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Spin polarization under gravity from Schwinger-Keldysh formalism

We employ the Schwinger-Keldysh (SK) formalism to study the spin polarization in a medium induced by the metric perturbation diagrammatically. The results in the near-equilibrium limit can be used to describe the effects of hydrodynamic gradient on the polarization (e.g. shear-induced polarization). Moreover, the results obtained from SK formalism may apply to far-from-equilibrium situations that are relevant to the early stage of a heavy-ion collisions. We also demonstrate the matching between diagrammatic calculations and quantum kinetic theory.

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