Constraints on Symmetry Energy

\[ E_{\text{sym}} = S_0 + \left( \frac{L}{3} \right) \left( \rho - \rho_0 \right) / \rho_0 + \ldots \] from different experiments

Tsang et al., PRC (in print)

HIC: heavy ion collisions; PRL 102, 122701(2009)

p elastic scattering PRC 82, 044611 (2010)

Isobaric Analogue States
NPA 818, 36 (2009)

Finite Droplet Range Model
PRL 108, 052501 (2012)

Pygmy Dipole Resonances
PRC 81, 041304 (2010)

Tsang et al., PRC (in print)
Importance of 3-body neutron-neutron force in the Equation of State of pure neutron matter

Summary of $^{208}$Pb n-skin thickness measurements

Model calculations with and without 3nn forces:

**BHF**: PRC80,045806 (2009)  
Brueckner-Hartree-Fock

**DBHF**: arXiv:1111.0695  
Dirac Brueckner-Hartree-Fock

**CEFT**: PRL105,161102(2010)  
Chiral Effective Field Theory

**QMC**: PRC85,032801R(2012)  
Quantum Monte Carlo