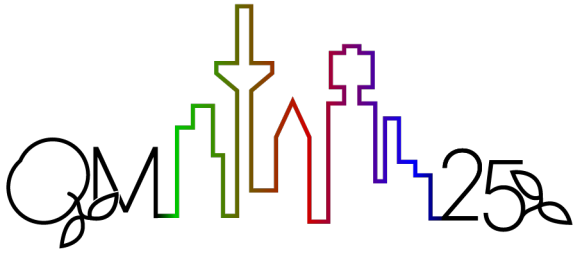

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Exploring the net-quark diffusion in a viscous, resistive plasma under the influence of strong magnetic fields

We present a self-consistent method to describe a conformal plasma composed of three quark flavors (particles + anti-particles) in the presence of strong magnetic fields by means of kinetic-theory tools. Based on a specific ansatz for the dissipative correction to the equilibrium distribution function, we explicitly solve the Boltzmann equation in relaxation-time approximation, including magnetic effects within the space-time gradients of the quark distributions -–coming from the transverse (to the fluid velocity) projection of the energy-momentum conservation law – and obtain a first-order constitutive relation for the spatially-anisotropic diffusivity tensor. Additionally, in the simple case of a single quark flavor, we quantitatively emphasize differences and similarities with some of the available results in the literature for the orthogonal (with respect to the magnetic field) and Hall components of the diffusivity tensor.

Category

Theory

Collaboration (if applicable)

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