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**Technical Committee:**

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Wen Wan and Rishav Harsh

UAM, Spain

DIPC, Spain

**Sponsors**



**SPECSGROUP**

# Monday 20<sup>th</sup>

09:00 – 09:15	<b>WELCOME</b>	
09:15 – 10:00	<b>A. N. Pasupathy</b> Columbia Univ., USA	<i>Two-dimensional heavy fermions</i>
10:00 – 10:45	<b>Peter Liljeroth</b> Aalto Univ., Finland	<i>Designer quantum states in van der Waals heterostructures</i>
10:45 – 11:15	<b>COFFEE BREAK</b>	
11:15 – 12:00	<b>Amadeo L. Vázquez de Parga</b> UAM, Spain	<i>Two dimensional Kondo lattice in a TaS<sub>2</sub> van der Waals heterostructure</i>
12:00 – 12:20	<b>Wen Wan</b> DIPC, Spain	<i>Magnetic order in a coherent Kondo lattice in the 1T/1H-TaSe<sub>2</sub> heterostructure</i>
12:20 – 12:40	<b>V. Vaño</b> Aalto University, Finland	<i>Artificial heavy fermions in a van der Waals heterostructure</i>
12:40 – 13:00	<b>Cosme G. Ayani</b> UAM, Spain	<i>Atomic and Electronic Properties of a 1H/1T-TaS<sub>2</sub> Polymorphic van der Waals Heterostructure</i>
13:00 – 15:00	<b>LUNCH</b>	
15:00 – 15:45	<b>Irina V. Grigorieva</b> U. Manchester, UK	<i>Magnetization signature of topological surface states in a superconductor</i>
15:45 – 16:05	<b>José J. Baldoví</b> ICMol, Spain	<i>Electronic structure and magnetism in 2D van der Waals materials</i>
16:05 – 16:25	<b>Nicolás Lorente</b> CSIC-EHU, Spain	<i>2-D magnetic structures ensembled from a molecular van-der-Waals solid on a surface: the case of nickelocene overlayers</i>
16:25 – 16:45	<b>Namrata Bansal</b> Karlsruhe Inst.Tech, Germany	<i>Probing magnetic domains in two dimensional Fe<sub>3</sub>GeTe<sub>2</sub> using spin-polarized scanning tunneling microscopy</i>
16:45 – 17:15	<b>COFFEE BREAK</b>	
17:15 – 18:00	<b>Pavel Jelinek</b> Inst. Physics Prague, Czech Republic	<i>Quinone-based 1D organometallic molecular chains on surfaces</i>
18:00 – 18:20	<b>André Schirmeisen</b> Justus-Liebig-U, Germany	<i>2D graphene rings on Au(111): on-surface synthesis and SPM Characterization</i>
18:20 – 18:40	<b>Bruno de la Torre</b> Palacky University, Czech Republic	<i>Atomic scale control and visualization of topological quantum phase transition in <math>\pi</math>-conjugated polymers</i>

## Tuesday 21<sup>st</sup>

09:15 – 10:00	<b>Arkadi Krasheninnikov</b> Helmholtz-Zentrum, Germany	<i>Defects and new phases in two-dimensional materials</i>
10:00 – 10:45	<b>Eva Andrei</b> Rutgers Univ., USA	TBA
10:45 – 11:15	<b>COFFEE BREAK</b>	
11:15 – 12:00	<b>Roland Wiesendanger</b> U. Hamburg, Germany	<i>From 0D Shiba atoms to 2D Shiba lattices</i>
12:00 – 12:20	<b>Eva Cortés del Río</b> UAM, Spain	<i>Observation of Yu-Shiba-Rusinov states in superconducting graphene</i>
12:20 – 12:40	<b>F. Massee</b> U. Paris-Sud/U. Paris-Saclay, France	<i>Tunnelling process into YSR states in NbSe<sub>2</sub> visualized by shot-noise scanning tunnelling microscopy</i>
12:40 – 13:00	<b>Deung-Jang Choi</b> CFM (CSIC-UPV/EHU), Spain	<i>Atomic manipulation of spin structures on the <math>\alpha</math>-Bi<sub>2</sub>Pd Superconductor</i>
13:00 – 15:00	<b>LUNCH</b>	
15:00 – 15:45	<b>Ion Errea</b> CFM (CSIC-UPV/EHU), Spain	<i>First-principles calculations of charge-density wave transition temperatures: lessons learnt on transition-metal dichalcogenides</i>
15:45 – 16:05	<b>Pierre Mallet</b> Institut Néel, CNRS, France	<i>Alloying 2D VSe<sub>2</sub> with Pt: from a CDW state to a magnetic insulator</i>
16:05 – 16:25	<b>Timo Knispel</b> University of Cologne, Germany	<i>Electronic structure and charge density wave order in monolayer NbS<sub>2</sub></i>
16:25 – 16:45	<b>Árpád Pásztor</b> University of Geneva, Switzerland	<i>Out of phase multiband charge modulations in 2H-NbSe<sub>2</sub></i>
16:45 – 17:15	<b>COFFEE BREAK</b>	
17:15 – 18:45	<b>POSTER SESSION &amp; Cocktail</b>	

