

Abstract Submitted
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Hydrodynamics of Dirac and Weyl materials GUSTAVO MONTEIRO, ALEXANDER ABANOV, Stony Brook University, V. PARAMESWARAN NAIR, City College of New York — The study of transport in Weyl and Dirac metals should account for additional contributions to the electric current coming from the chiral anomaly, namely chiral magnetic and chiral vortical effects. These responses are non-dissipative and fully characterized by the chiral anomaly coefficient. In addition, they are believed to be robust even in a strongly interacting regime, due to the topological nature of the anomaly. The fundamental equations for the hydrodynamic limit of such transports were introduced in [1], in order to describe the quark-gluon plasma in nuclear collision. Having these equations as starting point, we present a variational principle for them and discuss the canonical structure of the corresponding hydrodynamic modes [2].

[1] D. T. Son and P. Surowka, Phys. Rev. Lett. 103, (2009).

[2] G. Monteiro, A. G. Abanov and V. P. Nair, arXiv:1410.4833 [hep-th] (2014).

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