
Learning about reionization and the first galaxies

Andrei Mesinger^{*1}

¹Scuola Normale Superiore – Italy

Abstract

I will review recent progress in understanding the timing of the epoch of reionization (EoR). The advent of multi-scale modeling techniques enabled robust interpretation of the Thompson scattering optical depth to the CMB, as well as Lyman alpha absorption of high- z galaxy and quasar spectra. As a result, we can now estimate the timing of the bulk of the EoR to within a $\Delta z \sim 1.5$. However a complete picture of the first billion years will emerge only after upcoming interferometric observations of the 21-cm line. We will soon have a 3D map of the early Universe, with the properties of the unseen first structures encoded in the timing and patterns of the 21-cm signal. I will briefly demonstrate an inference framework for this upcoming Big Data revolution.

^{*}Speaker