Poster Session #B
Observational and space tests of gravitation

B02

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

Gregorio Carullo (University of Pisa and INFN Pisa)

Observations of binary black holes mergers from the LIGO-Virgo interferometers provide an unprecedented opportunity to glance into an unexplored dynamical regime of gravity, where spacetime curvature is several orders of magnitudes larger than the one probed by other experiments. We will start by reviewing the state of the art of black holes ringdown spectra observations. Next, we will show how requiring stringent, yet well-motivated, perturbative parametrisations of beyond-General Relativity (GR) effects, allows to extract observational constraints much stronger than those present in the literature on a variety of classes of alternative theories of gravity. Such a boost brings observations close to the regime where corrections from Effective Field Theories of beyond-GR gravity may start to leave a detectable imprint, and translates into a much smaller number of signals needed to detect violations due to a modified theory of gravity. Finally, we will show what const raints can be placed on a class of specific theories, where a self-consistent, non-perturbative prediction can be tested against the data.