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Observing Merging Massive Black Hole Binaries with LISA
JAMES THORPE, SEAN MCWILLIAMS, JOHN BAKER, KEITH ARNAUD, NASA/GSFC — The Laser Interferometer Space Antenna (LISA) is expected to detect gravitational radiation from the inspiral and merger of massive black hole binaries at high redshifts with large signal-to-noise ratios (SNRs). Observing these waveforms with large SNRs will allow physical parameters such as hole masses and spins, luminosity distance, and sky position to be measured. Two important questions are the ultimate precision of these measurements and the manner in which the precision increases with observation time. These qualities will affect LISA's impact as an individual instrument as well as its potential for synergy with other instruments. We present estimates of LISA parameter errors for the special case of non-spinning black holes with an emphasis on the contribution of the late inspiral and merger portions of the waveform. This regime has only recently become accessible due to the success of numerical relativity in providing a precise description of the merger waveform.

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