

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

“Towards a complete classification of symmetry protected topological phases for interacting fermions in three dimensions and a general group supercohomology theory”

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Abstract: Classification and construction of symmetry protected topological (SPT) phases in interacting boson and fermion systems have become a fascinating theoretical direction in recent years. It has been shown that the (generalized) group cohomology theory or cobordism theory can give rise to a complete classification of SPT phases in interacting boson/spin systems. Nevertheless, the construction and classification of SPT phases in interacting fermion systems are much more complicated, especially in 3D. In this talk, I will revisit this problem based on the equivalent class of fermionic symmetric local unitary (FSLU) transformations. I will show how to construct very general fixed point SPT wavefunctions for interacting fermion systems. I will also discuss the procedure of deriving a general group super-cohomology theory in arbitrary dimensions.

12:00pm
Thursday, May 25, 2017
Duboc Room (4-331)