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Remnant mass, spin, and recoil from spin aligned black-hole binaries II: New simulations, recoil fit and hangup studies JAMES HEALY, CARLOS LOUSTO, Rochester Inst of Tech — We present the results of 40 new simulations of nonprecessing black hole binaries with mass ratios $q = m_1/m_2$ in the range of $1/2 \leq q \leq 1$ and individual spins covering the parameter space $-1 < \alpha_{1,2} < 1$. This allows us to assess the accuracy of our formulae for the remnant black hole mass, spin and recoil. We find excellent agreement (typical errors $\sim 0.1\%$) for the mass and spin, but $\sim 5\%$ for the recoil. We hence perform 10 additional simulations of nonspinning black hole binaries with mass ratios covering the range of $1/10 < q < 1$ and find an improved fitting for the recoil velocity.

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