Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

"Physics of Majorana nanowires beyond 1D models"

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Abstract: Semiconducting nanowires brought into contact with a superconductor and subjected to an external magnetic field are one of the two actively explored paths to creating Majoranas. Beautifully, many physical phenomena occuring in these systems are captured by a simple model containing only a single one-dimensional spinful electron mode. However, while being amazingly useful for developing a basic understanding of the system, this model can also be misleading because of failing to capture several phenomena crucial for predicting the properties of Majoranas. I will discuss two examples of such phenomena: the effect of electrostatic interactions and the orbital effect of magnetic field. While the physical system beyond 1D is too complex to be treatable analytically, I will use simple estimates and symmetry analysis to build up the intuition about the phenomena we are studying.

11:00am
Thursday, March 17, 2016
Duboc Room (4-331)

Host: Liang Fu