Title:	Suppression of transport spin-polarization of surface states with emergence of ferromagnetism in Mn-doped Bi2Se3
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Abstract:	The surface states of topological insulators (TI) are protected by time reversal symmetry and they display intrinsic spin helicity where the momentum of the charge carriers decides their spin states. As a consequence, a current injected through the surface states becomes spin polarized and this transport spin-polarization leads to a proportionate suppression of Andreev reflection in superconductor/TI junctions. Here we show that upon doping Bi2Se3 with Mn, the transport spin-polarization is seen to be monotonically suppressed. The parent compound Bi2Se3 is found to exhibit a transport spin-polarization of about 63% whereas crystals with 10% Mn doping show transport spin-polarization of about 48%. This suppression is accompanied by an increasing ferromagnetic order of the crystals with Mn doping. Scanning tunneling spectroscopy shows that the topological protection of the surface states reduces due to Mn doping. The net measured transport spin-polarization is due to a competition of this effect with the increased magnetization on Mn doping. The present results provide important insights for the choice of magnetic topological insulators for spintronic applications.
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