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Type: **Invited talk in the parallel session**

Microwave spectro-polarimetry of matter and radiation across space and time

Thursday, 8 July 2021 16:30 (30 minutes)

I will discuss the science case for a sensitive spectro-polarimetric survey of the microwave sky. Such a survey would provide a tomographic and dynamic census of the three-dimensional distribution of hot gas, velocity flows, early metals, dust, and mass distribution in the entire Hubble volume. It would also exploit CMB temperature and polarisation anisotropies down to fundamental limits, and track energy injection and absorption into the radiation background across cosmic times by measuring spectral distortions of the CMB blackbody emission. Such a survey could be carried out with a large space mission featuring a broad-band polarised imager and a moderate resolution spectro-imager at the focus of a 3.5m aperture telescope actively cooled to about 8K, complemented with absolutely-calibrated Fourier Transform Spectrometer modules observing at degree-scale angular resolution in the 10-2000 GHz frequency range.

Primary author: Dr DELABROUILLE, Jacques (CNRS)

Presenter: Dr DELABROUILLE, Jacques (CNRS)

Session Classification: New Horizons in Cosmology with CMB Spectral Distortions

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