Abstract Submitted for the APR21 Meeting of The American Physical Society

Quasinormal Modes of deformed Black Holes with arbitrary spin¹ ASAD HUSSAIN, AARON ZIMMERMAN, University of Texas at Austin — The increasing precision of gravitational wave detectors has enabled even more precise tests of general relativity, including spectroscopic tests of black holes through the measurement of their quasinormal modes (QNMs). These spectroscopic tests ideally compare the QNM frequencies to predictions from theories beyond GR, where black holes may be described by deformations to the standard Kerr metric. I will present a framework to compute the leading shifts to QNM frequencies for perturbations around such deformed Kerr black holes, with arbitrary spin. To demonstrate this, we use the framework to find the scalar QNM shifts of the JohannsenPsaltis (JP) metric, a starting point for generic parameterizations of beyond Kerr corrections. This method can aid in getting constraints on beyond Kerr models of black holes.

¹This research was supported by NSF under grant number NSF PHY-1912578

Asad Hussain University of Texas at Austin

Date submitted: 07 Jan 2021

Electronic form version 1.4