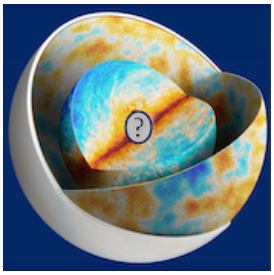

ID de Contribution: **3** Type: **Non spécifié**

Statistical separation of dust and CIB with Wavelet Phase Harmonics (WPH)

mardi 21 juin 2022 11:20 (40 minutes)

Modelling the emission of Galactic dust is a main challenge for CMB polarization experiments. Current models make use of Planck total intensity data plagued by the difficulty of separating dust emission from the Cosmic Infrared Background (CIB). We address this outstanding difficulty from a new perspective compared to previous attempts. We will show that dust and CIB may be statistically separated using their radically different structure on the sky. Our approach makes uses of a CIB model map built from a cosmological simulation and Herschel/SPIRE observations. We use the Wavelet Phase Harmonics (WPH) statistics to separate dust and CIB and derive a statistical, non-Gaussian, model of each component. We demonstrate and validate the separation on mock data, before applying it to Herschel observations of cosmological fields and the diffuse interstellar medium (ISM) at high Galactic latitude. The two models derived from our analysis of Herschel observations are generative models, which may be used to simulate maps of each component, essentially free from mutual contamination. We will present an astrophysical application where we extend our statistical modelling to HI observations to investigate the dynamical coupling of gas and dust, down to the smallest spatial scales, a few hundredths of a parsec in the diffuse ISM, probed by Herschel.

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