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Thermalization time constrained by high-pt QGP tomography

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We show that high- p_{\perp} R_{AA} and v_2 are way more sensitive to the QGP thermalization time, τ_0 , than the distributions of low- p_{\perp} particles, and that the high- p_{\perp} observables prefer relatively late thermalization at $\tau_0 \sim 1$ fm/c. To calculate high- p_{\perp} R_{AA} and v_2 , we employ our newly developed DREENA-A formalism, which combines state-of-the-art dynamical energy loss model with 3+1 dimensional hydrodynamical simulations. The model applies to both light and heavy flavor, and we predict a larger sensitivity of heavy observables to the thermalization time. Elliptic flow parameter v_2 is also more sensitive to τ_0 than R_{AA} due to non-trivial differences in the evolution of in-plane and out-of-plane temperature profiles. This presents the first time when a parameter describing bulk QGP has been constrained by high- p_{\perp} observables and related theory, i.e., by so-called QGP tomography.

Collaboration

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