Contribution ID: **13** Type: **Presentation**

Enhancing Fisher Matrix Results with Physically Motivated Priors

Wednesday 8 May 2024 15:00 (15 minutes)

Next-generation gravitational wave interferometers, such as the Einstein Telescope, will observe an unprecedented volume of events. This requires analysis tools that can deal with large datasets. Our software GWFish utilizes Fisher matrix analysis, which is currently the state-of-the-art method in the field and can effectively evaluate detector performance.

We now want to present an improvement to parameter estimation's precision by adding priors into the standard GWFish analysis. Fisher matrix methods alone are, in fact, agnostic of the physical range of gravitational wave parameters. To address this, we have integrated physically motivated priors into the analysis in order to generate reliable posterior samples. Our method has been tested against the GWTC data and serves as an intermediate step between the Fisher approximation and the currently too-expensive Bayesian methods.

Primary author: DUPLETSA, Ulyana (GSSI)

Session Classification: OSB

Track Classification: Observational Science Board (OSB)