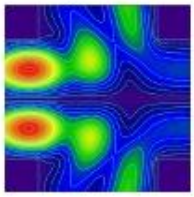


3rd Workshop on Nanoelectronics for Researchers of the Mediterranean Area

IFISC, 10 June 2011

Palma de Mallorca (Spain)

Programme and book of abstracts

Scientific coordination:

Rosa López, IFISC (CSIC-UIB)

David Sánchez, IFISC (CSIC-UIB)

Llorenç Serra, IFISC (CSIC-UIB)

Secretary:

Marta Ozonas, IFISC (CSIC-UIB)

Govern de les Illes Balears

Universitat de les Illes Balears

CSIC

IFISC

Instituto de Física Interdisciplinar y Sistemas Complejos

Contact

Scientific organization:

Llorenç Serra
Tel. 971.172805
Mobile 646726713
Email llorens.serra@uib.es

David Sánchez
Tel. 971 25 98 87
Email david.sanchez@uib.es

Rosa López
Tel. 971 25 98 77
Email rosa.lopez-gonzalo@uib.es

Secretary:

Marta Ozonas
Tel. 971.173290
Email marta@ifisc.uib-csic.es

Nanomediterráneo 3

Program

Chair: Serra

9:00		Opening
9:10	Haug	*Transport through quantum dots: Shot noise measurements and counting of electrons*
9:55	Ortuño	*Transport in electron glasses*
10:30	Ordejón	*Transport in nanostructured materials and nanoscale devices: a perpective from ab initio simulations*

11:05		break

Chair: Climente

11:35	Valenzuela	*Single electron spin ratchet*
12:10	Fernández Rossier	*Spontaneous persistent currents in graphene*
12:45	Escartín	*Concentric multiple quantum rings*

13:20		lunch

Chair: Pi

15:00	Büttiker	*Single electron emitters for multiparticle electronics*
15:45	Untiedt	*The ultimate limit in nano: atomic contacts*
16:20	López	*Spin-orbit properties of quantum wires*

16:55		break

Chair: Sánchez

17:25	Levy Yeyati	*Andreev transport in hybrid carbon nanostructures*
18:00	Ballester Caudet	*Mixed correlation phases in elongated quantum dots*

18:35		poster session

19:45		dinner

Ana Ballester

Universitat Jaume I - Universitat Jaume I
Spain

Mixed Correlation Phases In Elongated Quantum Dots

Nanorods (NRs) are an elongated variant of quantum dots (QDs) with a highly anisotropic confining potential. These nanostructures constitute the bridge between zero-dimensional QDs and one-dimensional quantum wires (QWs). Nanodumbbells (NDs) are another type of elongated structures. These structures are NRs sandwiched between two spherical caps, typically of a different material. The theoretical study of colloidal semiconductor NRs and NDs is of particular interest because of the ability to synthesize these kinds of nanostructures with precise size and shape control [1,2]. The unusual long length of the NRs leads to characteristic profiles of the electron density distribution in the NR growth direction, which depend on the ratio among the NR length and the number of electrons populating the conduction band of the nanostructure. In the case of diluted N-electron NRs, the particles are distributed in an ordered way forming a Wigner crystal [3]. The Coulomb energy predominates so that correlations dominate the electronic structure. In the opposite limit, the particles interact weakly and the kinetic energy dominates the Coulomb repulsion. Then, the so-called Fermi-liquid phase appears [4]. The transition to the Fermi liquid goes through an intermediate phase (called charge-density wave within the local spin-density-functional theory) which can be considered as a partially melted Wigner molecule [5]. In this contribution, we present a comprehensive study on the electron density distribution in both, NRs under applied electric fields and nanodumbbells. We show that two of the above-mentioned phases may coexist simultaneously in the same structure – but in different regions – giving rise to new phases that we refer to as mixed correlation phases [6]. [1] X. Peng, L. Manna, W. Yang, J. Wickham, E. Scher, A. Kadanich, and A. P. Alivisatos, Nature (London) 404, 59 (2000); S. Kan, T. Mokari, E. Rothenberg, and U. Banin, Nature Mater. 2, 155 (2003). [2] J. E. Halpert, V. J. Porter, J. P. Zimmer, and M. G. Bawendi, J. Am. Chem. Soc. 128, 12590 (2006). [3] J. Planelles, M. Royo, A. Ballester, and M. Pi, Phys. Rev. B 80, 045324 (2009). [4] V. Filinov, M. Bonitz, and Yu. E. Lozovik, Phys. Rev. Lett. 86, 3851 (2001). [5] M. Koskinen, M. Manninen, and S. M. Reimann, Phys. Rev. Lett. 79, 1389 (1997). [6] A. Ballester, J. M. Escartín, J. L. Movilla, M. Pi, and J. Planelles, Phys. Rev. B 82, 115405 (2010).