# Wednesday 23<sup>rd</sup>

09:15 – 10:00	<b>Roman Fasel</b> EMPA, Switzerland	<i>Engineering <math>\pi</math>-electron magnetism in atomically-precise carbon nanostructures</i>
10:00 – 10:45	<b>Joaquín Fernández-Rossier</b> INL Braga, Portugal	<i>Graphene triangulenes as building blocks for non-trivial quantum matter</i>
10:45 – 11:15	<b>COFFEE BREAK</b>	
11:15 – 12:00	<b>José Ignacio Pascual</b> CIC nanoGUNE, Spain	<i><math>\pi</math>-Magnetism in engineered graphene nanostructures</i>
12:00 – 12:20	<b>Alejandro Berdonces</b> DIPC / CFM, Spain	<i>5-armchair GNR: One of a kind from the seed to the salt</i>
12:20 – 12:40	<b>J. Michael Gottfried</b> Philipps-U. of Marburg, Germany	<i>Novel non-benzenoid graphene isomers by on-surface synthesis</i>
12:40 – 13:00	<b>Chenxiao Zhao</b> EMPA, Switzerland	<i>Gapped excitations in carbon-based asymmetric spin-<math>\frac{1}{2}</math> ladders</i>
13:00 – 15:00	<b>LUNCH</b>	
15:00 – 15:45	<b>Sivan Refaeli-Abramson</b> Weizmann Institute, Israel	<i>Structural effects on exciton selection rules in TMDs: a computational perspective</i>
15:45 – 16:05	<b>Rishav Harsh</b> DIPC, Spain	<i>Nontrivial doping evolution of electronic properties in Ising-superconducting alloys</i>
16:05 – 16:25	<b>Manuela Garnica</b> IMDEA Nanoscience, Spain	<i>Epitaxial growth and characterization of a single-layer <math>1T'</math>-<math>\text{MoTe}_2</math> phase on graphene on Ir(111)</i>
16:25 – 16:45	<b>Bruno Schuler</b> EMPA, Switzerland	<i>Charge state dependent symmetry breaking in Rhenium doped <math>\text{MoS}_2</math></i>
16:45 – 17:15	<b>COFFEE BREAK</b>	
17:15 – 17:35	<b>Iolanda di Bernardo</b> UAM, Spain	<i>Effect of screening on the bandgap of MBE-grown <math>\text{WTe}_2</math></i>
17:35 – 18:20	<b>Andrei Bernevig</b> Princeton Univ., USA	<i>An Exact Map Between the TBG (and multilayers) and Topological Heavy Fermions</i>
20:45	<b>CONFERENCE DINNER</b> at “Ni neu” restaurant	

