ROT54, illuminated by Microstrip Patch, 4.5 GHz

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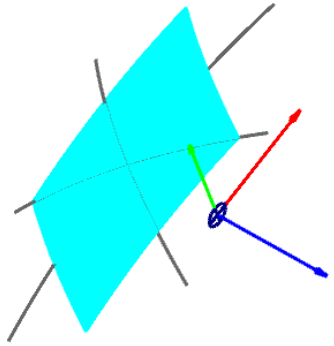
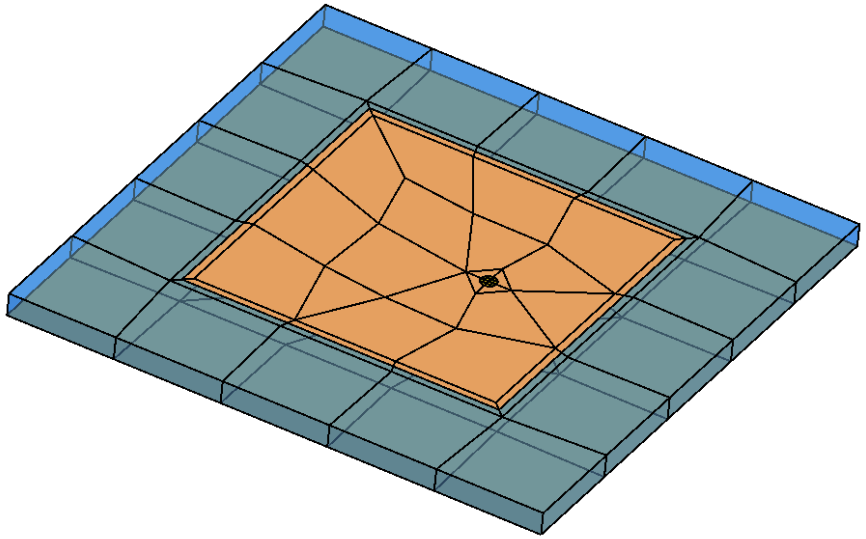
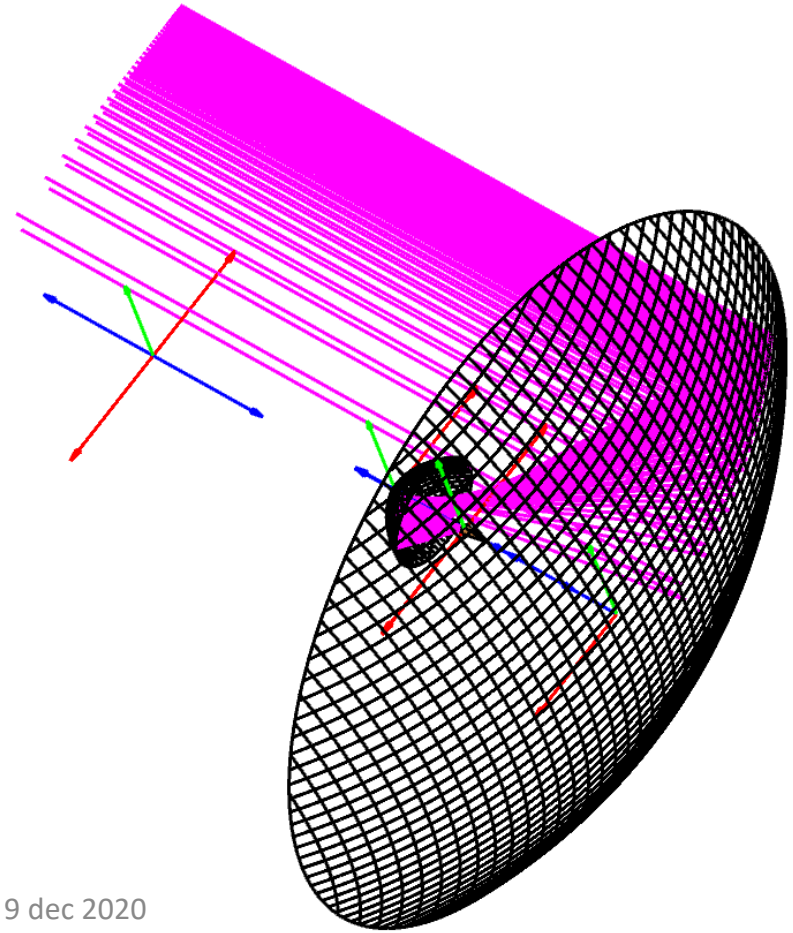
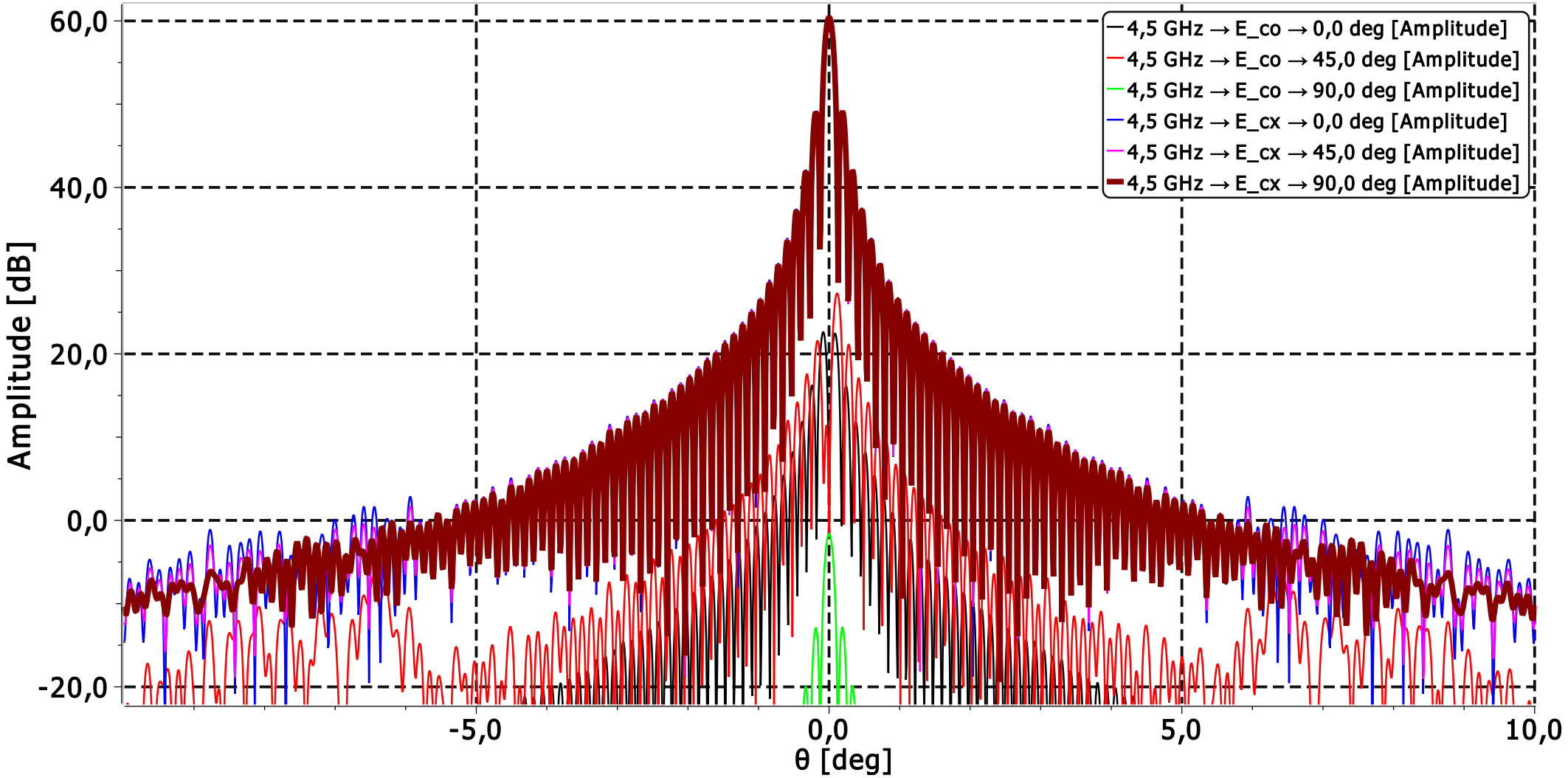
- **Viewgraph-3- :**
  - microstrip patch antenna, calculated with MOM, radiation pattern decomposed in spherical waves, with respect to assumed origin (as needed to refer to in subsequent calculations
- **Viewgraph-3-: (continued**)
  - spherical wave expansion transferred to secondary focus of a spherical main reflector with a correcting sub-reflector. The correcting sub-reflector is similar as to the one used in calculations presented in 18-September virtual Armenian Radio telescope and Interferometer Conference ➔ see for details in that hand-out concerning correction spherical reflector and correcting sub-reflector, analyzed with a dedicated corrugated horn (18 sept)
- **Viewgraph-4-:**
  - Predicted radiation pattern for a spherical wave expansion representing a microstrip patch mounted in the focal point in the large radio telescope. One assumption has been made and checked: the part beyond ~32 meter is ignored in the physical optics calculations, as its contribution goes to a low level.
- **Viewgraph-5-:**
  - Two-dimensional representation of total telescope pattern. It is noted that the microstrip – patch antenna with its asymmetrical feeding point causes an increase of the asymmetry in the cross pol level.
  - A previous calculation was for the feed location laterally offset by 0.03m or about ~labda/2 lateral offset in C-band. **This calculation presents the result for the feed representation in the focus: no beam-shift**
  - Scales are in (kx, ky) or (u,v) or just take the arcsine of the values to find angle in degrees. Two lines at about +0.01 and -0.01 relates to **± 0.57° (manually drawn..)**
  - **<u>It is to stress the pointing accuracy needed, in order to catch a point source, with a somewhat arbitrary boundary limit of ±0.01 = ±0.57°</u>**
  - ➔ ***<u>credit: Technical University of Eindhoven NL for utilizing Grasp</u>***





