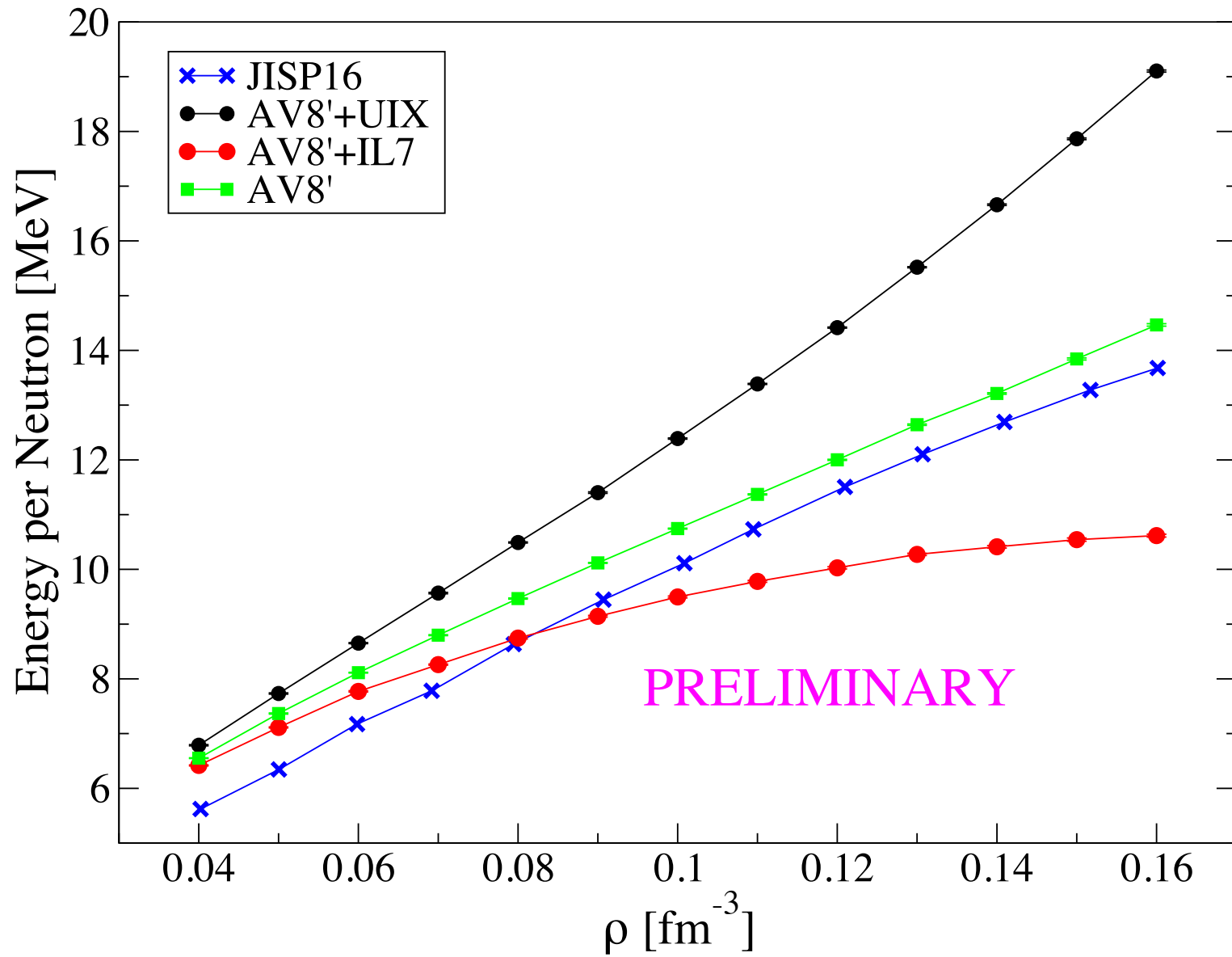
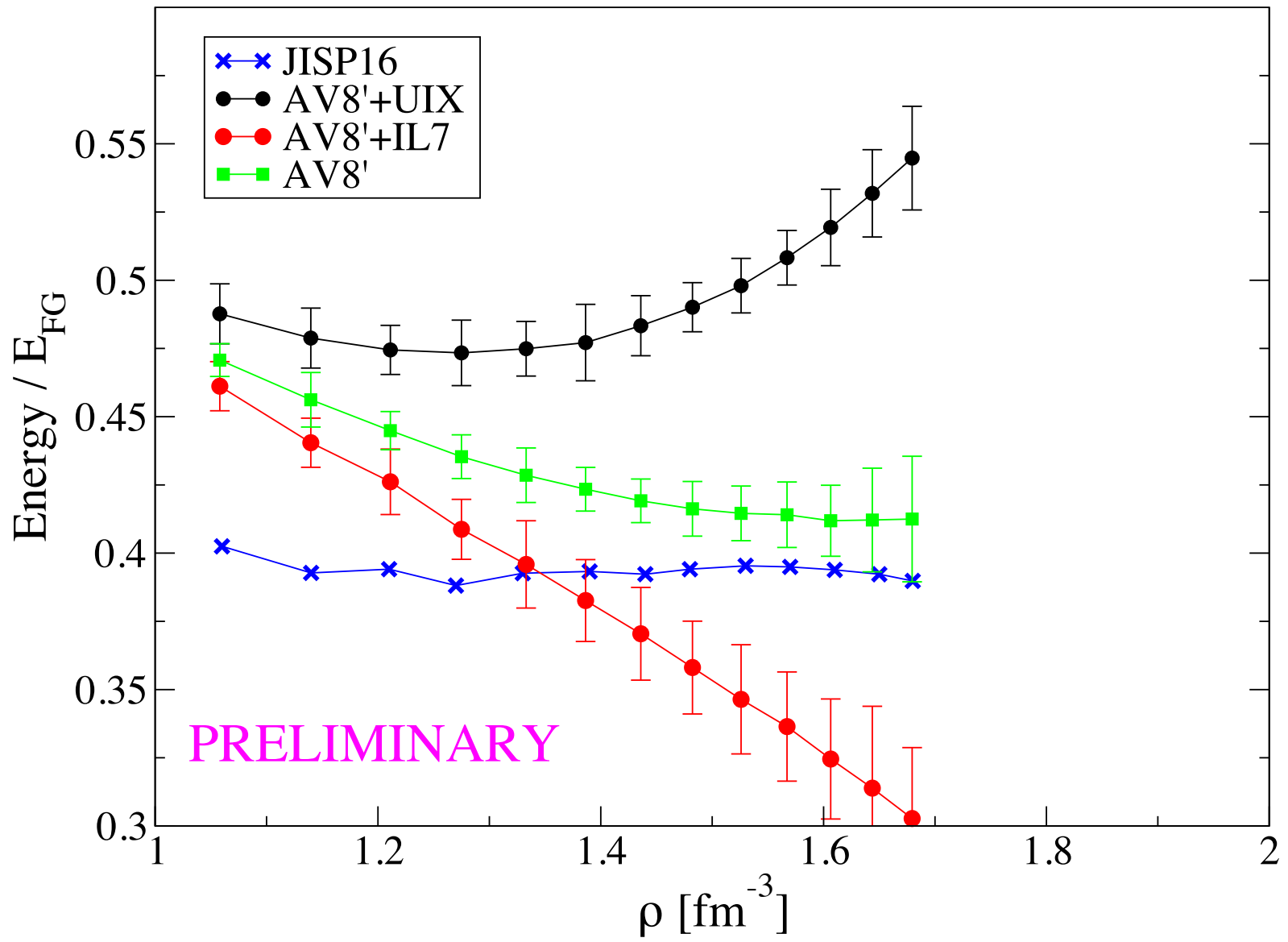


