Chez Pierre

Presents ...

Monday, November 20, 2017

12:00pm Noon

MIT Room 4-331

Chez Pierre Seminar

Alexander Yu. Kuntsevich - P.N. Lebedev Physical Institute, Moscow, Russia

"Spin magnetization and entropy measurements in two-dimensional systems."

We apply recharging techique to measure derivatives dS/dn and dM/dn (where S and and M are entropy and magnetization per unit area) in two dimensional gated systems. In particular, we demonstrate that 2D metal-to-insulator transition is acompanied by formation of spin droplets. We also detect fingerprints of these droplets in transport properties of the system. Entropy measurements reveal signatures of electron-electron interaction in both Fermi liquid (T<<E_F) and correlated plasma (T~E_F) regime. In the QHE gaps entropy decreases significantly. In the Fermi-liquid regime (high densities) S goes to zero as temperature decreases as S\propto T, thus independently checking the 3rd law of thermodynamics.