

Functional renormalization group study of anomalous magnetic moment in Nambu-Jona-Lasinio model

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The anomalous magnetic moment (AMM) is calculated in the 2-flavor Nambu-Jona-Lasinio (NJL) model within the functional renormalization group (FRG) approach under an extra magnetic field. Schwinger proper time formalism and weak-field expansion of quark propagators are employed respectively, and Fierz-complete four-quark interactions are self-consistently included through RG flows. The AMM of the up and down quarks are distinguished, and the temperature dependence is investigated. The AMM in the direction perpendicular to the magnetic field monotonically decreases with increasing magnetic field, while the AMM in the parallel direction monotonically increases with the magnetic field.

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