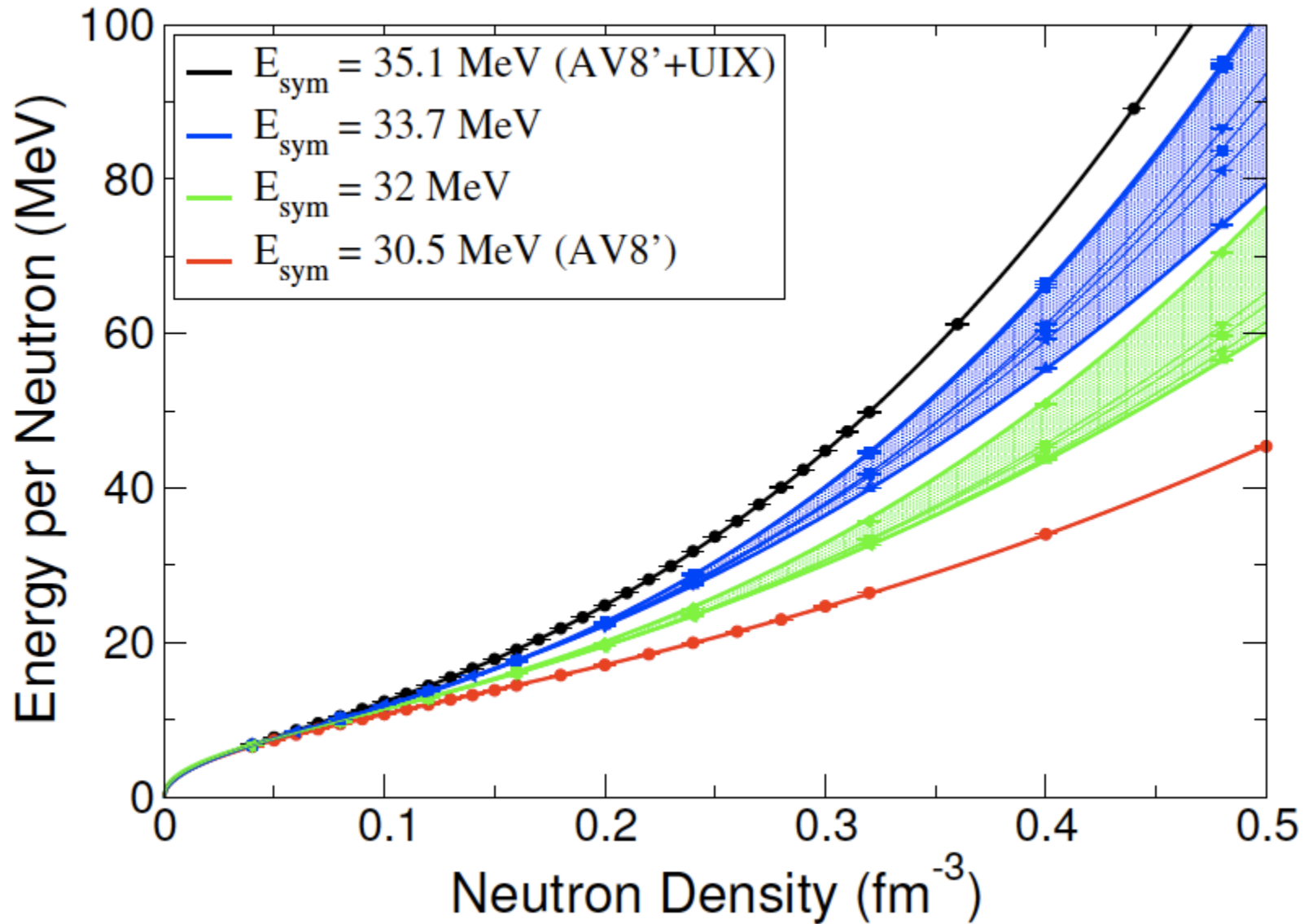
Neutrons: Homogeneous and Inhomogeneous

EOS for Drop Hamiltonians

