

Colloquium Notice

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The intriguing world of disordered topological insulators

Topological Insulators and Superconductors are novel materials with non-trivial energy-band topology. This non-triviality has important physical consequences, such as the emergence of chiral edge or surface bands at the boundary of the samples, or quantized electric and magneto-electric responses. Depending on their generic symmetries, the topological materials fall in several distinct classes. An ongoing effort is understanding what are the physical properties that remain robust in the presence of strong disorder. Some fundamental questions, which apply to all these distinct classes of topological materials, are: Do the edge and surface modes localize? Are there extended states in the bulk (as in the IQHE)? Does the Magneto-Electric response remain quantized in the presence of strong disorder? In this talk, I will give a brief historical account of the field and bring up-front some of the present challenges and new research directions. In the second part I will introduce a non-commutative geometry program for topological insulators, which enabled us to make analytical and computational progress in the field of strongly disordered topological materials.

Monday

October 21, 2013

Starts at 12:15 PM

Coffee at 12:00 PM

Physics Conference Room, SB B326