

凝縮系物理学インフォーマルセミナー Condensed Matter Seminar

Location: Room 115, School of Science Bldg. 5 (理学 5 号館 413 号室)
Time and date: 13:30 – 15:00, Thursday, 23 April 2015

Electron-phonon interaction and magneto-optical effect in topological valleytronic materials

Speaker: Dr. Zhou Li (RIKEN)

Abstract:

In Graphene and topological insulators (recently also in Weyl semimetals), the Hamiltonian is governed by Dirac equation. In spintronics the Hamiltonian is similar but with the strength of Fermi velocity to be much smaller, making the system cross over from Dirac fermions to Schrodinger fermions. Strong distortion of the Fermi surface could introduce a hexagonal warping term in the Hamiltonian in which the energy is proportional to the cubic of the momentum. Optical and magneto-optical measurements play an important role in determining the physics of superconductors and now we use these tools to probe topological materials. Finally the impact of electron-phonon interaction on these systems will be addressed.