Abstract Submitted
for the TSF13 Meeting of
The American Physical Society

Matching Black Hole Merger Waveforms[1] JOSE MCKINNON, University of Texas at Brownsville, JOHN BAKER, PHILIP GRAFF, NASA Goddard Space Flight Center, NASA GODDARD SPACE FLIGHT CENTER TEAM — Matched filtering techniques require accurate waveform models to perform precise parameter estimation. We present a hybrid gravitational waveform model for the inspiral and coalescence of non-spinning black-hole binaries. Since numerical-relativity (NR) waveform calculations remain computationally expensive and so cannot be used to investigate the complete space of possible parameters, we have combined effective-one-body (EOB) and post-Newtonian (PN) waveforms to produce a "complete" inspiral-merger-ringdown quadrupole waveform for use in the identification of systematic biases in parameter estimation of binary black-hole mergers. The approach is based on both frequency-domain (FD) and time-domain (TD) matching, and the minimization of systematic errors that arise from the matching process. In this work we have used various PN template families, such as the TaylorT1, TaylorT2, TaylorT3, TaylorT4 and the TaylorF2, together with the EOBNR (2,2) mode. Here we give results of the waveform matching technique and its efficiency for the different waveform models.

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Date submitted: 10 Sep 2013 Electronic form version 1.4