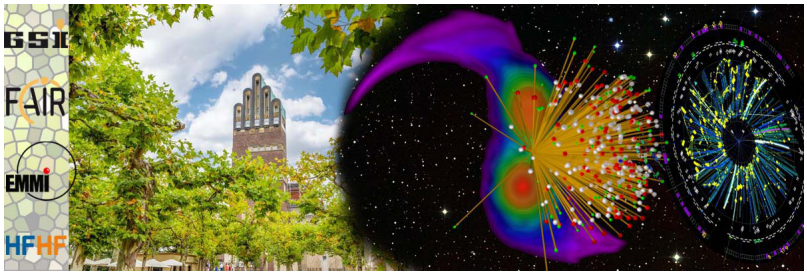

Contribution ID: **76** Type: **Oral**

Towards constraints on the Equation of State with SMASH

Tuesday, September 19, 2023 12:30 PM (25 minutes)

In this work, we aim to put constraints on the equation of state of nuclear matter by comparing transport calculations with SMASH to the recent high-precision data from the HADES experiment.

In order to achieve reliable constraints, we first investigate different methods of taking light nuclei formation into account, as a large fraction of nucleons is bound to nuclei. We find that flow coefficients of protons are sensitive to light nuclei formation at small transverse momenta, but at large p_T, one can extract information about the nuclear potential in a more controlled way.

We further improve the model by including a momentum-dependent term in the nuclear potential and show that this improves the description of experimental data for several observables, such as the flow coefficients of protons and particle spectra for different species.

A first estimate for the equation of state is presented, but more importantly, this work lays a basis for quantitative constraints using Bayesian methods in the future.

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Session Classification: Transport model simulations of heavy-ion reactions

Track Classification: Transport model simulations of heavy-ion reactions