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Probing spacetime geometry with gravitational waves

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We review recent results about tests of quantum gravity with gravitational waves, using modified dispersion relations and the luminosity distance of standard sirens. Theoretical models predicting signals observable with LIGO-Virgo-KAGRA and LISA are discussed. The gravitational-wave physics of a recent nonlocal theory with fractional operators and infrared corrections to gravity is presented for the first time.

Primary authors: CALCAGNI, Gianluca; TASINATO, Gianmassimo (Swansea University); ARZANO, M.; SAKEL-LARIADOU, Maria (University of London (GB)); TAMANINI, Nicola (IPhT CEA/Saclay); KUROYANAGI, Sachiko

Presenter: CALCAGNI, Gianluca

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