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Constraints on EoS from study of light clusters and strange hadrons in heavy-ion collisions

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We present the latest results on the constraints on the equation-of-state (EoS) of strongly interacting hadronic and partonic matter created in heavy-ion collisions from study of the light clusters, hypernuclei and strange hadrons (hyperons and strange mesons). Our study is based on the Parton-Hadron-Quantum-Molecular Dynamics (PHQMD) microscopic transport approach (PHQMD) [1-4]. The PHQMD is a microscopic n-body transport model based on the QMD propagation of the baryonic degrees of freedom, where the clusters are formed dynamically during the entire heavy-ion collision by potential interaction between nucleons and deuteron production by hadronic kinetic reactions.

We employed different EoS realized via potential interaction - a static interaction between nucleons vis Skyrme potential as well as via a {\bf momentum dependence interaction}. We investigate the influence of EoS on the collective dynamics of hadronic matter. The comparison of PHQMD results on directed and elliptic flow coefficients v_1 and v_2 of nucleons, light clusters and strange baryons with HADES, FOPI and STAR data allows to make a constraints on the EoS of nuclear matter probed in heavy-ion collisions at SIS and FAIR energies.

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