



Contribution ID: 413

Type: **Parallel session talk**

Probing the standard cosmological model with the population of binary black-holes

Monday 26 July 2021 15:55 (20 minutes)

Gravitational-wave (GW) detections are rapidly increasing in number, enabling precise statistical analyses of the population of compact binaries. In this talk I will show how these population analyses cannot only serve to constrain the astrophysical formation channels, but also to learn about cosmology. The three key observables are the number of events as a function of luminosity distance, the stochastic GW background of unresolved binaries and the location of any feature in the source mass distribution, such as the expected pair instability supernova (PISN) gap. Given data from LIGO-Virgo observations, I will present constraints in cosmological modifications of gravity. I will also discuss future prospects on measuring H_0 given a possible population of black holes above the PISN gap. These novel tests of the standard cosmological model require GW data only and will become increasingly relevant as GW catalogs grow, specially if multi-messenger events remain elusive.

First author

Jose María Ezquiaga

Email

ezquiaga@uchicago.edu

Collaboration / Activity

University of Chicago

Primary author: EZQUIAGA, Jose María (University of Chicago)**Presenter:** EZQUIAGA, Jose María (University of Chicago)**Session Classification:** T01: Astroparticle and Gravitational Waves**Track Classification:** Astroparticle and Gravitational Waves