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Location: Buchanan A202

Exact quasinormal modes of slowly-rotating, charged black holes

Cody Holder, University of Alberta

Einstein's theory of General Relativity predicts that a black hole, upon encountering the gravity of another massive body, releases energy to infinity in the form of gravitational waves. As the black hole relaxes from the perturbation, it "rings-down" with a discrete set of damped frequencies. Analagous to the dying tones of a bell, these quasinormal modes depend only on the composition of the "ringing" object. It follows that precise calculations of black hole quasinormal modes are essential to the task of identifying astrophysical black holes via gravitational wave detection (e.g., LIGO, LISA). For the case of asymptotically flat, slowly-rotating, electrically charged black holes I will demonstrate an analytic method which, provided the magnitude of the charge takes special values, yields exact expressions for quasinormal modes.