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Thermoelectric Measurements and Angle-Resolved Magnetic Torque in Kondo Insulator SmB_6 ZIJI XIANG, COLIN TINSMAN, TOMOYA ASABA, BENJAMIN LAWSON, GANG LI, FAN YU, LU CHEN, Univ of Michigan - Ann Arbor, HONGWOO BAEK, National High Magnetic Field Laboratory, Florida State University, CHAO SHANG, XIANHUI CHEN, University of Science and Technology of China, LU LI, Univ of Michigan - Ann Arbor — Kondo insulator samarium hexaboride (SmB_6) has attracted much attention in recent years as a potential candidate of an interaction-driven topological insulator. One of the most puzzling phenomena observed in SmB_6 is the clear quantum oscillations appearing in magnetic torque at a low temperature even though the overall resistance curve is insulating. The origin of quantum oscillation is, however, still under debate with indications of both two-dimensional Fermi surfaces and three-dimensional bulk nature. We use two different approaches to study this phenomenon in detail. We carried out angle-resolved torque magnetometry measurements in a magnetic field up to 45 T and a temperature range down to 40 mK. The quantum oscillation amplitudes show almost no temperature dependence below 500 mK. The strongest oscillation branch shows a four-fold symmetry with magnetic field rotated in (010) plane. The angular dependence of its amplitude is consistent with a two-dimensional electron system in which the carrier mobility is suppressed by the in-plane magnetic field. We will also discuss the result of our low-temperature Seebeck effect and Nernst effect measurements in SmB_6 under strong magnetic field.

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