

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Gravitational recoil in black hole mergers inside scalar field clouds

MIGUEL GRACIA, University of Texas at Austin, YU-PENG ZHANG, Lanzhou University, China, PABLO LAGUNA, University of Texas at Austin — The loss of linear momentum carried away by gravitational waves in the coalescence of binary black holes inflicts a kick on the final black hole. The effect has been mostly studied for black holes merging in vacuum. We investigate the kick on the final black hole when the binary is immersed in a cloud of scalar field. We present results from two types of binaries: non-spinning, unequal-mass systems and systems with equal mass holes with anti-aligned spins perpendicular to the orbital plane. We find that the scalar field attenuates the kick of the final remnant black hole in all the studied cases.

Pablo Laguna
University of Texas at Austin

Date submitted: 08 Jan 2021

Electronic form version 1.4