Markus Buttiker

University of Geneva - Physics
Switzerland

Single electron emitters for multiparticle electronics

We explore dynamically controlled single electron sources which can emit precisely one electron per cycle. A conceptually simple candidate for such a source is a mesoscopic capacitor connected to a metallic contact via only one tuneable contact (a quantum point contact). Periodic driving of such a system leads to an ac-current. In linear response the ac-current can be described via an electrochemical capacitance and a charge relaxation resistance. While the mesoscopic capacitance exhibits quantum oscillations as function of gate voltage the charge relaxation resistance, in the single channel limit, is universal and given by half a resistance quantum. For driving voltages comparable to the effective level spacing the capacitor emits one electron and one hole in each cycle. We discuss the quantum mechanics of the emission process. The fidelity of the emitter is determined through the analysis and measurement of noise. We discuss the full counting statistics using a quasi-classical model. We propose a number of two-particle set-ups in which two such sources operate in synchronism to bring particles into collision. Of interest are an electronic Hong-Ou-Mandel set-up and the generation of a two-particle Aharonov-Bohm effect under conditions when there exists no single particle interference. [1] M. Buttiker, H. Thomas, and A. Pretre, Phys. Lett. A180, 364 (1993). [2] J. Gabelli, G. Feve, J.-M. Berroir, B. Placais, A. Cavanna, B. Etienne, Y. Jin, and D. C. Glattli, Science 313, 499 (2006). [3] G. Feve, A. Mahe, J.-M. Berroir, T. Kontos, B. Placais, D. C. Glattli, A. Cavanna, B. Etienne, and Y. Jin, Science 316, 1169 (2007). [4] M. Moskalets, P. Samuelsson, and M. Buttiker, Phys. Rev. Lett. 100, 086601 (2008). [5] A. Mahé et al., Phys. Rev. B 82, 2010309 (2010). [6] M. Albert, C. Flindt, M. Büttiker , Phys. Rev. B 82, 041407 (2010).

Marco Casas

Universidad de Alicante - Lt-nanolab
España

(attendance only)

attendance only

Juan Ignacio Climente

Universitat Jaume I - Universitat Jaume I
Spain

Colloidal quantum dots in complex dielectric environments

David Costa Milan

Universidad de Alicante - LT-Nanolab
España

Graphene Origami

D.C. Milan1, G. Saenz-Arce1, C. Untiedt1 1 LT Nanolab, Departamento de fisica aplicada universidad de Alicante. Nowadays, graphene is one of the most studied carbon compounds due to their electronic properties. Graphene, like a sheet of paper, folds under mechanical forces. Grapheme edges can significantly influence the overall electronic and magnetic properties of grapheme nanostructures. Especially for electronic applications. Folded graphene edges posses unusual electronic properties. Graphene preferentially folds along the armchair and zigzag directions. Graphene , a one-atom thick form a crystalline-carbon, possesses extraordinary electronic properties. Here we study grapheme flakes deposited on graphite. Experiments were conducted in a home built low temperatures STM using mechanically cut Pt-Ir wire tips. Samples were prepared in HOPG. Once a sheet of graphene is folded its structure and electronic properties are studied to determine its degree of coupling to the graphite substrate. Cross-sectional analysis of the fold shown reveals that it consists of a single sheet of graphite (3,4A^{o}) folded. When the graphitic sheet bends, the bonding must lose some of its sp2 character and gain some sp3 character. So the ripples can be seen as sp3-like line defects in the sp2 graphite sheets. The change from sp2 to sp3-like character must always involve a pair of carbon atoms, as it is the pi-bonding that is being disrupted. The sp3-like line defects should result in well defined edges in strongly curved graphite sheets. [1]□Jiong Zhang et al. PRL 104, 166805 (2010) [2]□Guohong Li et al. PRL 102, 176804 (2009) [3]□H Hiura et al. Nature 367, 148-151 (1994) [4]□Guohong Li et al, Nature Physics 6, 109-113 (2010)

