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Quasi-normal modes of black holes in Einstein-Gauss-Bonnet-dilaton theory

Abstract

In this talk we present our results on quasi-normal modes of black holes in Einstein-Gauss-Bonnet-dilaton theory. This theory is an extension of general relativity, that includes corrections to Einstein's theory of gravity through the addition of second order curvature terms in the action. Static black holes with secondary scalar hair are present in this theory. By considering perturbations to these black holes, we study the gravitational waves emission and the ring-down phase using the quasi-normal mode formalism. Our results show that these black holes are linearly mode stable in the axial and the polar components. A new channel of gravitational wave emission related to the dilaton field is found in the polar component. We discuss how the quasinormal modes could be excited during black hole collisions and how its detection could be used to constraint the coupling constant of the theory.