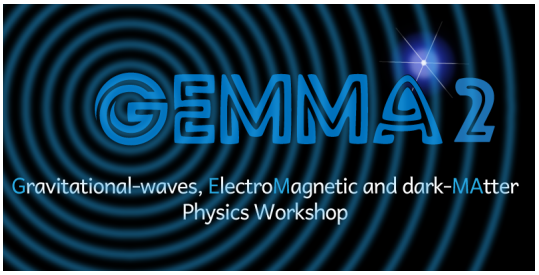

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Inferring the Hubble Constant using Joint Stochastic and Dark Siren Analysis

I will present a prospective technique to infer the Hubble constant H_0 through a joint analysis of dark sirens-gravitational wave sources without electromagnetic counterparts-and the stochastic gravitational wave background (SGWB). Traditional methods for measuring H_0, which rely on either local distance ladder techniques or observations of the cosmic microwave background, face significant challenges and yield conflicting results. Dark sirens offer an independent method to measure H_0, but their analysis is often limited by the need for statistical associations with potential host galaxies.

We propose a new analytical framework that integrates information from the SGWB, which encodes cosmological and astrophysical signals from numerous unresolved sources. By jointly analyzing dark siren events with the SGWB, we aim to enhance the precision and accuracy of H_0 measurements. This method involves inferring the joint probability distribution of these signals, leveraging the complementary nature of the information provided by each.

Our work involve testing this approach using simulated data based on LIGO-Virgo-Kagra-India (LVKI) interferometer design noise curves and simulated SGWB signals. By incorporating the SGWB, we anticipate gaining insights into the population and potentially improving the constraints on H_0 compared to using dark sirens alone.

In conclusion, our proposed method offers a potentially efficient and robust means to infer the Hubble constant, providing a crucial step towards resolving the current tension in H_0 measurements.

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