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Magnetotransport response in the 3D topological insulator Bi2Te3 with indium superconducting electrodes ZHUO WANG, TIANYU YE, RAMESH MANI, Georgia State University — 3D Topological insulators (TIs) include novel surface states which are protected by time reversal symmetry from backscattering by impurities. Recently, the superconducting proximity effect at the interface between a TI and a superconductor has been a focus of attention. Hence, our study explores the magnetotransport behavior of thin Bi_2Te_3 flakes with superconducting electrodes in a Hall bar configuration. Such specimens exhibit a magnetoresistance anomaly resulting from the proximity effect. To better understand this magnetoresistance anomaly, we examine here the effect of biasing thin Bi_2Te_3 flakes samples of different thicknesses simultaneously with both a dc and a low-frequency ac current through the same pair of contacts at the ends of the device. Here, we report the role of finite bias and electron heating on the observed effects.

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