Binary NS simulations using SpEC ROLAND HAAS, JEFFREY KAPLAN, BELA SZILAGYI, Caltech, CURRAN MUHLBERGER, Cornell, FRANCOIS FOUCART, CITA, JONAS LIPPUNER, MARK SCHEEL, Caltech, MATTHEW DUEZ, Washington State University, CHRISTIAN OTT, Caltech — NSNS binaries are expected to be one of the major sources of gravitational radiation detectable by Advanced LIGO. Together with neutrinos, gravitational waves are our only means to learn about the processes deep within a merging pair of NS, shedding light on the as yet poorly understood, equation of state governing matter at nuclear densities and beyond. We report on binary neutron star simulations using the Spectral Einstein Code (SpEC) developed by the Caltech-Cornell-CITA-WSU collaboration. We simulate the inspiral through many orbits, follow the post-merger evolution, and compute the full gravitational wave signal. We provide estimates on the accuracy required for the LIGO scientific goals of constraining EOS parameters.

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