



Condensed Matter Theory Center Seminar

Chuanwei Zhang

(Washington State University)

Monday, September 20

2:30 - 3:30pm

2205 Physics Building

"Topological insulator and superconductor in spin-orbit coupled semiconductors"

Spin-orbit is the physical origin of many important topological phenomena, ranging from the intrinsic anomalous and spin Hall effects in ferromagnetic semiconductors, the quantum spin Hall insulator, to the recently discussed Majorana physics in semiconductor/superconductor heterostructure. In this talk, I will discuss three recent work in my group on this topic: 1) A quantized anomalous Hall insulator in a nanopatterned two-dimensional electron gas; 2) Proximity induced chiral f-wave superconductivity and Majorana fermions in a hole-doped semiconductor-superconductor heterostructure; 3) Robustness of Majorana modes and minigaps in an electron doped semiconductor-superconductor heterostructure.

Ref. [1] Y. Zhang, C. Zhang, arXiv.1009.1200.

Ref. [2] L. Mao, C. Zhang, arXiv.1007.2972.

Ref. [3] L. Mao, J. Shi, Q. Niu, C. Zhang, in preparation