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A complete waveform model for compact binaries on eccentric orbits DANIEL GEORGE, Univ of Illinois - Urbana, ELIU HUERTA, National Center for Supercomputing Applications, PRAYUSH KUMAR, Canadian Institute for Advanced Research, BHANU AGARWAL, University of Illinois at Urbana-Champaign, HSI-YU SCHIVE, National Center for Supercomputing Applications, HARALD PFEIFFER, Canadian Institute for Advanced Research, TONY CHU, Princeton University, MICHAEL BOYLE, Cornell Center for Astrophysics and Planetary Science, DANIEL HEMBERGER, California Institute of Technology, LAWRENCE KIDDER, Cornell Center for Astrophysics and Planetary Science, MARK SCHEEL, California Institute of Technology, BELA SZILAGYI, Jet Propulsion Laboratory
— We present a time domain waveform model that describes the inspiral, merger and ringdown of compact binary systems whose components are non-spinning, and which evolve on orbits with low to moderate eccentricity (arXiv:1609.05933). We show that this inspiral-merger-ringdown waveform model reproduces the effective-one-body model for black hole binaries with mass-ratios between 1 to 15 in the zero eccentricity limit over a wide range of the parameter space under consideration. We use this model to show that the gravitational wave transients GW150914 and GW151226 can be effectively recovered with template banks of quasicircular, spin-aligned waveforms if the eccentricity e0 of these systems when they enter the aLIGO band at a gravitational wave frequency of 14 Hz satisfies $e_0^{\rm GW150914} \leq 0.15$ and $e_0^{\rm GW151226} \leq 0.1$.

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