Contribution ID: **76** Type: **Poster + Flashtalk**

Reconstructing source motion from gravitational wave strain

The identification of burst gravitational wave signals can be challenging due to the lack of well-defined waveform models for various source types. In this study, we propose a novel approach to understanding the mass dynamics of the system that produced the burst signal by reconstructing the possible motions of masses that could generate the detected waveform within certain constraints.

Our method involves training a normalising flow on random motions of masses, which allows us to explore a wide range of possible mass configurations and their corresponding waveforms. By employing this technique, we can reconstruct all feasible mass dynamics that may have contributed to the observed gravitational wave signal.

We present some results from our analysis, as well as discuss its limitations and potential extensions. These methods could provide valuable insights into the nature of burst gravitational wave sources and point towards a better understanding of their astrophysical origins.

AI keywords

simulation-based-inference: transformers: generative AI: normalising flows

Primary author: BAYLEY, Joe

Presenter: BAYLEY, Joe

Track Classification: Simulations & Generative Models