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Fast time-domain waveform model of compact-binary coalescences for LIGO and Virgo observations[1] DEYAN MIHAYLOV, SERGUEI OSSOKINE, ALESSANDRA BUONANNO, Max Planck Institute for Gravitational Physics — We present a computationally efficient time-domain waveform model for spin-aligned compact binary coalescences. The model combines the advantages of the numerical-relativity informed, effective-one-body family of models with a post-adiabatic solution of the equations of motion for the inspiral part of the two-body dynamics. Together with further data-analysis improvements, this enables a new, computationally cheaper way to generate reliable waveforms for compact binaries in the frequency band relevant for LIGO and Virgo. We benchmark this model against other state-of-the-art waveforms in terms of efficiency and accuracy. In particular, we obtain a speed-up of $\sim 10^2$ times for the binary mass range $20 - 100 M_\odot$ for the state-of-the-art multipolar EOB waveform model for spin-aligned black holes (SEOBNRv4HM) currently used in LIGO and Virgo observations.

[1]LIGO, MPS

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