

Monday Afternoon Discussion

- 3pm July 15, 2013: Some very sketchy notes of informal discussion. C. Horowitz

List of topics for future discussion

- HI observables for sym energy
 - HI theory questions
 - FRIB questions: stable vs radioactive beams and FRIB vs other radioactive beam facilities (GSI, RIBF)
- Nuclear structure observables for symmetry energy(radii, and skins, surface thickness of skin?) Can we observe K_{sym} in addition to L . What is Pygmy? does it determine L , do we need to measure pygmy in more nuclei? Correlation of dipole polarizability with skin thickness?
 - Nuc structure theory questions: role of pairing on skins, what can be calculated microscopically? role of $1/2$ infinite matter?
 - FRIB nuclear structure questions
- Astrophysical observables for symmetry energy (Masses, radii, cooling..) Systematic errors for radii: atmospheres, dynamics of x-ray bursts (time dependence), interstellar absorption, accretion rate dependence, role of residual accretion, are there observed neutron stars with enhanced cooling? impact of large maximum mass on allowed high density symmetry E ?
 - Astrophysical theory/ systematic errors questions (gaia getting distances to globular clusters)
 - Future X-ray missions / better use of existing data (time resolved spectra?)
 - Astrophysical applications of symmetry energy to supernovae and nucleosynthesis.

Questions

- Why can't we calculate the symmetry E at $2\rho_0$??
- To what density can we calculate S?
- How well correlated are S and L?
- How to determine momentum dependence of sym potential
- At what density does Mott transition occur where clusters become unbound in nuclear matter?
- What is role of clusters for HI observables and for theories / transport models / fluctuations of HI collisions?
- What is role of clusters in astrophysics?
- What theory infrastructure do we need to build?

FRIB question

- What is the role of radioactive beams for HI observables sensitive to $\sin^2 E$? Does signal grow with neutron - proton asymmetry squared or just linear? Note may be most important to compare *proton* rich radioactive beam to stable beam system.
- How much do RIBs help compared to HI collisions with stable beams? Is it worth it?
- How much will FRIB help compared to radioactive beams from other facilities?