (China)*

P-E09-02 Switchable Notch filter bank with level control for RFI Mitigation in Radio Astronomy
Ankur . [1]
[1] *GMRT - NCRA (India)*

P-EC-01 A Fundamental Study on Effect of Transfer Characteristics of Side-Channel Waveform in Correlation Power Analysis
Hideaki Sone [1], Yuichi Hayashi [2]
[1] *Tohoku University (Japan);* [2] *NAIST (Japan)*

P-EC-02 A Simple Aircraft Position Verification Method using Received Signal Strength and Support Vector Machine
Junichi Naganawa [1]
[1] *National Institute of Maritime, Port and Aviation Technology (MPAT) (Japan)*

P-EJGF-03 Trajectory Based RFI Subtraction and Calibration for Radio Interferometry
Christopher Finlay [1], Bruce Bassett [2], Martin Kunz [1], Nadeem Oozeer [3]
[1] *University of Geneva (Switzerland);* [2] *University of Cape Town (South Africa);* [3] *South African Radio Astronomy Observatory (South Africa)*

Commission F Poster Session

Main Hall B (Posters)

P-F01-01 Urban Damage Mapping With Reconstructed Quad-Pol SAR Data From Dual-Pol SAR mode
Deng Jun-Wu [1], Li Ming-Dian [1], Li Hao-Liang [1], Chen Si-Wei [1]
[1] *National University of Defense Technology (China)*

P-F02-02 Z-R Relationship and DSD Based on Precipitation Classification: An Arctic Study from Ny-Ålesund
Lekhraj Saini [1], Soumen Datta [2], Saurabh Das [1], Nuncio Murukesh [3]
[1] *Indian Institute of Technology Indore (India);* [2] *IIT Indore (India);* [3] *National Center for Polar and Ocean Research (India)*

P-F03-02 Understanding the Temporal Evolution of the Atomic Oxygen Red Line Emission in Ionospheric Heating
Konstantinos Kalogerakis [1]
[1] *SRI International (United States)*

P-F05-01 Development and Measurement of 79GHz 24×32 MIMO Radar
Nanaho Kawata [1], Yoshiyuki Shibue [1], Masayuki Nakajima [1], Jun Fujiwara [1], Issei Watanabe [2], Qiang Chen [3], Motoyuki Sato [1]
[1] *Antenna Giken Co., Ltd. (Japan);* [2] *National Institute of Information and Communications Technology (Japan);* [3] *Tohoku University (Japan)*

P-F05-02 Proactive Prediction of Path Loss Using Multi-Input Recurrent Neural Network in an Urban Environment
Motoharu Sasaki [1], Naoki Shibuya [1], Kenichi Kawamura [1], Nobuaki Kuno [1], Minoru Inomata [1], Wataru Yamada [1], Takatsune Moriyama [1]
[1] *Nippon Telegraph and Telephone Corporation (Japan)*

P-F05-03 The impact of wind on trees during the integration time of a SAR image
Xavier HUSSON [1], Etienne Everaere [1], Elise COLIN [1]
[1] *ONERA (France)*

P-F05-05 Six-component Scattering Power Decomposition for Polarimetric SAR Data Without Matrix Rotation
Hiroyoshi Yamada [1], Sato Ryoichi [1]
[1] *Niigata University (Japan)*

P-F05-06 Detection of Periodic Motions using Wi-Fi Received Signal Strength by Lomb-Scargle periodogram
Koichiro Sakaguchi [1], Mitsuyoshi Kisihara [1], Kensuke Okubo [1]
[1] *Okayama Prefectural University (Japan)*

P-F05-07 Comparison of Physical Optics and Ray Tracing in Non-Planar Serration Object at Millimeter-Wave Band
Ek-amorn Shinwasusin [1], Nopphon Keerativoranan [1], Panawit Hanpinitsak [2], Xin Du [1], Jun-ichi Takada [1]
[1] *Tokyo Institute of Technology (Japan);* [2] *Khon Kaen University (Thailand)*

P-F06-01 YSA* Measurements and Analysis of Angular Channel Characteristics in Substation Scenarios for Power IoT
Tao Zhou [1], Yiteng Lin [1], Liu Liu [1]
[1] *Beijing Jiaotong University (China)*

P-F07-01 Towards a Standardized method to quantify the amount of interference in the remote sensing bands
Roger Oliva [1], Ryo Natsuaki [2], De Matthaeis Paolo [3]
[1] *Zenithal Blue Technologies (Spain);* [2] *The University of Tokyo (Japan);* [3] *NASA Goddard Space Flight Center (United States)*

Commission H Poster Session

Main Hall B (Posters)

P-H01-01 Magnetic Field Fluctuations from the Solar Wind to the Surface of Mars

Teresa Esman [1], Jared Espley [1], Jacob Gruesbeck [1], Joe Giacalone [2], Alexa Halford [1]
[1] *NASA Goddard Space Flight Center (United States);* [2] *University of Arizona (United States)*

P-H01-03 Investigating geomagnetic variation across Aotearoa New Zealand: Introducing the MANA variometer network

Aaron Hendry [1], Craig Rodger [1], James Brundell [1]
[1] *University of Otago (New Zealand)*

P-H02-01 Phase Space Density Hole/Hill Formation by Whistler-mode Chorus in a Multi-component Plasma

Kyungguk Min [1]
[1] *Chungnam National University (South Korea)*

P-H02-02 Local Time Distributions of Subelements of Lower-Band Rising-Tone Chorus Emissions

Wun-Jyun Lin [1], Jih-Hong Shue [1], Yoshiharu Omura [2], Han-Wen Shen [3], Yoshizumi Miyoshi [4]
[1] *National Central University (Taiwan);* [2] *Kyoto University (Japan);* [3] *University of Iowa (United States);* [4] *Nagoya University (Japan)*

P-H02-03 Investigation of Local Acceleration and Losses in the Radiation Belts via Novel Simulations of Chorus Waves in the Inner Magnetosphere

Kateryna Yakymenko [1], Oleksandr Koshkarov [1], Vania Jordanova [1], Misa Cowee [1]
[1] *Los Alamos National Laboratory (United States)*

P-H02-05 Investigating different methods of chorus wave identification in the radiation belts for improved understanding of nonlinear interactions

Rachel Black [1], Oliver Allanson [1], Nigel Meredith [2], Jin-Mann Wong [1]
[1] *University of Exeter (United Kingdom);* [2] *British Antarctic Survey (United Kingdom)*

P-H02-06 Dispersion and Polarization Features of Whistler-Mode Waves in Low-Density Plasma

Natalia Artekha [1], David Shklyar [1]
[1] *Space Research Institute of RAS (Russia)*

P-H02-08 Characteristics of Electron Injections Below the Inner Radiation Belt

Samuel Walton [1], Solène Lejosne [1], Seth Claudepierre [1]
[1] *University of California (United States)*

P-H02-09 The fast modulation of pulsating aurora: related to the subelement of chorus waves

Rui Chen [1], Yoshizumi Miyoshi [2], Xinliang Gao [1], Quanming Lu [1], Keisuke Hosokawa [1], Yasunobu Ogawa [1], Shin-ichiro Oyama [1], Yoshiya Kasahara [1], Shoya Matsuda [1], Satoko Nakamura [1], Ayako Matsuoka [1], Iku Shinohara [1]
[1] *University of Science and Technology of China (China);* [2] *Nagoya University (Japan)*

P-H02-10 Simultaneous cyclotron wave-particle interaction from 10s eV to MeV

Alexa Halford [1], Katherine Garcia-Sage [1], Ian Mann [2]
[1] *NASA Goddard Space Flight Center (United States);* [2] *University of Alberta (Canada)*

P-H02-11 Phase difference of ECH waves observed by using the interferometry observation mode of the Arase satellite

