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Extracting $\hat{q}$ in event-by-event hydrodynamics and the centrality/energy puzzle

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The final goal of the jet quenching studies is to extract medium parameters that characterize the QGP formed in high-energy nuclear collisions. In our analysis, we combine event-by-event hydrodynamics, within the EKRT formulation, with jet quenching (ASW Quenching Weights) to obtain high-p_T R_{AA}, v_2 and v_3 for charged particles at RHIC and LHC energies for different centralities.

By defining a K-factor that quantifies the departure of the transport coefficient, $\hat{q}$, from an ideal estimate, $K = \hat{q}/(2\epsilon^{3/4})$, we fit the single-inclusive experimental data for charged particles. Then, using the fitted K-value for each energy and centrality we also compute high-p_T v_2 and v_3, getting a good agreement with data. As obtained already in previous analyses, this K-factor is larger at RHIC than at the LHC but, surprisingly, it is almost independent of the centrality of the collision. We provide some possible explanations to this finding.

Preferred Track

Jets and High pT Hadrons

Collaboration

Not applicable

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