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Chiral effective field theory for nuclear matter and neutron stars

Wednesday, 10 March 2021 08:40 (30 minutes)

The first confirmed observation of a binary neutron star merger through its gravitational wave and associated electromagnetic emissions has opened a new window into understanding ultra-dense matter. In this talk I will describe recent progress in modeling the strong interaction physics of neutron stars and supernovae based on the low-energy realization of QCD, chiral effective field theory. Despite the large uncertainties in the high-density equation of state, our present nuclear physics models give constraints on neutron star radii and tidal deformabilities that are competitive (if not stronger) with those from current neutron star observations. Future observational campaigns, however, have the potential to significantly constrain nuclear theories and forces.

Presenter: HOLT, Jeremy (Texas A&M University)