Here are the latest calculations for the alpha formation in mostly neutron matter. I've done some calculations at different densities, not all of which are finished, but this is what I have in Figure 1. It looks like the two correlations

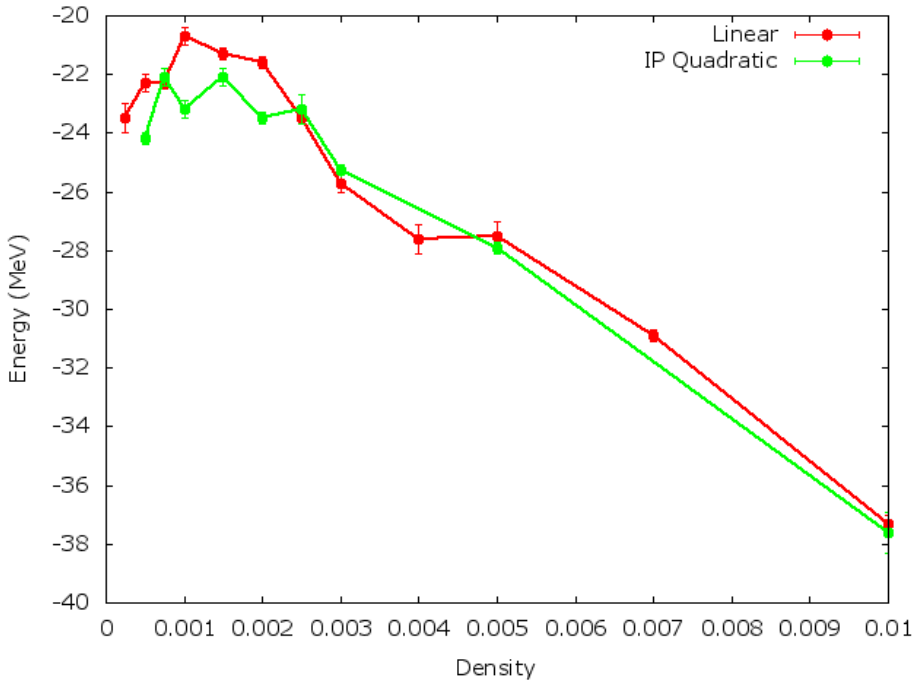

Figure 1: Alpha energy calculated as $16\epsilon_{14n2p} - 12\epsilon_{14n}$ where $\epsilon = E/A$.

give about the same answer above $\rho = 0.002\text{fm}^{-3}$, and the quadratic (IP) correlations give more binding below that density.

I also did calculations at the same densities with just 2 neutrons and 2 protons for comparison and as you can see in figure 2 however the two correlations give about the same answer, so the extra neutrons must be sensative to the extra correlations of the quadratic. Figure 2 also compares the 2n2p calculations to the cluster calculations in Figure 1.

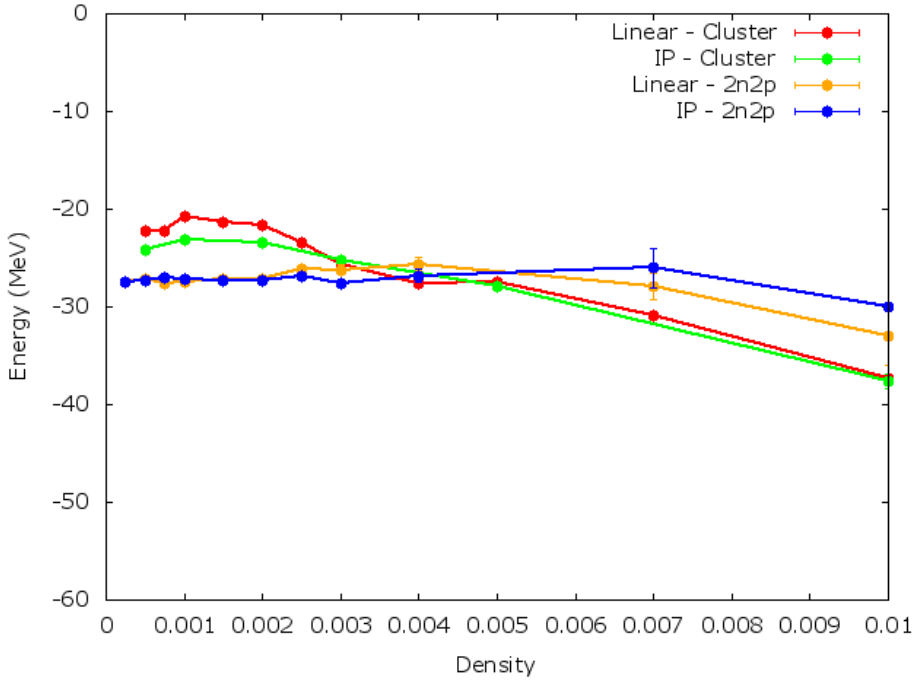

Figure 2: Energy of alpha particle calculated as a cluster in mostly neutron matter and 2 neutrons and 2 protons with both linear and IP correlations.

I also plotted the separate pieces of the AV6' potential to see which pieces of the quadratic correlations mattered

the most. Figure 3 shows that the two pieces that differ the most are the OPE pieces, sigma-tau (vst in the plot) and tensor-tau (vtent in the plot). So this is good.

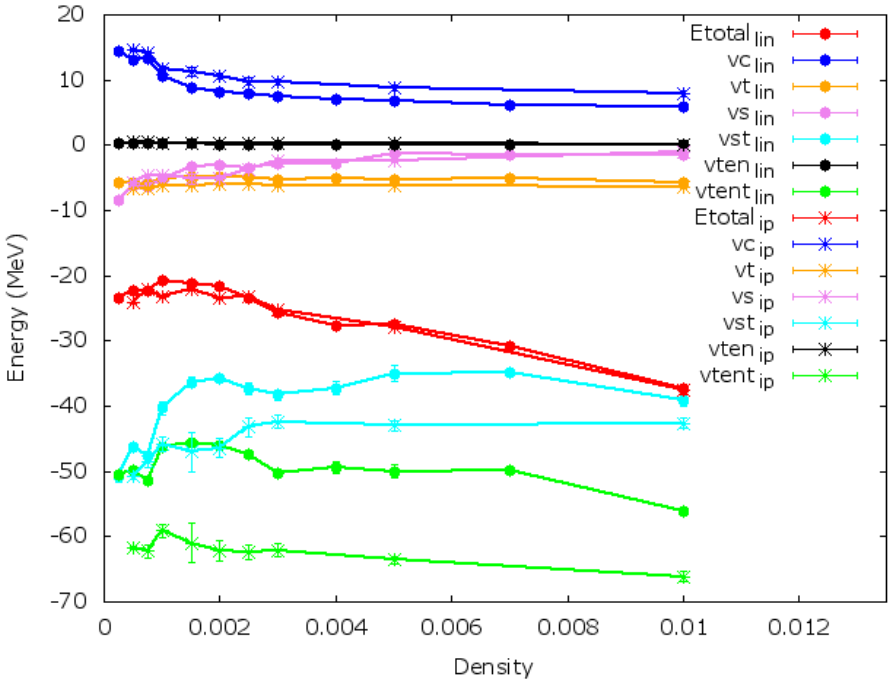

Figure 3: Energy of alpha particle calculated as a cluster in mostly neutron matter and 2 neutrons and 2 protons with both linear and IP correlations.

I also compared the proton-proton correlations functions