

Abstract Submitted  
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**Sky Localization and Electromagnetic Follow-up with Third-Generation Detectors**<sup>1</sup> SHREYA ANAND, Univ of Maryland-College Park, LEO SINGER, NASA/GSFC, COLE MILLER, Univ of Maryland-College Park — We present a preliminary investigation of the potential of third-generation gravitational-wave (GW) detectors for multi-messenger astronomy, from the standpoint of electromagnetic follow-up and identification of host galaxies. Using approximate sky localization inferred from GW observations, we intend to plan their electromagnetic follow-up in order to pinpoint the host galaxies. This involves simulating GW data, matching it with electromagnetic observations, and converting it into a sky-map used to chart locations of host galaxies of known sources. We aim to understand whether there are identifiable trends for host galaxies of transients in order to address whether a strategy that focuses on individual host galaxies is more optimal than one that locates them based on a statistical trend. Our project also concerns the configuration and calibration of a next generation detector network. Questions we focus on include: at what redshift will sky localization accuracy be limited by detector calibration? Using different combinations of detectors, what sky localization can be achieved? Our research motivates why third generation GW detector networks are crucial in enhancing signals detected and in providing insight into the sources and their physical environments.

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