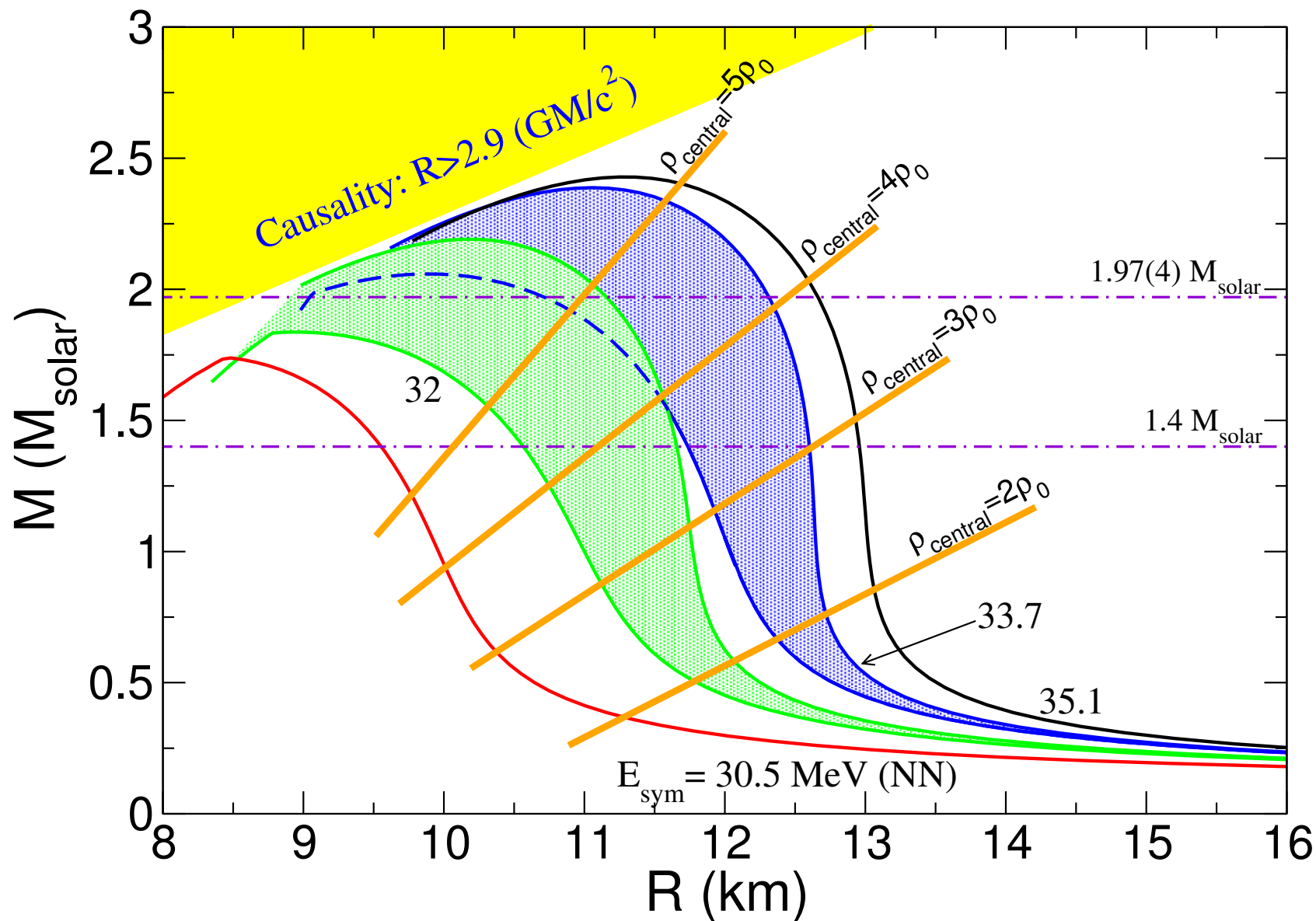




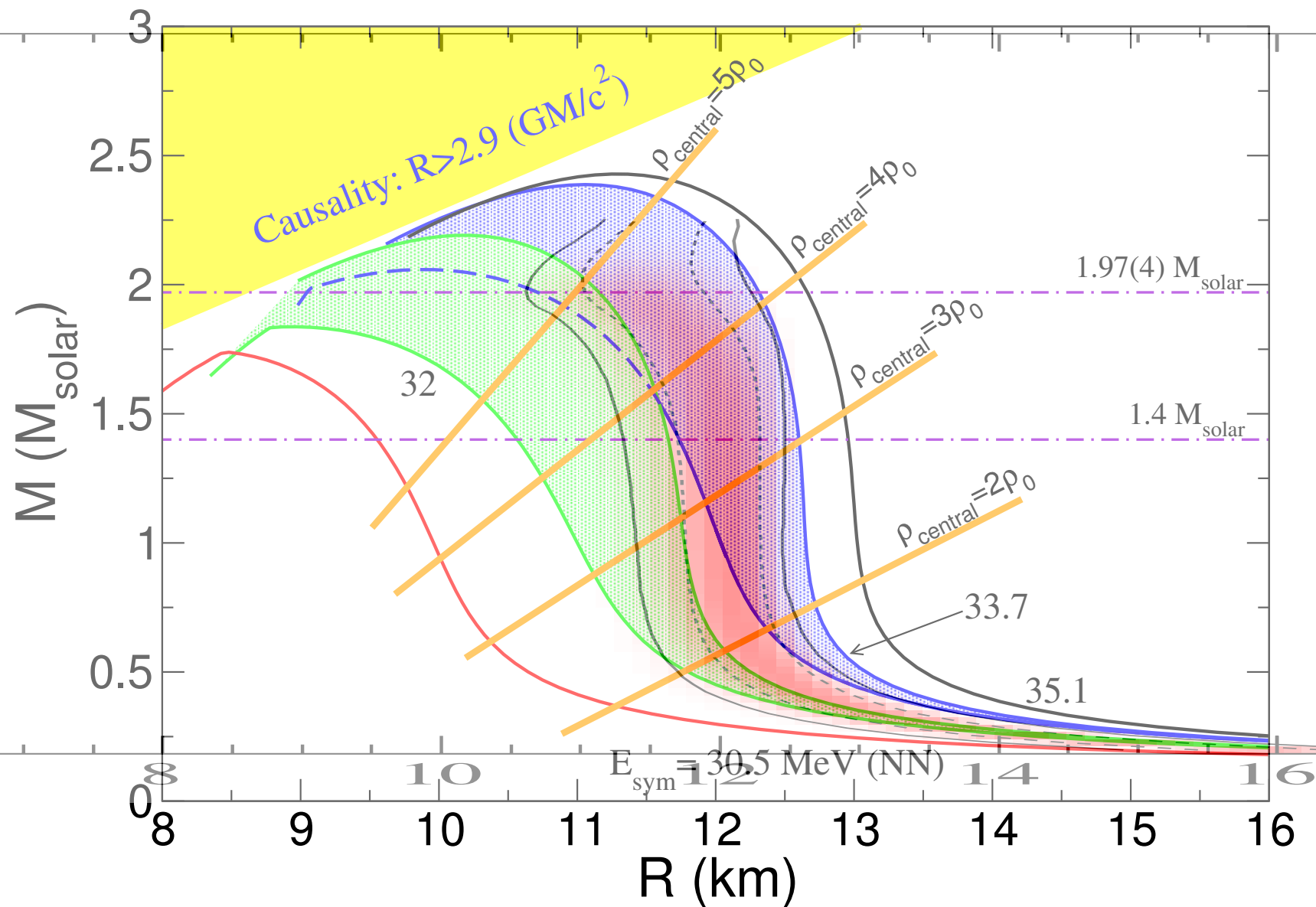
Neutron Matter EOS



