

Title: Tests of gravity on cosmological scales with bright standard sirens

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Abstract: The direct detection of gravitational waves (GW) by the LIGO/Virgo Collaboration has opened a new window with which to measure cosmological parameters such as the Hubble constant H_0 , and also probe general relativity on large scales. In this talk, I will present a new phenomenological approach for measuring deviations from general relativity (GR) on cosmological scales concurrently with a determination of H_0 . I will focus on modifications of GR that introduces a GW dispersion relation and additional energy leakage (friction). By using simulating GW detection from binary neutron star mergers with associated electromagnetic counterparts, I will show that it is possible to measure conjointly the GW dispersion relation, friction, and background cosmology with a 2%, 15% and 2% accuracy, respectively. I will also show that the determination of the Hubble constant from bright standard sirens is strongly correlated with the determination of the GW dispersion and friction for modified GR.