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Tests and applications of the SXS binary black hole catalog

MARK SCHEEL, California Institute of Technology, SIMULATIONS OF EXTREME SPACETIMES (SXS) COLLABORATION COLLABORATION — Numerical relativity is the only reliable method of computing the full gravitational waveform—including inspiral, merger, and ringdown—for strongly-gravitating systems like coalescing black holes, which are of foremost importance to gravitational-wave interferometers such as LIGO. We have used the Spectral Einstein Code [black-holes.org/SpEC.html] to construct a public catalog of hundreds of binary black hole simulations, for use by gravitational-wave science, and for calibration of fast analytic models of binary black-hole waveforms. We discuss the current status of the catalog, tests of the resulting waveforms, and selected applications.

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