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Signatures of Dirac fermion-mediated magnetic order PAOLO SESSI, FELIX REIS, THOMAS BATHON, Institute of Physics, University of Wuerzburg, Germany, KONSTANTIN KOKH, OLEG TERESHCHENKO, Novosibirsk State University, Novosibirsk, Russia, MATTHIAS BODE, Institute of Physics, University of Wuerzburg, Germany — The spin-momentum locking of topological states offers an ideal platform to explore novel magneto-electric effects. These intimately depend on the ability to manipulate the spin texture in a controlled way. Here, we combine low-temperature scanning tunneling microscopy with single-atom deposition technique to directly map the evolution of the electronic properties of topological states under the influence of different magnetic perturbations. By analyzing energy-resolved quasi-particle interference maps, we reveal signatures of Dirac fermion-mediated surface magnetic order for extremely dilute adatom concentrations. By using different magnetic elements and coverages, we find that this striking observation crucially depends on two parameters: single adatoms magnetic anisotropy direction and energy-level alignment.

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