Fernando Delgado

Universidad de Alicante - Universidad de Alicante
Spain

Cotunneling theory for STM spin-flip spectroscopy

Scanning Tunneling Spectroscopy of both magnetic atoms and molecules adsorbed on surfaces is analyzed from the theoretical point of view. We show that cotunneling is the leading mechanism that explains the spin assisted inelastic conductance reported in recent experiments [1-4]. We describe the electronic transport between the scanning tip and the conducting surface through the magnetic system (MS) with a generalized Anderson model. The correlations in the MS are calculated exactly and transport is considered to fourth order in the tip-MS and MS-surface coupling. Our theory accounts for the observed [2,4] asymmetric conductance and provides an explanation of the large inelastic contribution. [1] A. J. Heinrich et. al, Science 306, 466 (2004) [2] Xi Chen, et al, Phys. Rev. Lett. 101, 197208 (2008) [3] A. A. Khajetoorians et al, Nature 467, 1084 (2010) [4] X. Chen et al, Phys. Rev. Lett. 101, 197208 (2008)

José María Escartín

Universitat de Barcelona - Facultat de Física i Institut de Nanociència i Nanotecnologia
Spain

Concentric multiple quantum rings

We study the electronic internal structure, far-infrared (FIR) multipole response and persistent currents of nanoscopic few-electron concentric double (CDQR) and triple (CTQR) quantum rings [1,2,3] submitted to a perpendicularly applied magnetic field. We compare the CDQR ground states obtained from the full configuration-interaction exact diagonalization and the local spin-density functional theory (LSDFT) approaches [4]. Connections between the FIR multipole spectra of the system and its correlations and persistent currents are presented. For the CTQR geometry, we discuss within LSDFT the appearance of the ground state and dipole responses for systems hosting several tens of electrons. We pay special attention to the combination of oscillations of the persistent current of the system as a function of the applied B [5]. [1] T. Mano et al., Nano Lett. 5, 425 (2005). [2] C. Somaschini et al., Nano Lett. 9, 3419 (2009). [3] J.M. Escartín et al., Phys. Rev. B 79, 245317 (2009). [4] J.M. Escartín et al., Physica E 42, 841 (2010). [5] J.M. Escartín et al., Phys. Rev. B 82, 195427 (2010).

Joaquín Fernández R.

Universidad de Alicante - Universidad de Alicante
Spain

Spontaneous persistent currents in graphene

We discuss a new mechanism for persistent charge current that takes place when Coulomb repulsion induces a time reversal symmetry breaking in the the edges of a two-dimensional Quantum Spin Hall Insulator. For that matter, we study consider the case of graphene, described with Hubbard model including Haldane-Kane-Mele spin-orbit coupling in

a zigzag ribbon. We find three electronic phases with magnetic edges that carry currents reaching 0.4 nA, comparable to persistent currents in metallic rings, for the small spin-orbit coupling in graphene. We find a strong spin-valley coupling driven by spin orbit and the formation of local moments.

M. Magdalena Gelabert

Universitat de les Illes Balears - UIB
Spain

Rashba effect on the g-factor in hole systems

We present calculations of the g factors for the lower conductance steps of 3D hole quantum wires. Our results prove that the anisotropy with magnetic field orientation, relative to the wire, originates in the Rashba spin-orbit coupling. We also analyze the relevance of the deformation, as the wire evolves from 3D towards a flat 2D geometry. For high enough wire deformations, the perpendicular g factors are greatly quenched by the Rashba interaction. On the contrary, parallel g factors are rather insensitive to the Rashba interaction, resulting in a high g factor anisotropy. For low deformations we find a more irregular behaviour which hints at a sample dependent scenario.

Daniel Gosálbez

Universidad de Alicante - Universidad de Alicante
España

Stability of the Quantum spin Hall phase on curved graphene structures

The quantum spin Hall phase is characterized by the presence of spin filtered edge or surface states due to the spin-orbit coupling, that preserve time reversal symmetry. These states are robust against disorder due to the topological character of the quantum spin Hall phase. We study the stability of the transport properties of this phase in curved graphene structures. To consider the effects of the curvature in graphene we use an orthogonal tight-binding model within the Slater-Koster approximation, including the spin-orbit coupling. We compute, using the Landauer-Büttiker formalism, the conductance along curved and flat graphene ribbons with different kind of disorder (constrictions, bumps and Anderson-like disorder). For the transport calculations we have used the ALACANT (ANT.1D) transport package. We observe that the longitudinal conductance is quantized and robust against the disorder when we take in account the spin-orbit interaction.

