

Abstract Submitted
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Laboratory Tests of Low Density Astrophysical Equations of State JOSEPH NATOWITZ, Texas A&M University — Clustering in low density nuclear matter has been investigated using the NIMROD multi-detector at Texas A&M University. Thermal coalescence models were employed to extract densities, ρ , and temperatures, T , for evolving systems formed in collisions of 47A MeV $^{40}\text{Ar} + ^{112}\text{Sn}$, ^{124}Sn and $^{64}\text{Zn} + ^{112}\text{Sn}$, ^{124}Sn . The yields of d, t, ^3He and ^4He have been determined at $\rho = .002$ to $.032$ nucleons/ fm^3 and $T = 5$ to 10 MeV. Symmetry energy coefficients and equilibrium constants for alpha production have been derived from these data. The data provide an important constraint on astrophysical equation of state models at low density.

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