# Thursday 24<sup>th</sup>

9:15 – 10:00	<b>Vincent Renard</b> CNRS Grenoble, France	<i>Textbook 1D density of states in graphene nanoribbons on 3c-SiC</i>
10:00 – 10:45	<b>Aran García-Lekue</b> DIPC, Spain	<i>Towards controlling electronic anisotropy in nanoporous graphene</i>
10:45 – 11:15	<b>COFFEE BREAK</b>	
11:15 – 12:00	<b>Milan Allan</b> Leiden U., The Netherlands	<i>Detecting electron pairs without superconductivity with the electron pair microscope</i>
12:00 – 12:20	<b>Jian-Feng Ge</b> Leiden U., The Netherlands	<i>Shot noise of subgap vortex states in NbSe<sub>2</sub> and FeTe<sub>0.55</sub>Se<sub>0.45</sub></i>
12:20 – 12:40	<b>Felix Lüpke</b> Forschungszentrum Jülich, Germany	<i>Proximity effects in WTe<sub>2</sub>-based heterostructures and twisted bilayers.</i>
12:40 – 13:00	<b>Jung-Ching Liu</b> University of Basel, Switzerland	<i>Proximity-Induced Superconductivity in Atomically Precise Nanographene</i>
13:00 – 15:00	<b>LUNCH</b>	
15:00 – 15:45	<b>Tristan Cren</b> Sorbonne Univ., France	<i>Huge doping and unconventional superconductivity in NbSe<sub>2</sub> misfit compounds</i>
15:45 – 16:05	<b>Fernando de Juan</b> DIPC, Spain	<i>Observation of superconducting Leggett modes from competing pairing instabilities in single-layer NbSe<sub>2</sub></i>
16:05 – 16:25	<b>Somesh Chandra Ganguli</b> Aalto University, Finland	<i>Evidence of strong correlations and unconventional superconductivity in monolayer transition metal dichalcogenides 1H-NbSe<sub>2</sub> and 1H-TaS<sub>2</sub></i>
16:25 – 16:45	<b>Anand Kamlapure</b> Radboud University, Germany	<i>Tuning lower dimensional superconductivity with hybridization at a superconducting-semiconducting interface</i>
16:45 – 17:15	<b>COFFEE BREAK</b>	
17:15 – 18:00	<b>Ernst Meyer</b> Basel Univ., Switzerland	<i>Energy dissipation mechanisms of 2d-materials</i>

# Friday 25<sup>th</sup>

09:15 – 10:00	<b>Ali Yazdani</b> Princeton Univ., USA	<i>Correlations, topology, and unconventional superconductivity in magical flatbands</i>
10:00 – 10:45	<b>Joseph Strosio</b> NIST, USA	<i>Tunable narrow bands in twisted graphene heterostructures probed by local STM and AFM measurements at mK temperatures</i>
10:45 – 11:15	<b>COFFEE BREAK</b>	
11:15 – 12:00	<b>Vidya Madhavan</b> Univ. Urbana-Champaign, USA	<i>Spin-selective tunneling from nanowires of topological Kondo insulator <math>\text{SmB}_6</math></i>
12:00 – 12:20	<b>Carmen Rubio-Verdú</b> Columbia University, USA	<i>Universal moiré nematic phase in twisted graphene</i>
12:20 – 12:40	<b>Florie Mesple</b> Univ. Grenoble Alpes, France	<i>Effect of Heterostrain on the flat bands of magic-angle twisted graphene layers</i>
12:40 – 13:00	<b>Astrid Weston</b> University of Manchester, UK	<i>Layer polarization and piezoelectric textures in marginally twisted transition metal dichalcogenides</i>

