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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 τ_0 ~ 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+1dimensional 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.

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