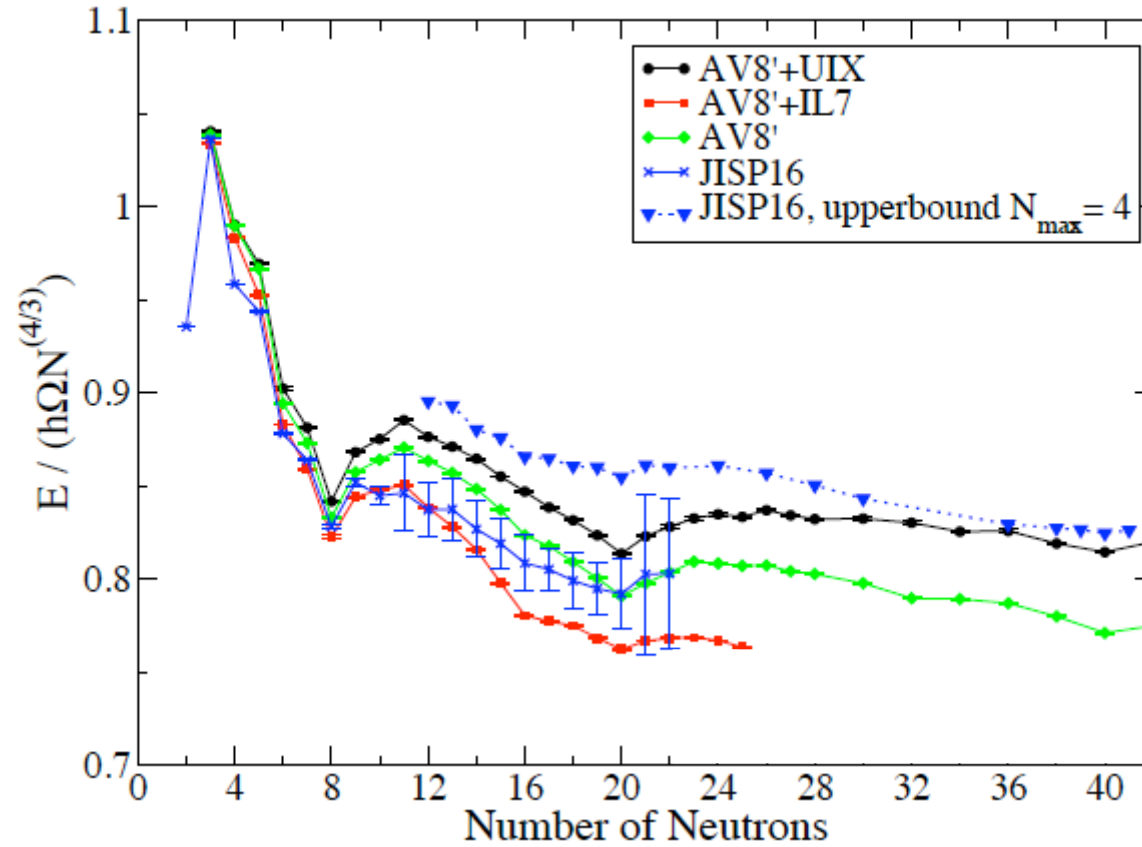
Mass/Radius Bands for Different Symmetry Energies



