

Massachusetts Institute of Technology
Department of Physics

Condensed Matter Theory Seminar

"Topological classes of quantum dynamics in quasi-periodically driven systems"

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Abstract: Advances in the control and manipulation of experimental quantum systems has allowed us to realize new driven phases of quantum matter in the laboratory. In periodically driven systems new phases occur when the steady states, determined by Bloch-Floquet theorem, have novel spatio-temporal or topological order.

In this talk I show how the Bloch-Floquet theorem is generalized to cases when the drives are not periodic, but rather quasi-periodic.

I apply this framework to the simplest case of a few level system, and show that steady state dynamics admit a topological classification. When the classification is non-trivial the system exhibits a quantized pumping of energy, and a sensitivity to initial conditions, neither of which is present in the trivial case.

I further discuss the stability of this classification, the behavior near the critical point where the topological class changes, and ongoing work to observe this in experiments.

12:00pm noon
Thursday, October 17, 2019
Low room 6C-333

Host: Liang Fu