

EXERCISE 2B

Determining the level and location of the side lobe of the directional characteristic of the antenna

Before the exercise:

Prepare the ephemerides of the Sun.

Tasks:

- 1) Perform a scan of the Sun in hour angle. Adjust the value of attenuation in the path of the receiver to fit the signal in the range of the Analog – Digital converter. Make a calibration at the beginning and at the end of the observation.
- 2) Determine the shape of the side lobe of the characteristics $P(\alpha, \delta)$ in the two planes by performing scans of the Sun in hour angle and in declination (without attenuation). Make a calibration at the beginning and at the end of the observation.

Report (coverage):

- 1) Provide on a graph a directional antenna characteristic measured in two planes.
- 2) Determine the location and level (in dB) of the side lobes towards the main lobe. Comment on the results.
- 3) Compare the width of the main lobe obtained in *Exercise 2A* (observation of the compact source - *CasA*) with the width obtained from the convolution of the directional characteristic of the antenna with the distribution of brightness of the extended source, which is Sun.