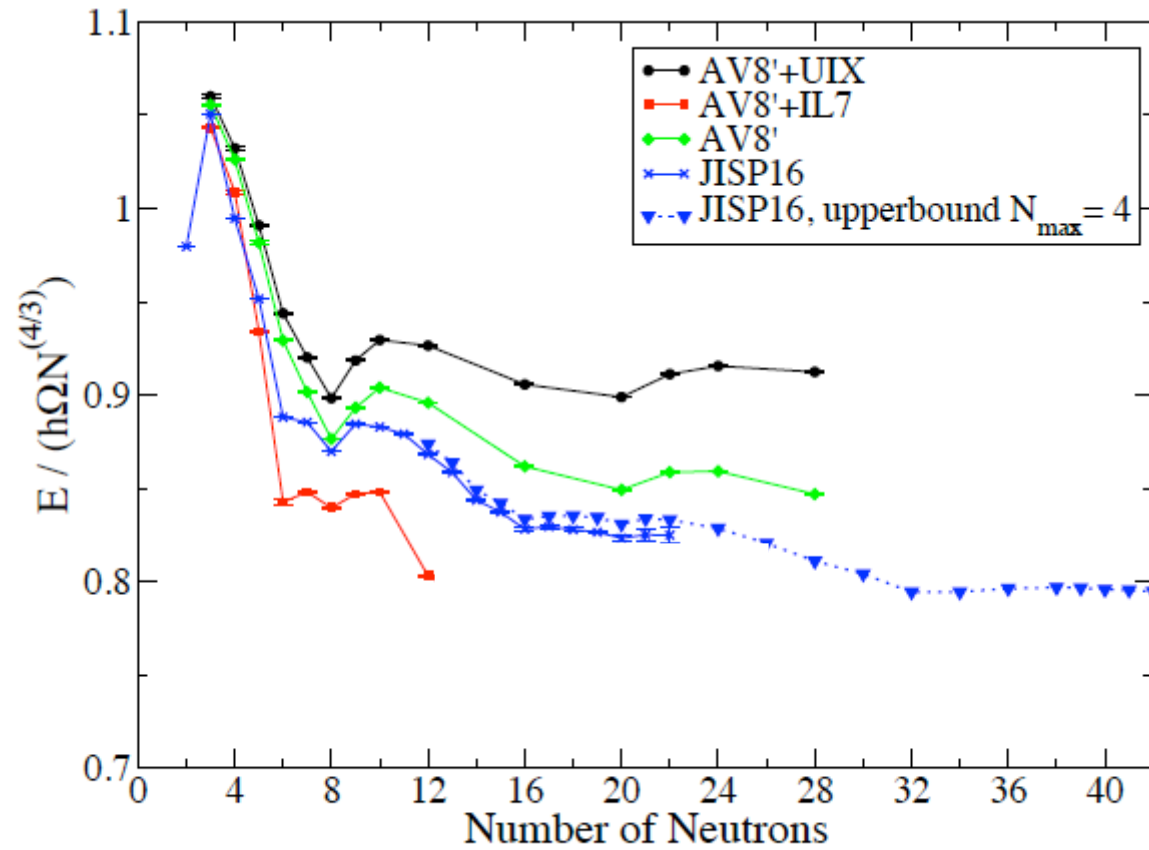
Microscopic Theory vs. Observation



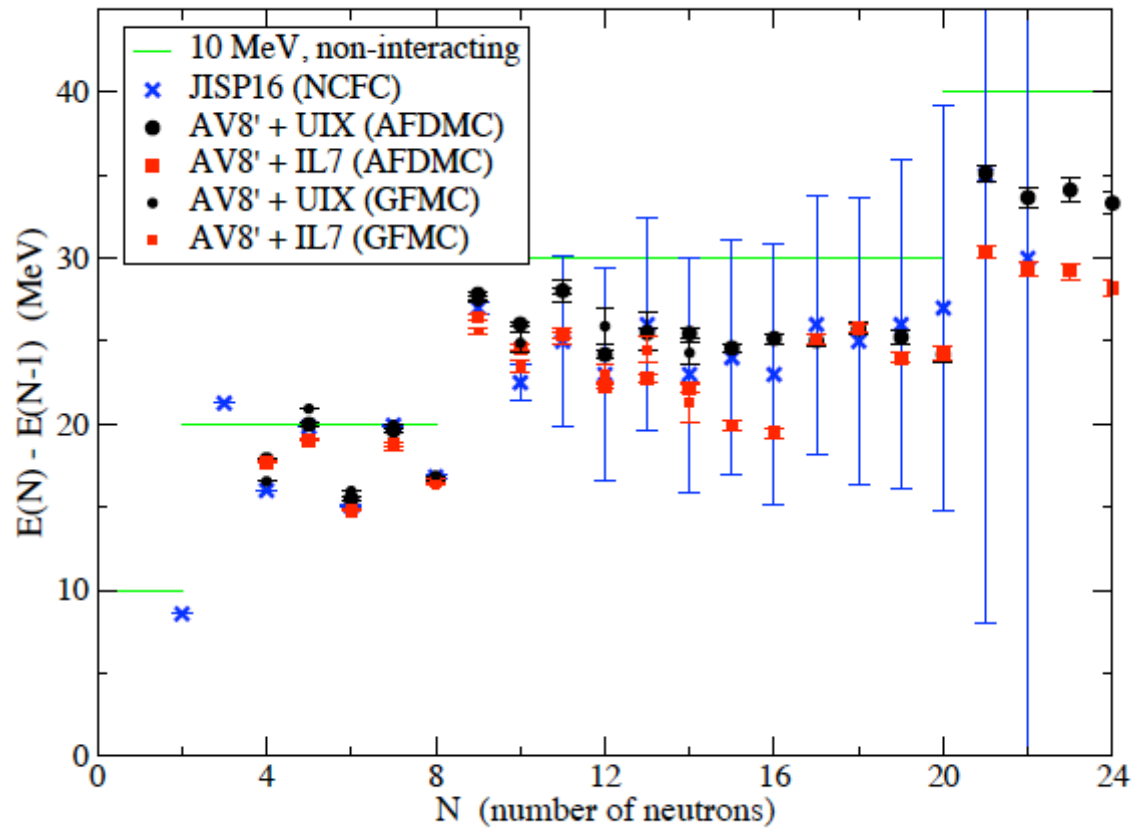
Neutron Drops in 10 MeV H.O.



