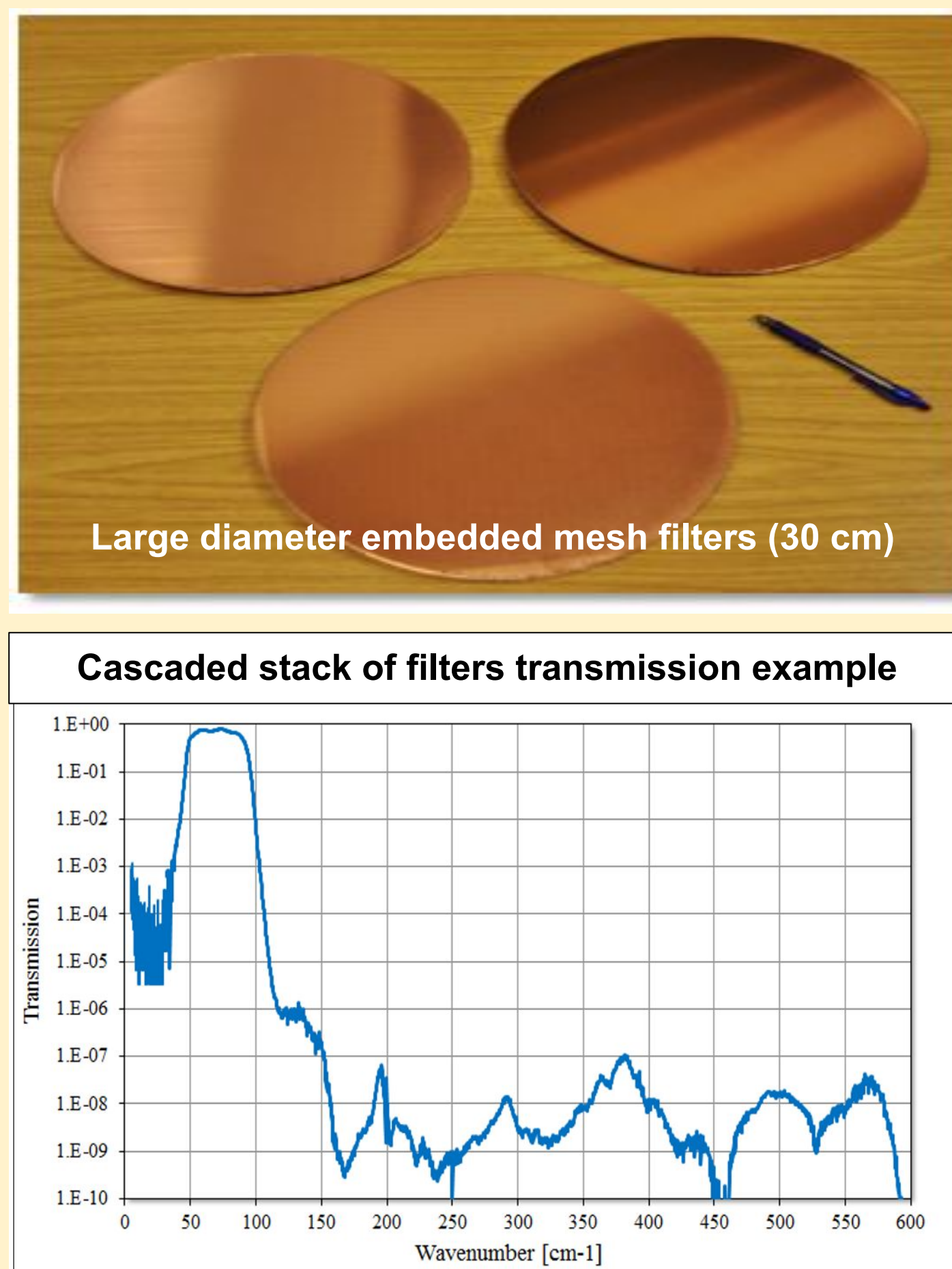