Rolf Haug

Leibniz Universität Hannover - Institute for Solid State Systems
Germany

Transport through quantum dots: Shot noise measurements and counting of electrons

In measuring shot noise or counting electrons in transport through quantum dots more information about the electronic properties of quantum dots can be retrieved than is accessible by ordinary transport experiments. The group has long standing experience in measuring shot noise [1,2,3] and counting of electrons [4,5,6] in transport through quantum dots. In the talk recent results will be presented and discussed. [1] Phys. Rev. B 66, 161302 (2002) [2] Phys. Rev. Lett. 96, 246804 (2006) [3] Phys. Rev. Lett. 99, 206602 (2007) [4] Phys. Rev. B 76, 155307 (2007) [5] PNAS 106, 10116 (2009) [6] Appl. Phys. Lett. 96, 202103 (2010)

Rosa López

IFISC (UIB-CSIC) - IFISC
Spain

Spin-orbit properties in quantum wires

The Rashba interaction is a salient spin-orbit interaction in semiconductors which occurs due to interfacial electric fields in asymmetric heterostructures. This removes the spin degeneracy of conduction electron states and the resulting splitting can be tuned with external gates. Recently, strongly modulated transmission lineshapes (antiresonances) have been predicted when the the spin-orbit coupling is localized inside a quantum wire attached to normal leads. These antiresonances originate from path interference between a direct channel through the Rashba region and a channel that interacts with a quasibound state formed by the Rashba potential in the region (the Rashba dot). It is shown that the Rashba intersubband coupling controls the coupling between the continuum and discrete states and that the lineshape is of the Fano form. For energies above the onset of the second conductance plateau, strong polarization effects are observed. When electron-electron interactions are taken into account, Coulomb blockade resonanes have a Fano form, whereas in the strong coupling regime we predict an oscillating conductance as a function of the Rashba strength. Furthermore, we find at very low temperature and in the presence of an Aharahov-Bohm flux that the Kondo resonance becomes split and that this splitting contains important corrections due to interactions. Finally, we will discuss the effect of spin-orbit coupling in a carbon nanotube attached to ferromagnetic leads.

Alfredo Levy Yeyati

Universidad Autónoma de Madrid - Facultad de Ciencias
Spain

Andreev Transport in hybrid carbon nanostructures

Great progress in the fabrication of hybrid nanostructures combining graphene or carbon nanotubes with superconducting electrodes is allowing to explore Andreev quantum transport in novel situations. In this talk I shall present some recent work by our group within this field, focussing on three different aspects: the proximity effect in graphene-superconductor junctions [1]; the splitting of Cooper pairs in carbon nanotubes double quantum dots [2] and the formation of Andreev bound states in carbon nanotubes coupled to superconducting leads [3]. [1] P. Burset, W. Herrera and A. Levy Yeyati, Phys. Rev. B 80, 041402(R) (2009). [2] L. Herrmann, F. Portier, P. Roche, A. Levy Yeyati, T. Kontos and C. Strunk, Phys. Rev. Lett. 104, 026801 (2010). [3] J.D. Pillet, C.H. L. Quay, P. Morfin, C. Bena, A. Levy Yeyati and P. Joyez, Nature Phys. 6, 965–969 (2010).

Jong Soo Lim

Universitat de les Illes Balears - UIB- Dpto. Física
Spain

Josephson current in carbon nanotubes with spin-orbit interaction

In carbon nanotubes, the spin and valley degrees of freedom are coupled due to the curvature induced spin-orbit (SO) coupling. On the other hand, carbon nanotubes can support supercurrents when coupled to superconductors. These supercurrents are mediated by the so-called Andreev bound states (ABS). In this work, we study the interplay between SO coupling and ABS. It is shown that the SO coupling is able to reverse the supercurrent.

Pablo Ordejon

CSIC - Centro de Investigacion en Nanociencia y Nanotecnologia - CIN2 (CSIC-ICN)
Spain

Transport in nanostructured materials and nanoscale devices: a perspective from ab-initio simulations

Electronic transport in nanoscale systems and nanostructured materials is an area of great activity. From the theoretical point of view, it is very desirable to be able to describe in a manner as realistic as possible the properties of specific systems and devices, and not only the general physical trends and effects. Simulation can currently achieve this to a certain degree, based on first-principles calculations. In this talk, I will review work done in this direction, in developing first-principles methods to tackle the problem of quantum transport in nanoscale devices, and recent attempts to scale up these calculations to be able to deal with larger and more realistic problems, which ab-initio methods are still too expensive to reach.