Tomoe Taki [1], Satoshi Kurita [1], Airi Shinjo [1], Satoko Nakamura [2], Hirotsugu Kojima [1], Yoshiya Kasahara [1], Shoya Matsuda [1], Ayako Matsuoka [1], Yoshizumi Miyoshi [1], Iku Shinohara [1]
[1] *Kyoto University (Japan);* [2] *Nagoya University (Japan)*

P-H02-12 Strong diffusion of electrons as an acceleration process

Tom Daggitt [1], Richard Horne [2], Sarah Glauert [1], Giulio Del Zanna [1]
[1] *Cambridge University (United Kingdom);* [2] *British Antarctic Survey (United Kingdom)*

P-H02-13 Estimating relativistic electrons' source population from the spectral features of chorus emissions

Lilla Murár-Juhász [1], Laura Gréta Magyar [2], János Lichtenberger [1], Yoshiharu Omura [3]
[1] *ELKH-ELTE (Hungary);* [2] *Eötvös University (Hungary);* [3] *Kyoto University RISH (Japan)*

P-H02-14 Electron Precipitation Processes due to Oblique Chorus Emissions

Yikai Hsieh [1], Yoshiharu Omura [2]
[1] *Research Institute for Sustainable Humanosphere (Japan);* [2] *Research Institute for Sustainable Humanosphere - Kyoto University (Japan)*

P-H03-03 Factors controlling the shape and energy of pulsating aurora: Simultaneous observations by Arase satellite, ground-based all-sky imagers and EISCAT radar
Yuri Ito [1], Keisuke Hosokawa [1], Yasunobu Ogawa [2], Yoshizumi Miyoshi [1], Mizuki Fukizawa [1], Fuminori Tsuchiya [1], Kiyoka Murase [1], Shin-ichiro Oyama [1], Satoko Nakamura [1], Yoshiya Kasahara [1], Shoya Matsuda [1], Satoshi Kasahara [1], Tomoaki Hori [1], Yokota Shoichiro [1], Kunihiro Keika [1], Iku Shinohara [1]
[1] *The University of Electro-Communications (Japan);* [2] *National Institute of Polar Research (Japan)*

P-H03-04 Feature analysis of chorus elements observed by the Arase satellite
Takaya Hiratsuka [1], Yoshiya Kasahara [1], Shoya Matsuda [1], Yoshizumi Miyoshi [2], Iku Shinohara [3]
[1] *Kanazawa University (Japan);* [2] *Nagoya University (Japan);* [3] *ISAS/JAXA (Japan)*

P-H03-05 Study on Statistical Properties of Plasmaspheric Hiss Observed by the Arase Satellite
Keita Hayashi [1], Yoshiya Kasahara [1], Shoya Matsuda [1], Fuminori Tsutchiya [2], Atsushi Kumamoto [1], Masahiro Kitahara [1], Ayako Matsuoka [1], Satoko Nakamura [1], Yoshizumi Miyoshi [1], Iku Shinohara [1], David Malaspina [1], Jean-Francois Ripoll [1]
[1] *Kanazawa University (Japan);* [2] *Tohoku University (Japan)*

P-H04-02 Modeling Electric Potential Produced by Photoelectrons and Spacecraft charging: A case of the Arase satellite
Tomoko Nakagawa [1], Tomoaki Hori [2], Satoko Nakamura [1], Yasumasa Kasaba [1], Masafumi Shoji [1], Yoshizumi Miyoshi [1], Masahiro Kitahara [1], Shoya Matsuda [1], Yoshiya Kasahara [1], Iku Shinohara [1]
[1] *Tohoku Institute of Technology (Japan);* [2] *Institute for Space-Earth Environmental Research (ISEE) - Nagoya University (Japan)*

P-H04-03 Spectral Resonance Structure in 0.5-8Hz Magnetic Field Variations Detected at Kawatabi, Miyagi, Japan
Tomoko Nakagawa [1], Taiki Sato [1], Chihiro Kumagai [1]
[1] *Tohoku Institute of Technology (Japan)*

P-H05-02 Development of automatic classification program for low frequency waves observed by Arase satellite
Taketoshi Miyake [1], Kouga Yamashita [1], Yoshiya Kasahara [2]
[1] *Toyama Prefectural University (Japan);* [2] *Kanazawa University (Japan)*

P-H06-01 Numerical Studies of Plasmapause Boundary Layer Instabilities
Oleksandr Koshkarov [1], Kateryna Yakymenko [1], Michael Henderson [1], Gian Luca Delzanno [1]
[1] *Los Alamos National Laboratory (United States)*

P-H07-01 Particle Simulation on Antenna Characteristics at around the Lower-Hybrid Resonance Frequency in space plasma.
Koshiro Kusachi [1], Yohei Miyake [1], Hideyuki Usui [1], Hirotsugu Kojima [2], Satoshi Kurita [1], Ibuki Fukasawa [1]
[1] *Kobe university (Japan);* [2] *Kyoto university (Japan)*

P-H08-01 SPC* Vortex Electromagnetic Wave Propagation in Magnetized Plasma
Yiyun Wu [1], Moran Liu [2], Chen Zhou [1]
[1] *Department of Space Physics (China);* [2] *Department of Space Physics - Wuhan University (China);* [1] *Department of Space Physics - Wuhan University (China)*

P-H08-02 Hybrid simulations of mirror instability and waves
Chun-Kai Chang [1], Lin-Ni Hau [1]
[1] *National Central University (Taiwan)*

P-H08-03 Global hybrid modeling of ultra-low frequency solar wind foreshock waves at Mercury, Venus, Earth and Mars
Riku Jarvinen [1], Esa Kallio [2], Tuija Pulkkinen [3]
[1] *Finnish Meteorological Institute (Finland);* [2] *Aalto University (Finland);* [3] *University of Michigan, Department of Climate and Space Sciences and Engineering (United States)*

P-H08-04 Fully-kinetic global simulations of Mercury's magnetosphere in support to BepiColombo
Federico Lavorenti [1], Pietro Dazzi [2], Pierre Henri [1], Jan Deca [1], Francesco Califano [1], Johannes Benkhoff [1]
[1] *University of Pisa (Italy);* [2] *LPC2E (France)*

P-H08-05 Backward Propagating Source as a Mechanism of Rising Tone Whistler Mode Chorus
Vijay Harid [1], Mark Golkowski [1], Poorya Hosseini [2], Hoyoung Kim [3]
[1] *University of Colorado Denver (United States);* [2] *Johns Hopkins University Applied Physics Laboratory (Uruguay);* [3] *University of California Berkeley - Space Sciences Laboratory (United States)*

P-H08-06 YSA* Cassini's floating potential in Titan's ionosphere: 3-D Particle-In-Cell Simulations

Zeqi Zhang [1], Ravindra Desai [2], Oleg Shebanits [3], Yohei Miyake [4], Hideyuki Usui [1]
[1] *Imperial College London (United Kingdom);* [2] *Centre for Fusion Space & Astrophysics - University of Warwick (United Kingdom);*
[3] *Swedish Institute of Space Physics (Sweden);* [4] *Graduate School of System Informatics - Kobe University (Japan)*

P-H08-07 Field perturbation and ion dynamics in the dayside Mercury's magnetosphere

Hideyuki Usui [1], Yoshitaka Uemoto [1], Manabu Mikawa [1], Yohei Miyake [1], Matsumoto Masaharu [2]
[1] *Kobe University (Japan);* [2] *Fukushima University (Japan)*

P-H08-08 Simulation study of the duct propagation of whistler-mode chorus emissions in the Earth's inner magnetosphere

Yuto Katoh [1]
[1] *Tohoku University (Japan)*

P-H09-01 Instrumental modelling of Mutual Impedance experiments and validation tests in plasma chamber

