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Inference and modeling of early galaxy properties: the role of stochasticity during EoR.

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Recent years have seen an increase in data probing the Epoch of Reionization (EoR) and nearing Cosmic Dawn, which is set to culminate with the observations from SKA. To accurately interpret these observations, we need to model both large-scale radiation fields and small-scale galaxy physics. The role of stochasticity in these quantities, is often neglected in semi-numerical models. To investigate it we develop a simple and flexible parametric model for galaxy formation, combining it with the public large-scale semi-numerical simulation 21cmFAST. We find that complex star-formation processes and small-scale physics that affects the radiation leaving the galaxies has a large impact on the variance of ionizing and x-ray emissivities which has important consequences for 21cm signal.

Research area

Epoch of Reionization

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