

Abstract Submitted  
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**Topological magnetic crystalline insulators and co-representation theory** RUIXING ZHANG, CHAOXING LIU, Department of Physics, Pennsylvania State University — We introduce a new type of topological insulator protected by magnetic group symmetry, which is a combined symmetry of point group symmetry and time reversal symmetry. Based on the Herring rule of the co-representation theory of magnetic group, we systematically show that systems with certain magnetic group symmetries can have Kramers'-like degeneracies and admit a  $Z_2$  classification. We establish a tight-binding model describing a layered magnetic structure with combined  $C_4$  rotation and time reversal symmetry. We show that this model can support non-trivial topological phases by calculating its gapless surface states and defining its  $Z_2$  topological invariant.

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