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Extracting equaation of state parameters from inspiral waveforms[1] JOHN L. FRIEDMAN, University of Wisconsin-Milwaukee, JOCELYN READ, Albert Einstein Institute, HARRIS MARKAKIS, University of Wisconsin-Milwaukee, MASARU SHIBATA, University of Tokyo, KOJI URYU, University of the Ryukyus, JOLIEN CREIGHTON, KEISUKE TANIGUCHI, University of Wisconsin-Milwaukee — In this and a companion talk by Markakis, we report the results of first studies that that use numerical simulations of binary inspiral to estimate the accuracy with which gravitational wave observations of binary inspiral can determine parameters of the neutron-star equation of state. We use a parameterized equation of state (previously obtained in work with B.D. Lackey and B.J. Owen) based on piecewise polytropes. The EOS is chosen to make the number of parameters smaller than the number of neutron-star properties that have been measured or will have been measured in the next several years and large enough to accurately approximate the large set of candidate EOSs. Knowing the mass of the neutron star(s) in a neutron-star-neutron-star or neutron-star-black-hole binary allows one to use the inspiral waveform to reduce the equation-of-state parameter space by one dimension; the EOS is restricted to a surface associated with the measured departure from point-particle waveform. We estimate the accuracy with which one can extract a parameter transverse to that surface and the accuracy with which one can estimate neutron star radius.

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