Post-1-Newtonian tidal effects in the gravitational waveform from binary inspirals[1] JUSTIN VINES, Cornell, TANJA HINDERER, Caltech, EANNA FLANAGAN, Cornell — The gravitational wave signal from an inspiralling binary neutron star system will contain detailed information about tidal coupling in the system, and thus, about the internal physics of the neutron stars. To extract this information will require highly accurate models for the gravitational waveform. We present here a calculation of the gravitational wave signal from a binary with quadrupolar tidal interactions which includes all post-1-Newtonian-order effects in both the conservative dynamics and wave generation. We consider stars with adiabatically induced quadrupoles moving in circular orbits, and work to linear order in the stars' quadrupole moments. We find that post-1-Newtonian corrections increase the tidal signal by approximately 20% at gravitational wave frequencies of 400 Hz.

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