

# A binary black hole waveform generator trained on numerical relativity waveforms

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## Abstract

Most methods for extracting signals and parameter estimation for gravitational wave signals from compact binary coalescences require prior knowledge of the signal morphology. This prior information is obtained from numerical relativity simulations which are both expensive and time-consuming to produce. Consequently, only a small region of the overall signal parameter space has been probed. We present a method, based on Gaussian process regression informed by numerical relativity waveforms, which is capable of placing a prior probability distribution over the entire precessing binary black hole merger parameter space. This allows us to produce interpolated waveforms with an associated measure of the interpolation uncertainty across the entire parameter space.