ID de Contribution: **3**   Type: **Non spécifié**

Jérôme Cayssol: Dirac materials.

mercredi 6 juillet 2022 14:30 (1 heure)

In this talk, I will explain how the Dirac equation can be used to describe the physics of materials like graphene and topological insulators. I will present briefly the topological band theory for Bloch electrons in crystalline materials. Specific examples of tight-binding models giving rise to lattice versions of the Dirac equation in various space dimension will be discussed in various space dimensions : 1D (Su–Schrieffer–Heeger and Rice–Mele models), 2D (graphene, boron nitride, Haldane model) and 3D (Weyl semi-metals). I will show how the Dirac equation provides a description of the physics near specific points in reciprocal space, and also allows to predict edge/surface states between various Dirac materials.

J. Cayssol and J.N. Fuchs, "Topological and geometrical aspects of band theory", J. Phys. Mater. 4, 034007 (2021).