
Mapping the $z \sim 2$ Cosmic Web with IGM Tomographic Mapping

Khee-Gan Lee*¹

¹Kavli IPMU – Japan

Abstract

In recent years, the CLAMATO survey with the Keck-I telescope has been observing high area densities of $z \sim 2-3$ star-forming galaxies spectra. This enabled a closely-spaced grid of sightlines that tomographically map the Lyman-alpha forest in the IGM at $z \sim 2.0-2.5$. I will discuss the observations which have lead to the highest-redshift detection of cosmic voids and preliminary results for the cross-correlation with co-eval galaxies. Other applications include constrained realizations of the observed volume, constraining galaxy-cosmic web intrinsic alignments, and cosmological parameter measurement. Finally, I will describe the future prospects of this technique including the Subaru-PFS IGM Tomography Survey, and the ambitious Billion Object Apparatus (BOA) of the 2030s.

*Speaker