

LIGHT ELEMENTS IN SUPERNOVAE *

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Core-collapse supernovae are giant stellar explosions that lead to neutron stars and provide a possible site for the formation of heavy nuclei through the r-process. In this talk, we present an equation of state for low-density nuclear matter based on the virial expansion. The virial equation of state makes model-independent predictions for matter near the supernova neutrinosphere (the surface of last scattering for neutrinos). In addition to the standard composition of neutrons, protons and α particles, we include for the first time all light elements through ^2H , ^3H and ^3He . While the mass fraction in light elements is low, of order 10% for the conditions of interest, they have significant effects on the neutrino absorption and therefore for the neutrino spectra in supernovae.

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