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Hypernuclei Production in CBM at FAIR - A Feasibility Study

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The main goal of the CBM experiment at FAIR is to study the behavior of nuclear matter at very high baryonic density. This includes the exploration of the high density equation of state, search for the transition to a deconfined and chirally restored phase, critical endpoint. One of the promising diagnostic probes for these new states is the enhanced production of multi-strange (anti-)particles. The CBM detector is designed to measure such rare diagnostic probes multi-differentially with unprecedented precision and statistics. Important key observables are the production of hypernuclei and dibaryons. Theoretical models predict that single and even doubly-strange hypernuclei are produced in heavy-ion collisions with the maximum yield in the region of SIS100 energies. The discovery and investigation of new (doubly strange-)hypernuclei and of hyper-matter will shed light on the hyperon-nucleon and hyperon-hyperon interactions. In this talk, we will report the results of feasibility study on the production of single- and double-strange hypernuclei in CBM experiment. Implications on the high baryon density nuclear matter will be discussed.

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