Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

"Subsystem symmetry-protected topological phases in two and three dimensions"

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Abstract: Beyond the global symmetries usually dealt with in condensed matter physics (such as the spin-flip symmetry of the Ising model), it is also possible to have symmetries which act on only a subextensive subsystem. These subsystem symmetries act along rigid subsystems, such as: along a line in 2D, a plane in 3D, or even subsystems of fractal dimension. It was recently appreciated that such symmetries could also protect non-trivial symmetry-protected topological (SPT) phases: such phases have recently gained interest due to their capability to act as a resource for universal measurement-based quantum computation in 2D, and due to their connection (by duality) to fracton topological order in 3D. I review this and recent progress in subsystem SPT phases, with a particular focus on their classification and its implication on fracton phases.

11:00 AM
Thursday, December 5, 2019
Duboc Room (4-331)

Host: Liang Fu