# Stuttgarter Physikalisches Kolloquium

Max-Planck-Institut für Festkörperforschung
Max-Planck-Institut für Intelligente Systeme
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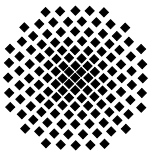

**Dienstag, 12. Januar 2016** | **17.15 Uhr** | **Hörsaal 2 D5**

**Stuttgarter Max-Planck-Institute, Heisenbergstraße 1, 70569 Stuttgart-Büsnau**

# Effects of atomic scale perturbations on Dirac surface states in topological crystalline insulators

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## Abstract

Topological crystalline insulators are recently discovered topological materials where topology and crystal symmetry intertwine to create relativistic massless Dirac electrons. Due to the importance of crystalline symmetry in generating and protecting the Dirac surface states, the topological states in these materials are expected to be highly sensitive to local structure. In this talk I will discuss how local disorder and strain influence the properties of topological crystalline insulators. In particular I will show that the Dirac point is surprisingly robust against short-range random disorder but sensitive to long-range coherent distortions that break mirror symmetry. I will discuss how different types of strain effect Dirac electrons in momentum space. In particular I will show how the effects of uniaxial strain in this system are counterintuitive and strongly influenced by the orbital nature of the bands.