

Chez Pierre

Presents ...

Tuesday, October 29, 2013

3:00pm

MIT Room 4-331



Special Chez Pierre Seminar

Brian Skinner

Argonne National Laboratory

“Negative compressibility and supercapacitors”

Negative compressibility, in which a system lowers its energy with increasing density, is an unusual feature of strongly-correlated systems with long-ranged Coulomb interactions. Here I show how negative compressibility arises in two-dimensional electron gases, including semiconductor heterostructures and graphene, and discuss its signature in quantum capacitance measurements. I then show how similar physics is behind the remarkable performance of supercapacitors, which are energy storage devices capable of storing hundreds of Coulombs of electric charge within a single cubic centimeter of volume.