Contribution ID: **15** Type: **not specified**

# Time Dependent qhat from AdS/CFT

We present the first ever AdS/CFT calculation of $\hat{q}$ for a light quark jet as a function of position or, equivalently, time. Our result does not suffer from the gamma factor blow up of the usual time-independent AdS/CFT heavy quark setup and is qualitatively similar to, but about a factor of 2/3 larger than, the light flavor result from Liu, Rajagopal, and Wiedemann. Our findings can be immediately implemented into any $\hat{q}$-based energy loss model.

Our q^ derivation relies on our calculation of the average distance squared, $s^2(t)$, travelled by the endpoint of a string falling in an AdS3-Schwarzschild spacetime. The early time behavior is ballistic, $s^2(t) \sim t^2$, but the late time behavior is the usual diffusive Brownian motion, $s^2(t) \sim t$. These late time dynamics are universal and depend only on the near-horizon physics, which allows us to generalize our results to arbitrary dimensions and thus make contact with the physics explored by RHIC and LHC.

Additionally, we find that AdS/CFT predicts angular ordering for radiation in medium, just as in vacuum, and in contradistinction to weak-coupling, with its anti-angular ordering prediction. Finally, our results also imply, sensibly, that AdS/CFT predicts a smooth interpolation between the angular correlations of open heavy flavor and light flavor observables.

## I intend to submit my contribution for the proceedings

Yes

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