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Non-saturating Magneto-resistance up to 60 Tesla in Topological Insulator Bi2Te3 Thin Films SHIXIONG ZHANG, Center for Integrated Nanotechnologies, Los Alamos National Laboratory, ROSS D. MCDONALD, ARKADY SHEKHTER, National High Magnetic Field Laboratory, Los Alamos National Laboratory, ZHENXING BI, Center for Integrated Nanotechnologies, Los Alamos National Laboratory, YAN LI, National High Magnetic Field Laboratory, Los Alamos National Laboratory, QUANXI JIA, S.T. PICRAUX, Center for Integrated Nanotechnologies, Los Alamos National Laboratory — We report magneto-transport studies of topological insulator Bi2Te3 thin films grown by pulsed laser deposition. A non-saturating linear-like magneto-resistance (MR) was observed at low temperatures in the magnetic field range from a few Tesla up to 60 Tesla. Due to the large Fermi Surface, the magnetic field is not high enough to quantize all the surface Dirac Fermions into the lowest Landau level, which rules out the possibility of 'quantum linear magnetoresistance'. We have further shown that the Linear MR may be associated with the weak antilocalization effect at high fields and can be described by the Hikami-Larkin-Nagaoka analysis providing the elastic scattering time is longer than the spin-orbit scattering time.

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