# Poster List

Contributor	Title
Martina Corso	<i>Chemical sensing with CN functionalized chiral graphene nanoribbons</i>
Paula Angulo-Portugal	<i>Growth and electronic structure of 2D transition metal dichalcogenide in-plane heterostructures</i>
D. G. de Oteyza	<i>Circumventing the stability problems of graphene nanoribbon zigzag edges</i>
Simon Turkel	<i>Imaging heavy fermions in two dimensions</i>
Lisa M. Rütten	<i>Yu-Shiba-Rusinov states of Fe dimers on 2H-NbSe<sub>2</sub></i>
Lucas Schneider	<i>Tuning Yu-Shiba-Rusinov states via a 2D surface state confined in a quantum corral</i>
Camiel van Efferen	<i>Real-space observation of the Kondo effect in MoS<sub>2</sub> mirror twin boundaries</i>
Taner Esat	<i>A millikelvin scanning tunneling microscope in ultra-high vacuum with adiabatic demagnetization refrigeration</i>
Jan Cuperus	<i>Towards shot-noise spectroscopy of Majorana modes in 2D systems</i>
R.A.M. Ligthart	<i>Artificial electronic lattices on InAs(111)A</i>
Wouter Jolie	<i>Metal-insulator transition in monolayer MoS<sub>2</sub> via contactless chemical dopin</i>
Dhaneesh Kumar	<i>Manifestation of strongly correlated electrons in a 2D Kagome metal-organic framework</i>
Beatriz Viña	<i>Controllable growth and characterization of monolayer FeSe</i>
M. Ortego Larrazabal	<i>High frequency shot-noise STM to study electron correlations in 2D materials</i>
Aishwarya Vishwakarma	<i>Exploring the quantum magnetism of single spins at surfaces using EPR-STM</i>
Leonard Edens	<i>Electronic properties of chiral graphene nanoribbons on MgO(001) decoupling layers</i>
K. Vaxevani	<i>Long-lifetime spin excitations of a magnetic molecule on a proximitized superconductor</i>
Jon Ortuzar	<i>Growth of 2D ferromagnetic layers on superconducting surfaces</i>
Francisco R. Lara	<i>Synthesis and characterization of triangulene: a novel concept of magnetic nanostructure made of carbon</i>
Mohammad Amini	<i>Ferroelectricity in monolayer tin telluride (SnTe) and its effect on molecular states of FePc</i>
Stefano Trivini	<i>Many-body excitations of a quantum spin on a proximitized superconductor</i>

<b>Xin Huang</b>	<i>Lateral heterostructure of NbSe<sub>2</sub>/VSe<sub>2</sub></i>
<b>Dongfei Wang</b>	<i>Proximity effect in epitaxial gold films on elemental superconductor</i>
<b>Alessio Vegliante</b>	<i>Unravelling the magnetic state of all-organic diradicals on gold substrates</i>
<b>A. Schlenhoff</b>	<i>Image potential states as local probes for graphene magnetism</i>
<b>D. Longo</b>	<i>Tailoring the chemical and physical properties of hybrid systems through dimensionality reduction</i>
<b>Nicolò Bassi</b>	<i>Graphitic nitrogen substitution states in graphene nanoribbons</i>
<b>Elia Turco</b>	<i>Spin excitations in spin ½ and spin-1 nanographenes and their dimers</i>
<b>B. Mallada</b>	<i>On-Surface Strain-Driven Synthesis of Nonalternant Non-Benzenoid Aromatic Compounds Containing Four- to Eight-Membered Rings</i>
<b>Ricardo Ortiz</b>	<i>Theory of triangulene two-dimensional crystals</i>
<b>Diego Expósito</b>	<i>Development of a true variable temperature gateable-STM/AFM in ultra high vacuum conditions to probe 2D materials</i>
<b>Hugo de Latour</b>	<i>Conductive AFM characterisation of twist angle variation in van der Waals heterostructures assembled in UHV</i>
<b>A. Ollier</b>	<i>Giant energy dissipation on twisted bilayer graphene at the magic angle twist</i>
<b>T. Samuely</b>	<i>Ising superconductivity in 3D crystals (LaSe)<sub>1.14</sub>(NbSe<sub>2</sub>)<sub>m=1,2</sub></i>
<b>I. Alcón</b>	<i>Engineering of charge current flow in nanoporous graphenes</i>
<b>Jan Patrick Calupitan</b>	<i>On-surface synthesis of aza-triangulene and its fused derivatives</i>
<b>Yiming Song</b>	<i>Structural and mechanical properties of MoS<sub>2</sub> on Au(111) revealed by ultrahigh vacuum atomic force microscopy</i>
<b>Jeff Strasdass</b>	<i>Evidence for local spots of viscous electron flow in graphene at moderate mobility</i>
<b>Soroush Arabi</b>	<i>Imaging quasiparticle excitations in a Kondo lattice</i>
<b>Thais Chagas</b>	<i>Bi<sub>2</sub>:Bi<sub>2</sub>Te<sub>3</sub> stacking influence on the surface electronic response of the topological insulator Bi<sub>4</sub>Te<sub>3</sub></i>
<b>Sara Lois</b>	<i>Empowering non-covalent hydrogen, halogen and [S-N]<sub>2</sub> bonds in synergistic molecular assemblies on Au(111)</i>
<b>Christian Lotze</b>	<i>Moiré tuning of spin excitations: individual Fe atoms on MoS<sub>2</sub>/Au(111)</i>
<b>Linghao Yan</b>	<i>Fabrication and Characterization of 2D Metal-Organic Network on Weakly Interacting 2D Materials</i>
<b>Eli G. Castanon</b>	<i>Interfacial ferroelectricity in marginally twisted 2D semiconductors studied via KPFM</i>



