

## The importance of population assumptions for gravitational-wave dark sirens cosmology

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Gravitational waves (GWs) from compact binary coalesce are cosmological standard sirens and provided with an electromagnetic (EM) counterpart can be used to probe cosmology. Unfortunately, with the rapid increase of GW detector sensitivity, it will be less and less likely that GW sources are accompanied by an EM counterpart. Furthermore, the completeness of galaxy catalogs rapidly decreases and the statistical association of GW and EM data is less and less effective. In this talk, I will show how population assumptions on the formation channel for binary black holes can be used to study GW-based cosmology. I will discuss how population assumptions can impact, and possibly introduce systematics in GW cosmology and how it is possible by collecting more and more GW events to jointly infer population properties and cosmology.

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