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## On the nature of the remnants in mergers of compact binaries

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Observations of binary black holes mergers from the LIGO-Virgo interferometers provide a window to investigate the highly dynamical regime of gravity as well as the nature of astrophysical black holes. The black hole born from the merger of its progenitors emits gravitational waves with a characteristic spectrum, the so-called ringdown, whose direct detection provide informations about the black hole mass, spin and constraints on violations of the predictions of general relativity. In this talk, I will begin by briefly reviewing black hole perturbation theory that stands at the foundation of our understanding of the black hole ringdown. I will then present the current status of the observations and highlight some of the key results in the emerging field of black hole spectroscopy. Finally, I will conclude by discussing some perspectives from future observations.

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**Classifica Sessioni:** Recorded talks: GW Physics

**Classificazione della track:** Physics: Gravitational wave perspective