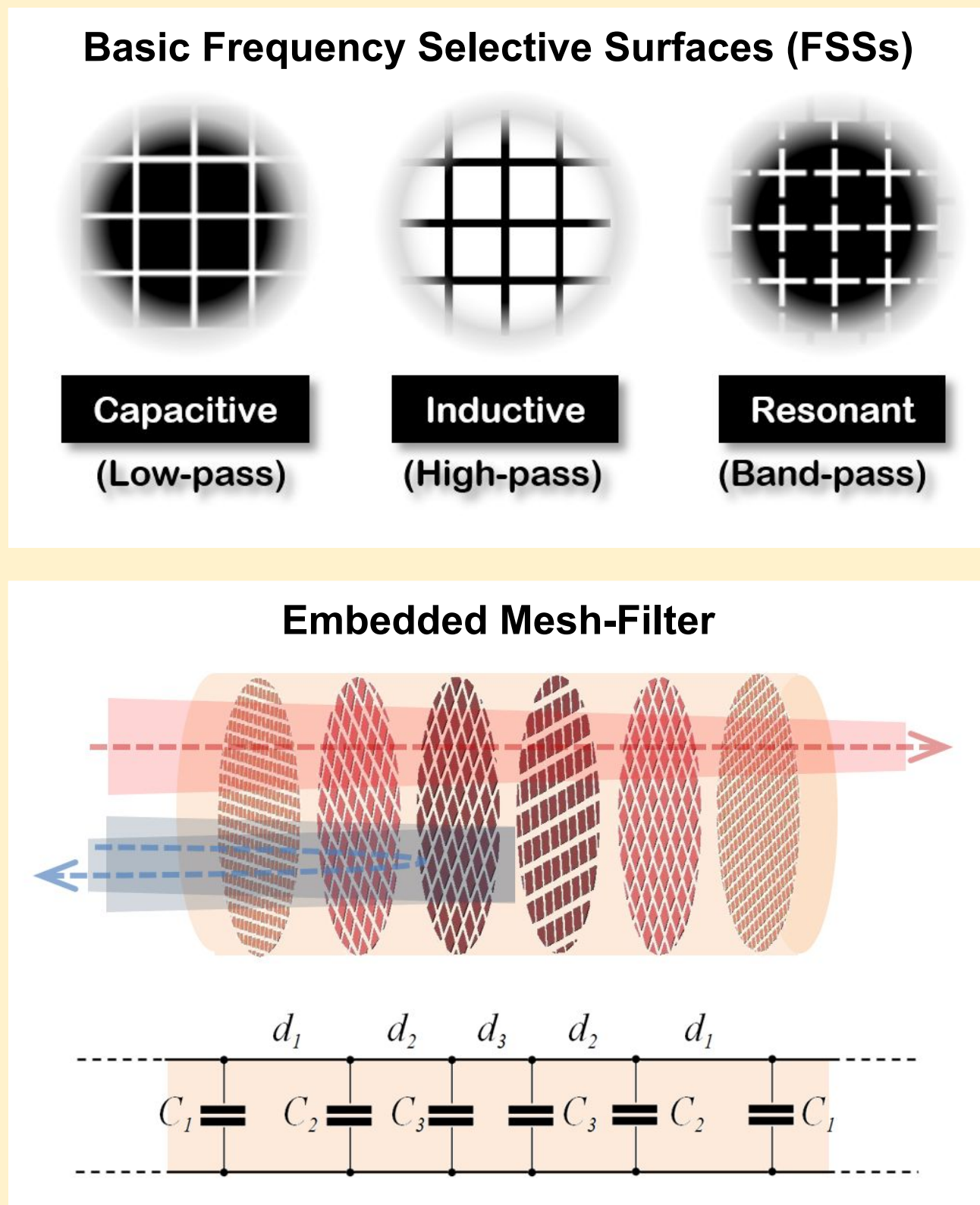


