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Study of Clusters and Hypernuclei production within PHQMD+FRIGA model

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Heavy-ion collisions provide the unique possibility to create and investigate hot and dense matter in the laboratory. At the initial stage of the reaction a QGP is formed, while the final stage is driven by the hadronization process and the formation of clusters. The capture of the produced hyperons by clusters of nucleons leads to the hypernuclei formation which is a very rare process at strangeness threshold energies. In this respect it is important to have the robust modeling of such processes in order to study the detector replica and to have the possibility to optimize the experimental setup for the best efficiency.

We report on the results on the dynamical modeling of cluster formation with the combined PHQMD+FRIGA (Parton-Hadron Quantum Molecular Dynamics + Fragment Recognition In General Application) model at Nuclotron and NICA energies. The clusters selection in FRIGA is realised by a simulated annealing procedure to obtain the most bound configuration of fragments and nucleons.

Based on present predictions of the combined model we study the possibility to detect such clusters and hypernuclei in the BM@N and MPD/NICA detectors.

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