



## Seminar

### Quantum Hall Effects in Two-Dimensional Hole Systems Confined in Wide GaAs Quantum Wells

刘阳

*Princeton University*

**Time: 4:00pm, August 3, 2015 (Monday)**

**时间: 2015年8月3日 (周一) 下午4:00**

**Venue: Room w563, Physics building, Peking University**

**地点: 北京大学物理楼, 西563会议室**

#### Abstract

A strong perpendicular magnetic field applied to a 2D charged system quantizes the particles' kinetic energy into a set of discrete Landau levels (LLs), giving rise to many interesting quantum phases such as quantum Hall effect (QHE). Introducing additional subband degree of freedom can lead to novel phenomena. In this talk, I will introduce our progress in the study of 2D hole systems confined in wide GaAs quantum wells, where the heavy- and light-hole subbands are close in energy. In our transport study, we discover several interesting phenomena, arising from the non-trivial physics of the heavy- and light-hole subbands. For example, we observe an unusual crossing of the two lowest-energy LLs, and correlated two-component  $\Psi_{111}$  and  $\Psi_{331}$  states at this crossing.

#### About the speaker

My name is Yang Liu. I am a postdoctoral research associate working with Prof. Mansour Shayegan at Princeton University. I received my Ph.D. degree from the department of Electrical Engineering at Princeton University, and B.E. and M.E. degrees from the department of Electronics Engineering at Tsinghua University. My study at Princeton concentrated on the rich family of interaction-induced quantum phases in ultra-clean 2D electron/hole systems, such as quantum Hall effects, charge density waves, Wigner crystals, etc.