Pietro Dazzi [1], Luca Bucciantini [2], Pierre Henri [3], Gaetan Wattieaux [4], Francesco Califano [5], Federico Lavorenti [6]
[1] *LPC2E (CNRS) - LESIA (Obs. de Paris) (France);* [2] *LPP (CNRS) - LPC2E (CNRS) (France);* [3] *Lab. Lagrande - OCA (CNRS) - LPC2E (CNRS) (France);* [4] *LAPLACE - Univ. Toulouse (France);* [5] *Univ. of Pisa (Italy);* [6] *Lab. Lagrange - OCA (CNRS) - Univ. of Pisa (Italy)*

P-H09-02 Design and Performance of the Compact Five-channel VLF Wave Receiver on the CANVAS CubeSat Mission

Robert Marshall [1], David Malaspina [1], Thierry Dudok de Wit [2], Guillaume Jannet [3], James Cannon [1], Madison Stratton [1], Sebastian Wankmueller [1]
[1] *University of Colorado at Boulder (United States);* [2] *Universite d'Orleans (France);* [3] *Centre Nationale de Recherche Scientifique (France)*

P-H09-03 Development of KOYOH and Space Science and Technology Education at Kanazawa University

Tomohiko Imachi [1], Satoshi Yagitani [1], Daisuke Yonetoku [1], Yoshiya Kasahara [1], Tatsuya Sawano [1], Ichiro Jikuya [1], Yasuhiro Shoji [1], Makoto Arimoto [1], Shoya Matsuda [1], Mitsunori Ozaki [1], Ryuichi Fujimoto [1]
[1] *Kanazawa University (Japan)*

P-H09-04 Foldable Transparent Mesh Patch Antenna for CubeSat

Saowapa Meerabeab [1], Tomohiko Imachi [1], Satoshi Yagitani [1], Mitsunori Ozaki [1]
[1] *Kanazawa University (Japan)*

P-HJ-01 Analysis of various quasi-periodic structures of linearly drifting S-bursts in sporadic decameter radiation from Jupiter

Galina Litvinenko [1], Vladimir Ryabov [2], Vyacheslav Zakharenko [3], Aleksander Konovalenko [1], Hanna Rothkaehl [1]
[1] *Institute of Radio Astronomy National Academy of Sciences of Uktaine (Ukraine);* [2] *Future University Hakodate (Japan);*
[3] *Institute of Radio Astronomy NAS of Ukraine (Ukraine)*

P-HJ-02 A Study of the Relation between Type III Radio Storms and Solar Energetic Particle Events

Sachiko Akiyama [1], Nat Gopalswamy [2], Seiji Yashiro [1], Pertti Mäkelä [1], Hong Xie [1]
[1] *The Catholic University of America (United States);* [2] *NASA Goddard Space Flight Center (United States)*

P-HJ-03 YS* Characteristics of Circular Polarized Type III Radio Bursts in the Inner Heliosphere

Huei-Wen Siao [1], Ya-Hui Yang [1]
[1] *National Central University (Taiwan)*

Commission J Poster Session

Main Hall B (Posters)

P-J01-03 Activities of ngVLA-Japan Science Working Groups

Munetake Momose [1], Daisuke Iono [2], Akimasa Kataoka [1], Yoko Oya [1], Kengo Tachihara [1], Hidetoshi Sano [1], Bunyo Hatsukade [1], Takuma Izumi [1], Hiroshi Nagai [1], Shunya Takekawa [1], Niinuma Kotaro [1]
[1] *Ibaraki University (Japan);* [2] *National Astronomical Observatory of Japan (Japan)*

P-J01-04 The terminal control software of Ali CMB Polarization Telescope (Ali-CPT) room temperature electronics system based on B/S mode

Xiaohui Yan [1], Fei Liu [1], Ran Duan [1]
[1] *National Astronomical Observatories - Chinese Academy of Sciences (China)*

P-J01-05 Data Transmission System for the Wideband Sensitivity Upgrade in Atacama Large Millimeter/submillimeter Array

Takeshi Kamazaki [1]
[1] *National Astronomical Observatory of Japan (Japan)*

P-J01-06 Misasa 54m ground station for deep space missions and its usage for radio science

Yasuhiro Murata [1], Kimihiro Kimura [2], Takashi Uchimura [1], Tadashi Fukada [1], Satoru Ohwada [1], Moeko Ryoki [1], Goh Tabuchi [1], Eriko Taguchi [1], Kazuhiro Takefuji [1], Tomoaki Toda [1], Atsushi Tomiki [1], Masato Tsuboi [1], Koji Yuchi [1]
[1] *JAXA (Japan);* [2] *JAXA - Space Tracking and Communications Center (Japan)*

P-J01-07 A signal processing system for detecting ultra-high-energy particles with FAST

Xiaojing Wu [1], Ran Duan [2]
[1] *National Astronomical Observatories - Chinese Academy of Sciences (China);* [2] *National Astronomical Observatories - Chinese Academy of Science (China)*

P-J01-08 A 3-element portable radio interferometer for 6.7 GHz methanol observations in the Southern Hemisphere

Victor Arturo Centa [1], Juan Antonio Jave Sagastegui [1], David Torres [1], Paulo Mamani [1], Carlos Busquets [1], Manuel Valenzuela [1]
[1] *Pontificia Universidad Católica del Perú (Peru)*

P-J01-09 Two new 40m Radio Telescopes and major upgrades of TMRT

Bin Li [1], Zhiqiang Shen [1]
[1] *Shanghai Astronomical Observatory - Chinese Academy of Sciences (China)*

P-J01-11 Assembling, Integration, commissioning, and delivery of the ALMA Hardware in the Loop Simulation Environment

Alejandro Saez [1]
[1] *ALMA Observatory (Chile)*

P-J01-12 The new IPS telescope for space weather

Wei Wang [1], Yihua Yan [1], Ming Xiong [1], Zhijun Chen [1], Jin Fan [2], Cang Su [1], Linjie Chen [1]
[1] *NSSC (China);* [2] *NAOC (China)*

P-J02-01 OmniUV: A Multipurpose Simulation Toolkit for VLBI Observation

Lei Liu [1], Weimin Zheng [1]
[1] *Shanghai Astronomical Observatory - Chinese Academy of Sciences (China)*

P-J02-03 Terahertz Intensity Interferometry for High Angular Resolution Astronomy

Hiroshi Matsuo [1], Hajime Ezawa [1], Hitoshi Kiuchi [1], Mareki Honma [1], Norio Okada [1], Yasuhiro Murata [2], Tomohiro Koseki [3], Ayako Niwa [1], Nario Kuno [1], Rina Enohi [1], Masumichi Seta [1], Naomasa Nakai [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *Japan Aerospace Exploration Agency (Japan);* [3] *University of Tsukuba (Japan)*

P-J02-04 Position Measurement and Synchronization for Space-borne Ultra-long Wavelength Radio Array

Linjie Chen [1], Maohai Huang [2], Mo Zhang [1]
[1] *National Space Science Center - Chinese Academy of Sciences (China);* [2] *National Astronomical Observatories - Chinese Academy of Science (China)*

P-J03-01 Commissioning Progress of FAST VLBI System

Haiyan Zhang [1], Rurong Chen [1]
[1] *National Astronomical Observatories - Chinese Academy of Sciences (China)*

P-J03-03 Recent updates of the Hitachi and Takahagi 32-m radio telescopes, Ibaraki Station
Yoshinori YONEKURA [1], Yoshihiro TANABE [1], Kenta FUJISAWA [2], Kotaro NIINUMA [1], Hideo OGAWA [1], Koichiro SUGIYAMA [1], Kazuhiro TAKEFUJI [1], Mareki HONMA [1], Hideyuki KOBAYASHI [1]
[1] *Ibaraki University (Japan);* [2] *Yamaguchi University (Japan)*

