EBL Tomography: Method and Application to Data

Yi-Kuan Chiang[*1]

[1]Johns Hopkins University – United States

Abstract

The targets of intensity mapping do not need to be limited to strong emission lines. I will introduce a cross-correlation-based method to recover previously collapsed redshift information for cosmic photons in intensity maps of arbitrary bandwidths. This represents a tomography not only in line-of-sight distance (or cosmic time) but also in frequency space as the photons get redshifted by the cosmic expansion. I will demonstrate this method with data by probing the continuum, Lyα line, and Lyman break in the cosmic UV background up to z~2 using GALEX All Sky and Medium Imaging Surveys. This allows us to perform spectral diagnostics for the entire body of the UV background and provide insights on cosmic starformation, black hole accretion, and potential emission from the diffuse intergalactic medium. We expect this method to be generically applicable for a rich set of existing and upcoming wide-field datasets in probing the cosmic background over a wide range of wavebands up to cosmic high noon.

[*]Speaker