

Abstract Submitted  
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**Observational Selection Effects with Ground-based Gravitational Wave Detectors** HSIN-YU CHEN, University of Chicago, REED ESSICK, SALVATORE VITALE, MIT, DANIEL HOLZ, University of Chicago, ERIK KATSAVOUNIDIS, MIT — Ground-based interferometers are not perfectly all-sky instruments, and it is important to account for their behavior when considering the distribution of detected events. In particular, the LIGO detectors are most sensitive to sources above North America and the Indian Ocean and, as the Earth rotates, the sensitive regions are swept across the sky. However, because the detectors do not acquire data uniformly over time, there is a net bias on detectable sources' right ascensions. Both LIGO detectors preferentially collect data during their local night; it is more than twice as likely to be local midnight than noon when both detectors are operating. We discuss these selection effects and how they impact LIGO's observations and electromagnetic follow-up. These effects can inform electromagnetic follow-up activities and optimization, including the possibility of directing observations even before gravitational-wave events occur.

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