P-J03-05 Multi-epoch obsevations of 6.7 GHz methanol maser with periodic flux variability G32.045+0.059 with the East-Asia VLBI Network
Ren Moriizumi [1], Koichiro Sugiyama [2], Yoshihiro Tanabe [1], Munetake Momose [1], Yoshinori Yonekura [1]
[1] *Ibaraki University (Japan);* [2] *National Astronomical Research Institute of Thailand (Thailand)*

P-J03-07 New broad band observing system using the new digital back-end (OCTAVE-DAS) and correlator system for VERA, JVN and EAVN
Tomoaki Oyama [1]
[1] *National Astronomical Observatory of Japan (Japan)*

P-J03-08 The ngEHT Analysis Challenges: Key Science, Traceability, and Algorithm Development for the Next-Generation EHT
Freek Roelofs [1], Sheperd S. Doeleman [1], Lindy Blackburn [1]
[1] *Center for Astrophysics - Harvard & Smithsonian (United States)*

(Invited)P-J04-02 Design of terahertz detector based on superconducting kinetic inductance
Shiling Yu [1]
[1] *National Astronomical Observatories - Chinese Academy of Sciences (China)*

P-J04-07 Status of a C-band Phased Array Feed with RFSoC digital beamformer
Tonino Pisanu [1], Paolo Maxia [1], Alessandro Cabras [1], Luca Schirru [1], Pierluigi Ortu [1], Andrea Melis [1], Alessandro Navarrini [1], Massimiliano Belluso [1], Sergio Billotta [1], Gianni Comoretto [1], Raimondo Concu [1], Paola Di Ninni [1], Adelaide Ladu [1], Pasqualino Marongiu [1], Renzo Nesti [1]
[1] *Italian National Institute for Astrophysics (Italy)*

P-J04-09 Development of Wideband Antennas
Hideki Ujihara [1]
[1] *Ritsumeikan University (Japan)*

P-J04-10 Array antenna position measurement of Chinese Meridian Project Phase II at Mingantu Observing Station
Lihong Geng [1], Yihua Yan [2], Linjie Chen [1], Wei Wang [1], Donghao Liu [1], Maosheng Yang [1], Cang Su [1], Jing Du [1]
[1] *National Space Science Center - Chinese Academy of Sciences (China);* [2] *National Space Science Center - Chinese Academy of Science (China)*

(Invited)P-J05-02 Research on accelerated methods for real-time processing of astronomical signals
Yingrou Zhan [1], Ran Duan [1], Xiaoyun Ma [1], Di Li [1]
[1] *National Astronomical Observatories - Chinese Academy of Sciences (China)*

P-J05-04 An implementation on RDMA communication between FPGA and NIC
Liaoyuan Liu [1], Xiaoyun Ma [1], Ran Duan [1], Fei Liu [1], Di Li [1]
[1] *National Astronomical Observatory of China/UCAS (China)*

P-J06-01 A Clipping Algorithm for Generating TES Bias Waveform for Ali-CPT
Ruirui Fan [1], Ran Duan [1]
[1] *National Astronomical Observatories (China)*

P-J06-04 A uGMRT Polarization Pipeline
Janhavi Baghel [1], Preeti Kharb [1], Silpa Sasikumar [1]
[1] *National Centre for Radio Astrophysics - Tata Institute of Fundamental Research (India)*

P-J06-05 A deep uGMRT study of the steep spectrum radio halo in A521
Ramananda Santra [1], Ruta Kale [1]
[1] *(India);* [2] *National Center for Radio Astrophysics (NCRA-TIFR) (India)*

P-J06-06 A novel formula on point-source calibration in radio aperture synthesis
Yihua Yan [1], Zhichao Zhou [1], Wei Wang [1], Linjie Chen [1], Suli Ma [1]
[1] *National Space Science Center - Chinese Academy of Sciences (China)*

P-J06-09 Separating Interferometric Artifacts from Extremely Bright Sources using Bluebild

Shreyam Krishna [1], Emma Tolley [1], Ian Harrison [2]
[1] *Ecole polytechnique fédérale de Lausanne (EPFL) (Switzerland);* [2] *Cardiff University (United Kingdom)*

P-J06-10 Wideband Radio Properties of the Radio Quiet AGN NGC 4388

Andrew Sargent [1], Travis Fischer [2], Alexander Van der Horst [3], Megan Johnson [4], Nathan Secrest [1]
[1] *United States Naval Observatory/The George Washington University (United States);* [2] *Space Telescope Science Institute (United States);* [3] *The George Washington University (United States);* [4] *United States Naval Observatory (United States)*

P-J07-01 ROAD: Radio Observatory Anomaly Detector

Michael Mesarcik [1], Elena Ranguelova [2], Albert-Jan Boonsta [3], Marco Iacobelli [1], Rob Van Nieuwpoort [1]
[1] *University of Amsterdam (Netherlands);* [2] *Netherlands eScience Center (Netherlands);* [3] *ASTRON (Netherlands)*

P-J07-02 Deep Learning for Magnetic Field Extrapolation

Long Xu [1], Yihua Yan [1], Zhang Yao [1]
[1] *Chinese Academy of Sciences (CAS) (China)*

P-J07-03 Magnetogram Generation by Deep Learning

Wenqing Sun [1], Long Xu [1], Yihua Yan [1]
[1] *Chinese Academy of Sciences (CAS) (China)*

P-J08-01 The End-to-End simulation of SKA1-Low observation for Cosmic Dawn and Reionization: Overview and Data Release 1

Zhenghao Zhu [1], Jiajun Zhang [1], Huanyuan Shan [1]
[1] *Shanghai Astronomical Observatory (China)*

P-J08-02 Observing the HSC SXDS field with the uGMRT Band-2

Shintaro Yoshiura [1], Kohei Kurahara [1], Takuya Akahori [1], Keitaro Takahashi [2]
[1] *NAOJ (Japan);* [2] *Kumamoto University (Japan)*

P-J08-06 Design and Characterization of the Engineering Model of the Spectrometer Onboard LuSEE-Night

Emi Tamura [1], Fried Jack [1], O'Connor Paul [1], Herrmann Sven [1]
[1] *Brookhaven National Laboratory (United States)*

(Invited)P-J08-07 Antenna Pattern Complexity as a Design Figure of Merit for Global 21cm Experiments

Dirk De Villiers [1], Carla Pieterse [1]
[1] *Stellenbosch University (South Africa)*

P-J08-10 Measuring receiver noise parameters for global 21-cm experiments

Danny Price [1], Cheuk-Yu Edward Tong Tong [2], Lincoln Greenhill [1], Adrian Sutinjo [1], Nipanjana Patra [1]
[1] *ICRAR / Berkeley SETI (Australia);* [2] *Harvard & Smithsonian (United States)*

P-J10-02 ALMA Band 1 Commissioning Work and Prospects for Cycle 10

Hiroshi Nagai [1], Antonio Hales [2], Matias Radiszcz [1], Giorgio Siringo [1], Bill Dent [1], Gianni Marconi [1], Patrick Koch [1], Saito Toshiki [1], Hsi-Wei Yen [1]
[1] *NAOJ (Japan);* [2] *Joint ALMA Observatory (Chile)*

P-J10-03 Warp and shadows in transitional disks

Ryuta Orihara [1], Munetake Momose [1]
[1] *Ibaraki University (Japan)*

P-J10-06 Bullet Stars with Long Cometary Tails in the Galactic Center

Masato Tsuboi [1], Takahiro Tsutsumi [2], Ryosuke Miyawaki [3], Makoto Miyoshi [4]
[1] *Meisei University (Japan);* [2] *National Radio Astronomy Observatory (United States);* [3] *J. F. Oberlin University (Japan);* [4] *National Astronomical Observatory of Japan (Japan)*

