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Thermoelectric Properties of Non-Metallic Topological Insulator Bi_2Te_3 at High Magnetic Fields[1] DONG-XIA QU, YEW SAN HOR, ROBERT J. CAVA, N. PHUAN ONG, PRINCETON UNIVERSITY TEAM — Three-dimensional topological insulators are a new class of electronic systems characterized by a bulk insulating state and conducting surface states with Dirac-like energy-momentum dispersion [1, 2]. One of the interesting aspects of this material is how the surface states affect thermoelectric properties of the whole electronic system, given that the bismuth based topological insulators are also excellent thermoelectric materials. We studied the low-temperature thermoelectric transport properties of high-mobility bulk topological insulator Bi_2Te_3 at high magnetic fields up to 35 T. We found remarkably large quantum oscillations in the thermopower of the surface states over a field range of 14 to 35 T. The existence of a non-zero Berry's phase in surface electrons is confirmed from the magneto-oscillations of both thermopower and magnetoresistance.

[1] L. Fu, C. L. Kane, and E. J. Mele, Phys. Rev. Lett. **98**, 106803 (2007)
[2] Y. Xia *et al.*, Nat. Phys. **5**, 398 (2009).

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