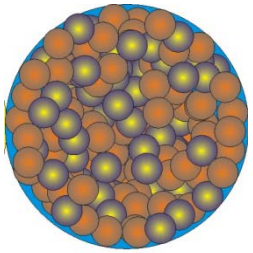
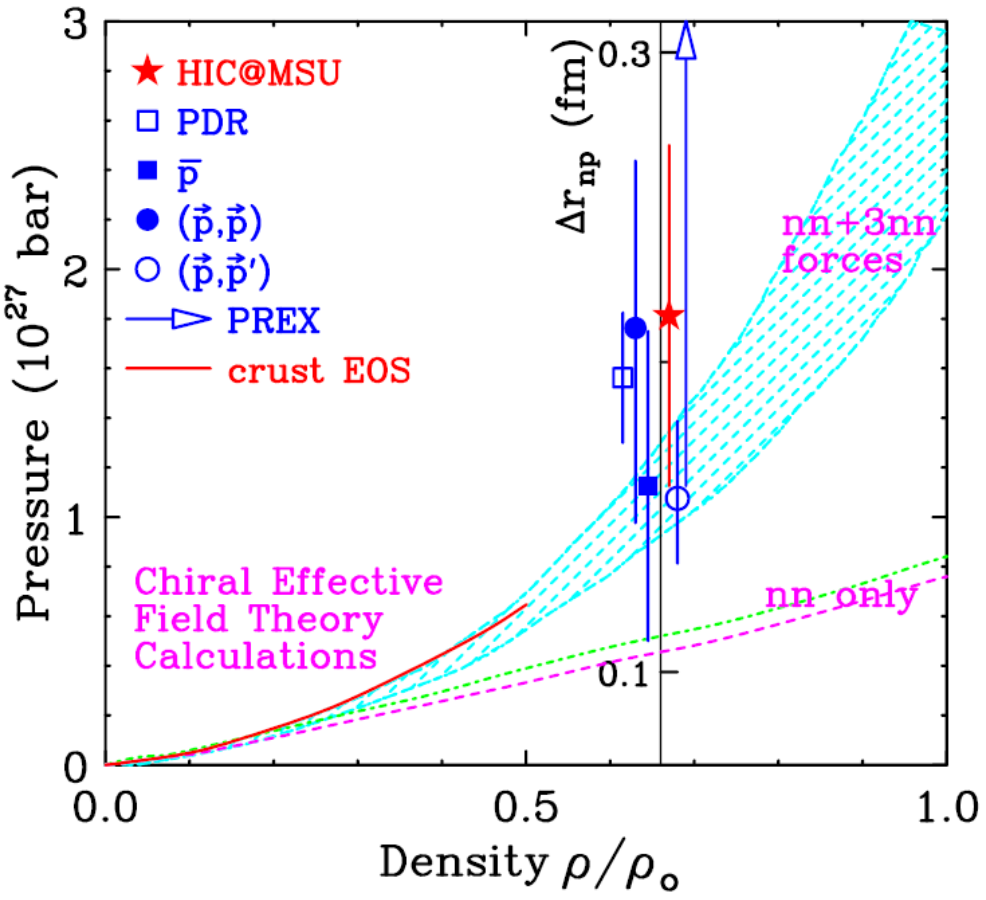
Importance of the 3 neutron forces in neutron matter

- *At two-third of the normal nuclear matter density, the neutron matter pressure (P) is directly related to the neutron skin thickness (Δr_{np}) of ^{208}Pb.*
- *The experimental values of Δr_{np} including values obtained in Heavy Ion Collision experiments cluster around 0.2 fm corresponding to P~1.5x10^{27} bar. (1 bar ~ 1 atmosphere).*
- *The data agree better with Chiral Effective Field Theory calculations that include 3n forces (shaded region). Calculations that include only nn force (lower two lines) predict much lower pressure and neutron skin thickness of ^{208}Pb.*



^{208}Pb~10^{-15} m

Neutron star ~10^{4} m



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