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Archival Searches for Stellar-Mass Binary Black Holes in LISA Data REBECCA EWING, SURABHI SACHDEV, SSOHRAB BORHANIAN, Pennsylvania State University, B.S. SATHYAPRAKASH, Pennsylvania State University, Cardiff University — Stellar-mass binary black holes will sweep through the frequency band of the Laser Interferometer Space Antenna (LISA) for months to years before appearing in the audio-band of ground-based gravitational-wave detectors. One can expect several tens of these events up to a distance of 500 Mpc each year. The LISA signal-to-noise ratio for such sources even at these close distances will be too small for a blind search to confidently detect them. However, next generation ground-based gravitational-wave detectors, expected to be operational at the time of LISA, will observe them with signal-to-noise ratios of several thousands and measure their parameters very accurately. We show that such high-fidelity observations of these sources by ground-based detectors help in archival searches to dig tens of signals out of LISA data each year.

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