

Condensed Matter Physics Seminar Series

Quantum Geometry and Electronic Interactions in Twisted Bilayer Graphene

Jeanie "Chun Ning" Lau

OSU



In a flat band system, the charge carriers' energy-momentum relation is very weakly dispersive. The resultant large density of states and the dominance of Coulomb potential energy relative to the kinetic energy favor the formation of strongly correlated electron states, such as ferromagnetism, nematicity, and superconductivity. The advent of two-dimensional (2D) materials and their heterostructures has ushered in a new era for exploring, tuning and engineering of flat band system. Here I will present our recent works in twisted bilayer graphene, including experimental demonstration of the resolution of the paradox of slow Fermi velocity by quantum geometry, and suppression of superconductivity by in situ tuning of Coulomb screening.

Chun Ning (Jeanie) Lau is a Professor in the Department of Physics at The Ohio State University. She received her BA in physics from University of Chicago in 1994, and PhD in physics from Harvard in 2001. She was a research associate at Hewlett Packard Labs in Palo Alto from 2002 to 2004, before joining University of California, Riverside in 2004. She started her current position at OSU in 2017. Her research focuses on electronic, thermal and mechanical properties of nanoscale systems, in particular, graphene and other two-dimensional systems. She is a recipient of NSF CAREER Award and PECASE Award, APS Fellow, and AAAS Fellow. She is currently an Associate Editor at Nano Letters and ACS Nanoscience Au.

**Friday, April 17th at 11am
4-330 PAB**

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