Abstract Submitted
for the DNP07 Meeting of
The American Physical Society

Constraining the density dependence of the symmetry energy and the nuclear equation of state: A dynamical and statistical model approach[1] D.V. SHETTY, S.J. YENNELLO, G.A. SOULIOTIS, Cyclotron Institute, Texas A&M University — The density dependence of the symmetry energy is important for studying the equation of state of systems as diverse as the atomic nuclei and neutron stars. Our current understanding of this very important quantity remains largely unconstrained due to a lack of understanding of the basic nucleon-nucleon interaction for matter that is highly asymmetric and at non-normal nuclear density. Theoretical studies based on microscopic "ab-initio" calculations predict variety of different form of the density dependence of the symmetry energy. Recent studies carried out at Texas A&M University to investigate the the equation of state of isospin asymmetric nuclear matter using the statistical and the dynamical model approaches of multifragmentation reaction will be presented. These studies along with several other independent studies rule out an extremely "stiff" and "soft" form of the density dependence of the symmetry energy and have important implications for astrophysical and nuclear physics studies. The importance of further constraints for studying the symmetry energy of finite nuclei will also be emphasized.

[1]Work supported by Robert A. Welch foundation (grant no A-1266) and the DOE (grant no DE-FG03-93ER40773).

Dinesh Shetty
Cyclotron Institute, Texas A&M University

Date submitted: 26 Jun 2007 Electronic form version 1.4