Interplay between geometry and topology in topological crystalline phases

TAYLOR HUGHES, University of Illinois at Urbana-Champaign

In this talk I will discuss new developments that illustrate the interplay between topology, geometry, and symmetry in topological phases of matter. I will discuss the classification of some topological insulator/superconductor phases via their spatial symmetries and the consequences for topological defects such as disclinations and dislocations. Additionally, I will show how spatial symmetries can protect quantized topological responses in topological insulator phases. If time permits, I will discuss how interactions can generate a spatial protected topological phase in a symmetry class which only has trivial phases in the non-interacting limit.

\(^1\)We acknowledge support from ONR award N0014-12-1-0935.