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

Wednesday 8 February 2017 08:50 (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.

## **Preferred** Track

Jets and High pT Hadrons

## Collaboration

Not applicable

Primary author: KUMAR, Amit (Wayne State University)

Presenter: KUMAR, Amit (Wayne State University)

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