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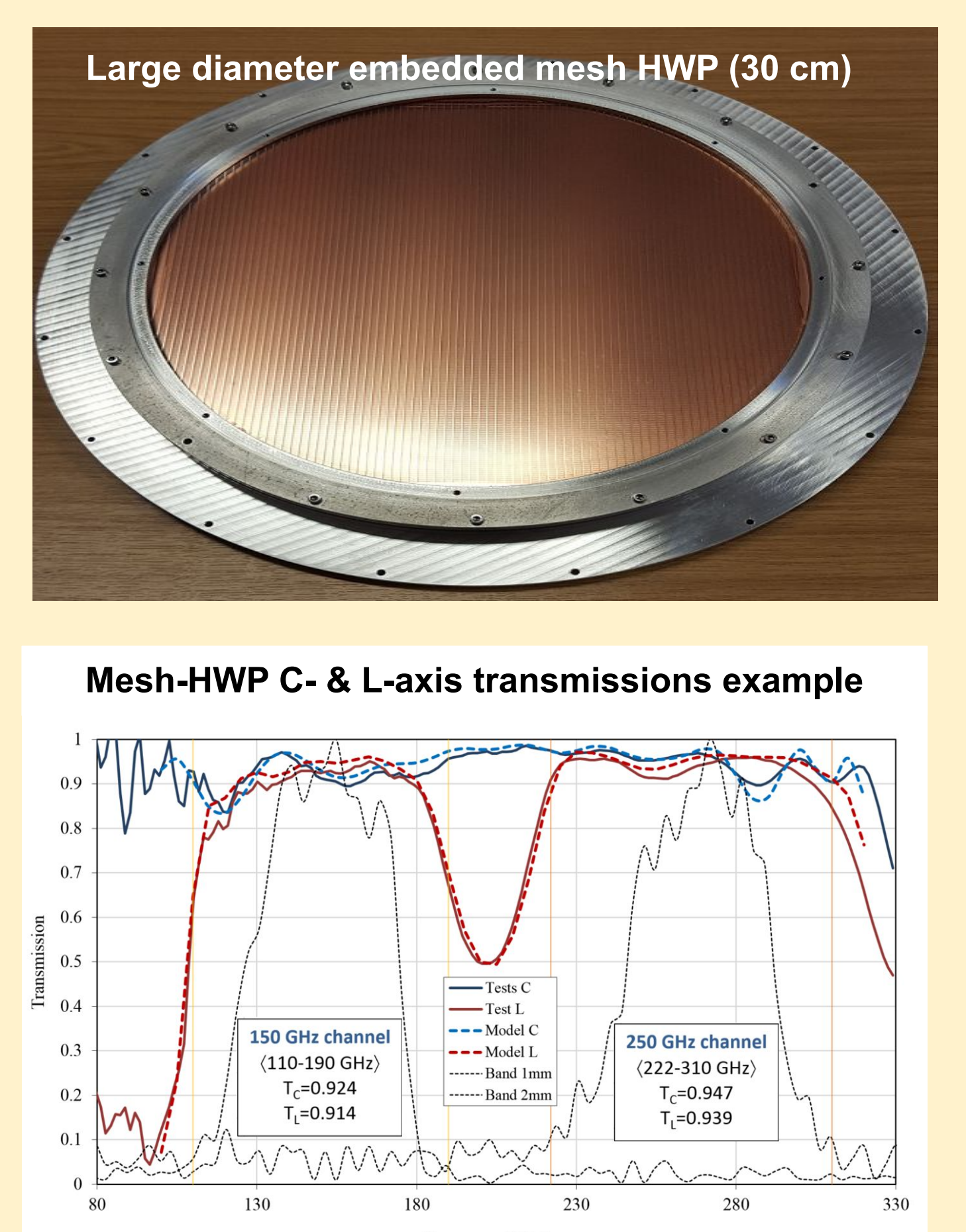
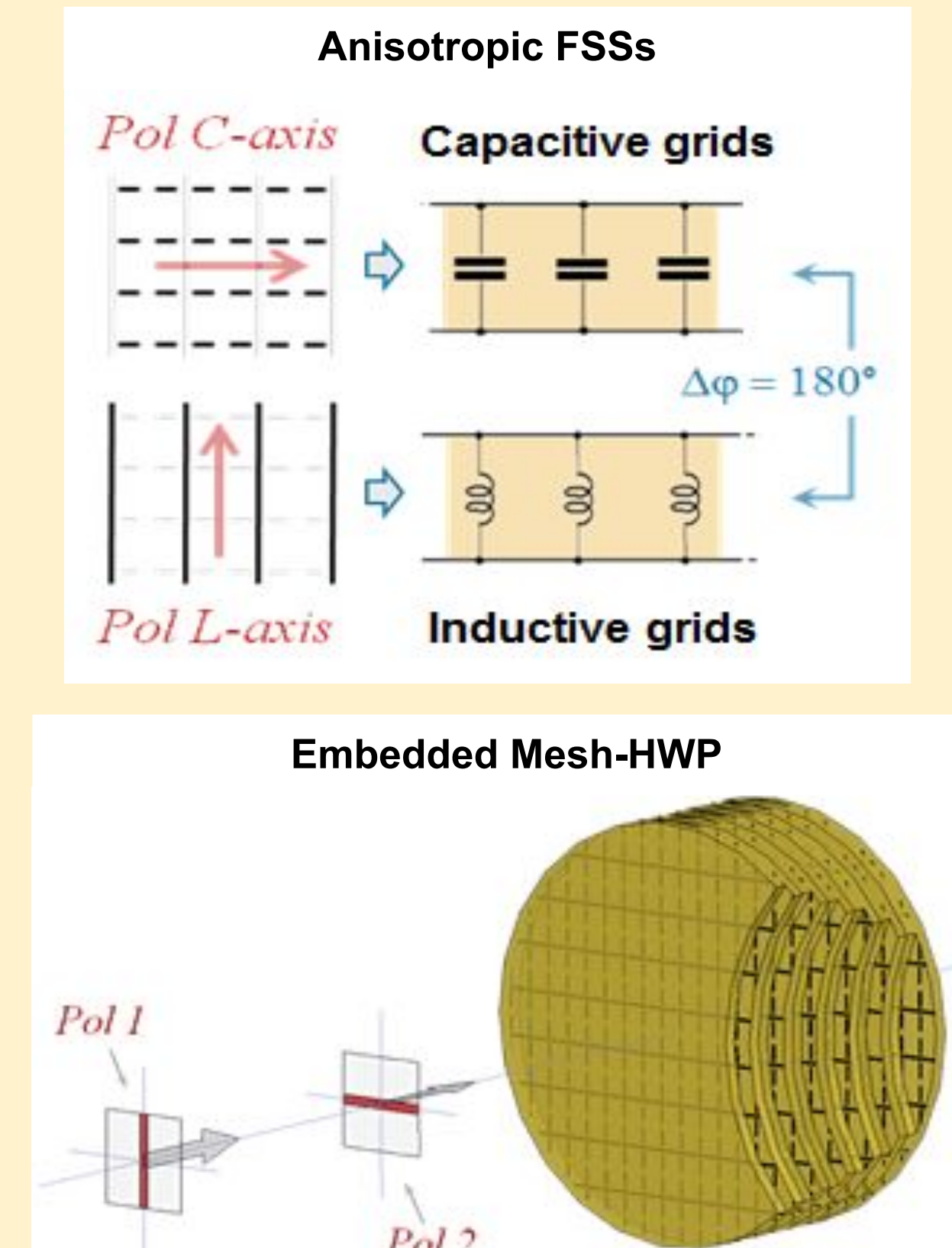
Quasi-optical components expertise & interests