Miguel Ortuño

Universidad de Murcia - CIOyN
Spain

Transport in Electron Glasses

M. Ortuño, A. M. Somoza and M. Pino Universidad de Murcia We study transport properties of strongly localized systems and with long-range interactions. We use a Monte Carlo technique and a master equation approach, which enable us to include many-electron transitions. Their role is very important at low temperatures and long relaxation times. We calculate the nonlinear conductivity and analyze the applicability of hot-electron models. We also study relaxation at low temperatures from an excited states.

Martí Pi

Universitat de Barcelona - IN2UB
Spain

(attendance)

Gloria Platero

CSIC - ICMM
Spain

Topology and phase: two ways to control the coherent dynamics of electrons

The excellent coherence properties of low dimensional semiconductor nanostructures, together with the degree of control over their geometry and specifications, make them ideal candidates for studying coherent transport, where quantum interference is used to regulate the movement of particles. Such control is particularly vital for quantum information, in which the coherence and entanglement of the initial state must be preserved during the evolution of the system. A powerful method of manipulating the coherent dynamics of quantum particles is to control the phase of their tunnelling. In this work we show how such phases can be produced in two distinct and complementary ways. If we consider a particle hopping on a lattice, interference will occur if the hopping acquires a phase factor. A direct way of doing this is to apply a magnetic field, which produces the well-known Aharonov-Bohm (AB) phase. In Ref. [1] it was shown that such phases could produce a localization effect termed AB caging, in which destructive interference bounds the set of sites that can be visited by an initially localized wave packet. This caging effect has been observed in superconducting wire networks, mesoscopic semiconductor lattices, and arrays of Josephson junctions. AB caging is resistant to small quantities of disorder but is swiftly destroyed by interactions due to the formation of spatially extended states. A different form of localization, also arising from quantum interference, is termed ‘‘Coherent Destruction of Tunneling’’ (CDT). This arises in systems subjected to a time-periodic driving field. Tunneling processes acquire phase factors from the interaction of the system with the driving, producing an effective renormalization of the tunneling. In this talk we consider the dynamics of two interacting electrons hopping on a quasi one-dimensional lattice with a non-trivial topology threaded by a uniform magnetic flux, and study the effect of adding a time- periodic driving field. We will show that the dynamical phases produced by the driving field can combine with the familiar Aharonov-Bohm phases arising from the magnetic flux to restore AB caging [2]. This occurs when CDT causes the (repulsive) electrons to bind together into a composite object of charge 2e termed a ‘‘doublon,’’ which can then be caged by the magnetic flux. We then go on to consider the effect of a low-frequency driving field and show that this gives rise to an unusual form of propagation in which the doublon moves in steps of two lattice sites, via the virtual occupation of the intermediate sites. This permits the creation and control of spatially separated entangled states of two electrons via the beam-splitter effect, with many potential applications to quantum information. In summary, we show that the dynamical phases produced by the driving can combine with the Aharonov-Bohm phases to give precise control of the localization and dynamics of the particles, even in the presence of strong particle interactions. [1] J. Vidal, R. Mosseri, and B. Douc¸ot, Phys. Rev. Lett. 81, 5888 (1998). [2]C.E. Creffield and G. Platero, Phys. Rev. Lett. 105, 086804 (2010).

Agustin Renart Gómez

UIB - UIB
España

(attendance only)

David Rivas

Universidad de Valencia - Instituto Ciencia de los Materiales Universidad de Valenca (Icmuv)
España

