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Using GEMINI to study multiplicity distributions of LCP's in heavy ion collisions ADIL BAHALIM, Davidson College, JOSEPH NATOWITZ, SEWERYN KOWALSKI, Cyclotron Institute, TAMU, NATOWITZ GROUP TEAM — There is a multifragmentation process that occurs in heavy ion collisions. At sufficiently low densities and high temperatures, this process creates primary fragments that are usually in excited states. These primary fragments decay into secondary fragments while emitting light charged particles (LCP's) and releasing energy. Given the time frame of the decay, it is impossible to make direct experimental observations on the primary fragments; therefore, we must combine experimental observables from the secondary fragments with results from computer simulation programs, such as GEMINI, to reconstruct and identify the primary fragments and their conditions. This, in turn, gives us a better understanding of the nuclear equation of state. GEMINI calculates the decay of compound nuclei by sequential binary decays, until the resulting products are unable to undergo further decay. Decay simulations are run for nuclei with Z=3 to Z=40 at excitation energies from 2 to 5 MeV/amu at 0.5 MeV/amu intervals. At each excitation energy, 1000 events are simulated. The multiplicity distributions of each of the six LCP's in consideration (n, p, d, t, 3He, 4He) are extracted to ROOT from the data gathered by these simulations. The correlation between the mean multiplicity and the width of multiplicity distribution will be used in the reconstruction model input parameters.

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