Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

"Exotic phases in spin-orbit coupled correlated electron systems"

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Abstract: Correlated electron system with strong spin-orbit coupling is one of the cutting edge areas in modern condensed matter physics. Interplay between spin-orbit coupling and Coulomb interaction provides a new route to access novel phases. In this seminar, we discuss attainable exotic phases in three dimensional spin-orbit coupled correlated electron systems. We show that quantum critical phases and topological phases may be realized in systems with proper symmetries using standard renormalization group methods. One of the important implications of our finding is to provide a concrete example of strongly interacting quantum criticality in three spatial dimensions. Application to pyrochlore iridates and relation with recent experiments will be also discussed.

12:00noon
Tuesday, June 10, 2014
Duboc Seminar Room (4-331)

Host: Liang Fu