3:30 pm • Friday September 27, 2013 • 2241 Chamberlin Hall • Coffee at 4:30 pm

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Topological Phases in Correlated Materials

Department of Physics Colloquium

WISCONSIN

Recently there have been significant theoretical and experimental efforts to understand and identify the so-called topological phases of matter in interacting electron systems. These topological phases may be characterized by different kinds of topological properties such as non-trivial edge/surface states and/or unusual elementary excitations in the bulk or surface. Notable examples include quantum spin liquids, topological insulators, and other closely related phases. One of the main challenges is to come up with theoretical criteria that can be used to identify or predict correlated materials that hold promise for the emergence of such topological phases. We discuss recent theoretical and experimental developments in this direction, along with a brief introduction to some of the proposed topological phases. In particular, we focus on correlated materials with strong spin-orbit coupling and/or near a metal-insulator transition.

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