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Cosmology with LISA standard sirens and their host galaxies

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LISA is expected to deliver unprecedented information on the gravitational wave sources emitting in the mHz frequency band. Extreme mass-ratio inspirals are amongst the main LISA sources and their parameters will be measured with precision, notably their sky localisation. We show that, using the best-localised events as dark standard sirens in combination with a realistic galaxy catalog, these systems will give accurate estimates of the Hubble constant in a ΛCDM scenario as well as valuable information on the equation-of-state parameter w0 in a redshift-dependent dark energy model. We also discuss the potential of combining these estimates with those coming from LISA bright standard siren observations, like massive black hole binaries having an electromagnetic counterpart.

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