Filters



- Polypropylene embedded mesh-filter technology developed in UK
- Provides thermal shielding and spectral bands definition
- Space qualified technology employed in many other ground-based, balloon-borne and satellite instruments (Planck, Herschel, etc)
- Filter diameters of 500mm to be realised in July 2019

Mesh-HWPs

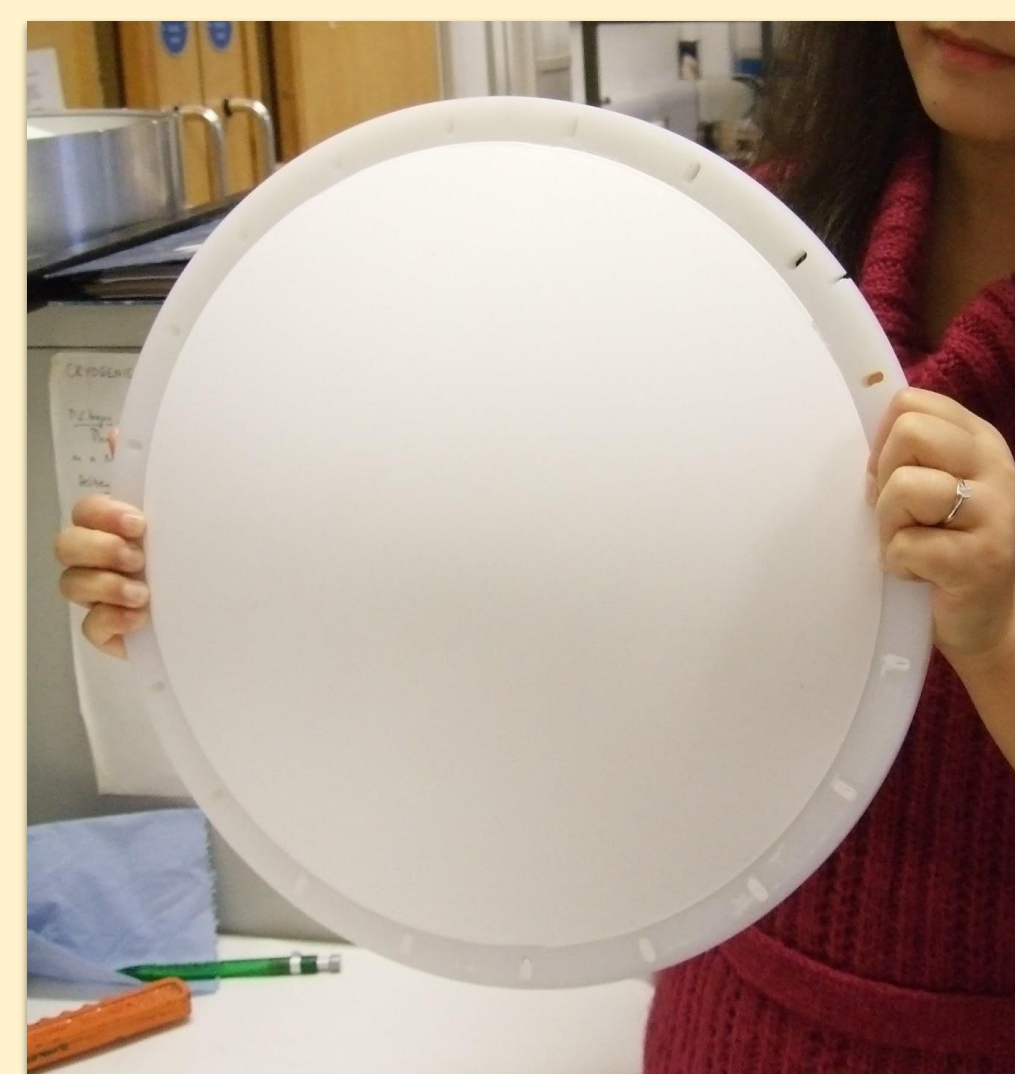


- Novel alternative solution based on polypropylene embedded mesh-filter technology
- Anisotropic grids providing phase-shifts in opposite directions
- Employed in ground-based and balloon-borne instruments
- Further performance developments funded by ESA contract

