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GOR-Arbeitsgruppe: Praxis der Mathematischen Optimierung
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Hiermit möchte ich Sie herzlich zur 71. Arbeitsgruppensitzung der GOR-Arbeitsgruppe Praxis der MATHEMATISCHEN OPTIMIERUNG in das Haus der Deutschen Physikalischen Gesellschaft nach Bad Honnef (Physikzentrum Bad Honnef, Hauptstr. 5, 53604 Bad Honnef, http://www.pbh.de) einladen. Die Sitzung findet unter dem Thema

Modellierungssprachen in der Mathematischen Optimierung

statt. Sie beginnt am **23. 04. 2003 um 14:00** und endet **am 25. 04. 2003 gegen 17:00**.

Die Veranstaltung wird in englischer Sprache durchgeführt, da die meisten der Vortragenden aus den USA bzw. England kommen.

Bitte beachten Sie, dass die Teilnahme an einer GOR-Arbeitsgruppe für Nichtmitglieder (es sei denn, sie sind Referenten bzw. Gastgeber) kostenpflichtig ist.

Ihre Teilnahmebestätigung – auch per e-Mail oder Fax - erbitten wir baldmöglichst, spätestens aber bis zum 04.04.2003. Die Übernachtungsmöglichkeit im sehr schönen und stilvollen Tagungshaus wird empfohlen, steht aber nur begrenzt zur Verfügung. Aktuelle Informationen zur Sitzung finden sich auf den Homepages der GOR (http://www.gor-ev.de/) unter der Rubrik *Arbeitsgruppen*.

Mit freundlichen Grüßen

Josef Kallrath

Bitte informieren Sie mich weiterhin über Aktivitäten der GOR-AG Mathematische Optimierung: ja nein
Falls *ja*, bitte e-mail Adresse angeben.

71. Sitzung der GOR-AG
Praxis der MATHEMATISCHEN OPTIMIERUNG

im Haus der Deutschen Physikalischen Gesellschaft
23.-25. April 2003

Tag 1:

14:00-14:05	Begrüßung der Teilnehmer
14:05-15:45	Session 1
15:45-16:00	Kaffeepause
16:00-18:00	Session 2
18:30-	gemeinsames Abend – Buffet

Tag 2 : 9:00 – 18:00

Tag 3

09:00-	Session 3
10:30-10:45	Kaffeepause
10:45-11:00	Session 4
12:00-13:30	gemeinsames Mittagessen
13:30-15:15	Session 5
15:15-15:30	Kaffeepause
15:30-16:50	Session 6
16:50-17:00	Abschlussdiskussion und Tagungsende
	AG-Angelegenheiten: Vorsitzendenwahl und Stellvertreterwahl

Bisher sind die folgenden Vorträge bestätigt:

Jan Bisschop & Marcel Roelofs, Paragon Decision Technology B.V, Haarlem, NL (www.paragon.com)
The Modeling Language AIMMS

Yves Colombani & Susanne Heipcke, DashOptimization, Blisworth, UK (www.dashoptimization.com)
Mosel: a Modular Environment for Modeling and Solving Optimization Problems

Bob Fourer & David Gay, Northwestern Univ. 4er@iems.nwu.edu & dmg@research.bell-labs.com
Design Principles and New Developments in the AMPL Modeling Language

Josef Kallrath, BASF-AG, Ludwigshafen (e-Mail: josef.kallrath@t-online.de)
Introduction: Models, Modelbuildung and Mathematical Optimization

Bjarni Kristjansson, Maximal Software Inc., Arlington, VA (www.maximalsoftware.com)
Optimization Modeling in Distributed Applications: How new technologies such as XML and SOAP allow OR to provide Web-based services

Josef Liesenfeld, MaBOS GmbH, Schwetzingen (www.mabos.com)
The Importance of Modeling Languages for Solving Real World Problems

Alex Meeraus, Michael Bussieck & Steven Dirkse, GAMS Development Corporation, Washington D.C., USA (www.gamsworld.org)
The Modeling Language GAMS

Arnold Neumaier & Hermann Schichl, Univ. Wien, (www.mat.univie.ac.at)
The NOP-2 modeling language for global non-linear optimization

Jean-Francois Puget & Gregory Glockner, ILOG Inc., Santa Cruz, CA (www.ilog.com)
Discrete Optimization Modeling via ILOG OPL Studio

Hermann Schichl, Univ. Wien, (www.mat.univie.ac.at)
Language and Conceptional Design Features of Modeling Languages for Optimization

Modeling Languages in Mathematical Optimization

This symposium deals in a unique combination with the aspects of model-building and solving real world-optimization problems. It treats in a systematic way all major modeling languages and model language software used to solve mathematical optimization problems.

Most of the modeling language providers

- *AIMMS (Jan Bishops, Paragon Decision Technology B.V, Haarlem)*
- *AMPL (Bob Fourer, Northwestern University; David Gay, Bell-Laboratories)*
- *GAMS (Alex Meeraus, Michael Bussieck & Steven Dirkse, GAMS, Washington D.C.)*
- *Mosel (Yves Colombani & Susanne Heipcke, Dash Optimization, Blisworth, UK)*
- *MPL (Bjarni Kristjansson, Maximal Software, Arlington, VA)*
- *NOP (Arnold Neumaier, Vienna University)*
- *OPL (Gregory Glockner, ILOG Inc.).*

will be present and will give deep insight into their motivations and conceptional design features of the software, highlight their advantages but also discuss critically their limits.

Roughly speaking, a modeling language is a means of describing a problems to a computer system in the same way that people describe those problems to each other. Of course in reality it is not exactly in the same way, but the resemblance has to be close enough to spare the user any significant translation. Of course, in this book we focus on modeling languages used in mathematical optimization. As an example, when practitioner or researcher describe large-scale linear programs to each other, they use summations and subscripting. To give a negative definition first: Probably one would not consider a language lacking in these features to be a modeling language for large-scale LP. This can be turned into a positive definition: A modeling language in mathematical optimization needs to support the expressions and symbols used in the mathematical optimization community. Therefore, it is naturally an algebraic modeling language supporting the concepts of data, variables, constraints and objective function. Those entities are connected by algebraic operations (+,-,x) but also nonlinear functions. Have so features and languages.

The earliest algebraic modeling languages appeared in the late 1970s and early 1980s. They were already very useful supporting analysts to feed their problems to solvers. In the midst 1980s, when, for instance, AMPL or XPress-MP appeared, the software developers were already trying to improve on previous designs, by taking advantage of faster computers and better computing environments

By showing the strengths and characteristic features we hope to give novices and practitioners in mathematical optimization, supply chain management, finance industry and other areas of industry a useful overview of these different software packages and support decision makers when they have to decide which way to go.