Contribution ID: **36** Type: **not specified**

pop-cosmos: investigating the explainability of a high-dimensional, data-driven generative model in cosmology

Thursday 12 September 2024 11:15 (30 minutes)

I will present a perspective that explainability —model interrogation and validation rooted in domain knowledge —is a more important desideratum in fundamental science than interpretability in its strict meaning. In order to illustrate this point, I will draw on our recent work on pop-cosmos: a forward modelling framework for photometric galaxy survey data, where galaxies are modelled as draws from a population prior distribution over redshift, mass, dust properties, metallicity, and star formation history. After showing how the model is composed in terms of a diffusion model population prior and calibrated using simulation-based optimal-transport optimisation, I will discuss how to view this type of approach from a hierarchical Bayesian perspective. I will showcase the parallels between validating this type of model and standard practices in validating any complex physics-based parametric model in the field.

Primary Field of Research

Presenter: PEIRIS, Hiranya

Session Classification: Talks