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Where There's a Wave, Bayestar leads the way. Sky Localization of Gravitational Wave

Low-latency searches are crucial for Multi-Messenger Astronomy (MMA), where gravitational waves help us to quickly locate where events happened and promptly inform other telescopes to conduct follow-up observations. Gravitational waves, like ripples in space and time, are generated by the mergers of massive compact binaries such as binary black holes, binary neutron stars, and neutron star-black hole binaries. These waves propagate outwards from the events. They could be detected by the observatories (Ligo, Virgo, and KAGRA) when they reach Earth. This study uses the rapid Bayesian sky localization tool Bayestar to analyze gravitational wave events originating from Binary Neutron Star (BNS) events. We aim to investigate the impact of using data from different gravitational wave detector network configurations on the precision of sky localization.

Section

Cosmology

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