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Observational limitations of black hole perturbation theory STEVE DRASCO, Max Planck Institute for Gravitational Physics, CURT CUTLER, MICHELE VALLISNERI, Jet Propulsion Laboratory, Caltech — Some of the black hole binary systems targeted by gravitational wave detectors will be sought using templates based on black hole perturbation theory. Currently, the most theoretically advanced templates available for such searches assume an adiabatic system described only to leading order in the mass ratio. We study the impact of these theoretical limitations on our ability to measure system parameters such as black hole masses and spins. Specifically, we compute the systematic errors induced by varying the ability of kludged waveform families to reproduce the waveforms of black hole perturbation theory. Our work represents the first use of a frequency-domain implementation of numerically kludged waveforms

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