

Abstract Submitted
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Search for New Topological Insulators HSIN LIN, Northeastern U., L.A. WRAY, S.-Y. XU, M.Z. HASAN, Princeton U., T. DAS, Y.J. WANG, R.S. MARKIEWICZ, ARUN BANSIL, Northeastern U. — Topological insulators (TIs) host a novel quantum phase of electrons which is characterized by topologically protected surface states originating from the effects of spin-orbit and time-reversal symmetries. While several families of TIs have already been found, the intense world-wide search for new classes of TIs continues unabated. This interest is driven by the need for materials with greater structural flexibility and tunability to enable viable applications in spintronics and quantum computing. We have used first-principles band theory computations in combination with angle-resolved photoemission experiments to successfully predict many new classes of topologically interesting materials, including Bi₂Se₃ series, the ternary half-Heusler compounds, thallium-based chalcogenides, and the Li₂AgSb and Ge_nBi_{2m}Te_{3m+n} families. [1-5] Work supported by the Office of Basic Energy Sciences, US DOE.

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