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Anomalous current from covariant Wigner function

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We consider accelerated and rotating media of weakly interacting fermions in local thermodynamic equilibrium on the basis of kinetic approach. Kinetic properties of such media can be described by covariant Wigner function calculated on the basis of relativistic distribution function of particles with spin. We obtain the formulae for axial current by summation of the terms of all the orders over thermal vorticity tensor, chemical potential and temperature arising from the distribution functions under consideration, both for massive and massless particles and calculate axial current divergence. We show, that in the massless limit all the terms, since the fourth order over vorticity and third order over chemical potential and temperature equal zero. It is shown, that axial current gets a topological component along the 4-acceleration vector. The similarity between different approaches to baryon polarisation is established.

Content type

Theory

Collaboration

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