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Hybridizing Gravitational Waveforms of Inspiralling Binary Neutron Star Systems TORREY CULLEN, Gravitational Wave Physics and Astronomy Center, LIGO COLLABORATION — Gravitational waves are ripples in space and time and were predicted to be produced by astrophysical systems such as binary neutron stars by Albert Einstein. These are key targets for Laser Interferometer and Gravitational Wave Observatory (LIGO), which uses template waveforms to find weak signals. The simplified template models are known to break down at high frequency, so I wrote code that constructs hybrid waveforms from numerical simulations to accurately cover a large range of frequencies. These hybrid waveforms use Post Newtonian template models at low frequencies and numerical data from simulations at high frequencies. They are constructed by reading in existing Post Newtonian models with the same masses as simulated stars, reading in the numerical data from simulations, and finding the ideal frequency and alignment to “stitch” these waveforms together.

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