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Impact of Secondary Spin in Black Hole Binaries with Increasing Mass Ratio DEBORAH FERGUSON, DEIRDRE SHOEMAKER, University of Texas at Austin — Improved ground-based gravitational wave detectors and highly anticipated space-based detectors are expected to provide us with a wealth of gravitational wave observations. In order to observe and characterize these signals, we require highly accurate template waveforms, often generated from models trained on numerical relativity waveforms. This relies upon having a catalog of numerical relativity waveforms which densely covers the possible parameter space. Unfortunately, numerical relativity simulations are time consuming and computationally expensive, limiting the number of simulations that can be performed. In order to reduce the necessary parameter space coverage and optimize simulation placement, we explore the impact of the secondary spin in unequal mass black hole binaries. As the mass ratio of a binary increases, the spin of the secondary black hole is expected to become less significant. This talk explores the ability of current and future detectors to distinguish the spin of the secondary black hole, allowing us to avoid densely filling indistinguishable regions of parameter space and instead focus our resources on more impactful simulations.

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