



THE UNIVERSITY OF
CHICAGO

THE COMMITTEE ON
COMPUTATIONAL AND
APPLIED MATHEMATICS

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Floquet Hamiltonians - Effective Gaps and Resonant Decay

THURSDAY, November 4, 2021 at 4:00pm
Jones 303, 5747 S. Ellis Ave. Chicago, IL 60637
OR
via Zoom

SFloquet topological insulators are an emerging category of materials whose properties are transformed by time-periodic forcing. Can their properties be understood from their first-principles continuum models, i.e., from a driven Schrodinger equation?

First, we study the transformation of graphene from a conductor into an insulator under a time-periodic magnetic potential. We show that the dynamics of certain wave-packets are governed by a Dirac equation, which has a spectral gap property. This gap is then carried back to the original Schrodinger equation in the form of an “effective gap” - a new and physically-relevant relaxation of a spectral gap.

Next, we consider periodic media with a localized interface, and ask whether edge/defect modes remain stable under forcing. In a model of planar waveguides, we see how such modes decay and disappear due to resonant coupling with the radiation modes.

Organizer:

Jeremy Hoskins, Department of Statistics, jeremyhoskins@statistics.uchicago.edu
CAM Colloquium URL: <https://cam.uchicago.edu/events/cam-colloquium/>

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