P-J10-07 Molecular gas physical conditions in the central kpc of M 83

Suphakorn Suphapolthaworn [1], Kazuo Sorai [2], Dragan Salak [3]
[1] *Graduate School of Science - Hokkaido University (Japan);* [2] *Faculty of Science - Hokkaido University (Japan);* [3] *Institute for the Advancement of Higher Education - Hokkaido University (Japan)*

P-J10-08 Development of a wideband multi-channel receiver for simultaneous observations in 230 and 345 GHz bands with dual-polarization

Sho Masui [1], Sana Kawashita [2], Yasumasa Yamasaki [1], Yutaka Hasegawa [1], Takafumi Kojima [1], Hideo Ogawa [1], Toshikazu Onishi [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *Osaka Metropolitan University (Japan)*

P-J10-09 Non-reciprocal superconducting microwave circuit based on a phase-controlled two-frequency-converter configuration

Takafumi Kojima [1], Sho Masui [2], Kazumasa Makise [1], Wenlei Shan [1], Yoshinori Uzawa [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *Osaka Metropolitan University (Japan)*

P-J11-03 On limit of dedispersion algorithm: A new prospective on dispersion removal

Xiaoyun Ma [1], Ran Duan [1], Yingrou Zhan [1], Di Li [1]
[1] *National Astronomical Observatories - Chinese Academy of Sciences (China)*

P-J12-03 SETI Program at the Sardinia Radio Telescope

Maura Pilia [1]
[1] *INAF (Italy)*

P-J13-01 DSA-2000 : RFI assessment and mitigation

Gregory Hellbourg [1], Gregg Hallinan [1], Yuping Huang [1], Vinand Prayag [1]
[1] *California Institute of Technology (United States)*

P-J13-03 Measuring the Effects of LEO Satellites on Ground-based Radio Astronomy: Results from the Onsala Twin Telescope

Gary Hovey [1], Michael D'Cruze [2], Federico Di Vruno [1], Boris Sorokin [1]
[1] *Onsala Space Observatory - Chalmers University (Sweden);* [2] *Square Kilometre Array Observatory (United Kingdom)*

P-J13-04 The Impact of GPS satellites in Radio Astronomy

Isaac Sihlangu [1]
[1] *South African Radio Astronomy Observatory (South Africa)*

P-J14-02 Southern Hemisphere Asteroid Radar Program (SHARP)

Shinji Horiuchi [1], Jamie Stevens [2], Chris Phillips [1], Philip Edwards [1], Jon Giorgini [1], Lance Benner [1], Ed Kruzins [1], Guifré Molera Calvés [1]
[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia);* [2] *CSIRO Space & Astronomy (Australia)*

P-J14-03 HINOTORI and its perspectives

Hiroshi Imai [1], Kotaro Niinuma [2], Hideo Ogawa [1], Tomoaki Oyama [1], Yusuke Shimizu [1], Chieko Miyazawa [1], Atsushi Nishimura [1], Nozomi Okada [1], Kei Amada [1], Ren Matsusaka [1], Keisuke Nakashima [1], Ka-Yiu Shum [1], Toshikazu Takahashi [1], Toshihisa Tsutsumi [1], Sho Yoneyama [1], Satoko Sawada-Satoh [1], Hiroko Shinnaga [1], Yoshinori Yonekura [1], Tomoya Hirota [1], Seiji Kameno [1]
[1] *Kagoshima University (Japan);* [2] *Yamaguchi University (Japan)*

P-J14-04 Amateur Pulsar Detection Project with EME Communication System in Japan

Noriyuki Yaguchi [1], Takashi Usui [1], Hideaki Yokokawa [1], Hideto Yoshida [2], Toshio Terasawa [1], Shin'ichiro Asayama [1]
[1] *Nippon Meteor Society (United Kingdom);* [2] *The University of Tokyo (Japan)*

P-JG-02 Equatorial Plasma Bubbles Observed by All-sky Images and Radio Waves over Mt. Lulin Astronomy Observatory in Taiwan during Nighttime of 1 November 2021

JANNYENQ LIU [1], Panthalingal Krishna Rajesh [2], Yi-An Liao [3], Jaroslav Chum [4]
[1] *National Central University (Taiwan);* [2] *Department of Earth Sciences - National Cheng Kung University (Taiwan);* [3] *Department of Space Science and Engineering - National Central University (Taiwan);* [4] *Institute of Atmospheric Physics of the Czech Academy of Sciences (Czechia)*

P-J10-09 Non-reciprocal superconducting microwave circuit based on a phase-controlled two-frequency-converter configuration

Takafumi Kojima [1], Sho Masui [2], Kazumasa Makise [1], Wenlei Shan [1], Yoshinori Uzawa [1]
[1] *National Astronomical Observatory of Japan (Japan);* [2] *Osaka Metropolitan University (Japan)*

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[1] *Onsala Space Observatory - Chalmers University (Sweden);* [2] *Square Kilometre Array Observatory (United Kingdom)*

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[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia);* [2] *CSIRO Space & Astronomy (Australia)*

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Hiroshi Imai [1], Kotaro Niinuma [2], Hideo Ogawa [1], Tomoaki Oyama [1], Yusuke Shimizu [1], Chieko Miyazawa [1], Atsushi Nishimura [1], Nozomi Okada [1], Kei Amada [1], Ren Matsusaka [1], Keisuke Nakashima [1], Ka-Yiu Shum [1], Toshikazu Takahashi [1], Toshihisa Tsutsumi [1], Sho Yoneyama [1], Satoko Sawada-Satoh [1], Hiroko Shinnaga [1], Yoshinori Yonekura [1], Tomoya Hirota [1], Seiji Kameno [1]
[1] *Kagoshima University (Japan);* [2] *Yamaguchi University (Japan)*

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[1] *National Central University (Taiwan);* [2] *Department of Earth Sciences - National Cheng Kung University (Taiwan);* [3] *Department of Space Science and Engineering - National Central University (Taiwan);* [4] *Institute of Atmospheric Physics of the Czech Academy of Sciences (Czechia)*

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[1] *South African Radio Astronomy Observatory (South Africa)*

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[1] *Commonwealth Scientific and Industrial Research Organisation (CSIRO) (Australia);* [2] *CSIRO Space & Astronomy (Australia)*

P-J14-03 HINOTORI and its perspectives

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[1] *Nippon Meteor Society (United Kingdom);* [2] *The University of Tokyo (Japan)*

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[1] *National Central University (Taiwan);* [2] *Department of Earth Sciences - National Cheng Kung University (Taiwan);* [3] *Department of Space Science and Engineering - National Central University (Taiwan);* [4] *Institute of Atmospheric Physics of the Czech Academy of Sciences (Czechia)*

Pre-recorded video Commission A

(Invited)REC-A01-01 Influence of Shielding processes on Field Strength of Reverberation Chamber
Tianxin Liu [1], Xiaotao Guo [1], Ke Liu [1]
[1] *National Institute of Metrology (China)*

Pre-recorded video Commission B

REC-B01-02 YS* A Novel Polarization-Insensitive Penta-band Metamaterial Absorber
Nandhitha Madana House [1]
[1] *Govt.Victoria College (India)*

REC-B02-03 YS* An Overview of Novel Tuning Techniques for Realizing Programmable Beam-Scanning Metasurfaces
Aqeel Naqvi [1], Sungjoon Lim [2]
[1] *Michigan State University (United States);* [2] *Chung-Ang University (South Korea)*

REC-B02-04 Single-Layer Wideband Dual-Polarized Suspended Patch Antenna for Sub-6 GHz 5G
Ozcan Tigli [1], Alp Emre Miran [2], Ibrahim Halil Giden [3], Mehmet Ciydem [1]
[1] *Gazi University (Turkey);* [2] *ENGITEK Engineering Technologies (Turkey);* [3] *Aselsan (Turkey)*

