Simulation of Quantum Materials

Professor: Francisco Munoz
Schedule: Friday 15:00 (it could change if deemed necessary)
Credits: 3

Objectives

To provide students with basic knowledge of the simulation of quantum materials, such as graphene, topological insulators, van der Waals heterostructures, etc.

Requirements

Optics, and Programming

Contents

- Basic of quantum mechanics
- The tight-binding method
- The Brillouin zone and graphene
- Density functional tight-binding and heterostructures
- Special topics chosen by the students

Evaluations

- Weekly working appreciation
- Research project
- Presentation of a paper.

The final score will be the simple average of the three items

Bibliography

Most of the content of the course will be given in lecture notes in u-cursos.
Also the book, S. Datta. "Quantum transport: From atom to transistor" will be used in the beginning