Equation of State from Multi-Messenger Observations

Objectives
Determine the equations of state which are consistent with electromagnetic and gravitational wave observations of neutron stars

Impact
Allows us to ensure that simulations are using equations of state which are consistent with recent observations from LIGO and electromagnetic observatories

Accomplishments
- Included observations of GW 170817 from LIGO, J0030 from NICER, as well as other X-ray binary neutron stars
- World's best current constraints on the equation of state of dense matter
- Showed that the increasing availability of observational data is decreasing the systematic uncertainties
- Tested the presence of additional systematic uncertainties in the EM observations: found no evidence of disagreement with LIGO constraints

Citation: Phys. Rev. Lett. 126 (2021) 061101  Contact: Andrew W. Steiner (awsteiner@utk.edu)