

Contribution ID: 47

Type: not specified

## Nuclear system size scan for freeze-out properties and baryon-strangeness correlation in relativistic heavy-ion collisions by using a multiphase transport model

In this study, we employ a multiphase transport (AMPT) model for considering the bulk properties at the freeze-out stage for  ${}^{10}\text{B}$  +  ${}^{10}$  B,  ${}^{12}\text{C}$  +  ${}^{12}$  C,  ${}^{16}\text{O}$  +  ${}^{16}$  O,  ${}^{20}\text{Ne}$  +  ${}^{20}$  Ne,  ${}^{40}\text{Ca}$  +  ${}^{40}$  Ca,  ${}^{96}\text{Zr}$  +  ${}^{96}$  Zr, and  ${}^{197}\text{Au}$  +  ${}^{197}$  Au collisions at RHIC energies  $\sqrt{s_{NN}}$  of 200, 20, and 7.7 GeV.

We use a statistical thermal model to extract the parameters at the chemical freeze-out stage, which agree with those from other thermal model calculations. It was found that there is a competitive relationship between the kinetic freeze-out parameter  $T_{kin}$  and the radial expansion velocity  $\beta_T$ , which also agrees with the STAR or ALICE results. We found that the chemical freeze-out strangeness potential  $\mu_s$  remains constant in all collision systems and that the fireball radius R is dominated by  $\langle N_{Part} \rangle$ , which can be well fitted by a function of  $a \langle N_{Part} \rangle^b$  with  $b \approx 1/3$ .

In the same context, the system size dependence of baryon-strangeness (BS) correlation also has been investigated. The combination of different hadrons affects BS correlations significantly. We find when the maximum rapidity acceptance  $y_{\text{max}} > 3$ , these coefficients are independent of the combination of different hadrons in the final state based on the AMPT model.

Primary author: Mr DONGFANG, Wang (Fudan university)

Co-authors: Mr YUGANG, Ma (Fudan university); Mr SONG, Zhang (Fudan university)

Presenter: Mr DONGFANG, Wang (Fudan university)