

RG flow of AC conductivity of Holographic QCD

We study the Renormalization Group (RG) flow of AC and DC conductivity using the bottom-up approach of holographic QCD. We consider the charged black hole metric and obtained the explicit form of AC and DC conductivity at the finite cut-off. Considering the numerical solution of the gauge field equation we study the response of the conductivity as the function of frequency.

Summary

Quantum Chromodynamics (QCD) is the fundamental theory for strong nuclear interactions which binds quarks and gluons together. This non-abelian gauge theory has $SU(3)$ symmetry containing three color charges (red, green and blue). Asymptotic freedom and confinement are its two properties which makes it different from other gauge theories. The strong coupling of quarks in the low energy regime (IR regime) prohibits the perturbative computation. Thus, to study QCD non-perturbatively in the low energy regime is a challenging and interesting field of research. We study some of the important transport properties of this strongly coupled system using gauge/gravity duality.

Primary author: Ms BHATNAGAR, Neha (Banaras Hindu University)

Presenter: Ms BHATNAGAR, Neha (Banaras Hindu University)

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