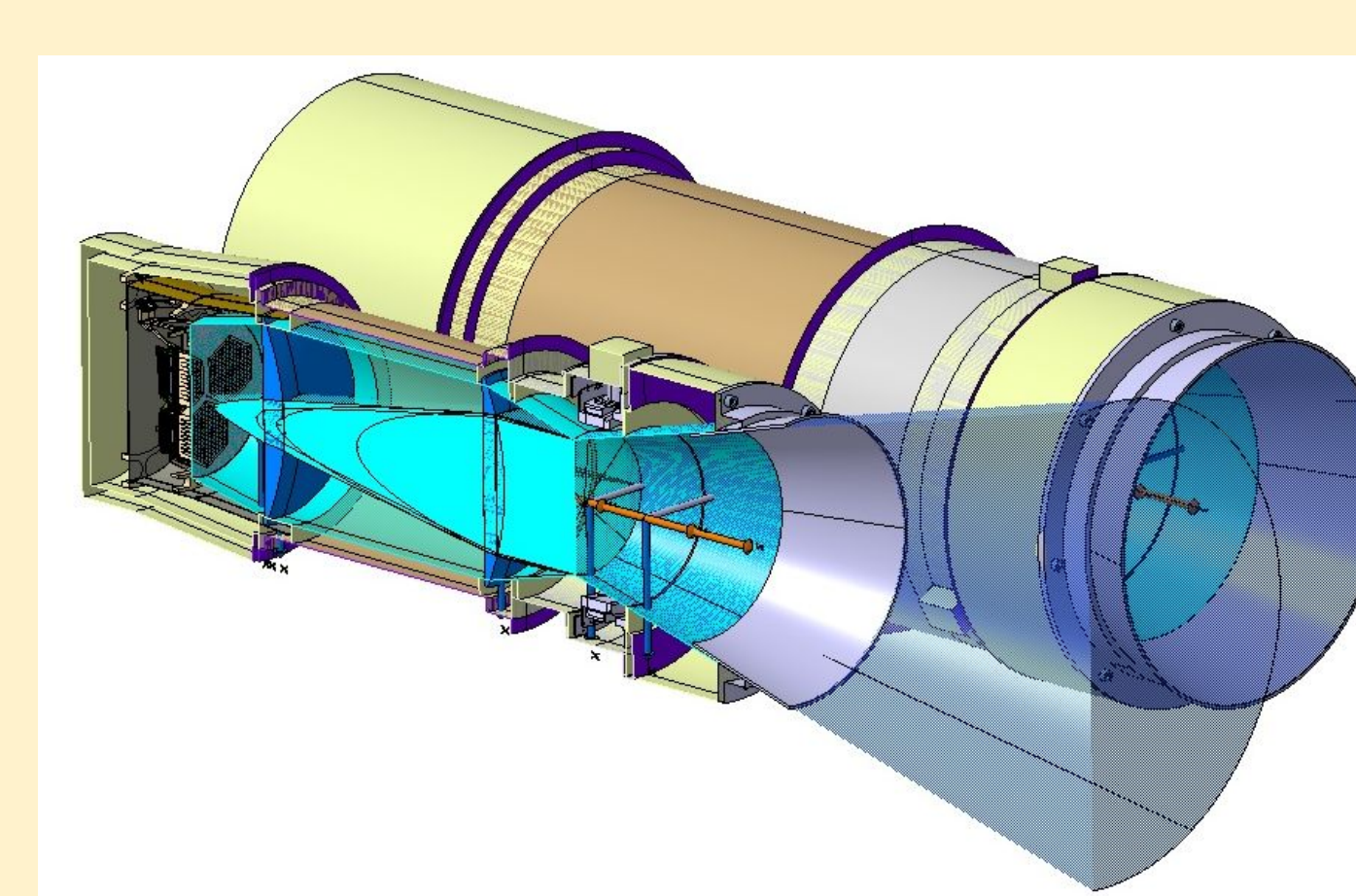


Lenses

- Millimetre-wave Anti-Reflection Coated dielectric lenses
- Coating made with $\frac{1}{4}$ wave Porous PTFE
- Process developed and refined under ESA contract
- Deployed on several ground & balloon-based experiments
- MFT and HFT telescopes based on two A/R coated polypropylene lenses



Baffles



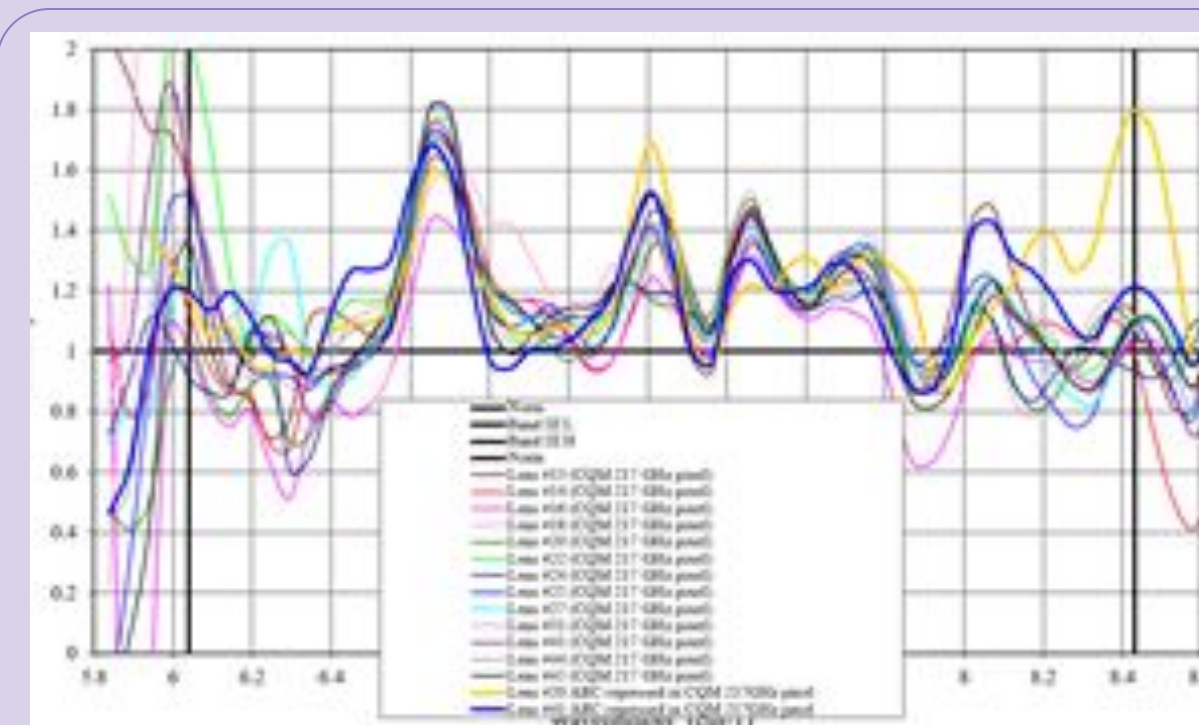
- Absorbing baffles for stray light reduction
- The internal surface of the baffles, facing the incoming light, will be covered with moulded in place ECCOSORB AN 72 (TBC). The process needs to be qualified but gives the best uniformity in absorbing the incoming stray light without biasing the polarisation.

