Kinetic equation approach to chiral anomaly driven magnetoconductivity of Weyl semimetals

XAVER NEUMEYER, University of North Dakota, VLADIMIR ZYUZIN, Texas AM University — We study electric field and temperature gradient driven magnetoconductivity of a Weyl semimetal system. To analyze the responses, we utilize the kinetic equation with semiclassical equation of motions affected by the Berry curvature and orbital magnetization of the wave-packet. Apart from known positive quadratic magnetoconductivity, we show that due to chiral anomaly, the magnetconductivity can become non-analytic function of the magnetic field, proportional to $3/2$ power of the magnetic field at finite temperatures. We also show that time-reversal symmetry breaking tilt of the Dirac cones results in linear magnetoconductivity. This is due to one-dimensional chiral anomaly the tilt is responsible for.