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Bayesian reconstruction of gravitational wave bursts using chirplets MARGARET MILLHOUSE, NEIL CORNISH, Montana State University, TYSON LITTENBERG, NASA/Marshall Space Flight Center — The BayesWave algorithm has been shown to accurately reconstruct unmodeled short duration gravitational wave bursts and to distinguish between astrophysical signals and transient noise events. BayesWave does this by using a variable number of sine-Gaussian (Morlet) wavelets to reconstruct data in multiple interferometers. While the Morlet wavelets can be summed together to produce any possible waveform, there could be other wavelet functions that improve the performance. Because we expect most astrophysical gravitational wave signals to evolve in frequency, modified Morlet wavelets with linear frequency evolution - called chirplets - may better reconstruct signals with fewer wavelets. We compare the performance of BayesWave using Morlet wavelets and chirplets on a variety of simulated signals.

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