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**Effects of nearly extremal black-hole spin in numerical-relativity simulations**[1] GEOFFREY LOVELACE, Cornell University, SXS COLLABORATION — There is a significant possibility that nearly extremal black holes (i.e., holes spinning nearly as rapidly as possible) exist and thus are among the compact-binary mergers that could be observed by Advanced LIGO. Numerical-relativity simulations of merging compact objects—necessary for predicting the gravitational waveforms that Advanced LIGO could detect—are particularly challenging when they contain nearly extremal black-hole spins. In this talk, I will discuss results from recent simulations [performed using the SpEC code (black-holes.org/SpEC)] that contain nearly extremal black holes, including a simulation of merging black holes with the highest spins (and among the most gravitational-wave cycles) simulated to date. In particular, I will compare the numerical gravitational waveforms and the holes' masses and spins with analytic predictions. I will also discuss the behavior of the strongly warped spacetime near the holes' horizons.

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