

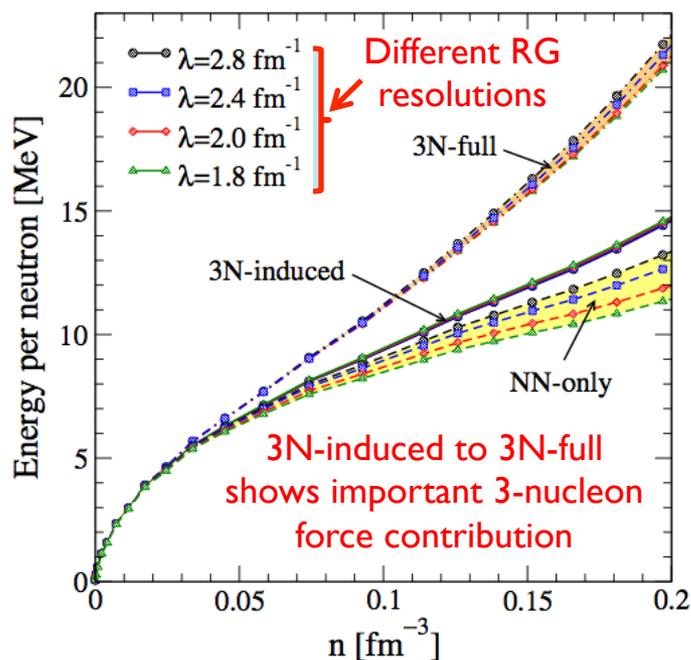
From neutron matter to neutron stars: The important role of three-nucleon forces

Objectives

- Calculate the nuclear equation of state (energy vs. density) over a wide density range
- Quantify systematic uncertainties based on the most advanced nuclear Hamiltonians including three-nucleon forces
- Study implications for properties of neutron stars

Impact

- New microscopic constraints for nuclear energy functionals for the neutron-rich extremes
- Input for ab initio nuclear structure and reaction calculations
- Input for neutron star calculations, including gravitational wave signal from mergers



Accomplishments

- Detailed study of impact of 3-nucleon forces on the equation of state
- Significantly reduced uncertainties by consistent renormalization group (RG) evolution of nuclear forces
- Derived systematic uncertainties for masses and radii of neutron stars

