

Chez Pierre

Presents ...

Monday, April 11, 2016

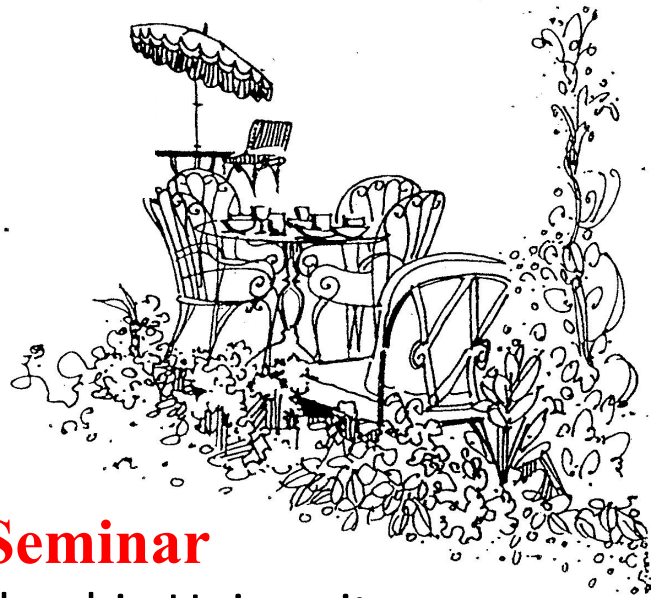
12:00pm Noon

MIT Room 4-331

Chez Pierre Seminar

Abhay Pasupathy – Columbia University

” Two Graphene Stories“



I will discuss two recent scanning tunneling microscopy (STM) experiments from my group on monolayer graphene. In the first experiment, I will discuss the formation of Kekule bond order in graphene. I will show how adatoms on the surface of graphene can interact with each other over long distances due to the peculiarity of graphene's Fermi surface. Under appropriate conditions, the adatom-mediated interaction causes the breaking of chiral symmetry in graphene which we directly observe in STM experiments. In the second experiment, I will discuss the physics of electrostatic quantum dots in graphene in the few nanometer size range. Due to its semimetallic nature, electrons in graphene cannot be truly confined by simple electrostatic potentials. They can however be confined for a period of time, leading to the formation of resonances with finite width in the graphene spectrum. I will discuss the nature of these quasibound states and how they can be used to understand Klein tunneling across potential barriers in graphene.