

Astrophysical Foregrounds for precision cosmology

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1 Abstract

In this talk, I introduce a semi-analytic model designed to evaluate the Cosmic Infrared Background (CIB) power spectrum across all frequency and multipole ranges. My methodology starts from the Halo Model, in order to describe the dark matter distribution in the Universe, capturing its non-linear behaviour. I further expand the Halo Model formalism to galaxies, populating dark matter halos with two distinct galaxy populations that exhibit different clustering behaviours and emissivity functions.

This modeling allows to end up with a prediction of the CIB power spectrum. In the absence of a comprehensive theoretical framework for the description of both the clustering and the emission of the two galaxy populations, I aim to constrain the clustering parameters. This objective is pursued through an MCMC analysis over three dataset; Planck, SPIRE and a re-analysis of Planck data done by Lenz et al. (2019). However, my findings indicate discrepancies across different frequency and multipole ranges, highlighting either potential issues within the model or suggesting a tension among the experiments.