

Phase diagram of a pressure-induced superconducting state and its relation to the Hall coefficient of Bi_2Te_3 single crystals

C. Zhang, LL. Sun, ZY. Chen, XJ. Zhou, Q. Wu, W. Yi, J. Guo, XL. Dong, and ZX. Zhao

Institute of Physics of Physics, Chinese Academy of Sciences, Beijing, China

Pressure-induced superconductivity and its relation to the corresponding Hall coefficient (R_H) have been investigated for Bi_2Te_3 , a known topological insulator, through in situ measurements of magnetoresistance and ac susceptibility with diamond anvil cells. A full phase diagram is presented which shows a complex dependence of the superconducting transition temperature as a function of pressure over an extensive range. High-pressure Hall measurements reveal a close relation to these complex behaviors; in particular, an abrupt change of dR_H/dP is observed in crossing from the nonsuperconducting to the superconducting ambient-pressure phase.

Corresponding author:

llsun@aphy.iphy.ac.cn

zhxzhao@aphy.iphy.ac.cn