

Abstract Submitted
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Adapted gauge to a quasilocal measure of the black holes recoil¹

NICOLE ROSATO, CARLOS LOUSTO, JAMES HEALY, Rochester Institute of Technology — We explore different gauge choices in the moving puncture formulation in order to improve the accuracy of a linear momentum measure evaluated on the horizon of the remnant black hole produced by the merger of a binary. In this talk, we will investigate gauges in which the parameter $m\eta$, which damps oscillations in the shift equation, takes on decreasing constant values. These alternative gauges are used to do an in-depth study of a $q = m_2/m_1 = 1/3$ binary in which it is determined that choosing an $m\eta$ at 1 produces the most accurate measure of recoil velocity when compared to the evaluation of the radiated linear momentum at infinity for typical numerical resolutions. This result is then confirmed with alternative comparable-mass, nonspinning binaries $q = 1/2$ and $q = 1/5$ as well as an equal mass binary with dimensionless spin of 0.8.

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