REC-B03-01 Effect of Dew in Active and Passive Microwave Remote Sensing
Avinash Sharma [1], Mikayla Kurkjian [1]
[1] *The Johns Hopkins University Applied Physics Laboratory (United States)*

(Invited)REC-B08-01 Outline, Achievements and Recent Trends: Spectral Theory of Open Structures. Dedicated to the 100 Anniversary of Victor P. Shestopalov
Yury Shestopalov [1]
[1] *University of Gaevle (Sweden)*

(Invited)REC-B08-02 Theorem for the N1(L,n) Numbers and Its Application in the Electromagnetic Theory
Mariana Georgieva-Grosse [1], Georgi Georgiev [2]
[1] *Consulting and Researcher in Physics and Computer Sciences (Bulgaria);* [2] *Consulting and Researcher in Physics - Mathematics and Computer Sciences (Bulgaria)*

(Invited)REC-B09-01 Convex Optimization Based MIMO Array Synthesis for Millimeter-Wave Imaging
Shuoguang Wang [1], Shiyong Li [1], Ahmad Hoorfar [2], Guoqiang Zhao [1], Houjun Sun [1]
[1] *Beijing Institute of Technology (China);* [2] *Villanova University (United States)*

REC-B10-01 SPC* Multi-Domain Multi-Solver Method for the Analysis of Electromagnetic Properties of Objects
Xiong Yang [1], Lin Lei [1], Jun Hu [1]
[1] *University of Electronic Science and Technology of China (China)*

PROBABLY NO SHOW * REC-B10-02 A Discontinuous Galerkin Scheme to Solve Coupled Maxwell-Boundary Integral Equations for Analysis of Electromagnetic Scattering
Ran Zhao [1], Ming Dong [1], Liang Chen [1], Jun Hu [2], Hakan Bagci [1]
[1] *King Abdullah University of Science and Technology (KAUST) (Saudi Arabia);* [2] *University of Electronic Science and Technology of China (UESTC) (Saudi Arabia)*

REC-B14-01 YS* Frequency Selective Surface Design For X-Band Radome Applications-
Recep Baş [1]
[1] *Yildiz Technical University (Turkey)*

(Invited)REC-B16-01 On a Method of Investigating Nonlinear Dispersion Relations of Electromagnetics in the Complex Domain
Yury Shestopalov [1]
[1] *University of Gaevle (Sweden)*

REC-B16-02 Fields Excitation in Open Resonators based on Shestopalovs - Poedinchuk Spectral Theory
Kostyantyn Lukin [1]
[1] *IRE NASU (Ukraine)*

REC-B16-04 Electrodynamic Modes Interaction in Clinotron Cavity with Double-Periodic Grating
Kostyantyn Lukin [1], Edward Khutoryan [1], Alexei Kuleshov [1], Sergey Ponomarenko [1]
[1] *IRE NASU (Ukraine)*

(Invited)REC-B19-01 Extreme nonreciprocity based on bound states in the continuum
Luis Manuel Máñez-Espina [1], Ihar Faniayeu [2], Viktar Asadchy [3], Ana Díaz-Rubio [1]
[1] *Universitat Politecnica de Valencia/Nanophotonics Technology Center (Spain);* [2] *Gothengurb University (Sweden);* [3] *Aalto University (Finland)*

(Invited)REC-B20-02 Evolution of Research on Small Tunable Antennas and the Integration of Antennas and Electrical Packaging
Kathleen Melde [1]
[1] *University of Arizona (United States)*

REC-B20-03 Wideband Multilayer Impedance Matching by a Minimization Approach
Adriana Brancaccio [1], Maria Antonia Maisto [1]
[1] *Università della Campania Luigi Vanvitelli - Dipartimento di Ingegneria (Italy)*

REC-B24-01 Wideband Full-Duplex MIMO: A 5*5 Example Across 12.5-13.0 GHz with Baseband 100 MHz
Yinyi Zhao [1], Udara De Silva [1], Satheesh Bojja Venkatakrishnan [1], John L. Volakis [1], Soumyajit Mandal [1], Arjuna Madanayake [1]
[1] *Florida International University (United States)*

REC-B30-01 Some Questions in Quantum Optics
Akira Ishimaru [1]
[1] *University of Washington (United States)*

(Invited)REC-BC-02 Robust Integrated Sensing and Communication Beamforming for Dual-functional Radar and Communications: Method and Insights
Marwa Chafii [1], Marwa Chafii [1]
[1] *New York University Abu Dhabi (United Arab Emirates)*

REC-BC-03: Mode Perturbations of Microstrip Patch Antennas for Wideband, Multiband, and Mutual-Coupling Reduction Performances
Neng-Wu Liu [1], Zhu Lei [2]
[1] *Xidian University (China);* [2] *University of Macau (China)*

REC-BD-01 Surface acoustic waves wireless sensor technology for extreme environments
Thierry Aubert [1], Sami Hage-Ali [1], Cécile Floer [1], Omar Elmazria [1]
[1] *Université de Lorraine (France)*

REC-BD-02 A DRA antenna-package for SAW-RFID high temperature sensing
Ulrich Youbi [1], Tony Makdissy [1], Thierry Aubert [2], Omar Elmazria [1], Sami Hage-Ali [1]
[1] *Université de Lorraine - CNRS (France);* [2] *Université de Lorraine (France)*

(Invited)REC-BE-01 Near-field Correlation in MIMO Antennas: A Necessary Revisit
Debdeep Sarkar [1], Yahia Antar [2]
[1] *Indian Institute of Science (India);* [2] *Royal Military College of Canada (Canada)*

REC-BK1-01 AI-Powered Microwave Imaging for Stroke Detection
Hannah Baum [1], Md. Asiful Islam [1], Asimina Kiourti [1]
[1] *The Ohio State University (United States)*

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REC-C02-01 Machine Learning Techniques for Terahertz Channel Estimation
Ahmet M Elbir [1], Kumar Vijay Mishra [2]
[1] *University of luxembourg (Luxembourg);* [2] *United States Army Research Laboratory (United States)*

REC-C03-01 Optimizing Energy Efficiency in 5G Small Cell Networks: An Approach Focused on Regulating Power Consumption Related to Transmission and RF Circuits
Mohamad Younes [1], Yves Louet [2]
[1] *Académie Militaire de Saint-Cyr Coëtquidan (France);* [2] *CentraleSupélec (France)*

(Invited)REC-C03-03 Dual-Blind Deconvolution Techniques for Joint Radar-Communications
Kumar Vijay Mishra [1]
[1] *United States DEVCOM Army Research Laboratory (United States)*

REC-C05-02 YS* Position Solution Quality Performance of Compact, Low-cost, Dual Frequency GNSS Modules
Somnath Mahato [1], Mrinal Goswami [2], Anindya Bose [1]
[1] THE UNIVERSITY OF BURDWAN (India); [2] Integrated Test Range (India)

REC-C07-01 Optimizing 5G Performance in Security Threat Situations: A Question of Coverage and Modeling
Mohamad Younes [1], Yves Louet [2]
[1] Académie Militaire de Saint-Cyr Coëtquidan (France); [2] CentraleSupélec (France)

REC-C07-02 Enhancing the Performance of Ultra-Dense 5G Networks by Maximizing Spectral Efficiency while Reducing Interference through Broadcast Transmission Modes
Mohamad Younes [1], Yves Louet [2]
[1] Académie Militaire de Saint-Cyr Coëtquidan (France); [2] CentraleSupélec (France)

(Invited)REC-C11-01 Fractal Patch Antenna based on Crystal Photonic applied to Intelligent Transportation Systems in the 40 GHz Millimeter Waveband
Nila Bagheri [1], Bahram Khan [1], Emanuel Teixeira [1], Fernando J. Velez [1]
[1] Instituto de Telecomunicações and Universidade da Beira Interior (Portugal)

