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Type: Oral presentation

Effect of nuclear structure on particle production in heavy-ion collisions using the AMPT model

Thursday 12 October 2023 11:00 (20 minutes)

Various nuclei, like Cu, Au, Pb, and U, have collided in various relativistic heavy-ion colliders to comprehend the medium of de-confined quarks and gluons called Quark-Gluon Plasma (QGP). The STAR data for isobar, Ru+Ru, and Zr+Zr, collisions at $\sqrt{s_{NN}} = 200$ GeV, provide hints of different nuclear structure between the two isobar nuclei through collective flow and multiplicity. All these colliding nuclei are observed to have different shapes and structures, which might also influence particle production. These collisions can be modeled using different configurations of Woods-Saxon (WS) distribution using the AMPT model and studying the influence of nuclear geometry on the particle production mechanisms.

In this talk, we will present transverse momentum spectra of pions, kaons, and (anti-)protons at mid-rapidity (

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rvert < 0.5) for Ru+Ru, Zr+Zr, Au+Au and U+U collisions at $\sqrt{s_{NN}} = 200$ GeV using a multi-phase transport (AMPT) model. The influence of various WS parametrizations on p_T -spectra, particle yield (dN/dy), mean transverse momentum ($\langle p_T \rangle$), and particle ratios will be discussed. The system size dependence of dN/dy and $\langle p_T \rangle$ with different colliding systems will be presented. In addition, the physics implications of such studies in the context of nuclear structure in isobars will be highlighted.

Is this abstract from experiment?

No

Name of experiment and experimental site

NA

Is the speaker for that presentation defined?

Yes

Details

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Internet talk

Yes

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