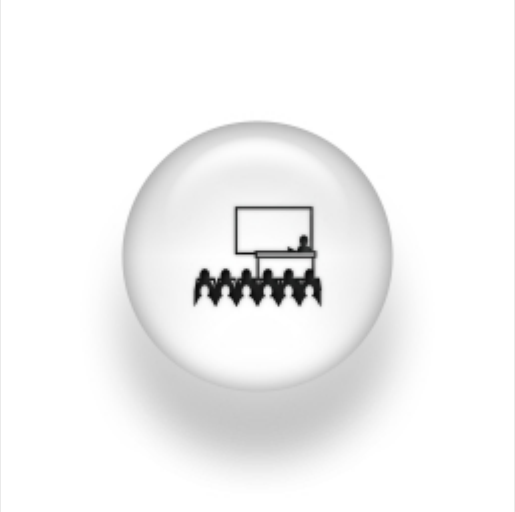
Coupling between topological insulators: Band topology and quantum spin Hall effect in bilayer graphene

Wednesday, 15 Dicember 2010, 12:00-13.00



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ABSTRACT:
In this seminar, first, I will review the electronic structure of CdTe and I will describe the conditions under which this material is a topological insulator.
Using band theory, I will introduce the concept of topological insulator and I will discuss the surface states of these materials.
Considering spin-orbit coupling graphene is a topological insulators. In the second part of the talk I will present the electronic properties of a graphene bilayer in presence of spin orbit coupling, and using this model system I will comment on the properties of two coupled topological insulators. Finally, I will analyze a bilayer graphene where the spin orbit coupling only exists in one of the layers.