

# Accelerating gravitational wave parameter estimation with normalizing flows

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After identifying a gravitational wave, the goal of parameter estimation pipelines is to infer the parameters of the source that generated the signal. Current methods rely on computationally expensive numerical approaches, such as Markov chain Monte Carlo (MCMC) samplers. For longer signals with a high-dimensional parameter space, such as gravitational waves generated by binary neutron star mergers, parameter estimation runs can take hours to weeks to complete. We present our ongoing efforts to improve existing pipelines by combining likelihood heterodyning, automatically-differentiable tidal waveforms, and gradient-based MCMC sampling enhanced by normalizing flows.

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