

Abstract Submitted
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Quantum Anomalous Hall Effect Induced on SnTe/EuTe Interface CHAOKAI LI, ICQM, Peking University — The Anomalous Hall effect (AHE), which is the Hall effect in magnetic materials in the absence of external magnetic field, was discovered over 100 years ago. However, its quantized version (QAHE) was discussed by physicists quite recently. Here we propose an experimental realization of QAHE on SnTe/EuTe interface. SnTe is an experimentally verified topological crystalline insulator, which supports topologically protected gapless surface states on surfaces preserving a subset of bulk mirror planes. Bulk EuTe is an antiferromagnetic insulator. We propose a strategy to open gaps on the original gapless surface states of SnTe by an epitaxial EuTe layer. The exchange field of the magnetic EuTe layer breaks time reversal symmetry of the SnTe surface Hamiltonian, and we can theoretically demonstrate that the gap is topologically nontrivial. This is confirmed by directly computing the electronic Chern number of the heterostructure via first principles calculation.

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