Title:	Anomalous negative longitudinal magnetoresistance and violation of Ohm's law deep in the topological insulating regime in Bi1−xSbx
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Abstract:	Bi1−xSbx is a topological insulator (TI) for x≈0.03–0.20. Close to the Topological phase transition at x=0.03, a magnetic field induced Weyl semi-metal (WSM) state is stabilized due to the splitting of the Dirac cone into two Weyl cones of opposite chirality. A signature of the Weyl state is the observation of a Chiral anomaly [negative longitudinal magnetoresistance (LMR)] and a violation of the Ohm's law (non-linear I−V). We report the unexpected discovery of Chiral anomaly-like features in the whole range (x=0.032,0.072,0.16) of the TI state. This points to a field induced WSM state in an extended x range and not just near the topological transition at x=0.03. Surprisingly, the strongest Weyl phase is found at x=0.16 with a non-saturating negative LMR much larger than observed for x=0.03. The negative LMR vanishes rapidly with increasing angle between B and I. Additionally, non-linear I–V is found for x=0.16 indicating a violation of Ohm's law. This unexpected observation of a strong Weyl state in the whole TI regime in Bi1−xSbx points to a gap in our understanding of the detailed crystal and electronic structure evolution in this alloy system.
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