

# ROLE OF ISOSPIN DEGREE OF FREEDOM AND MODEL INGREDIENTS IN LIGHT PARTICLES AND ENTROPY PRODUCTION

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It is well established that various phenomena such as fusion, cluster-decay, multifragmentation, collective and elliptic flows etc. are sensitive towards incident energy, system size, isospin asymmetry and impact parameter of the reaction. At intermediate energies, model ingredients (such as equation of state, nucleon nucleon (nn) cross-section, Gaussian width etc.) also affect the dynamics apart from the above factors. In recent times, light cluster production has captured a lot of attention. The composite clusters such as d, t, <sup>3</sup>He and <sup>4</sup>He have also been used to extract entropy produced during a collision. Interestingly, entropy was found to stay constant during the expansion phase; therefore, it poses as an excellent candidate for getting information about the early phase of the reaction. Here we aim to compare our theoretical calculations with experimental data for the yield ratios of various clusters and to present a complete systematic analysis of the light particles as well as entropy production with respect to various model ingredients. We also analyze the role of neutron content of reacting partners on entropy production. The present study is carried out using Isospin-dependent Quantum Molecular Dynamics (IQMD) model. Our findings reveal that composite particle yield ratios are sensitive towards equation of state and Gaussian width. The entropy is also found to get affected by isospin asymmetry of reacting partners.