Abstract Submitted
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Inferring physical properties of stellar collapse by third-generation gravitational-wave detectors[1] CHAITANYA AFLE, DUNCAN BROWN, Syracuse University — We use a combination of principal component analysis and Markov Chain Monte Carlo techniques to estimate how accurately third-generation observatories, like the planned Cosmic Explorer detector, will measure the properties of a core collapse supernova from its gravitational-wave radiation. Using a mapping for rotation rate of the core of the star between the principal components obtained from a catalog of core collapse waveforms and the morphology of the gravitational-wave signal, we obtain posterior probability distributions on the coefficients of the principal components and translate these to posteriors on the rotation rate using the above map. We also obtain posteriors on the frequency of the postbounce oscillations of the protoneutron star, from which we can infer the nuclear equations of state consistent with the signal waveform.

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