Abstract Submitted
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Valence band structure of Bi2Se3[1] YI-BIN GAO, Department of Mechanical and Aerospace Engineering, Ohio State University, Columbus, Ohio 43210, DAVID PARKER, Oak Ridge National Laboratory, 1 Bethel Valley Road, Oak Ridge, Tennessee 37831, JOSEPH P. HEREMANS, Department of Mechanical and Aerospace Engineering, Department of Physics, Ohio State University, Columbus, Ohio 43210 — Bi2Se3 is an interesting candidate for thermoelectric application because Se is a more abundant element than Te, which is commercially used in Bi2Te3-based Peltier coolers. However, intrinsic Se vacancies dominate in Bi2Se3 and dope the material n-type. Due to unfavourable conduction band structure, n-type Bi2Se3 does not have a high power factor. Recently, it has been calculated [1] that Bi2Se3 has a favourable valence band structure for thermoelectric application. In this presentation, high-quality p-type Bi2Se3 single crystals are prepared and Shubnikov de Haas measurement are carried out on them to characterize the band structure. Cross-sectional areas of Fermi surface are mapped out and compared with the theoretical calculation. Reference: [1] Phys. Rev. X 1, 021005 (2011)

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