

**XXII International Summer School “Nicolas Cabrera”**  
**NEW DIRECTIONS IN SPINTRONICS AND NANOMAGNETISM**

**Scientific Program**

Saturday 11 July 2015

16:00-20:00	Registration and check-in
<b>20.30</b>	<b>Wine reception</b>
21:00	Dinner

Sunday 12 July 2015

<b>Morning Session Day 1</b>	
Session Chair	<i>Juan Jose Palacios</i>
8:30-9:00	Opening
<b>9:00-9:50</b>	<i>Basics of nanomagnetism</i> <b>Jan Vogel</b> Institut Néel, CNRS and Université Grenoble Alpes (France) Invited Lecturer Page **
<b>9:50-10:40</b>	<i>Interface-driven magnetism: from chiral domain walls to spin spirals and magnetic skyrmions</i> <b>Roland Wiesendanger</b> Interdisciplinary Nanoscience Center Hamburg . University of Hamburg, (Germany) Invited Lecturer Page **
10:40-11:20	Coffee break
<b>11:20-12:10</b>	<i>Spin torque driven magnetization dynamics</i> <b>Ursula Ebels</b> Univ. Grenoble Alpes, CEA, INAC-SPINTEC (France) Invited Lecturer. Page **
<b>12:10-13:00</b>	<i>The magnetic solitons e.g. from magnetic vortices to magnetic skyrmions : newcomers in spintronics and spin transfer physics</i> <b>Vincent Cros</b> Unité Mixte de Physique CNRS/Thales and Université Paris Sud, Palaiseau, France (France) Invited Lecturer. Page **
13:00-15:00	Lunch
<b>Afternoon Session Day 1</b>	
Session Chair	<i>Farkhad Aliev</i>
<b>15:00-15:50</b>	<i>Atomic scale magnets as open quantum systems</i> <b>J J. Fernández-Rossier</b> International Iberian Nanotechnology Laboratory, Braga, (Portugal)

	Invited Lecturer. Page **
<b>15:50-16:40</b>	<i>Introduction to Organic Spintronics</i> <b>Minn-Tsong Lin</b> Department of Physics, National Taiwan University (Taiwan) Invited Lecturer. Page**
16:40-17:10	Coffee break
<b>17:10-21:00</b>	<i>FREE TIME</i>

21:00 Dinner

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## Monday 13 July 2015

### Morning Session Day 2

Session Chair *Farkhad Aliev*

<b>9:00-9:50</b>	<i>A step towards molecular spintronics - engineering the molecule/ferromagnet interface</i> <b>Jagadeesh S. Moodera</b> Physics Department, and Plasma Science and Fusion Center Massachusetts Institute of Technology (USA) Invited Lecturer. Page **
<b>9:50-10:40</b>	<i>Molecular Spintronics: From magnetic molecules to multifunctional devices</i> <b>Eugenio Coronado</b> Instituto de Ciencia Molecular (ICMol) Universidad de Valencia (Spain) Invited Lecturer. Page **
10:40-11:20	Coffee break, <b>School Photo</b>
<b>11:20-12:10</b>	<i>Exploring the magnetic interactions in metal-organic surface structures</i> <b>Wolfgang Kuch</b> Freie Universität Berlin, Institut für Experimentalphysik, Berlin, (Germany) Invited Lecturer. Page **
<b>12:10-13:00</b>	<i>Magnetic Resonance Imaging of nanoIron and Smart Magnetic Nanoagents</i> <b>Stephen E. Russek</b> National Institute of Technology, Boulder (USA) Invited Lecturer. Page **

13:00-15:00 Lunch

### Afternoon Session Day 2

Session Chair *Julio Camarero*

15:00-16:30	(SHORT lecture) <b>KUCH</b> Spin-crossover transition in magnetic molecules adsorbed on solid surfaces (SHORT lecture) <b>MOODERA</b> Ferromagnetic topological insulator and quantum transport (SHORT lecture) <b>VOGEL</b> Influence of chirality on domain nucleation and domain wall propagation in magnetic thin films with Dzyaloshinskii-Moriya interaction
16:30-17:00	Coffee break
<b>17:00-19:00</b>	<b>POSTER SESSION 1</b>
19:00-21:00	Free time
21:00	Dinner

