Contribution ID: **122** Type: **Poster + Flashtalk**

Simulation-based inference for extreme mass ratio inspirals

Extreme mass ratio inspirals are a key target for next generation space-based gravitational wave detectors because they have a rich phenomenology that could offer new astrophysics and fundamental physics insights. However, their dynamics are complicated to model, and they will be buried amongst a large population of other sources in the milliHertz frequency band, with a background of non-stationary and non-Gaussian noise. Searching for these systems and measuring their parameters therefore presents a difficult challenge.

Simulation-based inference methods could offer solutions to some of these challenges. I will show parameter estimation results for extreme mass ratio inspiral systems achieved using sequential simulation-based inference, specifically truncated marginal neural ratio estimation. I will highlight the benefits of this approach with respect to traditional likelihood-based methods, and discuss the broader context in which such a pipeline will need to be embedded.

AI keywords

simulation-based inference

Primary author: COLE, Philippa (Istituto Nazionale di Fisica Nucleare)

Presenter: COLE, Philippa (Istituto Nazionale di Fisica Nucleare)

Track Classification: Inference & Uncertainty