Waveform Systematics of Compact Binary Coalescence Models
AASIM JAN, ANJALI YELIKAR, Rochester Institute of Technology, JACOB LANGE, University of Texas - Austin, RICHARD O'SHAUGHNESSY, Rochester Institute of Technology — As Einstein's equations for binary compact object inspiral have only been approximately or intermittently solved by analytic or numerical methods, the models used to infer parameters of gravitational wave (GW) sources are subject to waveform modeling uncertainty. We illustrate these differences, then introduce a very efficient technique to marginalize over waveform uncertainties, relative to a pre-specified sequence of waveform models. Being based on RIFT, a very efficient parameter inference engine, our technique can directly account for any available models, including very accurate but computationally costly wave- forms. Our evidence and likelihood-based method works robustly on a point-by-point basis, enabling accurate marginalization for models with strongly disjoint posteriors while simultaneously increasing the re-usability and efficiency of our intermediate calculations.

AASIM JAN
Rochester Institute of Technology