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Fundamental Relation Between the Masses and Spins of the Heaviest Black Hole Mergers KARAN JANI, KELLY HOLLEY-BOCKELMANN, Vanderbilt University — Gravitational waves emitted during a binary black hole coalescence offer direct insights into the mass and spins of the black holes. The inaugural decade of gravitational wave astronomy will provide such mass-spin constraint for thousands of black holes, providing a unique opportunity to probe a wide range of astrophysical processes. Here we report a new phenomenological fit that captures a fundamental trend between the effective spins and total-mass of the binaries. We discuss its implication for the heaviest binary black holes observed so far.

Karan Jani
Vanderbilt University

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