Given the expertise in the design, manufacture and test of quasi-optical components, the UK aims to provide filters, HWPs, AR-coated lenses and baffles for the MFT and HFT instruments

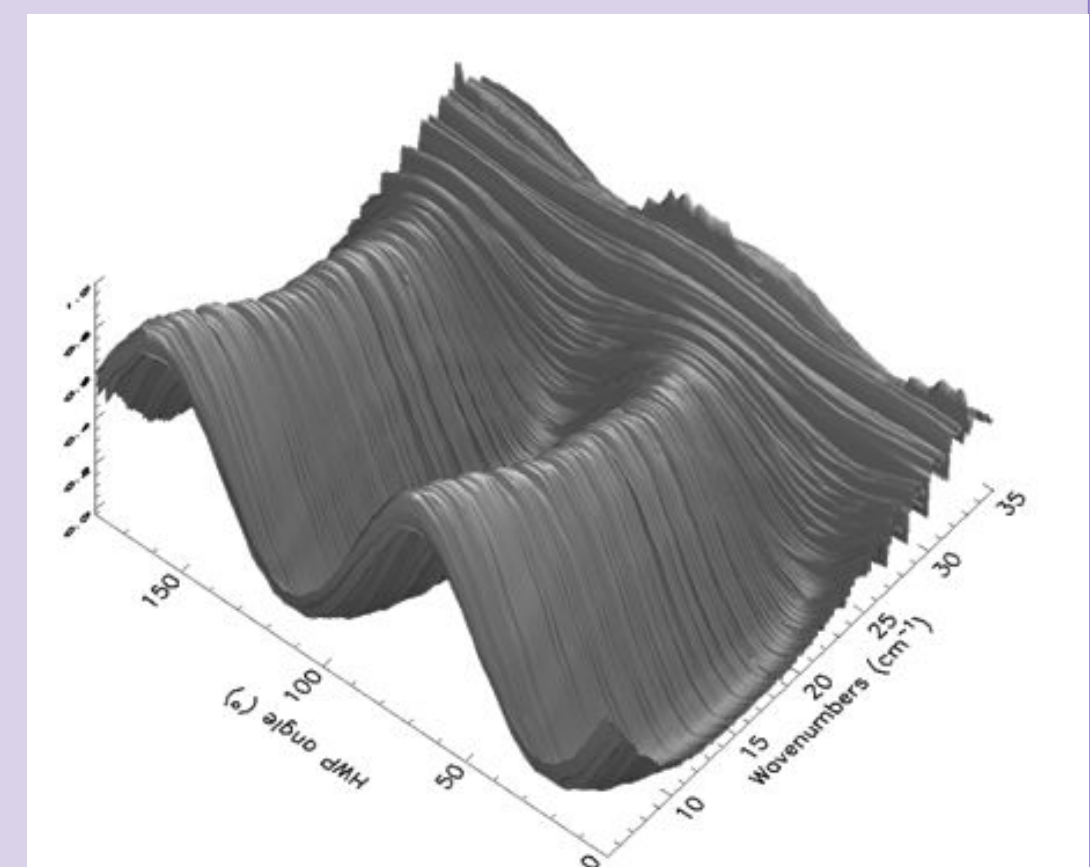
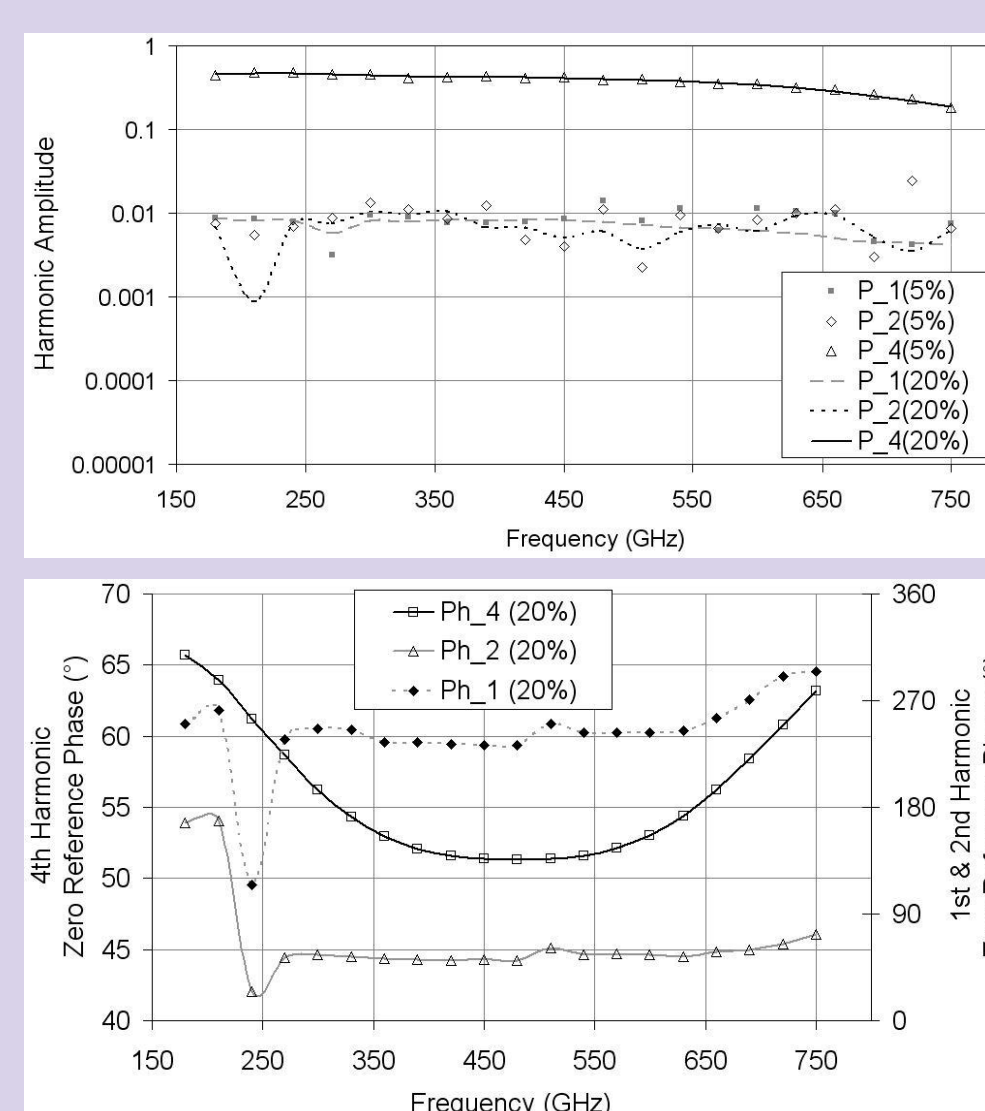
Calibration expertise & interests

