## Max-Planck-Institut für Struktur und Dynamik der Materie

Max Planck Institute for the Structure and Dynamics of Matter



Wednesday, May. 22, 2019 – 14:00 h CFEL Seminar room I-III (Bldg. 99)

## **Reimar Lüst Lecture**

Prof. Charles Kane

University of Pennsylvania

## Symmetry, topology and electronic phases of matter

Symmetry and topology are two of the conceptual pillars that underlie our understanding of matter. While both ideas are old, over the past several years a new appreciation of their interplay has led to dramatic progress in our understanding of topological electronic phases. A paradigm that has emerged is that insulating electronic states with an energy gap fall into distinct topological classes.



Interfaces between different topological phases exhibit gapless conducting states that are protected and are impossible to get rid of. In this talk we will discuss the application of this idea to the quantum Hall effect, topological insulators, topological semimetals and topological superconductors. The latter case has led to the quest for observing Majorana fermions in condensed matter, which opens the door to proposals for topological quantum computation. We will close by surveying the frontier of topological phases in the presence of strong interactions.

MAX-PLANCK-GESELLSCHAFT

Host: Angel Rubio