Abstract Submitted
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Quantum oscillations study of the type-II Weyl semimetal candidate β-$MoTe_2$[1] R. SCHOENEMANN, D. RHODES, Q. ZHOU, Q. ZHANG, S. DAS, E. MANOUSAKIS, L. BALICAS, NHMFL-FSU, J. CHANG, G. MCCANDLESS, UT-Dallas, E. KAMPERT, HLD-HZDR, Y. SHIMURA, ISSP-Tokyo, M. JOHANNES, Naval Research Lab, Washington — Here we present a quantum oscillations study of high quality single crystalline β-$MoTe_2$ samples that show residual resistivity ratios between 400 and 2000. We performed angular and temperature dependent Shubnikov-de Haas (SdH) and de Haas-van Alphen (dHVA) measurements and compared our results with bandstructure calculations. The magnetoresistivity shows no sign of saturation and reaches values of approximately 10^6 at 60 T and 1.7 K. Hall effect measurements indicate almost perfect electron-hole compensation at low temperatures. Additionally we were able to extract a non-trivial Berry Phase from dHvA measurements, i.e. between $2\pi \quad x$ 0.445 and 2π x 0.475 which is close to the predicted value of π. In contrast to recent ARPES data, the Fermi surface obtained by our bulk measurements deviates significantly from the calculated band structure. Furthermore we observe broad anomalies in Hall and specific heat measurements that indicate an evolution of the electronic structure below 100 K which might be responsible for the observed discrepancies[2]. 2. Zhou, Q. et al. Phys, Rev. B **94**, 121101(R) (2016); arXiv:1605.09065[cond-mat.mess-hall]

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