

# Thursday discussion

- He3/T data
- Cluster formation
- Hyperons

# Cluster formation

- 4He cluster formation impact 3He/T ratios
- Think of adding clusters as additional species in VUU simulations with appropriate formation cross sections.
- Understand Cluster formation and then come back to sym E observables at low energy.

# Hyperons

- Three constraints: observed binding energies of hypernuclei (mean field pot  $\sim -30$  MeV).
- Maximum neutron star mass  $> 2$  solar masses (hyperons can't soften EOS too much).
- Threshold density (threshold neutron star mass  $> \sim 1.4 M_{\text{sun}}$ ) for hyperons probably leads to enhanced cooling of NS (only massive stars should have hyperons??).
- Above likely requires three body YNN force or density dependent ratio of meson-Y to meson-N couplings.
- Pairing gap of hyperons in dense matter important for cooling. However, gap probably small when hyperons first appear. But also need proton gaps and these could block  $\Lambda \rightarrow p + e + \bar{\nu}$  (talk to NS cooling people, Dany Page)