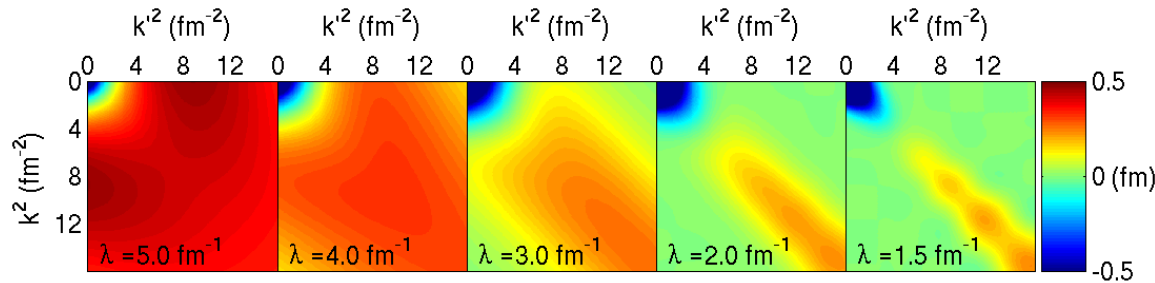


For atomic nuclei, three's a crowd

Enabling microscopic calculations of nuclei

Progress toward DOE milestones to carry out microscopic calculations of nuclei with realistic interactions is hindered by **three-body forces** between protons and neutrons. These are analogous to tidal forces: the gravitational force on the Earth is *not* just the sum of Earth-Moon and Earth-Sun forces.

The computational cost of nuclear 3-body forces can be greatly reduced by decoupling low-energy parts from high-energy parts, which can then be discarded.



Recently the first consistent softening of three-body forces was achieved, with rapid convergence in helium. With this faster convergence, calculations of larger nuclei are possible!

Tidal Bulges from Moon and Sun

