Condensed Matter Theory Center Seminar

Thursday, November 5
11:00 am – 12:30 pm
2205 Toll Physics Building

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"Many Body Localization Beyond Exact Eigenstates and Closed Systems"

Abstract: The discovery of many body localization (MBL) has opened a new chapter in the study of quantum statistical mechanics. Many body localized systems do not reach thermal equilibrium even at infinite times, and can display counterintuitive properties such as spontaneously broken symmetries at high temperature in one dimension, and topological order without a bulk gap (Phys. Rev. B 88, 014206 (2013). However, most investigations of MBL have focused on the (experimentally unrealizable) limit of perfectly isolated quantum systems, and on experimentally unmeasurable quantities such as many body level statistics or properties of exact eigenstates.

In this talk, I demonstrate how MBL may be understood using experimentally measurable quantities—the spectral functions of local operators—and how the discussion may be extended to imperfectly isolated systems. I discuss the properties of a (many body) localized system coupled to a (delocalized) heat bath, and discuss the behavior that may arise.

Refs: Phys. Rev. B 90, 064203 (2014), Phys. Rev. Lett. 114, 117401 (2015), Phys. Rev. B 90, 195115 (2014), arXiv: 1506.05468

Host: Jed Pixley

Web: http://www.physics.umd.edu/cmtc/seminars.html

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