

Abstract Submitted
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Spectroscopic analysis of stellar mass black-hole mergers in our local universe with ground-based gravitational wave detectors SWETHA BHAGWAT, DUNCAN BROWN, STEFAN BALLMER, Syracuse Univ — Motivated by the recent discoveries of binary black-hole mergers by the Advanced Laser Interferometer Gravitational-wave Observatory (Advanced LIGO), we investigate the prospects of ground based detectors to perform a spectroscopic analysis of signals emitted during the ringdown of the Kerr black-hole formed by a stellar mass binary black-hole merger. We investigate the detectability and resolvability of the sub-dominant modes $l = m = 3$, $l = m = 4$ and $l = 2; m = 1$. We find that new ground-based facilities such as Einstein Telescope or Cosmic Explorer could measure multiple ringdown modes in over 300 events per year. We also investigate detector tuning for ringdown oriented searches.

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