Electrical conductivity of anisotropic quark-gluon plasma

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In this paper, we consider the anisotropic $\mathcal{N}=4$ super Yang-Mils plasma at finite temperature and calculate its conductivity in the presence of a constant electric field. By applying the electric field in two different directions, we study the effect of the electric field, charge density and anisotropy parameter on the electrical conductivity of the plasma. We first consider the constant external electric field in the longitudinal x-direction, and then the external electric field is applied to the system in the longitudinal z- direction. At the end, we compare the results of two different directions with each other. Also, we compare the results with those from isotropic Ads-Schwarzschild black hole and non-critical Ads_6 model.

Keywords: quark-gluon plasma, anisotropy, gauge-gravity duality, electrical conductivity

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