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Anomalous Hall Effect on the surface of topological Kondo insulators ELIO KÖNIG, University of Wisconsin-Madison, PAVEL OSTROVSKY, Max Planck Institute for Solid State Research, Stuttgart, Germany, MAXIM DZERO, Kent State University, ALEX LEVCHENKO, University of Wisconsin-Madison — We calculate the anomalous Hall conductivity σ_{xy} of surface states on three dimensional topological Kondo insulators with cubic symmetry and multiple Dirac cones. We treat a generic model in which the Fermi velocity, the Fermi momentum and the Zeeman energy in different pockets may be unequal and in which the microscopic impurity potential is short ranged on the scale of the smallest Fermi wavelength. Our calculation of σ_{xy} to the zeroth (i.e. leading) order in impurity concentration is based on the Kubo-Smrcka-Streda diagrammatic approach. It also includes certain extrinsic contributions with a single cross of impurity lines, which are of the same order in impurity concentration and were, to the best of our knowledge, scrutinized in a single band model, only. We discuss various special cases of our result and the experimental relevance of our study in the context of recent hysteretic magnetotransport data in SmB_6 samples.

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