

Third Gravi-Gamma Workshop: The multimessenger view of the black hole life cycle



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Evaluation of catalogues' completeness by extending the Virtual Observatory framework to estimate the H_0 Hubble constant with dark standard sirens

About one hundred years ago, Edwin Powell Hubble made the first measure of the rate of expansion of the Universe but still today different techniques of investigation lead to different results. This dilemma is called Hubble tension and gravitational waves play a key role in its resolution.

The talk focuses on BBH mergers, called dark standard sirens in cosmological applications, and on the possible use of statistical Bayesian methods.

The study of the rate expansion of the Universe with BBH involves also the use of galaxy catalogues, as GLADE (v 2.4) which turns out to be an excellent complete catalogue in B-band.

We set out to define a parameter that can estimate the completeness in the 90% credible volume of a GW event within the framework of the Virtual Observatory.

The completeness coefficient C has been derived for each gravitational event detected in the first three observational runs of LVK (O1, O2 and O3a).

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