<b>J. Lagoute</b>	<i>Nanostructuring of nitrogen dopants in graphene with a submonolayer molecular resist to form sharp junctions</i>
<b>R. E. Menchón</b>	<i>Spin chains in metallic graphene nanoribbons</i>
<b>Y. Girard</b>	<i>Freestanding Graphene on SiC(0001) via Intercalation of 2D Cobalt Nanodots</i>
<b>Roberto Lo Conte</b>	<i>Coexistence of Antiferromagnetism and Superconductivity in pseudomorphic Mn ultra-thin films on Nb(110)</i>
<b>Markus Aapro</b>	<i>Precise atom manipulation through deep reinforcement learning</i>
<b>Jose Martinez-Castro</b>	<i>Mapping the Impact of Axial Strain in Porous Graphene Nanoribbons</i>
<b>Andrea Aguirre</b>	<i>Two-dimensional magnetism of metal dihalides on Au(111)</i>
<b>Wei Huang</b>	<i>Imaging resistivity dipoles in the quasi-ballistic transport regime in current biased graphene/SiC devices</i>
<b>Jyoti Krishna</b>	<i>Non-linear optical response of TMD Nanotubes using Wannier interpolation</i>
<b>Werner van Weerdenburg</b>	<i>Enhanced superconductivity in crystalline Al films at the 2D limit</i>
<b>Raúl Bombín</b>	<i>Adsorption and dissociation of diatomic molecules on monolayer 1H-MoSe</i>

# Venues

## Conference

The workshop will take place in the **Miramar Palace** located in La Concha Bay in the city of San Sebastian.

Address: Paseo de Miraconcha, 48; Donostia-San Sebastián, Guipúzcoa

Phone: +34 943 21 90 22

Web: <http://palaciomiramar.eus/>

## Lunch

The lunch will take place in the **Barceló Costa Vasca Hotel** at 7-10 minutes walk from the Conference venue.

Address: Avenida Pio Baroja, 15. Donostia-San Sebastián, Guipúzcoa.

Phone: +34 943 31 79 50

https://www.barcelo.com/en-us/barcelo-hotels/hotels/spain/san-sebastian/barcelo-costa-vasca/

