

Title: Electronic properties of graphene
Lecturer: Romain Danneau

Outline:

1. Theoretical background
(carbon sp^2 hybridisation, band structure, density of states, stacking)
2. Basic field effect properties and magneto-transport
(electronic transport, minimum conductivity, noise, quantum Hall effect, Klein paradox...)
3. Graphene production and device fabrication
4. Graphene and applications

Abstract:

Graphene is a two-dimensional material composed by carbon atoms in a honeycomb lattice. Since its isolation, graphene has attracted a tremendous attention in a very short period of time. Its unique properties have fascinated researchers from the academic world as well as microelectronic industries. Indeed, devices based on graphene are expected to be commercialized within the next few years. In this lecture I will cover the basic physical properties of graphene, from the most fundamental point of view to the potential applications.