

Population Properties of Massive Binary Black hole with LISA observations Using Iterative Reweighted Kernel Density Estimation Technique

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We propose an adaptive Kernel density estimate (KDE) with selection effects as a non parametric method to study rates and population of massive black hole binary systems, which are expected to observe in LISA Observations. We used simulated LISA data for specific models of massive black hole binaries and applied adaptive KDE to construct distribution in total mass and redshift. We incorporated selection effects using probability of detection of such systems with LISA, on our KDE distribution to reconstruct rate estimates for these models. We used an iterative re-weighting method to reduce uncertainty in posteriors of observed events. We study the advantages and limitation of such method and discuss possible improvement for future studies.

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