Neutron Drops in 20 MeV H.O.

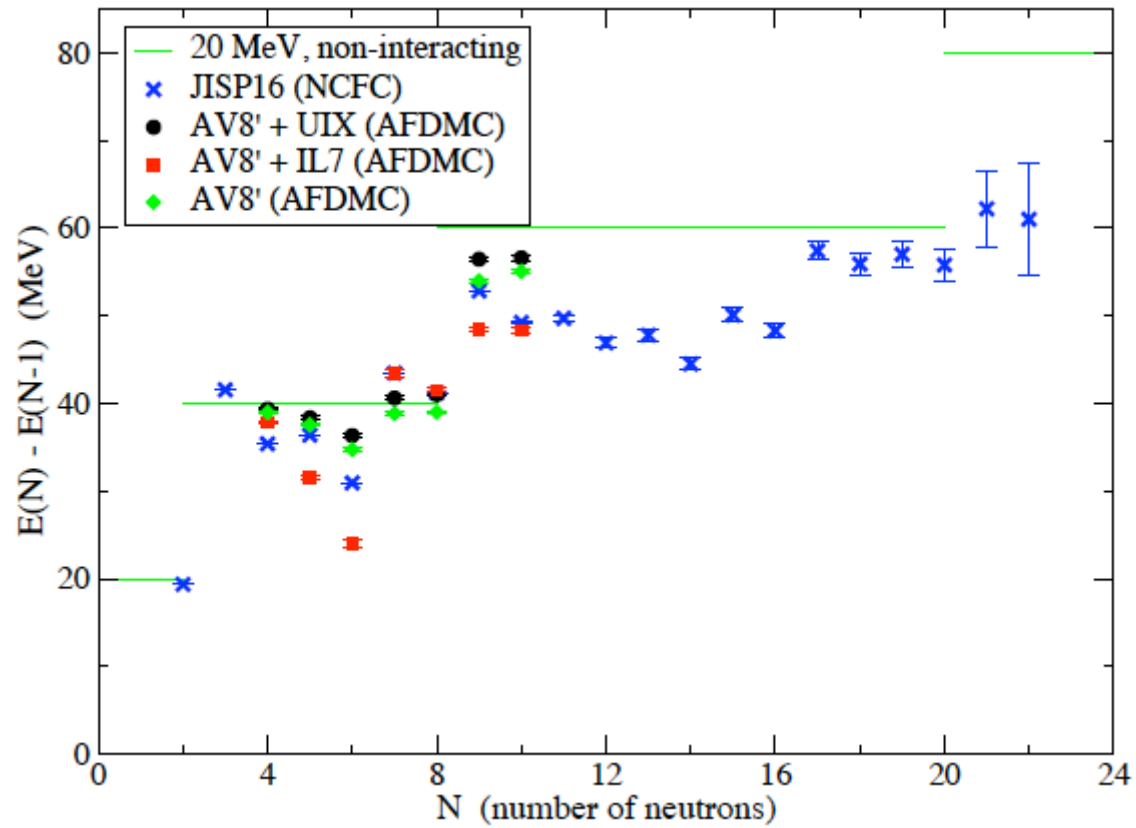


Single-Particle Energies 10 MeV well



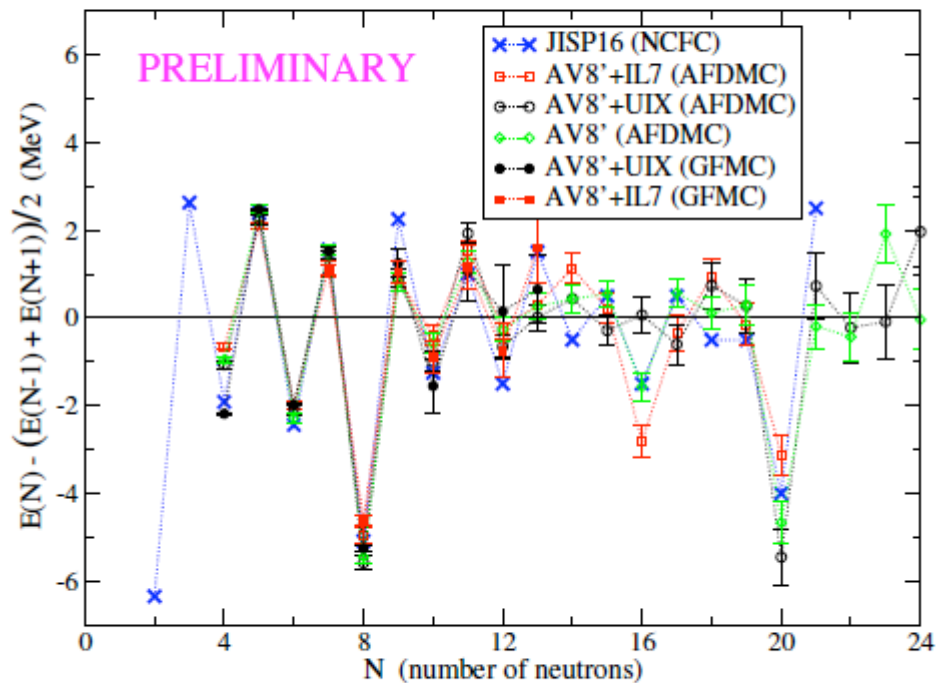
IL7 significant sub-shell closures (spin-orbit)
AV8' modest sub-shell closures

