

Bilinear magnetoresistance in topological insulators: the role of spin-orbit scattering on impurities

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Bilinear magnetoresistance (BMR) is a new kind of spin-orbit-driven magnetoresistance effect that scales linearly with electric and magnetic fields. We considered BMR theoretically in surface states of 3D topological insulators. Assuming the minimal model of surface electronic states in TIs, we calculated BMR induced by the interplay of current-induced spin polarization and spin-orbit scattering on impurities. We present detailed characteristics of BMR and compare our results to those obtained for TIs with structural defects [1] and hexagonal warping [2].

References:

- [1] A. Dyrdał, J. Barnaś, A. Fert, *Physical Review Letters* **124**, 046802 (2020)
- [2] P. He, et al., *Nat. Phys.* **14**, 495 (2018)

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