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# The Wake of a Quark Moving Through Hot QCD Plasma vs. N=4 SYM Plasma

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We present the energy density and flux distribution of a quark moving through the high temperature QCD plasma and compare it with that in strongly coupled N=4 SYM plasma.

The Boltzmann equation is reformulated as a Fokker-Planck equation at leading log approximation and is solved numerically with non-trivial boundary conditions in momentum space. We use the kinetic theory and take the Fourier transform to calculate the energy and momentum density in real space. The angular distribution exhibits the transition to the ideal hydrodynamics and is analyzed with the first and second order hydrodynamic source.

The AdS/CFT correspondence allows the same calculation in strong coupling regime. Compared to the kinetic theory, the energy-momentum tensor is better described by hydrodynamics even after accounting for the differences in the shear viscosities. We argue that the difference between Boltzmann and AdS/CFT comes from the second order hydrodynamic coefficient tau_pi, which is generically large compared to the shear length in a theory based on the Boltzmann equation.

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