Contribution ID: **7** Type: **Talk**

Kinetic and chemical freeze-out parameters from resonance reconstruction

Wednesday 2 December 2020 11:40 (20 minutes)

The hadronic transport simulation UrQMD is used to pin down the chemical freeze-out space-time point of each final state pion. In combination with a coarse-grained collision evolution, the local temperature T and the local baryo-chemical potential μ_{B} are estimated up to the top RHIC energies. The results match thermal model estimates of experimental data with high accuracy. However, here the chemical freeze-out is linked to the space and time dependent relation between the expansion and the scattering rate and not to the onset of deconfinement. Moreover, typical freeze-out criteria proposed in the literature are investigated on the reconstructed chemical freeze-out hyper-surface. The average energy per particle criterion $\langle E\rangle/\langle N\rangle = 1$ is confirmed within the whole energy range with deviations up to 20% depending on the meson/baryon content of the colliding system. The entropy per baryon criterion $s/T^3 = 7$ and the total baryon density criterion $n_{\mathrm{B}} + n_{\bar{\mathrm{B}}} = 0.12$ fm^{-3} are confirmed above 7 and 20 GeV, respectively. Finally, the combined UrQMD + coarse-graining model is used to constrain the space and time dependence of the shear viscosity to entropy density ratio η/s in central Au+Au collisions at a beam energy of 1.23 AGeV. The results indicate an intricate sensitivity to the different stages of the collision at this energy, i.e. the compression phase and expansion phase.

Author: REICHERT, Tom (Institut für Theoretische Physik, Goethe Universität Frankfurt)

Co-author: Prof. BLEICHER, Marcus (Uni Frankfurt)

Presenter: REICHERT, Tom (Institut für Theoretische Physik, Goethe Universität Frankfurt)