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Spin Alignment, Phase Transition and Transportation of QGP at Finite Temperature in the Presences of Magnetic and Vorticity Fields

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We study the two-flavor Nambu-Jona-Lasinio (NJL) model under the rotation and chiral chemical potential μ 5.First, the influence of chiral imbalance on the chiral phase transition in the Tpc – ω plane is investigated.In the study of the spin alignment of the vector meson ρ , ρ 00 is the 00 element of the spin density matrix of vector mesons. At high temperatures, ρ 00 is close to 1/3, which indicates that the spin alignment of the vector meson ρ is isotropic.The inclusion of the anomalous magnetic moments of the quarks at finite density into the NJL model gives rise to additional spin polarization magnetic effects. It is found that both the ratio η /s of shear viscosity coefficient to entropy and the collision relaxation time τ show similar trend with temperature, both of which reach minima around the critical temperature. The shear viscosity coefficient of the dissipative fluid system can be decomposed into five different components as the strong magnetic field exists. The influences of the order of chiral phase transition and the critical end point on dissipative phenomena in such a magnetized medium are quantitatively investigated.

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