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Enhancing gravitational-wave burst detection confidence in expanded detector networks with the BayesWave pipeline YI SHUEN CHRISTINE LEE, MARGARET MILLHOUSE, ANDREW MELATOS, The University of Melbourne — The global gravitational-wave detector network achieves higher detection rates, better parameter estimates, and more accurate sky localisation, as the number of detectors, $\mathcal{I}$ increases. This talk quantifies network performance as a function of $\mathcal{I}$ for *BayesWave*, a source-agnostic, wavelet-based, Bayesian algorithm which distinguishes between true astrophysical signals and instrumental glitches. Detection confidence is quantified using the signal-to-glitch Bayes factor, $\mathcal{B}_{\mathcal{S},\mathcal{G}}$. An analytic scaling is derived for $\mathcal{B}_{\mathcal{S},\mathcal{G}}$ versus $\mathcal{I}$, the number of wavelets, and the network signal-to-noise ratio, SNR_{net}, which is confirmed empirically via injections into detector noise of networks comprising two, three and four interferometers. We also show how larger detector networks impact the quality of the waveform reconstruction, and the sky localisation of the signal.

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