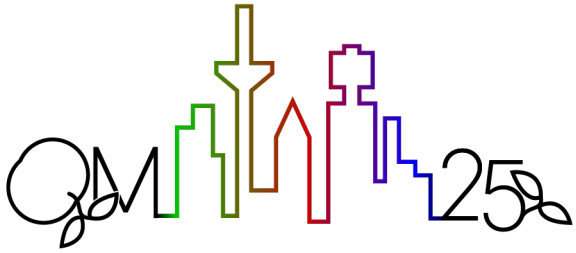

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Generalized thermodynamic relations for spin hydrodynamics

We introduce generalized tensor forms of thermodynamic relations used in relativistic perfect spin hydrodynamics. They are valid in the cases of Boltzmann and Fermi-Dirac statistics and allow for consistent treatment of spin degrees of freedom, also for large values of the spin polarization tensor $\omega_{\mu\nu}$ and for spin tensors $S^{\lambda,\mu\nu}$ of a form motivated by kinetic theory. The results can be further used to include dissipative corrections and may help to establish consistency between different formulations of spin hydrodynamics.
Based on:
[1] Florkowski Wojciech, and Mykhailo Hontarenko. "Generalized thermodynamic relations for perfect spin hydrodynamics." arXiv preprint arXiv:2405.03263 (2024).
[2] Drogosz Zbigniew, Wojciech Florkowski, and Mykhailo Hontarenko. "Hybrid approach to perfect and dissipative spin hydrodynamics." arXiv preprint arXiv:2408.03106 (2024) [accepted for publication in Phys. Rev. D].

Category

Theory

Collaboration (if applicable)

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