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Neutron Investigations of the Antiferromagnet Topological Insulator, MnBi_2Te_4

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In this talk, I discuss our recent results on the first intrinsic antiferromagnetic topological insulator, MnBi_2Te_4 . In this Van der Waals material, we can control the magnetic state through chemical substitution, as well as through the application of a magnetic field. These knobs allow us to effect the topology of the band structure and thus the transport. We apply a number of probes, including transport, susceptibility, neutron scattering, ARPES, and TEM to determine the physics of this exciting material [1,2]. "Spin Scattering and noncollinear spin-structure induced intrinsic anomalous Hall Effect in antiferromagnetic topological insulator MnBi_2Te_4 , Seng Huat Lee et al, Phys. Rev. Research 1, 012011 (2019) "Ferromagnetism in van der Waals compound $\text{MnSb}_{1.8}\text{Bi}_{0.2}\text{Te}_4$ " Yangyang Chen et al, Phys. Rev. Mater. 4, 064411 (2020)