

Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Observing Gravitational Waves from Core-Collapse Supernovae in the Advanced Detector Era SARAH GOSSAN, California Institute of Technology — The next galactic core-collapse supernova (CCSN) has already exploded, and its electromagnetic (EM) waves, neutrinos, and gravitational waves (GWs) may arrive at any moment. We present an extensive study on the potential sensitivity of prospective detection scenarios for GWs from CCSN sources within 5Mpc, using realistic noise at the predicted sensitivity of the Advanced LIGO and Advanced Virgo detectors for 2015, 2017, and 2019. We make statements on the detectability of the core collapse event for sources within the galaxy and Large Magellanic Cloud, for which there will be an associated neutrino burst, and consider the exclusion of extreme post-core collapse emission models for more distant SNe with an associated EM signature. Given a detection of GW from core collapse, we discuss the potential to infer the CCSN explosion mechanism.

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Date submitted: 04 Jan 2016

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