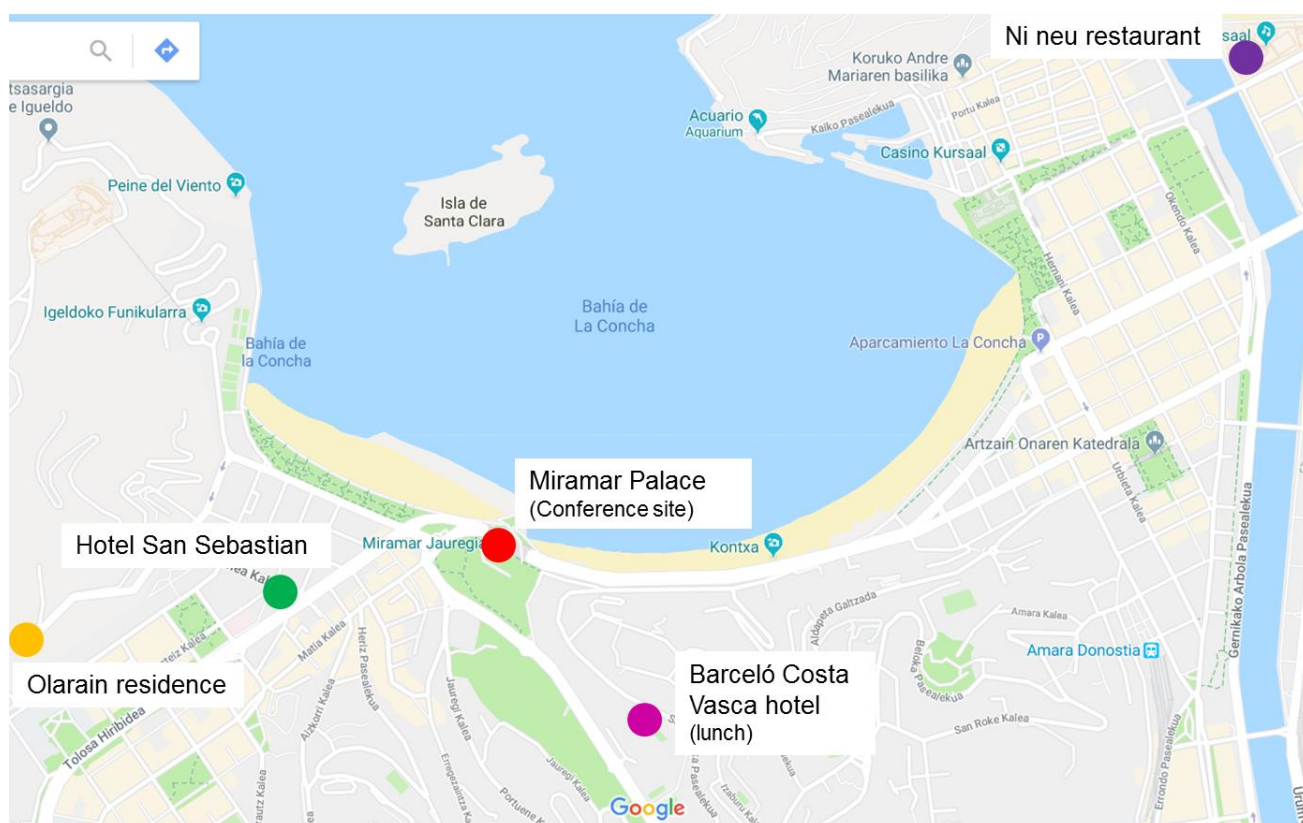
## Conference dinner

The Conference dinner will take place at **Ni neu restaurant**.

Address: Zurriola Hiribidea, 1. Donostia-San Sebastian, Guipúzcoa

Phone: +34 943 00 31 62

Web: <http://www.restaurantenineu.com/en/restaurant/>



## How to get to the **N2D conference** (follow “Summer Courses” indicators)

### Access from Matia street (from **A** to **C**)



## How to get to the **lunch place** (Barceló Costa Vasca hotel)

### The total route (7-10 mins)



### Take the east exit from the palace



## Scientific program at a glance

	Monday	Tuesday	Wednesday	Thursday	Friday
9:00 – 9:15	<b>WELCOME</b>				
9:15 – 10:00	A. Pasupathy	Krashennnikov	Roman Fasel	V. Renard	Ali Yazdani
10:00 – 10:45	P. Liljeroth	Eva Andrei	J. Fdez-Rossier	A. García-Lekue	J. Stroschio
10:45 – 11:15	COFFEE BREAK				
11:15 – 12:00	A.L. Vázquez de Parga	R. Wiesendanger	J.I. Pascual	Milan Allan	V. Madhavan
12:00 – 12:20	W. Wan	E. Cortés del Río	A. Berdonces	Jianfeng Ge	C. Rubio-Verdú
12:20 – 12:40	V. Vaño	F. Masee	J. M. Gottfried	F. Lüpke	F. Mesple
12:40 – 13:00	C. G. Ayani	D. J. Choi	C. Zhao	J. C. Liu	A. Weston
13:00 – 15:00	LUNCH				
15:00 – 15:45	I. V. Grigorieva	Ion Errea	S. Refaeli-Abramson	Tristan Cren	
15:45 – 16:05	J.J. Baldoví	P. Mallet	R. Harsh	Fernando de Juan	
16:05 – 16:25	N. Lorente	T. Knispel	M. Garnica	S. C. Ganguli	
16:25 – 16:45	N. Bansal	Á. Pásztor	B. Schuler	A. Kamlapure	
16:45 – 17:15	COFFEE BREAK				
17:15 – 18:00	P. Jelinek	<b>POSTER SESSION &amp; cocktail</b>	I. di Bernardo	Ernst Meyer	
18:00 – 18:20	A. Schirmeisen		Andrei Bernevig		
18:20 – 18:40	B. de la Torre				
20:45			<b>CONFERENCE DINNER</b>		