

Probing new physics on the horizon of black holes with gravitational waves

Wednesday, September 6, 2023 3:00 PM (30 minutes)

Black holes are the most compact objects in the Universe. According to general relativity, black holes have a horizon that hides a singularity where Einstein's theory breaks down. Recently, gravitational waves opened the possibility to probe the existence of horizons and investigate the nature of compact objects. This is of particular interest given some quantum-gravity models which predict the presence of horizonless and singularity-free compact objects. Such exotic compact objects can emit a different gravitational-wave signal relative to the black hole case. In this talk, I will give an overview of tests of the nature of compact objects with present and future gravitational-wave observations, including ringdown tests and searches for near-horizon structures with gravitational-wave echoes.

Presenter: MAGGIO, Elisa