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Clustering effects on GWs Dark Sirens determination of Ho A simulations study

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Gravitational waves (GWs) can be used to measure the Hubble parameter. The optimal technique, a "Standard Siren", requires the identification of the electromagnetic (E/M) counterpart of the GW source. However, a significant fraction of GWs will not have E/M counterparts. Such "Dark Sirens" can still help constrain the Hubble parameter by statistical techniques. In this work, we investigate the power of this method using high-resolution, cosmological simulations that include realistic clustering effects, finding an improvement of ~2%. In addition, we quantify the role of catalogue incompleteness, i.e. the lack of certain galaxies from our catalogues, due to observational limitations, when applying this technique.

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