

Michele Mancarella (Geneva University): Constraining modified GW propagation with LIGO/Virgo dark sirens

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Modified GW propagation is a generic prediction of modified gravity models at cosmological scales and allows new tests of GR, based on the fact that GW signals are standard sirens.

The recent detections and data releases from LIGO/Virgo allow the first concrete applications of such tests.

I will present the hierarchical bayesian framework for constraining modified GW propagation (as well as the Hubble parameter) with dark sirens and galaxy catalogues, focussing in particular on relevant improvements to the treatment of the latter, such as their completeness, and on the treatment of selection bias. I will then show results that make use of the recent O3a data release, presenting the most accurate measurement of H_0 from dark sirens alone, bounds on modified GW propagation, and commenting on the role of EM counterparts. I will also present the python code used to produce these results, that will be shortly publicly available, making it the first open source tool to date to constrain H_0 and modified GW propagation.