

Abstract Submitted  
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**The First Two Years of Electromagnetic Follow-Up with Advanced LIGO and Virgo** BENJAMIN FARR, Northwestern University, LEO SINGER, LARRY PRICE, California Institute of Technology, ALEX URBAN, CHRIS PANKOW, University of Wisconsin-Milwaukee, JOHN VEITCH, Nikhef, SALVATORE VITALE, Massachusetts Institute of Technology, WILL FARR, University of Birmingham, CHAD HANNA, Perimeter Institute for Theoretical Physics, KIPP CANNON, Canadian Institute for Theoretical Astrophysics, TOM DOWNES, University of Wisconsin-Milwaukee, PHILIP GRAFF, NASA Goddard Space Flight Center, CARL-JOHAN HASTER, MANDEL ILYA, SIDERY TREVOR, VECCHIO ALBERTO, University of Birmingham — We anticipate the first direct detections of gravitational waves later this decade with Advanced LIGO and Virgo. Though these first discoveries will be seminal on their own, they may also have electromagnetic counterparts. During the first two years of operation, 2015 through 2016, we expect the global gravitational-wave detector array to undergo several important changes: increased sensitivity and livetime, as well as expansion from two detectors to three. We model the detection rate and the sky localization accuracy across this transition by analyzing a large, astrophysically motivated population of simulated binary neutron star mergers using detection and sky localization codes that have been expressly built for real-time operation in the Advanced LIGO/Virgo era. We also evaluate how the localization of sources will evolve, from minutes to hours after detection, as more detailed analyses are completed.

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