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BayesWave: a novel method for detecting un-modeled gravitational wave bursts PAUL T. BAKER, NEIL CORNISH, Montana State University, TYSON LITTENBERG, Northwestern University — The principal challenge of gravitational wave (GW) data analysis is to separate true GW events from non-gaussian noise artifacts. The LIGO-Virgo Burst group has developed several algorithms for detecting un-modeled GW bursts that may be associated with supernova, gamma-ray bursts (GRB), or new physics. These existent algorithms fit for the signals, but do not include explicit models for the non-gaussian detector noise. We describe the BayesWave algorithm, which uses Bayesian model selection techniques to simultaneously fit coherent GW signals across a network of detectors along with non-gaussian and non-stationary noise features, or glitches, in each detector. BayesWave can identify instrument artifacts for detector characterization studies and produce 'cleaned' data streams for use by template based searches, such as those for compact binary coalescence.

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