Black Hole Dynamics in Einstein-Maxwell-Dilaton-Axion Theory

HYUN LIM, ERIC HIRSCHMANN, Brigham Young University, LUIS LEHNER, Perimeter Institute for Theoretical Physics, STEVE LIEBLING, Long Island University, CARLOS PALENZUELA, Universitat de les Illes Balears — Recent detections of gravitational waves from advanced LIGO promise a new channel with which to investigate the universe and test general relativity. In this work, we present black hole dynamics in a modified theory of gravity. Our particular model is Einstein-Maxwell-Dilaton-Axion (EMDA) theory. Using numerical simulations, we investigate dynamical black holes in EMDA theory. We consider a variety of initial data types in order to examine both stability of single black holes in this theory as well as possible alternate scalar and electromagnetic field channels for emission. We also investigate binary black hole mergers in order to probe deviations from the standard gravitational wave signatures of general relativity.

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