WORKSHOP EM ISAE 2012

Monostatic RCS of a rough surface Chairmen : G. Kubické (DGA/MI) Y. Béniguel (IEEA)

This problem addresses the computation of the monostatic RCS of a rough surface. The selected surface is a perfectly conducting disk. The height distribution is Gaussian and its autocorrelation function is exponential. This disk has been manufactured. Its RCS has been measured in an anechoïc chamber (CHEOPS at DGA / MI). The measurement results will be presented as a comparison.

Test case aim: Evaluate the calculation techniques on a very steep random profile surface.

1. Geometry definition

The sample surface is presented on Figure 1. The phase center is at the origin of the reference axis at the disk center. The mean plane is the xy plane.



Figure 1

Geometrical parameters:

- Disk diameter: 80 cm
- Disk thickness: 6.5 cm
- Height RMS: 0.75 cm
- Autocorrelation length: 5 cm.

The surface is isotropic. An IGS mesh file will be provided.

2. Requested calculation outputs

The impinging wave is either $\hat{\phi}$ polarized (Horizontal) or $\hat{\theta}$ polarized (Vertical)

The following cases shall be investigated

F (GHz)	Elevation	Azimuth	Polarization
2 GHz	-90° à +90° step=0°25	0°	HH, VV
10 GHz	-90° à +90° step=0°25	0°	HH, VV, VH, HV

The six corresponding curves will be provided as a text file.