Contribution ID: **685** Type: **Parallel session talk**

Determination of the path-length of parton energy loss in quark-gluon plasma

Friday, 19 July 2024 15:21 (17 minutes)

Based on a data-driven approach and a scaling analysis, we demonstrate that the quenching of hadron spectra at RHIC and LHC allows for a precise determination of the path-length dependence of parton energy loss in quark-gluon plasma. We find that the average energy loss is proportional $\langle\epsilon\rangle \propto L^{\beta}$ with $\beta = 1.02^{+0.09}_{-0.06}$, consistent with the pQCD expectation of parton energy loss in a longitudinally expanding QGP. We also show that the azimuthal anisotropy coefficient divided by the collision eccentricity, v_2/e, follows the same scaling property as the $p_{\perp}$ dependence of $R_{textnormalAA}$. This scaling is observed in data, which are reproduced by the model at large $p_{\perp}$. Finally, a linear relationship between v_2/e and the derivative of $R_{textnormalAA}$ is found and confirmed in data, offering an additional way to probe the L dependence of parton energy loss using measurements from LHC Run 3.

Alternate track

I read the instructions above

Yes

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Session Classification: Heavy Ions

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