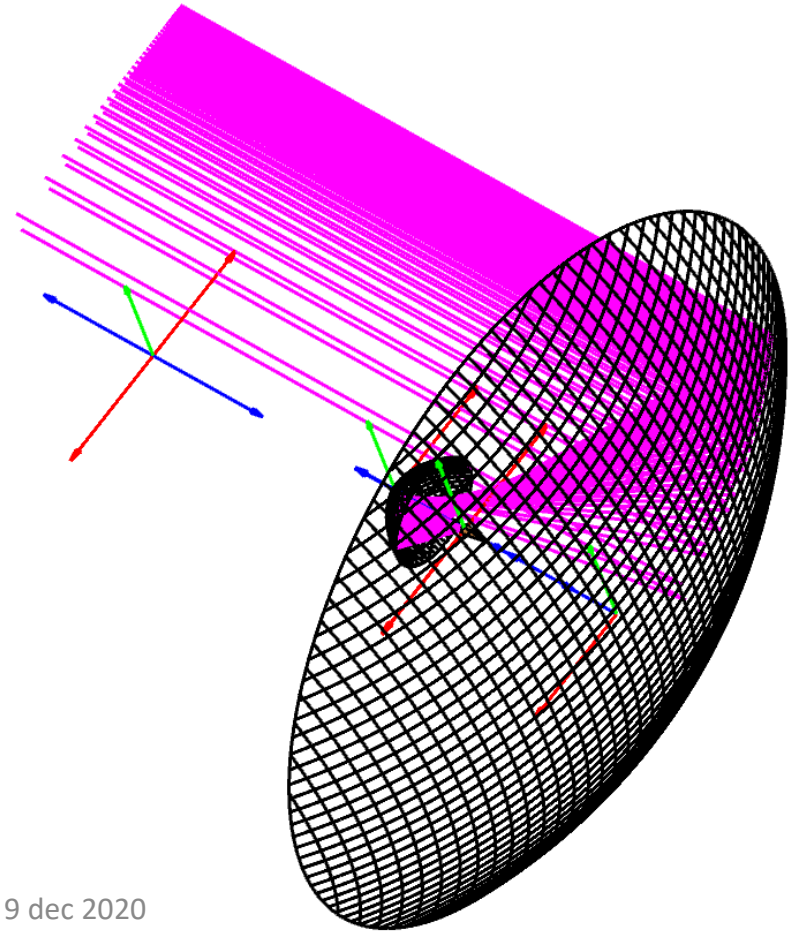
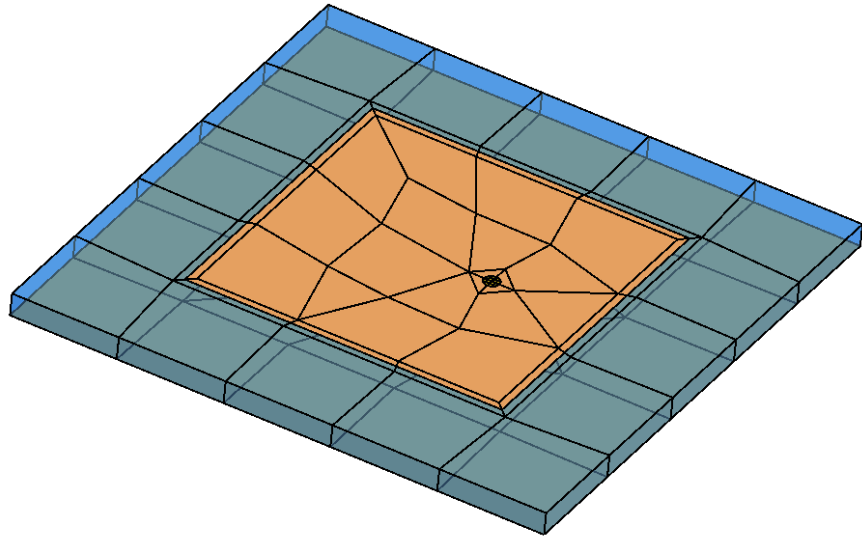
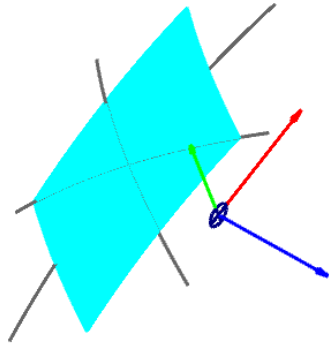


