

Abstract Submitted
for the APR21 Meeting of
The American Physical Society

Constraints on modified theories of gravity from the latest LIGO-Virgo ringdown observations GREGORIO CARULLO, University of Pisa - INFN Pisa — Observations of black holes mergers from the LIGO-Virgo interferometers provide an unprecedented opportunity to glance into an unexplored regime 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 spectra observations will be reviewed. Next, we will show how requiring stringent, yet well-motivated, perturbative parametrisations of beyond-General Relativity effects, allows to extract observational constraints much stronger than those present in the literature 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.

Gregorio Carullo
University of Pisa - INFN Pisa

Date submitted: 07 Jan 2021

Electronic form version 1.4