

Vulcano Workshop 2022 - Frontier Objects in Astrophysics and Particle Physics



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Implications for cosmology following gravitational waves detected from binary black hole binaries

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Standard sirens have been the central paradigm in gravitational-wave (GW) cosmology so far. From the GW signature detected from the compact binary mergers, it is possible to directly measure the luminosity distance of the source, and if additional information on the source redshift is provided, a measurement of the cosmological expansion can be performed. In this talk, I will present the most recent results on cosmology using the latest LIGO-Virgo-KAGRA GW events. I will focus on dark standard sirens, namely binary black holes for which no electromagnetic counterpart has been detected. I will discuss results from two methods that are able to provide an indirect redshift estimation: the first based on the distribution of the black holes source-frame masses and the second based on the correlation with galaxy surveys. I will conclude by highlighting prospects and challenges of GW-cosmology with binary black holes.

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