



Contribution ID: 408

Type: **Parallel session talk**

Constraining alternative theories of gravity using the latest LIGO-Virgo ringdown observations

Friday 30 July 2021 09:30 (20 minutes)

Detections of black hole mergers from the LIGO-Virgo interferometers provide an unprecedented opportunity to glance into unexplored regimes of gravity, where spacetime curvature is several orders of magnitudes larger than the one probed by other experiments. First, the state of the art of black holes ringdown spectral observations will be reviewed. Next, we will show how requiring stringent, yet well-motivated, perturbative parametrisations of beyond- General Relativity effects, allows to extract strong observational constraints on large classes of alternative theories of gravity. Such a boost brings observations close to the regime where corrections from Effective Field Theories of beyond-General Relativity gravity may start to leave a detectable imprint, and translates into a much smaller number of signals needed to detect violations due to an alternative theory of gravity. Finally, we will show what constraints can be placed on a few specific theories, where a self-consistent, non-perturbative prediction can be tested against the data.

First author

Gregorio Carullo

Email

gregorio.carullo@ligo.org

Collaboration / Activity

Member of LIGO-Virgo-Kagra

Primary author: CARULLO, Gregorio (University of Pisa, INFN Pisa)**Presenter:** CARULLO, Gregorio (University of Pisa, INFN Pisa)**Session Classification:** T01: Astroparticle and Gravitational Waves**Track Classification:** Astroparticle and Gravitational Waves