Building on the experience of the build and calibration of the Planck HFI as well as the manufacture and testing of a number of balloon flown Half-wave plates, the UK aims to participate in Calibration activities through:

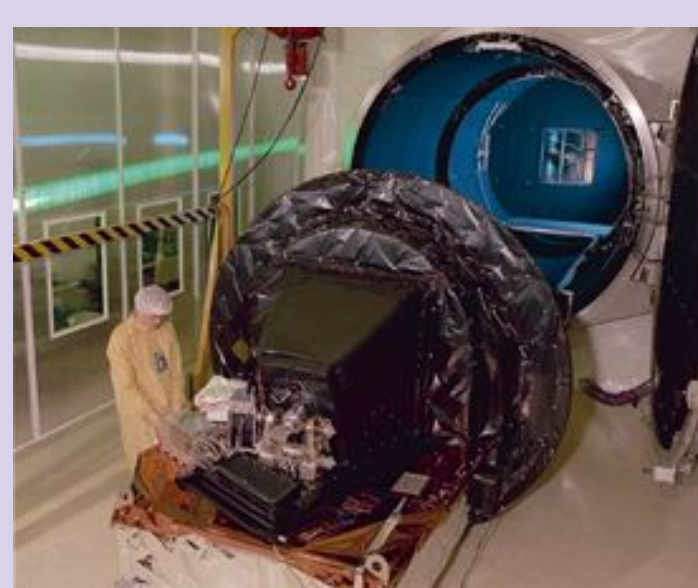
- Calibration and testing at component level of all optical components of MHFT
- Design of suitable RF and spectro-polarimetric tests and data analysis
- Participation in RF testing
- Extraction of instrument model parameter from test data



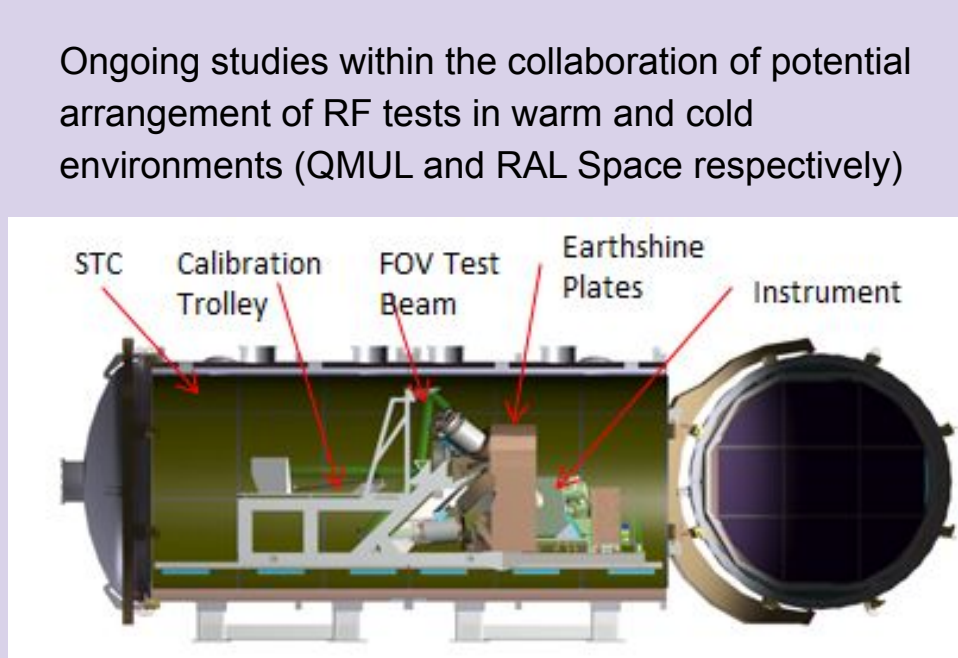
Spectro-polarimetric data-cube as spectral-performance and polarisation response as a function of HWP position.