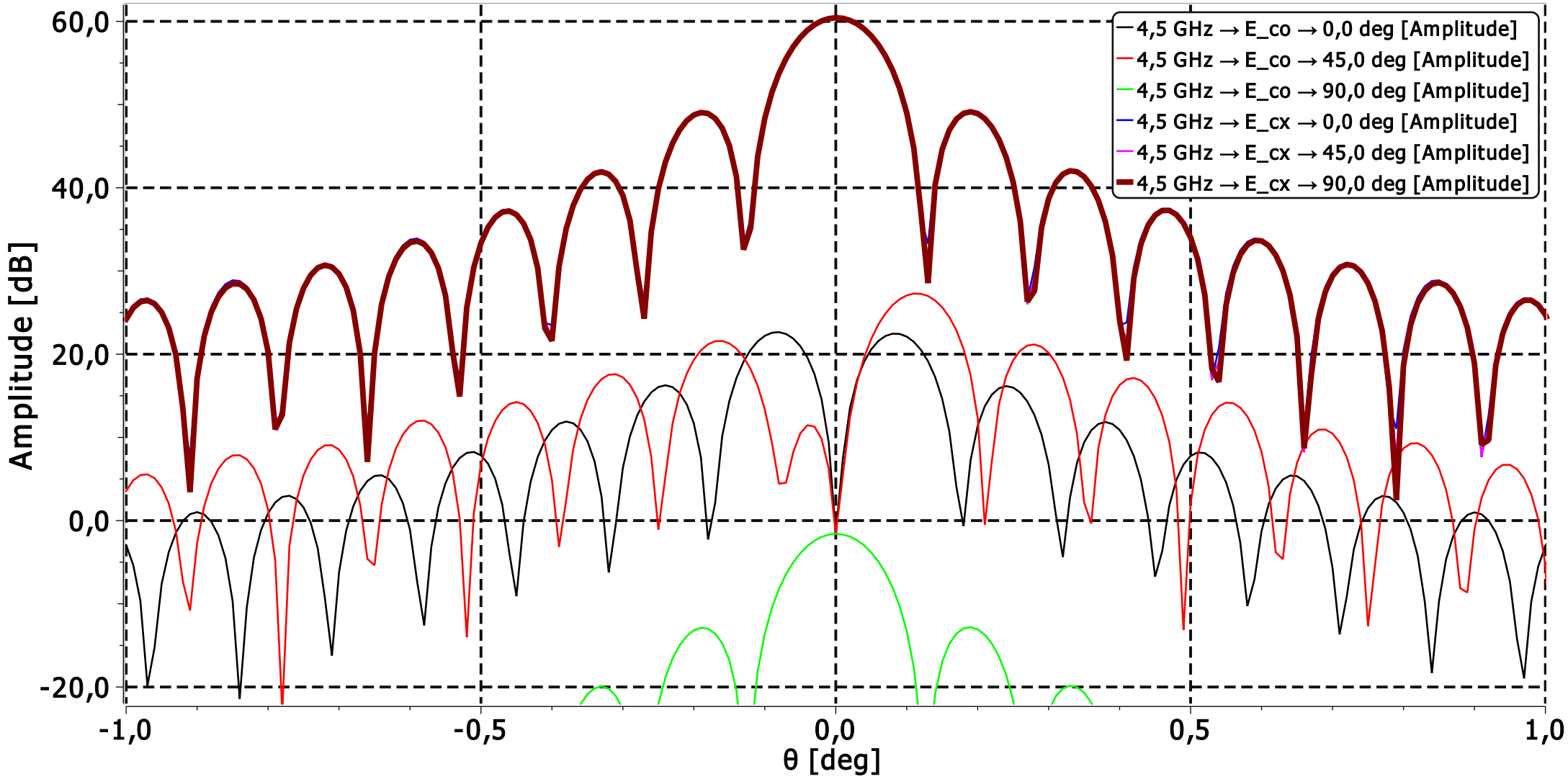


ROT54 illuminated with microstrip patch (Lin pol, y plane)



The microstrip patch is linearly polarised, assymetric feeding point, patch needs alignment !!
Consequences on pointing, crosspol,
spherical wave expansion patch co-aligned with ROT54 focal position

ROT54 illuminated with microstrip patch (Lin pol, y plane)



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1.15 deg

between black dashed lines