# ROT54, illuminated by Microstrip Patch, 4.5 GHz

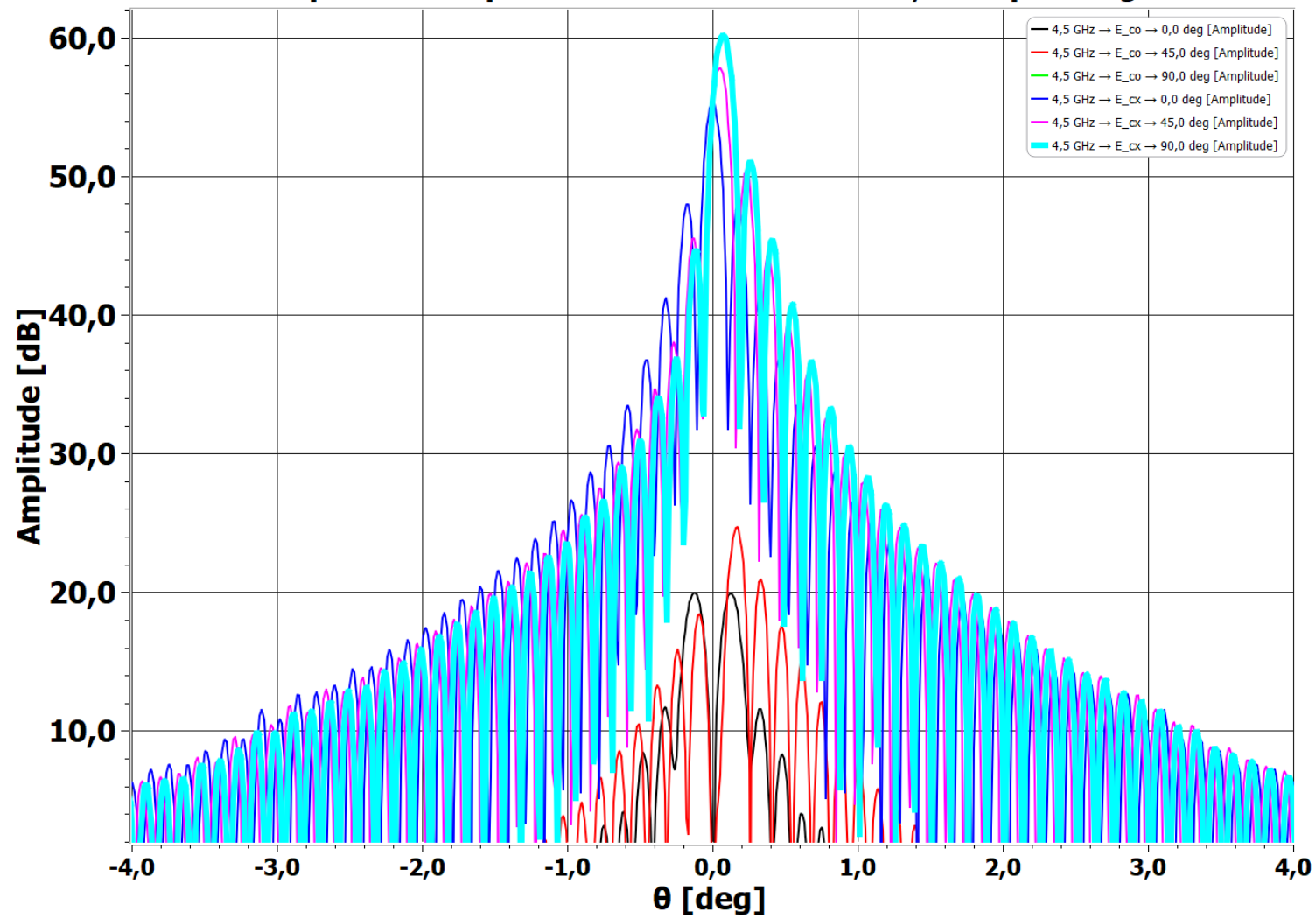
Kees

9 december 2020

- 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 Radiotelescope and Interferometer Conference → see for details in that hand-out concerning correction spherical reflector and correcting sub-reflector, analysed 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 a shift of the main beam, which is easily corrected by shifting it laterally to have the beam at  $0^\circ$
  - Scales are in (kx, ky) or (u,v) or just take the arcsin of the values to find angle in degrees. Two lines at about +0.02 and -0.02 relates to  $\pm 0.11^\circ$  (manually drawn..)
  - **It is to stress the pointing accuracy needed, in order to catch a point source, with a somewhat arbitrary boundary limit of  $\pm 0.02$**



# ROT54 @4p5 MicristripPatch → Radiation Pattern, note pointing deviation



The microstrip patch is linearly polarised, assymmetric feeding point, patch needs alignment !!  
Consequences on pointing, crosspol

K-space spherical\_grid → E → 4,5 GHz, Microstrip Patch Feed, Asymmetric feedpoint

0.2 deg  
between lines

