

Abstract Submitted
for the APR17 Meeting of
The American Physical Society

Are LIGO's Black Holes Made from Smaller Black Holes? MAYA FISHBACH, DANIEL HOLZ, BEN FARR, University of Chicago, LIGO COLLABORATION — We consider the hierarchical merger model for the formation of stellar mass black holes (such as the binary black holes observable by LIGO). In the hierarchical merger model, each black hole in a black hole binary is the result of a merger of two lesser black holes from a previous generation, and the previous generation's black holes may themselves be merger products of an even earlier generation. We apply the formulas of Hofmann, Barausse and Rezzolla (2016) to show that if black holes form in this hierarchical merger scenario, their spin magnitudes follow a certain probability distribution. We demonstrate how to compare this spin distribution to LIGO spin measurements in order to constrain the hierarchical merger scenario.

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Date submitted: 14 Nov 2016

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