



清华大学高等研究院

Institute for Advanced Study, Tsinghua University

物理学学术报告 Physics Seminars (biweekly)

- Title:** A new look at Rashba-related phenomena from multi-orbital perspective
- Speaker:** Prof. Jung Hoon Han (*Sungkyunkwan University*)
- Time:** 3:15pm, Wednesday, June 19, 2013
(2:45~3:15pm, Tea, Coffee, and Cookie)
- Venue:** Conference Hall 322, Science Building, Tsinghua University

Abstract

Over the last few years I have been developing a more realistic picture of the Rashba effect based on multi-orbital band structure ideas. The initiative, I hope, is a timely one in the sense that a great deal of efforts is being devoted to surface phenomena in both topological and non-topological material systems and various interface structures. I will try to provide arguments that multi-orbital picture is an essential ingredient in the overall microscopic understanding of the Rashba interaction taking place in such systems. Even in the absence of substantial spin-orbit interaction, i.e. in bands formed by light elements, I will show that an analogue of spin Rashba effect is taking place, dubbed orbital Rashba effect. Experiments to detect orbital Rashba effect will be discussed. Several applications of the orbital Rashba ideas will be presented in connection with spin transfer torque dynamics, as well as Kondo effects, assumed to be taking place in ultrathin film materials.