Poster Session #B
Observational and space tests of gravitation

B08

Constraining the Hubble constant and modified GW propagation with LIGO/Virgo dark sirens

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The recent detections and data releases from LIGO/Virgo allow the first concrete applications of statistical methods for constraining cosmological parameters with Gravitational Waves (GWs). Moreover, they open the possibility of new tests of General Relativity, based on the fact that GW signals are standard sirens and that modified gravity models predict non-standard GW propagation. I will present the hierarchical bayesian framework for constraining the Hubble parameter and modified GW propagation with "dark sirens" (namely, compact binary coalescences without an electromagnetic counterpart) and galaxy catalogues, focussing in particular on relevant improvements to the treatment of the latter, such as their completeness, and on the correct treatment of selection bias. I will then show results that make use of the recent O3a data release, presenting the most accurate measurement of H0 from dark sirens alone, new bounds on modified GW propagation, commenting on the role of EM counterparts and on relevant systematics. 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 H0 and modified GW propagation.