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*An overview on topological insulators*

Topological insulators are materials, which are conducting at their edges, though not in the bulk. Their essential physical properties take the form of an index, often associated to the Hamiltonian. "Topological" simply refers to the fact that indices remain invariant under continuous changes. Earliest examples occurred in connection with the Quantum Hall effect, which has been the source of various mathematical developments. In the last decade the concept has been refined by conditioning it to symmetries, such as time-reversal invariance. It has also been extended in part beyond band insulators, so as to include the localization regime as well. A general property of the indices, which should be preserved by any generalization, is bulk-edge correspondence, by which they should admit dual formulations, that is in terms of either the bulk or the edge properties of the material. The discussion is based on examples in dimension 1 and 2 exhibiting different symmetries.