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Material effects in binary neutron star inspiral waveforms CHARALAMPOS MARKAKIS, University of Wisconsin Milwaukee, JOCELYN READ, LUCA BAIOTTI, JOLIEN CREIGHTON, BRUNO GIACOMAZZO, JOHN FRIEDMAN, LUCIANO REZZOLLA, MASARU SHIBATA, KEISUKE TANIGUCHI — Tidal effects due to the presence of matter in binary neutron star inspiral cause the gravitational wave phase to accumulate more rapidly than in binary black hole inspiral. We report a comparison of numerical waveforms from an extended set of simulations of inspiraling neutron-star binaries, computed by systematically varying the parameters of the equation of state above nuclear density. We calculate the signal strength of the difference between waveforms and obtain improved estimates of the accuracy with which second and third generation gravitational wave detectors can constrain the neutron-star equations of state. We also show how a observation of N events at varying distances improves the measurability.

Charalampos Markakis
University of Wisconsin Milwaukee

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