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THERMAL CONDUCTANCE OF WEYL SEMIMETALS AND EDGE MODS IN A TOPOLOGICAL INSULATOR

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In this study, thermoelectric conductance of a Dirac material was investigated .We have considered Weyl semimetals and topological insulators in this study. We considered an edge mode for a 2D and 3D topological insulator. For the perfect one dimensional conductor our fermionic formulation agrees with the bosonization result. Back scattering was allowed in the presence of a magnetic field and thermal conductivity was determined. The conserved current and the thermal conductivity were computed within a fermionic formulation. We found that at finite temperature, due to backscattering alone, the electric conductance, thermoelectric conductance and thermal conductance decreases with the increase in magnetic field. At finite temperatures, weak localization effects are small and can be ignored. We confirmed the experimental results in a magnetic field for 3D topological insulator. An experimental set-up was proposed to test our theory.

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