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Probing the effect of hadron cascade-time on particle production and elliptic flow(v_2) in Xe+Xe collisions at $\sqrt{s_{\rm NN}}$ = 5.44 TeV using AMPT model

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Extreme conditions of energy density and temperature are the prerequisites to produce a deconfined state of quarks and gluons in ultra-relativistic heavy-ion collisions. The initial state geometry of the created system gives rise to spatial anisotropy, which later results in the momentum anisotropy of the final state particles in non-central collisions. Anisotropic flow (especially elliptic flow) quantifies the momentum anisotropy of the produced system, which is one of the signatures of QGP. A deformed nucleus like Xenon (Xe) offers access to the initial geometry's effect on final state particle production. This analysis focuses on the impact of hadron cascade-time on particle production and elliptic flow using A Multi-Phase Transport (AMPT) model by incorporating nuclear deformation in colliding nuclei for Xe+Xe collisions at $\sqrt{s_{\rm NN}}$ = 5.44 TeV. We analyze the effect of hadronic cascade-time on identified particle production by studying $p_{\rm T}$-differential particle ratios. The impact of hadronic cascade time on elliptic flow is studied by varying the cascade time between 5 and 25 fm/c. This study shows the final state interactions among particles generate additional anisotropic flow with increasing hadron cascade-time, especially at very low and high-$p_{\rm T}$.

Session

Heavy Ions and QCD

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