

Abstract Submitted
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Constraining recoil kicks for LIGO-Virgo binary black hole populations¹ VIJAY VARMA, Cornell University, MAXIMILIANO ISI, SYLVIA BISCOVEANU, MIT, RORY SMITH, Monash University — When two black holes merge, loss of linear momentum through gravitational radiation can impart a recoil velocity, or a kick, to the final black hole. While previous studies have shown that it is difficult to constrain the kick of individual gravitational-wave events at current detector sensitivities, it may still be possible to extract information about the kicks of the binary population as a whole. In this work, we model the kick for each event as drawn from a common underlying distribution, whose properties we infer from the data. We place constraints on the allowed distributions of kicks, which can be used to predict remnant black hole retention rates, and therefore constrain rates of second-generation mergers in different formation environments.

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