1.3 μm single quantum dot emission from metamorphic InAs/InGaAs nanostructures

Self assembled InAs/GaAs Quantum Dots (QD) have received much interest both from the standpoint of fundamental physics and technological applications. In consequence, thanks to these nanostructures important advances in optoelectronics and quantum technologies have been achieved [1]. However, these QDs have also some disadvantages, concerning to a strong decrease of the emission intensity with the temperature or difficulties to obtain emission wavelengths beyond 1 μm, when they are grown on GaAs substrates [2]. In this work we show an original approach to grow by Molecular Beam Epitaxy (MBE) long wavelength emitting metamorphic InAs/InGaAs/ GaAs QDs, with high single nanostructure optical quality [3]. Subcritical InAs coverages allow to obtain low QD density (108 cm−2) and the reduction of QD strain and confining potential provided by the metamorphic InxGa1−xAs confining layer results in emission wavelengths at 1.3 μm. For this purpose, two samples with different Indium compositions have been studied (x=0.15, 0.30). At low excitation power the micro-Photoluminescence (μPL) spectra show emission lines characteristic of a single QD. Figure 1a shows μPL spectra from a single QD emitting at around 1171 nm in a sample with x = 0.15. The spectra show typical excitonic (Xn) and biexcitonic (XXn) lines, which can be identified studying the integrated intensity power dependence and the selective optical pumping effect associated to local unintentional impurities [4]. In sample with x = 0.30 (Figure 1b) it was observed excitonic emission around 1.336 μm (second window of telecommunications). It was possible to identify different excitonic complex transitions using the same methods mentioned above. However, this sample shows a lower optical quality. The broader μ-PL linewidth could be explained by the high indium content in the metamorphic layer. This extra Indium content might cause a higher density of structural defects, resulting in a spectral diffusion effect on the μ-PL linewidth [5]. In conclusion, we report on the growth of low density metamorphic QD structures grown on GaAs (at two indium compositions) and single QD optical characterization, with emission up to 1300nm. These results show that metamorphic QDs could be valuable candidates for the development of single photon

sources emitting at the second telecommunication window wavelength.

Carlos Sabater Piqueres

Unviersidad de Alicante - Unviersidad de Alicante
Spain

Experiments and Molecular Dynamic Simulations to determine the structure of atomic contacts in Au, Ag and Pb.

For most cases, when two metals approach, the first contact between them occurs abruptly. This phenomenon is called “jump to contact”. It is well know, that in such a system, the conductance depends of the smallest area of the contact between two electrodes. Therefore, we can study this phenomenon by means analysis of the variation of the conductance. After a rigorous treatment of the data test we can see that there are certain values in the variation of the conductance that occur more frequently than others, i.e., we have certain atomic contact structures most likely to occur. Using Molecular Dynamic calculations and making other rigorous analysis of the data we can relate the shape of atomic contact with the values of conductance obtained for the one-atom contact formation.

David Sánchez

IFISC (UIB-CSIC) - IFISC
Spain

(organizer)

Llorens Serra

IFISC (UIB-CSIC) - IFISC
SPAIN

(organizer)

Carlos Untiedt

Universidad de Alicante - Universidad de Alicante
Spain

The Ultimate Limit in Nano: Atomic Contacts

The smallest object that we could connect to an electronic circuit will be formed by just a single atom. With the use of the Scanning Tunnelling Microscope (STM) and related techniques we can fabricate and modify atomic and molecular bridges in between two metallic electrodes. Here we will show the progress we have made in the study of such structures. Through the conductance characteristics of the atomic sized structures we have learned about the electronic transport properties, the interaction of phonons with the conduction electrons, or about the effective screening of the magnetic moment of the structure by the conduction electrons, namely Kondo effect. We also can study the mechanical properties and energy dissipation of the structures by using mechanical resonators. Finally we will comment on some applications of our findings.

Sergio Valenzuela

ICREA / ICN - CIN2
Spain

Single-electron spin ratchet

We describe a spin ratchet at the single-electron level that produces spin currents with no net bias or charge transport. Our device is based on the ground-state energetics of a single-electron transistor comprising a superconducting island connected to normal leads via tunnel barriers with different resistances that break spatial symmetry. We demonstrate spin transport and quantify the spin ratchet efficiency by using ferromagnetic leads with known spin polarization. [1] M.V. Costache and S.O. Valenzuela, Science 330, 1645 (2010)

Participants

Ana Ballester	Universitat Jaume I *Universitat Jaume I* *Castelló de la Plana, Spain* *Ana.Ballester@qfa.uji.es*
Markus Buttiker	University of Geneva *Physics* *Geneva , Switzerland* *Markus.Buttiker@unige.ch*
Marco Casas	Universidad de Alicante *Lt-nanolab* *alicante, España* *marco_casas81@hotmail.com*
Juan Ignacio Climente	Universitat Jaume I *Universitat Jaume I* *Castelló, Spain* *climente@qfa.uji.es*
David Costa Milan	Universidad de Alicante *LT-Nanolab* *Alicante, España* *david.costa@ua.es*
Fernando Delgado	Universidad de Alicante *Universidad de Alicante* *Alicante, Spain* *fernando.delgado@ua.es*
José María Escartín	Universitat de Barcelona *Facultat de Física i Institut de Nanociència i Nanotecnologia* *Barcelona, Spain* *escartin@ecm.ub.es*
Joaquín Fernández R.	Universidad de Alicante *Universidad de Alicante* *Alicante, Spain* *jfrossier@ua.es*
M. Magdalena Gelabert	Universitat de les Illes Balears *UIB* *Palma de Mallorca, Spain* *magdalena.gelabert@uib.es*
Daniel Gosálbez	Universidad de Alicante *Universidad de Alicante* *San Vicente del Raspeig, España* *daniel.gosalbez@ua.es*

