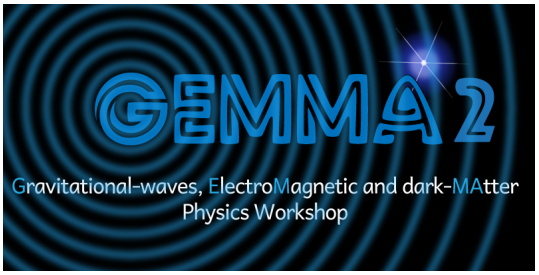

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Cosmology with gravitational waves

Thursday, 19 September 2024 11:15 (25 minutes)

Gravitational wave signals from compact binary mergers are excellent cosmological probes due to their ability to act as standard sirens: objects with measured luminosity distance which is independent of the cosmic distance ladder. This opens up new ways of measuring cosmological parameters, which is particularly relevant in the era of the so-called "Hubble tension". However, in order for this measurement to be made, additional redshift information is required. In the scenario where the merger is observed without a confirmed electromagnetic counterpart - true for all but one of the detections from the LIGO-Virgo-KAGRA collaborations to date - galaxy surveys, and the population of gravitational waves themselves, can be used to provide this missing information. I will introduce the latest developments to this method, which allow both sources of redshift information to be used simultaneously to measure cosmological parameters and compact binary population parameters, and discuss what this means for the field moving forwards.

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