

Abstract Submitted
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Effective-one-body modeling of precessing black hole binaries ANDREA TARACCHINI, STANISLAV BABAK, ALESSANDRA BUONANNO, Max Planck Institute for Gravitational Physics — Merging black hole binaries with generic spins that undergo precessional motion emit complicated gravitational-wave signals. We discuss how such waveforms can be accurately modeled within an effective-one-body approach by (i) exploiting the simplicity of the signals in a frame that corotates with the orbital plane of the binary and (ii) relying on an accurate model of nonprecessing black hole binaries. The model is validated by extensive comparisons to 70 numerical relativity simulations of precessing black hole binaries and can generate inspiral-merger-ringdown waveforms for mass ratios up to 100 and any spin configuration. This work is an essential tool for studying and characterizing candidate gravitational-wave events in science runs of advanced LIGO.

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