

Abstract Submitted
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Comparing Numerical Relativity and Black Hole Perturbation Waveforms for Intermediate Mass Ratio Black Hole Binaries DEREK NELSON, Cal Poly, San Luis Obispo, STEVE DRASCO, Grinnell College — Advanced gravitational-wave observatories with broadened frequency windows will soon be online. Intermediate Mass Ratio Inspirals are source candidates in the newly exposed low frequencies. These are a class of compact binary coalescences containing stellar-mass compact objects and black holes with masses on the order of hundreds to perhaps thousands of solar masses. Waves from these systems must be accurately and efficiently modeled in order to enable observations. A possible substitute for the current waveform model that assumes slow motion are waveforms calculated with a perturbative technique based on the mass ratio, a more stable small parameter. We implement an inexpensive version of this model and compare the corresponding waveforms with impractically expensive waveforms from full Numerical Relativity simulations. I discuss the somewhat surprising success of the comparisons for systems with simple motion and nearly equal-mass binaries. I will also discuss similar comparisons currently underway for more complex motion and mass distributions.

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