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Abstract for an Invited Paper
for the MAR12 Meeting of
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Correlated topological insulators and the fractional magnetoelectric effect¹

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I will describe the recent theoretical construction of electronic phases in 3d that combine the physics of electron fractionalization with that of topological insulators. Called fractional topological insulators, these states of matter host protected surface states and fractionally charged quasiparticle excitations. I will then discuss the emergent gauge theory description of these phases with an emphasis on the crucial role of deconfinement at low energies. I will also describe a wide variety of experimental signatures of fractional topological insulators as well as suggesting directions for experimental searches.

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