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Tuesday 14 July 2015

### Morning Session Day 3

Session Chair *Julio Camarero*

<b>9:00-9:50</b>	<i>Magnetoresistance and Spin Manipulation for Device Applications</i> <b>Shinji YUASA</b> National Institute of Advanced Industrial Science and Technology (AIST) (Japan) Invited Lecturer. Page 51
<b>9:50-10:40</b>	<i>Spin Waves and Skyrmions in Spin Torque and Spin Hall Nano-Oscillators</i> <b>Johan Åkerman</b> Department of Physics, University of Gothenburg (Sweden) Invited Lecturer. Page **

10:40-11:20 Coffee break

<b>11:20-12:10</b>	<i>Nanofabrication techniques based on focused electron and ion beams</i> <b>J. M. De Teresa</b> Instituto de Ciencia de Materiales de Aragón (ICMA), CSIC-University of Zaragoza (Spain) Invited Lecturer. Page **
<b>12:10-13:00</b>	<i>Graphene as a spin tunnel barrier in MTJs and silicon</i> <b>B.T. Jonker</b> Naval Research Laboratory, Washington (USA) Invited Lecturer. Page **

13:00-15:00 Lunch

### Afternoon Session Day 3

Session Chair *Juan Jose Palacios*

15:00-15:30	(SHORT lecture) <b>EBELS</b> Coupling effects in spin torque driven excitations
15:30-16:00	(SHORT lecture) <b>LIN</b> <i>Driving magnetization to out of plane by antiferromagnetic layer</i>
16:00-16:30	Coffee break
16:30-24:00	Visit to the city of Segovia (with short stay at summer Royal Residence La Granja). Dinner in the town (Meson Candido).

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## Wednesday 15 July 2015

### Morning Session Day 4

Session Chair *Farkhad Aliev*

<b>9:20-10:10</b>	<i>Superfluid-assisted transfer of spin and heat through magnetic insulators</i> <b>Yaroslav Tserkovnyak</b> University of California Los Angeles (USA) Invited Lecturer. Page **
<b>10:10-11:00</b>	<i>Low Temperature Magnetic Phenomena: Quantum tunneling, magnetic deflagration, quantum forces and new materials</i> <b>Javier Tejada</b> University of Barcelona (Spain) Invited Lecturer. Page **
11:00-11:30	Coffee break
<b>11:30-12:10</b>	<i>Magnetic Sensors</i> <b>Ruben Guerrero</b> IMDEA Nanociencia, Madrid (Spain) Invited keynote speaker. Page **
<b>12:10-13:00</b>	<i>Nanodevices (magnetic in particular) for bio-inspired computing</i> <b>Julie Grollier</b> Unité Mixte de Physique CNRS/Thales, Paris, France (France) Invited Lecturer. Page **
13:00-15:00	Lunch

### Afternoon Session Day 4

Session Chair *Julio Camarero*

15:00-16:30	(SHOT Lecture) <b>TSERKOVNYAK</b> Spin and orbital magnetic response on the surface of a topological insulator  (SHORT Lecture) <b>DETERESA</b> Conversion of spin currents into charge currents using Rashba coupling at the interface between non-magnetic materials
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	(SHORT Lecture) <b>RUSSEK</b> Hybrid Superconducting-Spintronic Memory Devices for exaFLOP Computing
16:30-17:00	Coffee break
17:00-19:00	<b>POSTER Session 2</b>
19:00-21:00	Free time
21:00	<b>“Cocktail” Dinner</b>

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Thursday 16 July 2015

<b>Morning Session Day 5</b>	
Session Chair	<i>Juan Jose Palacios</i>
<b>9:00-9:50</b>	<i>Tailoring Graphene for Spintronics</i> <b>Rodolfo Miranda</b> Dep. Física de la Materia Condensada, Universidad Autónoma de Madrid and IMDEA-Nanociencia (Spain) Invited Lecturer. Page **
<b>9:50-10:40</b>	<i>Challenges for spin transport and manipulation in graphene</i> <b>Sergio O. Valenzuela</b> Institució Catalana de Recerca i Estudis Avançats (ICREA) and ICN2, Barcelona (Spain) Invited Lecturer. Page **
10:40-11:10	Coffee break
<b>11:10-11:40</b>	<i>Understanding and controlling shot noise in organic and nonorganic spintronics</i> <b>Juan Pedro Cascales</b> Universidad Autonoma de Madrid (Spain) Invited speaker.
<b>11:40-12:20</b>	<i>Spin Caloritronics</i> <b>Marius Costache</b> Institut Català de Nanociència i Nanotecnologia (ICN2), Barcelona (Spain) Invited keynote speaker. Page **
12:20-12:40	Poster awards. Closing remarks. The organizers.
13:00-14:30	Lunch
13:00-15.00	Bus to Barajas Airport.

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