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Localizing massive binary black holes with LISA

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LISA is a future space-based gravitational wave detector that will a new window into the gravitational universe in the mHz range. Among LISA targets, coalescences of massive black hole binaries (MBHB) will be detected with unprecedented signal-to-noise ratios, and might enable multimessenger observations with instruments such as Athena, LSST and SKA. Modelling LISA's ability to locate these MBHB signals, both during their inspiral and after coalescence, is crucial to understand this synergy. We investigate this question using tools for Bayesian inference that allow to go beyond Fisher-matrix based estimates. We highlight the role of higher harmonics in the signal as well as the role of the time- and frquency-dependency in the instrumental response in breaking degeneracies in parameter space, and discuss the occurence of multimodalities in the recovered sky position.

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