

Abstract Submitted  
for the APR15 Meeting of  
The American Physical Society

**Reconstructing core-collapse supernovae waveforms with advanced era interferometers** JESSICA MCIVER, Univ of Mass - Amherst, LIGO SCIENTIFIC COLLABORATION — Among of the wide range of potentially interesting astrophysical sources for Advanced LIGO and Advanced Virgo are galactic core-collapse supernovae. Although detectable core-collapse supernovae have a low expected rate (a few per century, or less) these signals would yield a wealth of new physics in the form of many messengers. Of particular interest is the insight into the explosion mechanism driving core-collapse supernovae that can be gleaned from the reconstructed gravitational wave signal. A well-reconstructed waveform will allow us to assess the likelihood of different explosion models, perform model selection, and potentially map unexpected features to new physics. This talk will present a study evaluating the current performance of the reconstruction of core-collapse supernovae gravitational wave signals. We used simulated waveforms modeled after different explosion mechanisms that we first injected into fake strain data re-colored to the expected Advanced LIGO/Virgo noise curves and then reconstructed using the pipelines Coherent Waveburst 2G and BayesWave. We will discuss the impact of these results on our ability to accurately reconstruct core-collapse supernovae signals, and by extension, other potential astrophysical generators of rich, complex waveforms.

Jessica McIver  
Univ of Mass - Amherst

Date submitted: 07 Jan 2015

Electronic form version 1.4