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REC-D04-01 YS* A Broadband, Compact-Size Phase Shifter with Transformer Topology in 90-nm CMOS Process
Li-Jung Huang [1], Yunshan Wang [1], Huei Wang [1]
[1] Natioanal Taiwan University (Taiwan)

REC-D04-02 Grating-Gate Plasmonic THz Detector Based on InGaAs-Channel Inverted-HEMT
Akira Satou [1], Kenichi Narita [1], Takumi Negoro [1], Yuma Takida [2], Hiromasa Ito [1], Hiroaki Minamide [1], Tetsuya Suemitsu [1], Taiichi Otsuji [1]
[1] Tohoku University (Japan); [2] RIKEN (Japan)

(Invited)REC-D07-01 Design and construction of a solar simulator to finding new maximum power point tracking (MPPT)
Meraj Rajaee [1]
[1] The Technical and Vocational University (TVU) (Iran)

(Invited)REC-D07-02 Implementation of a new method for measuring quantum efficiency
Meraj Rajaee [1]
[1] The Technical and Vocational University (TVU) (Iran)

REC-D11-01 SPC* Design and Development of a X band Low Noise Amplifier for LEO Satellite Ground Station
Tugba Haykir Ergin [1], İSMAİL ŞİŞMAN [2], Duygun Erol Barkana [1]
[1] Yeditepe University (Turkey); [2] Profen Communication Technologies (Turkye)

REC-D11-03 SPC* Possibility of [Si]_(1-x) [Sn]_x alloy System for Photonic Devices: Field-Effect Phototransistors for Near-Infrared Applications
Harshvardhan Kumar [1], Bhavika Agarwal [1], Rikmantra Basu [1]
[1] LNM INSTITUTE OF INFORMATION TECHNOLOGY (India)

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REC-E08-01 SPC* Fast Index of Eye Diagram for Multiple Lines in DDR under Weak Coupling
Kai Li [1], Ruey-Beei Wu [1]
[1] National Taiwan University (Taiwan)

(Invited)REC-EAB-01 YS* On Estimation of Ideal Overmoded Frequency for Metallic Cavity Using the Chaotic Reverberation Chamber
Peng Hu [1]
[1] Southeast University (China)

REC-EFGH-02 How to Parameterize the Ionospheric Potential and Lightning in Modern Earth System Models?
Evgeny Mareev [1], Nikolay Slyunyaev [2], Nikolay Ilin [1], Evgeny Volodin [1]
[1] Institute of Applied Physics (Russia); [2] Institute of Applied Physics - Russian Academy of Sciences (Russia)

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REC-F03-01 A reappraisal of the Strong Fluctuation Theory in combination with rough soil models to improve the simulation accuracy in alpine snowpacks at C- and X-band
Fabrizio Baroni [1], Simone Pettinato [1], Emanuele Santi [1], Giuliano Ramat [1], Giacomo Fontanelli [1], Alessandro Lapini [1], Simonetta Paloscia [1], Paolo Pampaloni [1], Simone Pilia [1]
[1] *CNR (Italy)*

REC-F05-01 Ocean Surface Wave Parameter Estimation using Periodogram Method
Masoud Torabi [1], Reza Shahidi [1], Eric W. Gill [1]
[1] *Memorial University of Newfoundland (Canada)*

REC-F05-02 Model Analysis and Correction of Firn Effect on Emission Features for Polar Ice Sheet Based on Comprehensive Layer Emission Model
Dongjin Bai [1], Xiaolong Dong [1], Saibun Tjuatja [2], Di Zhu [1], Zijin Zhang [1]
[1] *National Space Science Center - Chinese Academy of Sciences (China);* [2] *The University of Texas at Arlington (United States)*

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REC-G03-02 YSA* Ionospheric positive storm phase on 18 December 2019 observed by the Kharkiv incoherent scatter radar
Vyacheslav Kolodyazhnyi [1], Sofiia Katsko [1], Leonid Emelyanov [1], Igor Domnin [1]
[1] *Institute of Ionosphere (Ukraine)*

REC-G03-04 Topside sounder as a most reliable instrument for the Space Weather monitoring. Short review and future perspectives.
Sergey Pulinets [1]
[1] *Space Research Institute (IKI) Russian Academy of Sciences (Russia)*

(Invited)REC-G07-01 Ionsonde monitoring and related studies in China with International Meridian Circle Program
Wang Zheng [1], Shi Jiankui [2], Wang Guojun [1], Gao Pengdong [1], Ren Liwen [1], Wang Xiao [1]
[1] *National Space Science Center - Chinese Academy of Sciences (China);* [2] *National Space Science Center - Chinese Academy of Science (China)*

(Invited)REC-G12-01 High Resolution Ionosphere/Plasmasphere/Thermosphere Modeling Studies: Equatorial Plasma Bubbles and Plasmasphere Ducts
Joeseph Huba [1]
[1] *Syntek Technologies Inc. (United States)*

(Invited)REC-G13-01 Space Weather at Mercury
Reka Winslow [1]
[1] *University of New Hampshire (United States)*

REC-GHE-01 Seismogenic electric field penetration into the ionosphere. Models and reality.
Sergey Pulinets [1], Valery Hegai [2]
[1] *Space Research Institute (IKI) Russian Academy of Sciences (Russia);* [2] *Pushkov Institute of Terrestrial Magnetism Ionosphere and Radiowave Propagation (Russia)*

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REC-H01-01 Spatial Aliasing and Accessible Wave Vectors for an Arbitrary Constellation of Spacecraft
Gérard Chanteur [1]
[1] *CNRS & Sorbonne Université (France)*

REC-H04-01 Next generation interplanetary scintillation observation system for space weather
Kazumasa Iwai [1], Munetoshi Tokumaru [1], Ken'ich Fujiki [1]
[1] *Nagoya University (Japan)*

REC-H07-01 Plasmasphere Tomography
Vikas Sonwalkar [1], Amani Reddy [1]
[1] *University of Alaska at Fairbanks (United States)*

REC-H07-02 Measurements of Dayside and Nightside O+/H+ Transition Height Using Whistler Mode Radio Sounding from IMAGE
Amani Reddy [1], Vikas Sonwalkar [1]
[1] *University of Alaska at Fairbanks (United States)*

(Invited)REC-HGE1-01 YSA* Combining Unsupervised and Supervised Machine Learning for Lightning Classification: Application to Identifying EIPs for Ground-based TGF Detection
Yunjiao Pu [1], Steven Cummer [1], Fanchao Lyu [2], Yu Zheng [1], Michael Briggs [1], Stephen Lesage [1], Bagrat Mailyan [1], Oliver Roberts [1]
[1] *Duke University (United States);* [2] *Nanjing Joint Institute for Atmospheric Sciences (China)*

REC-HGE1-02 A transcendental method for calculation of electron transport and rate coefficients in weakly ionized magnetized plasma
Reza Janalizadeh [1], Zaid Pervez [1], Victor Pasko [1]
[1] *Penn State University (United States)*

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REC-J04-01 Aperture Efficiency Calculation of Multi-beam Axisymmetric Dual-reflector Antenna of Cassegrain Type
Makoto Nagai [1], Hiroaki Imada [1]
[1] *National Astronomical Observatory of Japan (Japan)*

REC-J05-02 Evaluating Direct RF Sampling Performance for RFSoC-based Radio-frequency Astronomy Receivers
Chao Liu [1], Larry Ruckman [1], Ryan Herbst [1]
[1] *SLAC NATIONAL ACCELERATOR LABORATORY (United States)*

REC-J10-01 Transmittance Analysis of Silicon Vacuum Window with Antireflection Subwavelength Structure for Wideband Submillimeter Receivers
Makoto Nagai [1], Shohei Ezaki [1], Ryo Sakai [1], Keiko Kaneko [1], Hiroaki Imada [1], Takafumi Kojima [1], Yoshinori Uzawa [1]
[1] *National Astronomical Observatory of Japan (Japan)*

