



Physical Sciences Seminar

Quantum phenomena in real materials

Lukas Muechler

Flatiron Institute

Host: Maksym Serbyn

The discovery of topological phases of matter has led to a new paradigm in the field of condensed matter physics and has changed our fundamental understanding of the electronic properties of crystalline materials. It has further stimulated the search for quantum states with exotic electronic properties not only in physics, but also in chemistry and materials science, motivated by the demand for multifunctional materials in next generation spintronic and quantum devices. In this talk, I will show how the abstract and mathematical language used to describe these states can be translated into a chemical language of bands, bonds and symmetries. In particular, I will demonstrate how materials chemistry considerations are crucial to realizing the physics of these new states of matter in realistic materials such as monolayers of WTe₂ and the layered square-net semimetal ZrSiTe. By drawing analogies to well known chemical concepts such as electron counting rules and structure to property relationships, I will further discuss how a chemical understanding of topological concepts can be used to gain deeper insights into the electronic properties of complex materials.

Tuesday, March 17, 2020 10:00am - 11:00am

Mondi Seminar Room 2, Central Building



This invitation is valid as a ticket for the ISTA Shuttle from and to Heiligenstadt Station.
Please find a schedule of the ISTA Shuttle on our webpage:

<https://ista.ac.at/en/campus/how-to-get-here/> The ISTA Shuttle bus is marked ISTA Shuttle (#142) and has the Institute Logo printed on the side.