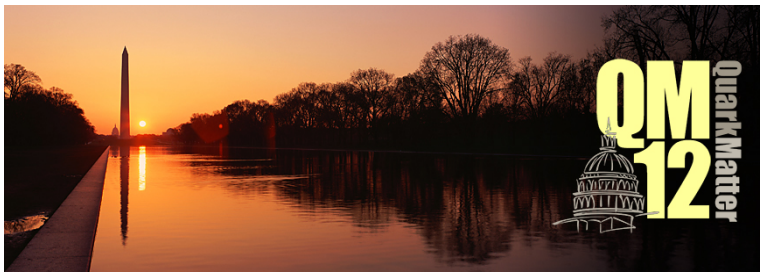

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A Non-AdS/CFT bound on eta/s

Thursday, August 16, 2012 2:20 PM (20 minutes)

Hydrodynamics predicts long-lived sound and shear waves. Thermal fluctuations in these waves can lead to the diffusion of momentum density, contributing to the shear viscosity and other transport coefficients. Within viscous hydrodynamics in 3+1 dimensions, this leads to a positive contribution to the shear viscosity, which is finite but inversely proportional to the microscopic shear viscosity. Therefore the effective infrared viscosity is bounded from below. The contribution to the second-order transport coefficient τ_π is divergent, which means that second-order relativistic viscous hydrodynamics is inconsistent below some frequency scale. We estimate the importance of each effect for the Quark-Gluon Plasma, finding them to be minor if $\eta/s = 0.16$ but important if $\eta/s = 0.08$.

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