Exploiting Lyman Alpha-21cm synergies to shed light on the Epoch of Reionization

Pratika Dayal*[1]

[1]Kapteyn Institute – Netherlands

Abstract

The Lyman Alpha line is a powerful tracer of both star formation and the progress of reionzation in the first billion years. I will start by showing the key physics of Lyman Alpha escape both from the ISM of dust-enriched galaxies as well as neutral hydrogen in the IGM. I will then show how stablishing the veracity of the 21cm signal and understanding the global sources and topology of reionization will require combining 21cm data with the unqiue data set provided by hgh-redshift Lyman Alpha Emitting galaxies (LAE). I will then highlight the crucial and urgent synergies required between 21cm and LAE experiments to understand the physics of the EoR that remains a crucial frontier in the field of astrophysics and physical cosmology. Finally, I will show how the 21cm signal from cosmic dawn can be used to constrain the (warm) nature of dark matter itself.

*Speaker