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## The $x$ and scale dependence of the transport coefficient $\hat{q}$

*Sunday, 25 September 2016 12:00 (20 minutes)*

We take a closer look at the single particle nuclear modification factor ( $R_{AA}$ ) and azimuthal anisotropy ( $v_2$ ) of leading hadrons at high transverse momentum ( $p_T$ ) at both RHIC and LHC collision energies. We focus on the established reduction in the interaction measure  $\hat{q}/T^3$  between RHIC and LHC, as discovered by the JET collaboration. The centrality dependence of the  $R_{AA}$  and  $v_2$  at both these collision energies strongly suggests that the reduction is not caused by a temperature dependence in the ratio of  $\hat{q}/T^3$  but rather by an energy dependence of  $\hat{q}$ .

We study this dependence by introducing an  $x$  dependence in the distribution function that is integrated to obtain  $\hat{q}$ . We conjecture on possible forms of a scale dependence by relating  $\hat{q}$  to an object similar to a transverse momentum dependent parton distribution function (TMDPDF). The ensuing operator product is then related to quantities that may be estimated in lattice QCD.

### Summary

### Presentation type

Oral

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