

MON2F1: Materials - Stability and Dynamics of Graphene (Shared with Semiconductors Physics)

Chaired by A. Fasolino, Institute of Theoretical Physics Toernooiveld, Nijmegen, The Netherlands

Time: Monday 16:50–18:30

Location: Aula 1

Invited talk

MON2F1.1 16:50 Aula 1

Graphene: A new bridge between condensed matter physics and quantum electrodynamics — ●MIKHAIL KATSNELSON — Institute for Molecules and Materials, Radboud University Nijmegen, 6525 AJ, Nijmegen, The Netherlands

A review of "quantum relativistic" dynamics of charge carriers in single- and bilayer graphene is done, with a special emphasize of the effects of corrugations of graphene sheets.

MON2F1.2 17:30 Aula 1

Surface quantum Hall state and spin accumulation in graphene in a zero magnetic field — ●GRIGORY TKACHOV and MARTINA HENTSCHEL — Max Planck Institute for the Physics of Complex Systems, Noethnitzer St. 38,D-01187 Dresden, Germany

We present a novel theoretical realization of an integer quantum Hall effect in a massless Dirac-electron system with a chiral boundary in a zero magnetic field. In particular, our findings apply to zigzag-terminated graphene.

MON2F1.3 17:50 Aula 1

Non-linear terahertz optics of graphene — ●SERGEY MIKHAILOV and KLAUS ZIEGLER — Institute for Physics, University of Augsburg, Augsburg, Germany

Non-linear kinetic theory of the electromagnetic response of graphene is developed taking into account self-consistent field effects. Radiative decay is calculated. Conditions of efficient higher harmonics generation of terahertz radiation in graphene are determined.

MON2F1.4 18:10 Aula 1

Ab initio numerical GW many body effects in the electronic structure of real free-standing graphene — ●PAOLO E. TREVISANUTTO^{1,2}, CHRISTINE GIORGETTI^{2,3}, LUCIA REINING^{2,3}, MASSIMO LADISA⁴, and VALERIO OLEVANO^{1,2} — ¹Institut Néel, CNRS & UJF, Grenoble, France — ²European Theoretical Spectroscopy Facility (ETSF), France — ³Laboratoire des Solides Irradiés, CNRS - CEA, École Polytechnique, Palaiseau, France — ⁴Istituto di Cristallografia, CNR, Bari, Italy

The electron electron dynamic correlation effects in the real free standing graphene have been investigated by using an ab initio GW many body approximation.