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## Modified gravitational-wave propagation with extreme mass-ratio inspirals

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Extreme mass-ratio inspirals (EMRIs) are systems consisting of a massive black hole and a stellar-mass compact object. These systems are one of the gravitational-wave (GW) sources that will be detected by the Laser Interferometer Space Antenna (LISA). By using dark sirens with galaxy catalogs, EMRIs detected by LISA have the potential to place stringent constraints on cosmological parameters  $(H_0, \Omega_m, w_0, w_a)$  within the framework of general relativity (GR). However, some modified gravity theories predict deviations from GR in the propagation of GWs at cosmological distances, which have a more dominant effect than the modification of the background evolution. Such modified GW propagation effects could be characterized by the phenomenological parameter  $(\Xi_0, n)$ . In this work, we explore the detectability of possible deviation from GR using different EMRI populations detected by LISA. We study the constraints on modified GW propagation effect and provide limits on cosmological parameters  $(H_0, \Omega_m, \Xi_0, n)$ .

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