

THU2F1: Surface, Interface and Low-Dimensional Physics - Graphene

Chaired by P. Jelinek, Institute of Physics of the ASCR, Prague, Czech Republic

Time: Thursday 11:30–12:50

Location: Aula 1

THU2F1.1 11:30 Aula 1

Optical properties of graphene nanoribbons — DEBORAH PREZZI¹, DANIELE VARSANO¹, ALICE RUINI^{1,2}, ANDREA MARINI³, and •ELISA MOLINARI^{1,2} — ¹INFM-CNR-S3, National Center on NanoStructures and BioSystems at Surfaces, I-41100 Modena, Italy — ²Dipartimento di Fisica, Università di Modena e Reggio Emilia, I-41100 Modena, Italy — ³Dipartimento di Fisica, Università di Roma “Tor Vergata”, I-0133 Roma, Italy

We investigate from first principles the optoelectronic properties of graphene nanoribbons (GNRs) with the inclusion of many-body effects. We show that strong exciton binding is accompanied by relevant effects of edge passivation and width modulation.

THU2F1.2 11:50 Aula 1

Soft ripples in the first graphene layer on SiC(0001) surface: A joined STM and ab-initio study — FRANÇOIS VARCHON, •PIERRE MALLET, JEAN-YVES VEUILLEN, and LAURENCE MAGAUD — Institut Néel, C.N.R.S. and Université Joseph Fourier, Boîte Postale 166, F-38042 Grenoble Cedex 9, France

STM and ab initio studies allow us to give a description of the graphene/SiC(0001) interface at the atomic scale. We demonstrate the existence of substrate-induced ripples in the graphene monolayer.

THU2F1.3 12:10 Aula 1

Even-odd effect in graphene valley filter — •ALESSANDRO CRESTI¹, GIUSEPPE GROSSO¹, and GIUSEPPE PASTORI PARRAVICINI² — ¹Dipartimento di Fisica, Università di Pisa, Italy — ²Dipartimento di Fisica, Università di Pavia, Italy

We analyze the peculiar even-odd dependence of the current-blocking effect in bipolar graphene junctions obtained in zigzag nanoribbons. We present numerical simulations and propose a symmetry-based interpretation of the effect.

THU2F1.4 12:30 Aula 1

Curved graphene sheets grown at the edges of stacked graphene planes — ISKANDAR KHOLMANOV^{1,2}, EMANUELE CAVALIERE¹, MATTIA FANETTI^{1,2}, CINZIA CEPEK², and •LUCA GAVIOLI^{1,2} — ¹Dipartimento di Matematica e Fisica, Università Cattolica del Sacro Cuore, via dei Musei 41, IT-25121 Brescia, Italy — ²Laboratorio nazionale TASC INFM-CNR, Area Science Park, Basovizza S.S. 14 Km 163.5, IT-34012 Trieste, Italy

We fabricate a structurally new form of graphene, namely curved graphene sheets, synthesized by chemical vapor deposition on HOPG. Scanning tunneling microscopy shows that the CGS has grown at the edges of topmost graphene bilayers.