

Nuclear Lunch: February 13 , 2019

Sensitivity of nuclear statistical equilibrium to nuclear uncertainties during stellar core collapse

Presenter: Mahesh

Moderator: Irin

1. What is the shell-washout effect introduced in models 2FB, 2FD, 2HE, and 2KE?
What is the shell damping model discussed in models 2KE and 2FE? (**Bishnu**)
2. What does the factor $(M_A z T / 2\pi \hbar^2)^{3/2}$ mean in equation 5?
Why does the surface tension come into play in nuclear matter? (**Doug**)
3. Why are neutrinos are trapped despite having such a low cross section? (**Joey**)
4. Should one use the liquid drop model for light or heavy nuclei, or both, to describe nuclear properties?
Why are ground state properties like neutron magic numbers and pair energies considered washed out at $T \approx 2-3$ MeV? (**Shiv**)
5. Why are ^{14}N ashes left over in the H burning stage?
Why are n, ^4He and ^1H ashes left over in the ^{56}Ni burning stage? (**Abinash**)
6. From figures 7 and 8, why does the author consider densities higher than $\sim 10^{12}$ for the lower solar mass star of $15M_{\odot}$ compared to $25M_{\odot}$ with density $\sim 10^{11}$? (**Ibrahim**)
7. In figure 9, how high an A can be produced in core collapse supernovae?
Can we eliminate the models being based on max A that can be produced in Core collapse supernovae? (**Utsav**)
8. Is there a possibility of forming a quark gluon plasma when the core of the star becomes denser and denser? (**Cole**)