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Dark energy with the Einstein Telescope

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Third-generation GW detectors will detect standard sirens up to cosmological distances. This will allow us to explore the dark-energy sector of generic modifications of General Relativity. In the dark energy sector a well-know observable is the equation of state of dark energy. However, its determination with ET (and with LISA) is not expected to be significantly better than what can already be obtained with electromagnetic observations (CMB, BAO, SNe). We will discuss recent work that shows that there is another way of testing the dark-energy sector, through modified GW propagation. This observable is more promising than the dark-energy equation of state, is specific to GW observations, and will allow both ET and LISA to reach a very competitive sensitivity to dark energy.

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