Contribution ID: **18** Type: **Talk**

Resonance suppression during the hadronic stage from the FAIR to the intermediate RHIC energy regime

The energy and centrality dependence of the kaon resonance ratio $(K^{*0} + \bar{K}^{*0})/(K^+ + K^-)$ is explored in the RHIC-BES and CBM-FAIR energy regime. To this aim, the Ultra-relativistic Quantum Molecular Dynamics (UrQMD) model is employed to simulate reconstructable K^* resonances in Au+Au and p+p collisions from $\sqrt{s_{\rm NN}} = 3-39$ GeV. We obtain a good description of the resonance yields and mean transverse momenta over the whole investigated energy range. The decrease of the K^*/K ratio, with increasing centrality is in line with the available experimental data. We also observe the experimenatlly measured increase in $\langle p_{\rm T} \rangle$ with increasing centrality which is interpreted as a lower reconstruction probability of low-$p_{\rm T}$ K^* due to the $p_{\rm T}$ dependent absorption of the decay daughter hadrons. We conclude that the observed suppression of reconstructable K^* resonances provides a strong sign of an extended hadronic rescattering stage at all investigated energies. Its duration increases from peripheral to central reactions as expected. Following a method, suggested by the STAR experiment, the "duration" of the hadronic stage is extracted using the K^*/K ratios at chemical and kinetic freeze-out. The resulting lifetimes are in good agreement with the experimental data, but much shorter than the actual lifetime of the hadronic phase in the transport simulation. This indicates that the experimental method to estimate the life time of the hadronic stage is too simplified.

Author: CHABANE, Amine

Presenter: CHABANE, Amine