Abstract Submitted
for the APR14 Meeting of
The American Physical Society

Bayesian Inference for Transient Gravitational Waves and Instrument Glitches: Theory NEIL CORNISH, Montana State University, TYSON LITTENBERG, Northwestern University — A central challenge in Gravitational Wave Astronomy is identifying weak signals in the presence of non-stationary and non-Gaussian noise. This requires good models for both the signals and the noise. When accurate signal models are available, such as for binary Neutron star systems, it is possible to make robust detection statements even when the noise is poorly understood. In contrast, searches for "un-modeled" burst signals are strongly impacted by the methods used to characterize the noise. I will describe a Bayesian approach to the problem that employs a multi-component, variable dimension, parameterized noise and signal model that explicitly accounts for non-stationarity and non-Gaussianity in data from interferometric gravitational wave detectors.

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Date submitted: 10 Jan 2014 Electronic form version 1.4