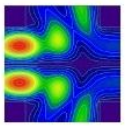
Participants

Rolf Haug	Leibniz Universität Hannover *Institute for Solid State Systems* *Hannover, Germany* *haug@nano.uni-hannover.de*
Rosa López	IFISC (UIB-CSIC) *IFISC* *Madrid, Spain* *rosa.lopez-gonzalo@uib.es*
Alfredo Levy Yeyati	Universidad Autónoma de Madrid *Facultad de Ciencias* *Madrid, Spain* *a.l.yeyati@uam.es*
Jong Soo Lim	Universitat de les Illes Balears *UIB- Dpto. Física* *Palma de Mallorca, Spain* *lim.jongsoo@gmail.com*
Pablo Ordejon	CSIC *Centro de Investigacion en Nanociencia y Nanotecnologia - CIN2 (CSIC-ICN)* *Bellaterra, Barcelona, Spain* *pablo.ordejon@cin2.es*
Miguel Ortuño	Universidad de Murcia *CIOyN* *Murcia, Spain* *moo@um.es*
Martí Pi	Universitat de Barcelona *IN2UB* *Barcelona, Spain* *marti@ecm.ub.es*
Gloria Platero	CSIC *ICMM* *Madrid, Spain* *gplatero@icmm.csic.es*
Agustin Renart Gómez	UIB *UIB* *costa de la calma, España* *danielpilar@hotmail.es*
David Rivas	Universidad de Valencia *Instituto Ciencia de los Materiales Universidad de Valenca (Icmuv)* *Valencia, España* *david.rivas@uv.es*
Carlos Sabater Piqueres	Unviersidad de Alicante *Unviersidad de Alicante* *Novelda, Spain* *carlos.sabater@iua.es*

Participants

David Sánchez	IFISC (UIB-CSIC) *IFISC* *Palma De Mallorca, Spain* *david.sanchez@uib.es*
Llorens Serra	IFISC (UIB-CSIC) *IFISC* *Palma de Mallorca, SPAIN* *llorens.serra@uib.es*
Carlos Untiedt	Universidad de Alicante *Universidad de Alicante* *Alicante, Spain* *untiedt@ua.es*
Sergio Valenzuela	ICREA / ICN *CIN2* *Bellaterra, Spain* *SOV@icrea.cat*

Universitat de les Illes Balears
Centre de Tecnologies de la Informació



3rd Workshop on Nanoelectronics for Researchers of the Mediterranean Area
IFISC, 10 June 2011
Palma de Mallorca (Spain)

WIFI network guide

1. Connect to the WiFi (or SSID) "uib" network.
2. Activate the dynamic IP configuration (DHCP). It's very usual to have dynamic configuration set on the wireless interfaces. Typically it won't be necessary to perform this step.
3. Open a web browser and try to access a website. Insert the following credentials in the web page that will appear:

Username	Password
nanoelectrics	mediterranean

WIFI network guide for EDUROAM users

Assistants coming from an institution that belongs to the Eduroam program can get connected to the "eduroam" wireless network. In order to get connected to this network, the credentials (username/password) served by the foreign institution must be used.

Note:

- **The connection to the "uib" and "eduroam" wireless network can be established from anywhere in the UIB campus (to know the wireless network availability a plane can be found at http://www.cti.uib.es/eduroam).**

Terms and conditions of use of the WiFi user account:

- Anyone using the account must be somehow related to **"3rd Workshop on Nanoelectromics for Reserchers of the Mediterranean Area"** program.
- The organization is responsible for any action taken from this service with this user account.
- The wrong usage of the network service will cause the definitive deactivation of the account in addition to the corresponding measures on the part of the Universitat de les Illes Balears.

