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The ringdown of spinning horizonless compact objects

When formed in a compact binary coalescence, black holes vibrate in a process called ringdown, which leaves the gravitational-wave footprint of the horizon. Some models of quantum gravity that attempt to solve the singularities of general relativity replace black holes with regular and horizonless objects with effective reflectivity. Motivated by these scenarios, we develop a generic framework to study the ringdown of horizonless compact objects. By extending the black-hole membrane paradigm, we describe models of compact objects with different interior solutions in terms of the properties of a fictitious membrane located at the object's radius. In this talk, we derive the quasi-normal modes in the ringdown of spinning horizonless compact objects at the linear order in spin. The extension to higher values of the spin would allow us to constrain the properties of the remnants of gravitational-wave events.

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