REC-J12-02 The Pulsar Positioning System as a Technosignature
Clément Vidal [1]
[1] *University of California Berkeley (United States)*

REC-JG-01 Ionospheric signal in the LOFAR images based on calibration phase solutions
Katarzyna Beser [1], Maaijke Mevius [1]
[1] *ASTRON (Netherlands)*

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REC-K02-01 Intense electric field-mediated detachment of kinesin from its microtubule track
Michal Cifra [1], Jiří Průša [2]
[1] *Czech Academy of Sciences (Czech Republic);* [2] *Institute of Photonics and Electronics of the Czech Academy of Sciences (Czechia)*

(Invited)REC-K05-01 Experimental human study concerning possible effect of 50 Hz magnetic fields on sleep and markers of Alzheimer's disease – Study design and exposure facility
Gernot Schmid [1], Pia Schneeweiss [1], Johannes Kainz [1], Rene Hirtl [1], Hans Dorn [2], Heidi Danker-Hopfe [1], Cornelia Sauter [1]
[1] *Seibersdorf Laboratories (Austria);* [2] *Charité - Universitätsmedizin Berlin - Competence Center of Sleep Medicine (Germany)*

(Invited)REC-K06-01 Assessing the in situ electric field strength caused by an EAS deactivator using a novel scaling method
Pia Schneeweiss [1], Rene Hirtl [1], Gernot Schmid [1]
[1] *Seibersdorf Laboratories (Austria)*

REC-K07-01 Evaluating Exposure by MIMO User Equipment at 28 GHz Using Optimization Method
Yuwei Jiang [1], Tongning Wu [1]
[1] *China Academy of Information and Communications Technology (China)*

REC-K12-01 Numerical Evaluation of Miniaturized Coils for Focal Magnetic Stimulation
Micol Colella [1], Daniel Z. Press [2], Rebecca M Laher [1], Courtney E. McIlduff [1], Seward B. Rutkove [1], Antonino M Cassarà [1], Francesca Apollonio [1], Alvaro Pascual Leone [1], Micaela Liberti [1], Giorgio Bonmassar [1]
[1] *Sapienza University of Rome (Italy);* [2] *Department of Neurology - Harvard Medical School (United States)*

(Invited)REC-K12-02 Non-conductive fiber optic imaging system for real-time detection of stimulus responses under high-intensity and low-frequency magnetic field exposure
Atsushi Saito [1], Masayuki Takahashi [1], Satoshi Nakasono [1]
[1] *Central Research Institute of Electric Power Industry (Japan)*

REC-K14-01 Wearable Loop Sensor System for Monitoring 2-Leg Kinematics
Yingzhe Zhang [1], Kiourti Asimina [1]
[1] *The Ohio State University (United States)*

REC-K14-02 Millimeter wave radar-based accurate vital sign detection for people in sleep state
Gaopeng Tang [1], Lei Yang [1], Tongning Wu [1], Zhongcai Liao [2], Yanwen Fang [1]
[1] *China Academy of Industry and Communications Technology (China);* [2] *Zhejiang Heye Health Technology (China)*

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(Invited)REC-WCF-01 A Study on Line-of-Sight Prediction in Urban Manhattan-Like Environments Using an Optimized Machine Learning Algorithm
Simone Del Prete [1], Nicola Di Cicco [2], Mohammad Hossein Zadeh [1], Franco Fuschini [1], Marina Barbiroli [1], Vittorio Degli-Esposti [1], Enrico Maria Vitucci [1]
[1] *University of Bologna (Italy);* [2] *Politecnico Di Milano (Italy)*

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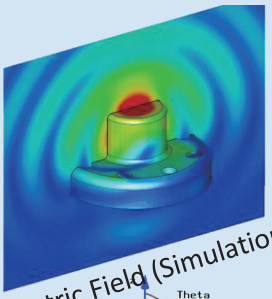

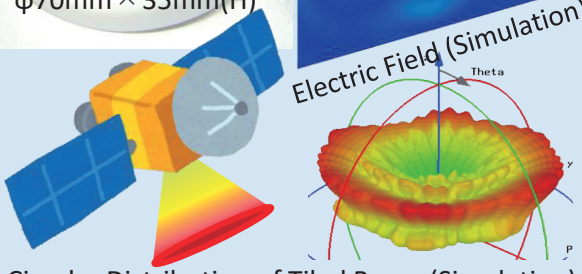

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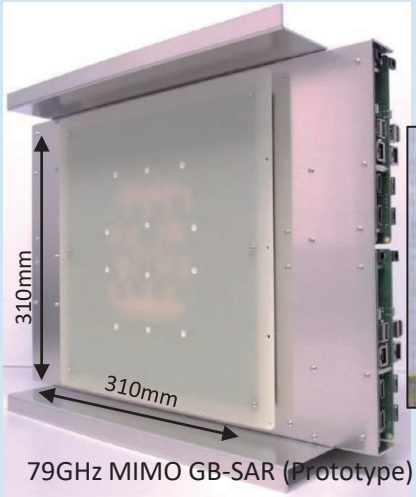
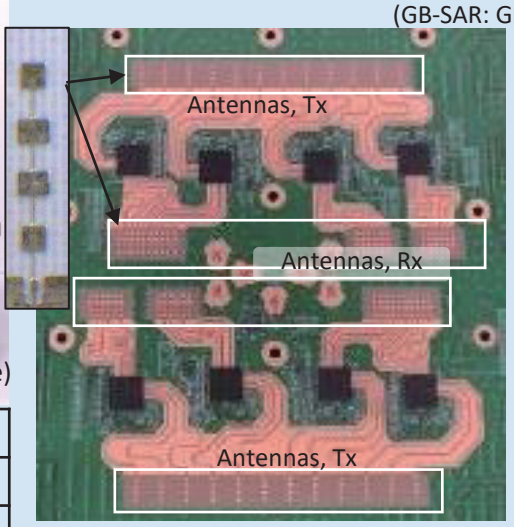
(GB-SAR: Ground Based Synthetic Aperture Radar)

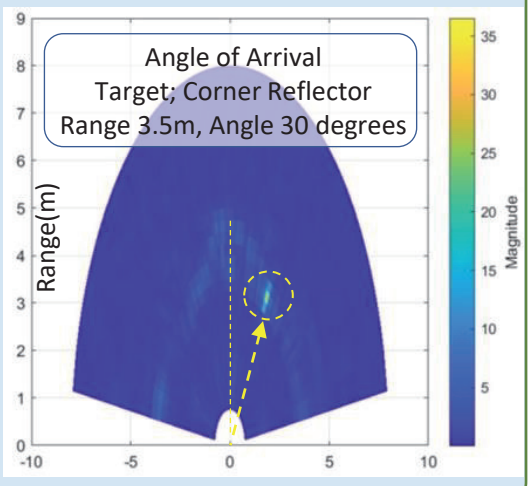


79GHz MIMO GB-SAR (Prototype)

Center Frequency	79 GHz
Chirp BW	0.727 GHz
Chirp Cycle Time	33 us



Antenna layout of cascaded 8 radar-chips



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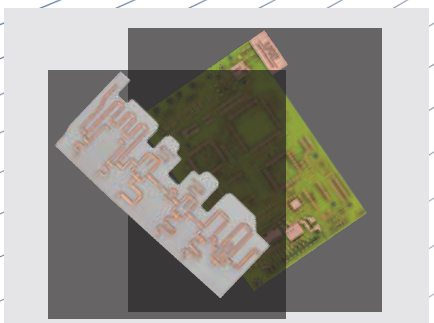
- インテリジェントで直感的なソフトウェア LPKF CircuitPro RPによるシームレスな操作



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