19 PARC BIT / UNIVERSITAT / PORTA DES CAMP

Curs 2010-2011

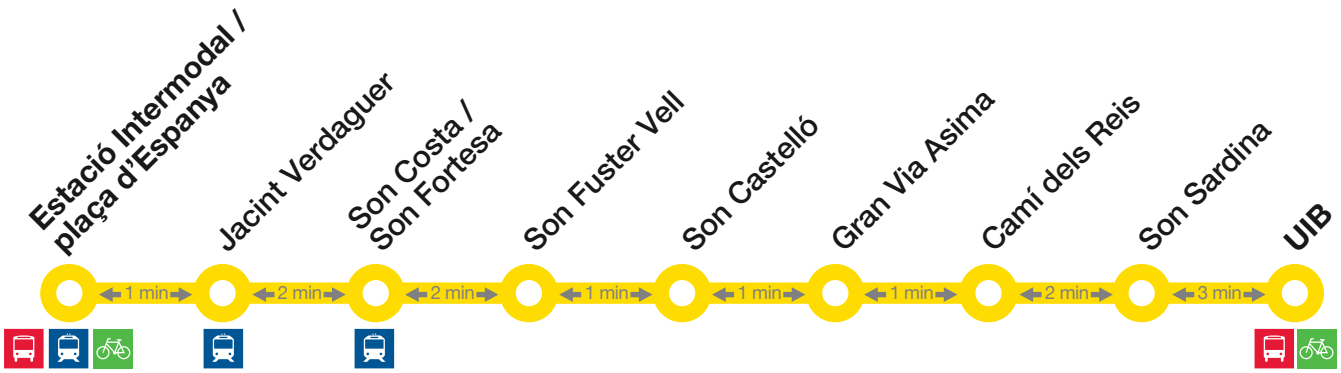
SORTIDES PORTA DES CAMP DIRECCIÓ PARC BIT - UNIVERSITAT						
7:00	7:12	7:25	7:37	7:50	8:02	8:15
8:27	8:40	8:52	9:05	9:17	9:30	9:42
9:55	10:07	10:20	10:32	10:45	10:57	11:10
11:22	11:35	11:47	12:00	12:12	12:25	12:37
12:50	13:02	13:15	13:27	13:40	13:52	14:05
14:17	14:30	14:42	14:55	15:07	15:20	15:32
15:45	15:57	16:10	16:22	16:35	16:47	17:00
17:12	17:25	17:37	17:50	18:02	18:15	18:27
18:40	18:52	19:05	19:17	19:30	19:42	19:55
20:07	20:20	20:32	20:45	20:57	21:10	21:22

SORTIDES DE PARC BIT- UNIVERSITAT						
7:40	7:52	8:05	8:17	8:30	8:42	8:55
9:07	9:20	9:32	9:45	9:57	10:10	10:22
10:35	10:47	11:00	11:12	11:25	11:37	11:50
12:02	12:15	12:27	12:40	12:52	13:05	13:17
13:30	13:42	13:55	14:07	14:20	14:32	14:45
14:57	15:10	15:22	15:35	15:47	16:00	16:12
16:25	16:37	16:50	17:02	17:15	17:27	17:40
17:52	18:05	18:17	18:30	18:42	18:55	19:07
19:20	19:32	19:45	19:57	20:10	20:22	20:35
20:47	21:00	21:12	21:25	21:37	21:50	22:02

Sortides addicionals de carretera Valldemossa parada 557 direcció Plaça Espanya

7:30	7:40

TUBE



Departure from Intermodal Station

Mondays to Fridays

From 7:00 a.m. to 20:30 p.m.	every 15 min.	From 6:30 to 7:00 a.m. and from 20:30 to 22:30 p.m.	every 30 min.

Saturdays, Sundays and holidays

From 7:30 a.m. to 21:00 p.m.	every 30 min.	From 6:30 to 7.30 a.m. and from 21:00 to 22:00 p.m.	every 60 min.

Departure from UIB Station

Mondays to Fridays

From 7:22 a.m. to 20:37 p.m.	every 15 min.	From 6:52 to 7:22 a.m. and from 20:37 to 22:52 p.m.	every 30 min.

Saturdays, Sundays and holidays

From 7:52 a.m. to 21:22 p.m.	every 30 min.	From 6:52 to 7.52 a.m. and from 21:22 to 22:22 p.m.	every 60 min.

Metro station-IFISC walking path

IFISC - Son Lledó walking path

Free circular bus