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Accelerated prospective parameter estimation for observing black hole mergers with LISA[1] JOHN BAKER, NASA/GSFC, SYLVAIN MARSAT, Albert Einstein Institute, PHILIP GRAFF, Applied Physics Laboratory — LISA, a candidate for the European Space Agency's planned L3 gravitational wave mission, is expected to provide tremendous capabilities in observing merging black holes out to very high redshifts with much higher signal-to-noise ratios than are likely with ground-based observations. Understanding precisely how well we may be able to measure these systems requires detailed Bayesian analysis with the best available theoretical waveform predictions and a full treatment of LISA's instrumental response. Highly accurate representations of general relativity's signal predictions, such as those of the Effective-One-Body formalism, are becoming available but these are too slow to compute directly. We address the practical challenge of computing the signals and response both accurately and quickly with frequency-domain reduced order signal models and apt approximation techniques for LISA's instrumental response to achieve millisecond likelihood evaluations. We apply these techniques to study of the impact of higher-harmonics in LISA observations of non-spinning mergers.

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