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Inferring the post-merger gravitational wave emission from binary neutron star coalescences MARGARET MILLHOUSE, Montana State University, KATERINA CHATZIIOANNOU, Canadian Institute for Theoretical Astrophysics, JAMES CLARK, Georgia Institute of Technology, ANDREAS BAUSWEIN, Heidelberger Institut fr Theoretische Studien, TYSON LITTENBERG, NASA Marshall Space Flight Center, NEIL CORNISH, Montana State University — Gravitational-wave signals from coalescing neutron stars can provide a wealth of information about neutron star interiors. The first detection of such an event was recently announced by Advanced LIGO. This indicates that in future observing runs we can expect to see more neutron star mergers, giving us the opportunity to observe a signal from the merger remnant. Gravitational-wave emission from this post-merger phase is dominated by the complex dynamics of the merger and highly sensitive to the neutron star equation of state, making precise analytic waveform models unfeasible at this time. For this reason it is important to have the ability to reconstruct these post-merger signals with minimal prior assumptions on the morphology of the signal for both the detection and characterization of this signal, and to observationally validate future waveform models. We present a robust technique to characterize the post-merger burst of gravitational-waves from remnants of binary neutron star mergers. We show how our model-agnostic reconstructions can be used to constrain the equation of state of neutron star matter that are comparable to constraints from the pre-merger phase, and how we can measure or place upper limits on the amount of energy emitted as gravitational waves after merger.

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