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Quasiclassical theory for the flux-flow Hall effect in a type-II superconductor HIKARU UEKI, WATARU KOHNO, TAKAFUMI KITA, Hokkaido Univ — After the sign change of the Hall conductivity have been observed in some high-T_c superconductors, intensive studies have been performed on the flux-flow Hall effect in type-II superconductors theoretically and experimentally. Despite these efforts, a microscopic understanding of the anomalous flux-flow Hall effect is still missing. This may be because the Lorentz force is missing from the standard Eilenberger equations. Recently, the Lorentz force has been incorporated successfully in a gauge-invariant manner within the real-time Keldysh formalism. The augmented quasiclassical equations in the Keldysh formalism have been used to calculate flux-flow Hall conductivity numerically for the s-wave pairing on an isotropic Fermi surface. However, the temperature dependence of the Hall conductivity have not been calculated. We calculate the temperature dependence of the ohmic and Hall resistivities induced by a motion of an isolated vortex by transforming the energy variable of the augmented quasiclassical equations in Keldysh formalism into the Matsubara energy on the imaginary axis. It is shown that linear responses can be calculated much more easily compared to the aproach based on the augmented quasiclassical equations in the Keldysh formalism.

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