

Thermopower in 3D Dirac Semimetal Na_3Bi

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Abstract: We study the electronic contribution to the thermopower of 3D Dirac semimetal using a semiclassical Boltzmann approach. We investigate the effect of various relaxation processes including disorder and interactions on the thermoelectric properties. We find that the thermopower have an interesting dependence on the chemical potential that is characteristic of the linear electronic dispersion, and that the electron-electron interactions modify the Lorenz number. We observed the dependence of thermopower on electron temperature and conclude that thermopower has higher values for electron-electron scattering as compared to charged impurity and short range disorder scattering mechanisms.

Keywords: Thermopower, charged impurities, electron-electron interaction, short range disorder, Dirac semimetal, Na_3Bi

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