

# *Chez Pierre*

Presents ...

**Monday, April 8, 2019**

**12:00pm Noon**

**MIT Room 4-331**

## **Chez Pierre Seminar**

**Jia Li – Brown University**

“Two-component composite fermions and their pairing states in double-layer graphene”

Pairing interaction between fermionic particles leads to composite Bosons that condense at low temperature. Such condensate gives rise to phase coherence in superconductivity, superfluidity, and other exotic states of matter in the quantum limit. In double-layer graphene structure where the active region consists of two monolayer graphene separated by few-layer hBN, layer pseudo-spin defines a unique two-component system, where pseudo-spin polarization and inter-species correlation are continuously tunable. The versatile tunability and multi-dimensional phase space establish double-layer graphene as ideal platform to explore the effect of pairing interaction. In this talk I will discuss a wide variety of emergent phenomena in double-layer graphene in the quantum Hall effect regime, such as condensate of electron-hole pairs at integer filling, and pairing states of composite fermions at fractional filling.

