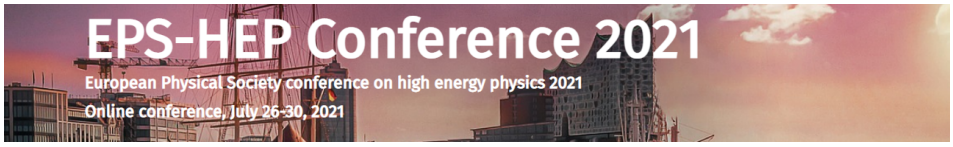

Contribution ID: **458** Type: **Poster**

Early galaxy formation and its implications for 21cm cosmology, dark matter and multi-messenger astronomy

Wednesday 28 July 2021 10:10 (20 minutes)

Galaxy formation in the first billion years mark a time of great upheaval in the history of the Universe: as the first sources of light, these galaxies ended the 'cosmic dark ages' and produced the first photons that could break apart the hydrogen atoms suffusing all of space starting the process of cosmic reionization. As the earliest building blocks, the galaxies that formed in the first billion years also determine the physical properties of all subsequent galaxy populations. I will start by introducing the reionization process and detail the reasons for which the history and topology of reionization remain debated. I will then show how cross-correlations of 21cm data with the underlying galaxy population, in the forthcoming era of 21cm cosmology, will yield tantalising constraints on the average intergalactic medium ionization state as well as the reionization toplogy (outside-in versus inside-out). I will try to give a flavour of how the assembly of early galaxies, accessible with the forthcoming James Webb Space Telescope, can provide a powerful testbed for Dark Matter models beyond "Cold Dark Matter". Finally, I will show the importance of black hole seeding and baryonic feedback in determinging the LISA detectability of merger events from the early universe.

Collaboration / Activity

SKA, Euclid, LISA

First author

Email

Primary author: DAYAL, Pratika (Kapteyn Astronomical institute, university of groningen)

Presenter: DAYAL, Pratika (Kapteyn Astronomical institute, university of groningen)

Session Classification: T02: Cosmology

Track Classification: Cosmology