Allows reconstruction of frequency dependent modulation function amplitude and phase. Critical for decomposition of modulated signal in timelines.

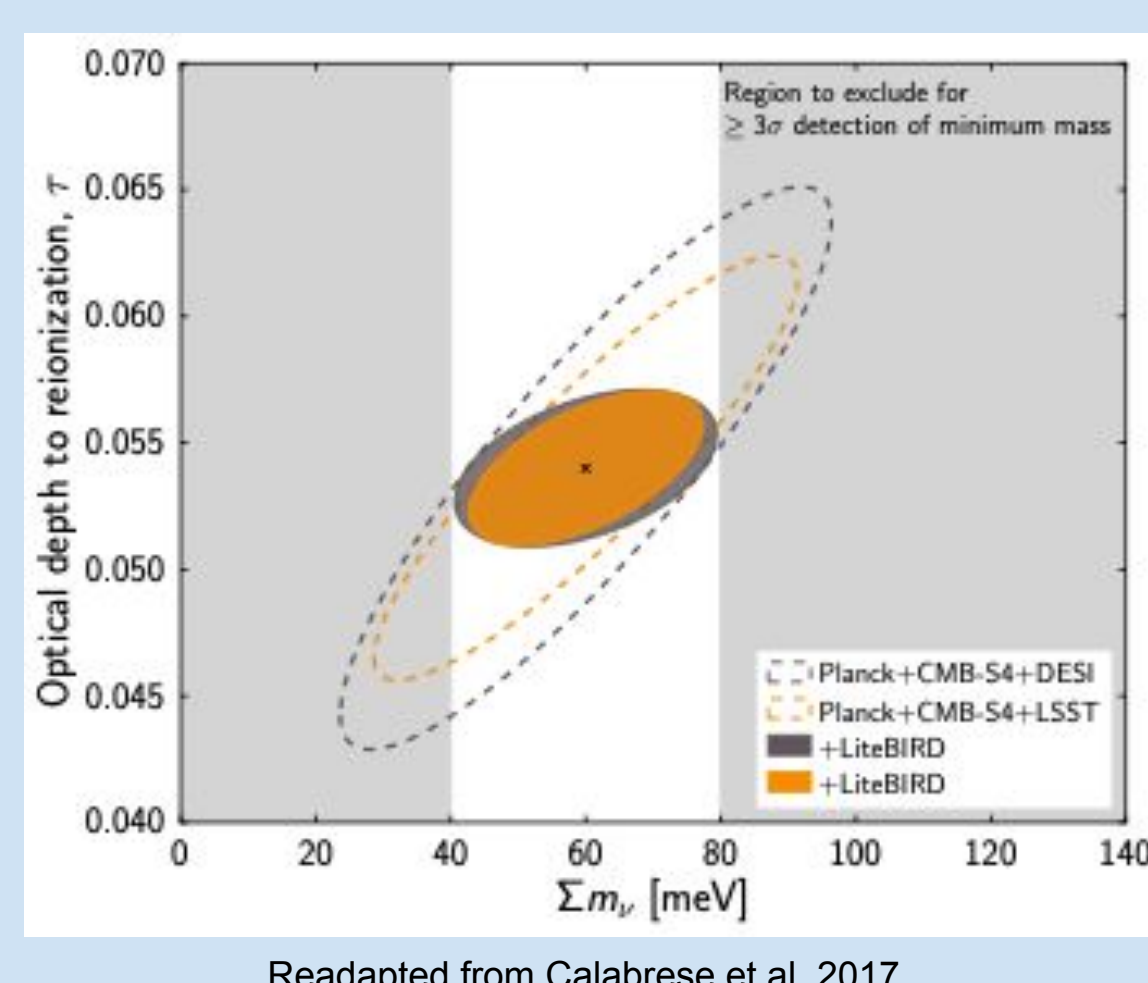


UK Centre for Satellite Instrumentation Calibration (UK CCSI)

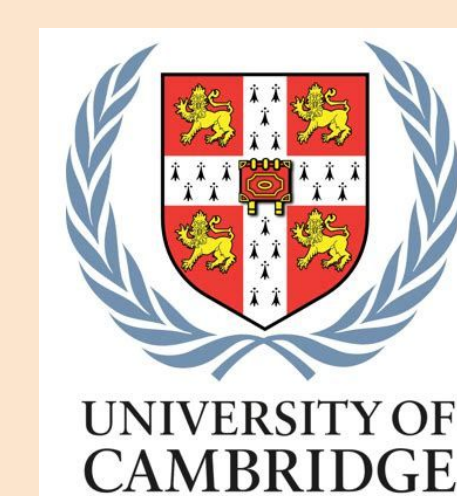


From sky maps to science: expertise and interests

- Scanning strategy and instrumental systematics mitigation
- Foreground modelling and removal
- High-level analysis: from CMB maps to power spectra to extraction of cosmological information
 - Combination with ground-based surveys to maximize cosmological exploitation
 - Galactic science



Institutions



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