

Abstract Submitted
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Constraining the symmetry energy with heavy-ion collisions and Bayesian analysis¹ C.Y. TSANG, G. JHANG, P. MORFOUACE, W.G. LYNCH, M.B. TSANG, Michigan State Univ, HIRA COLLABORATION — To extract constraints on symmetry energy terms in nuclear Equation of State (EoS), data from heavy ion reactions, are often compared to calculations from transport models. As multiple model input parameters are needed in the transport model, it is necessary to do multi-parameter analysis to understand the relationship especially if strong correlations exist among the parameters. In this talk, I will discuss how four symmetry energy parameters, S_0 , (Symmetry energy) and L (slope) at saturation density as well as the nucleon scalar effective mass (m_s^*) and the nucleon effective mass splitting, (Δ) are obtained by comparing transport model results with experimental data such as isospin diffusions and n/p spectral ratios using MADAI Bayesian analysis software. Probability of each parameter having a certain value given experimental data can be calculated with Bayes theorem by Markov Chain Monte Carlo integration. Results using single and double ratios of neutron and proton spectra from $^{124}\text{Sn}+^{124}\text{Sn}$, $^{112}\text{Sn}+^{112}\text{Sn}$ collisions at 120 MeV/u as well as isospin diffusion from Sn+Sn isotopes, at 50 and 35 MeV/u will be presented.

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