



Contribution ID: 129

Type: **not specified**

## Gravitational-wave cosmology with binary black holes as dark sirens in the 3G era

*Tuesday, 2 May 2023 14:20 (20 minutes)*

In this talk, we consider the problem of measuring the flat- $\Lambda$ CDM parameters using binary black hole coalescences observed by third-generation (3G) gravitational-wave detectors like the Einstein Telescope and Cosmic Explorer. Using simulated dark sirens together with redshift information from a realistic simulated galaxy catalog, we adopt a Bayesian framework to jointly estimate the Hubble constant  $H_0$  and the matter energy density parameter  $\Omega_m$  in different scenarios. Assuming a galaxy catalog complete up to  $z = 1$  and using dark sirens detected with a network signal-to-noise ratio greater than 300, we show that a network made of ET and two CEs can constrain  $H_0$  ( $\Omega_m$ ) to a promising 0.7% (9.0%) at 90% CI in one year of full observation. We also explore the importance of single-host dark sirens and an optimistic scenario with a galaxy catalog complete up to  $z = 3$ .

**Primary author:** LAGHI, Danny

**Presenter:** LAGHI, Danny

**Session Classification:** Gravitational Waves