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Binary-black-hole mergers with spins beyond the Bowen-York limit[1] GEOFFREY LOVELACE, Cornell University, MARK SCHEEL, BELA SZILAGYI, California Institute of Technology — Some accretion models predict black holes with spins that are nearly extremal. When (possibly rapidly spinning) black holes spiral together and merge, the emitted gravitational waves, the properties (mass, spin, velocity) of the remnant, and the behavior of the strongly curved spacetime near the holes' horizons can only be explored using numerical simulations. Most binary-black-hole (BBH) simulations use initial data based on the Bowen-York extrinsic curvature and consequently cannot represent merging holes with spins larger than 0.93 (the "Bowen-York limit"). In this talk, I will describe results (waveform, remnant properties, and vorticity and tendicity of the strongly curved spacetime) from simulations [using the SpEC code (black-holes.org/SpEC.html)] of BBH inspirals, mergers, and ringdowns that use suitable initial data to achieve spins beyond the Bowen-York limit.

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