Single-Particle Energies 20 MeV well

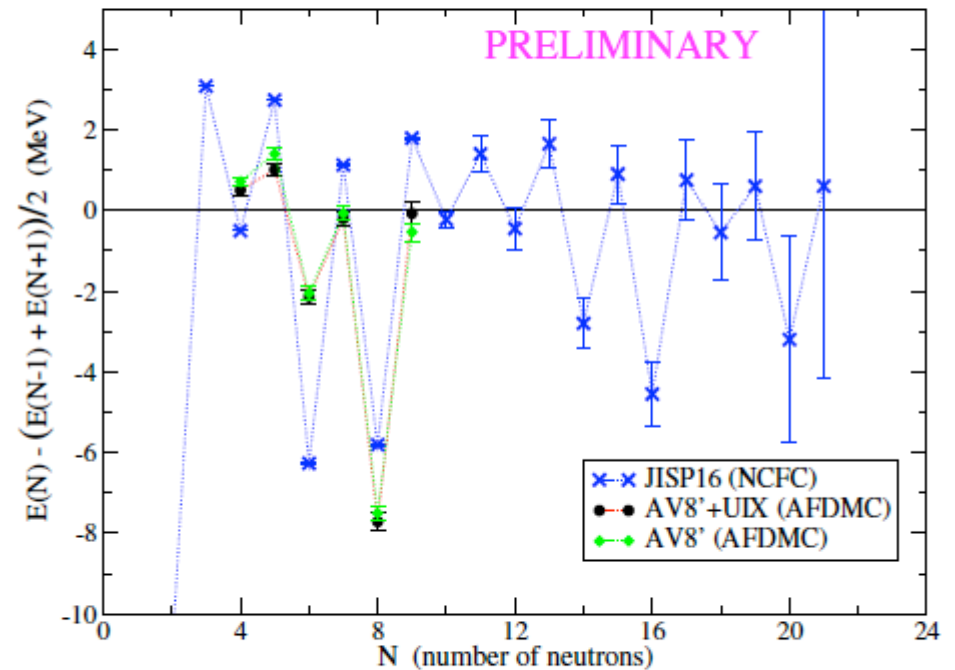


Double energy differences $E(N) - \frac{1}{2}(E(N-1) + E(N+1))$

$\hbar\omega = 10$ MeV



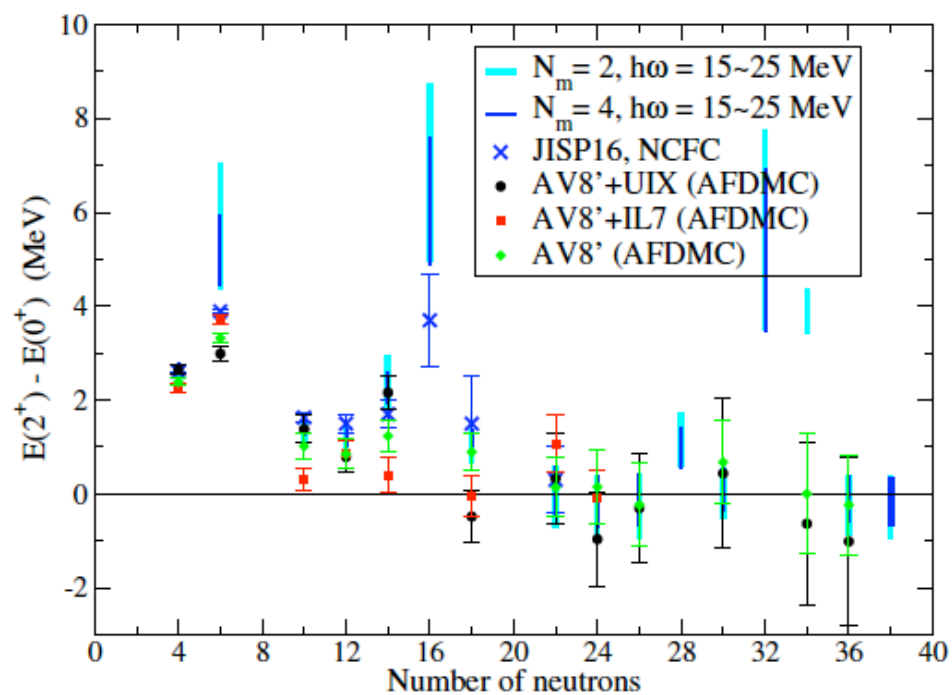
$\hbar\omega = 20$ MeV



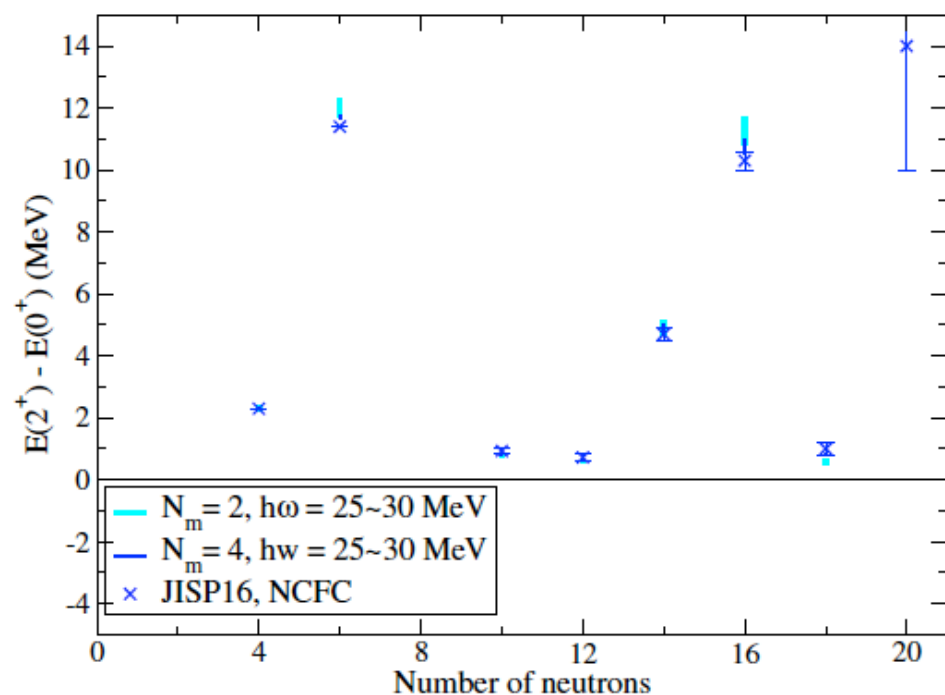
Carlson, Gandolfi, Pieper, Vary, Maris, work in progress

$0^+ - 2^+$ splitting

$\hbar\omega = 10$ MeV



$\hbar\omega = 20$ MeV



Carlson, Gandolfi, Pieper, Vary, Maris, work in progress

Spin Response at $q=0$

