

Effect of magnetic field in QGP fluid: electromagnetic probes and hyperon polarization

There must be electromagnetic fields created during high-energy heavy-ion collisions. However, as the quark-gluon plasma (QGP) starts to evolve hydrodynamically (around 1fm/c), these fields become very likely weak comparing to the energy scales of the strong interaction. In this talk, I will introduce the weak magnetic effect in the standard hydrodynamical formulation, which emerges in QGP close to local thermal equilibrium as the dissipative correction to the quark phase space distribution function. Although it is a small correction, we found that the weak magnetic field can be crucial to the anisotropic emission of direct photons (the direct photon puzzle), the polarization of thermal dilepton from QGP, and the sign change of local Lambda hyperon polarization.

references: 2302.07696, 2311.03929, 2401.07458

Category

Theory

Collaboration

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