

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

"Subsystem symmetry protected topological order and twisted Fracton theory"

Yizhi You, Princeton University

Abstract: In this talk, I introduce a new type of topological order protected by subsystem symmetries which only operate on a specific part of the many-body system—i.e. along planes, lines or fractals. We develop a zoology of exactly solvable models in $2d$ and $3d$ as candidates for subsystem SPT (SSPT) phase. Such class of subsystem SPT states holds exotic properties akin to the usual SPT states including un-gappable edge and surface anomaly. After gauging the subsystem symmetry, the corresponding higher-rank gauge theory either exhibit twisted Fracton topological order with sub-dimensional anyon excitation, or contain symmetry enriched Fracton phase. Finally, I would mention the higher-rank Aharonov-Bohm effect, which could be a numerical detectable way to measure SSPT order.

12:00pm noon
Wednesday, March 14, 2018
Duboc Room (4-331)