Abstract Submitted
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Quantum Anomalous Hall Effect in Magnetic Topological Insulator GdBiTe3[1] HAI-JUN ZHANG, XIAO ZHANG, SHOU-CHENG ZHANG, Department of Physics, McCullough Building, Stanford University, Stanford, CA 94305-4045 — The quantum anomalous Hall (QAH) state is a two-dimensional bulk insulator with a non-zero Chern number in absence of external magnetic fields. Protected gapless chiral edge states enable dissipationless current transport in electronic devices. Doping topological insulators with random magnetic impurities could realize the QAH state, but magnetic order is difficult to establish experimentally in the bulk insulating limit. Here we predict that the single quintuple layer of $GdBiTe_3$ film could be a stoichiometric QAH insulator based on *ab-initio* calculations, which explicitly demonstrate ferromagnetic order and chiral edge states inside the bulk gap. We further investigate the topological quantum phase transition by tuning the lattice constant and interactions. A simple low-energy effective model is presented to capture the salient physical feature of this topological material.

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