Constraints from 3 sum rules, high-energy
from short-range NN calculation

$$\chi/\chi_{FG} \approx 0.4$$

$$S_0/S_{-1} \approx 40 \text{ MeV}$$

$$S_1/S_0 \approx 55 \text{ MeV}$$

Spin Susceptibility

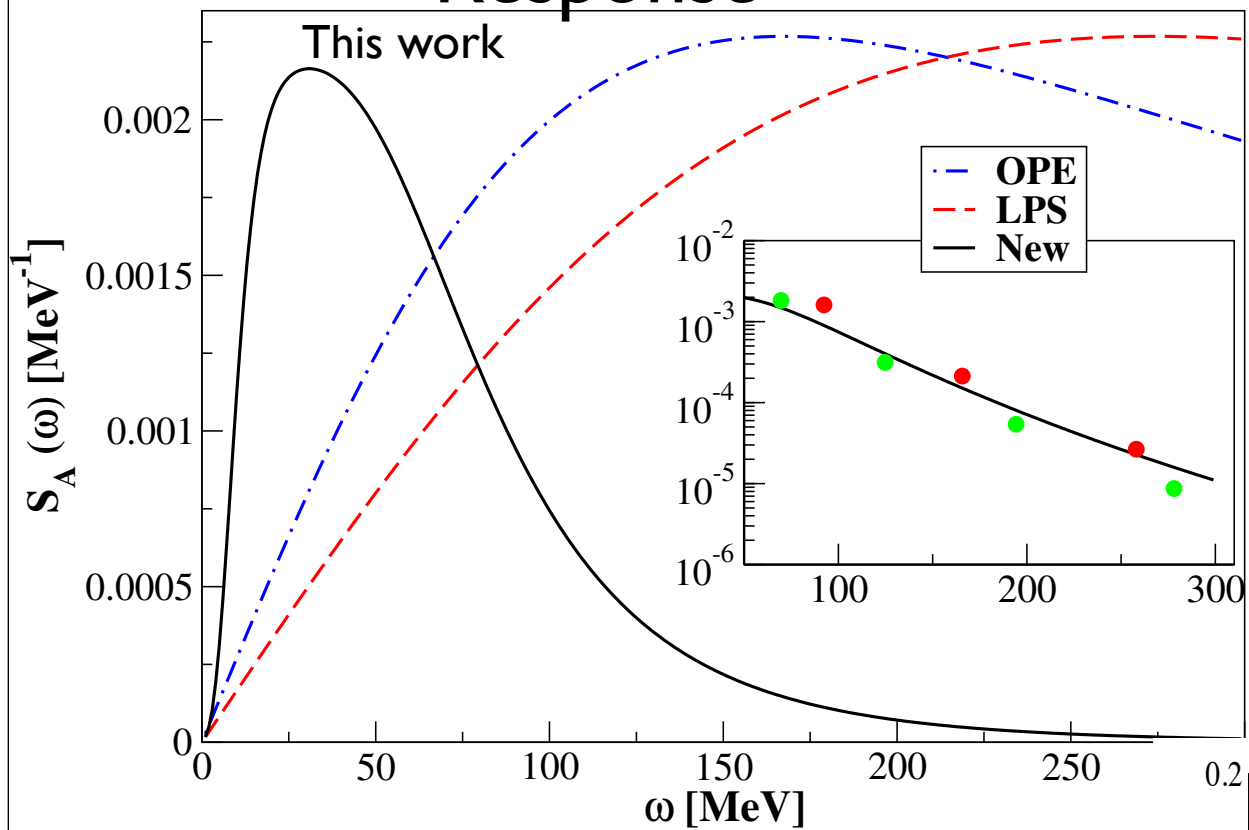
Structure Factor

Energy Weighted Sum Rule

Fantoni, Sarsa, and Schmidt PRL 87, 181101 (2001)

Sum Rules require a
fairly narrow peak around 50 MeV

Response



Shen, Gandolfi, Reddy, and Carlson
in preparation

Mean Free Path

