

# Novel 2D materials explored via scanning probe microscopy & spectroscopy

June 24<sup>th</sup> – 28<sup>th</sup> 2024, Donostia - San Sebastián (Spain)

	MONDAY	TUESDAY	WEDNESDAY	THURSDAY	FRIDAY
8:45 – 9:00	<b>Welcome*</b>				
9:00 – 9:45	<b>Joseph Stroschio</b> <i>How to measure Berry curvature derived orbital magnetism with Landau level spectroscopy in moiré quantum matter</i>	<b>Stuart Parkin</b> <i>2D van der Waals layers for spintronics</i>	<b>Maia Vergniory</b> <i>Phonon-induced phase transitions in topological materials</i>	<b>Natxo Pascual</b> <i>Inducing magnetism and superconductivity in graphene</i>	<b>Eva Andrei</b> <i>Moiré x Moiré: self-alignment, topology and quasi-crystals</i>
9:45 – 10:30	<b>Paco Guinea</b> <i>Superconductivity and junctions in twisted bilayer graphene</i>	<b>Joaquín F. Rossier</b> <i>Probing entanglement and fractionalization with scanning probe microscopy</i>	<b>Haim Beidenkopf</b> <i>The Kagome ferromagnetic metal <math>\text{Co}_3\text{Sn}_2\text{S}_2</math></i>	<b>R. Wiesendanger</b> <i>Non-Trivial Topological and Strongly Correlated Electron States in Model-Type Low-Dimensional Magnet - SC Hybrid Systems</i>	<b>Ali Yazdani</b> <i>Visualizing quantum matter in flat bands: from Wigner crystal to electron Kekulé lattices</i>
10:30 – 11:15	COFFE BREAK / POSTER SESSION I		COFFE BREAK / POSTER SESSION II		
11:15 – 12:00	<b>Stevan Nadj-Perge</b> <i>Imaging strongly correlated phases in twisted trilayer graphene using scanning tunneling microscopy</i>	<b>Roman Fasel</b> <i>Nanographene spin chains</i>	<b>Roser Valentí</b> <i>Modelling correlated electrons in two-dimensional van der Waals platforms</i>	<b>Peter Liljeroth</b> <i>Visualizing symmetry breaking in vdW quantum materials</i>	<b>Abhay Pasupathy</b> <i>Teaching an old dog some new tricks</i>
12:00 – 12:20	<b>Pierre Pantaleon</b> <i>Umklapp-driven evolution of superconductivity in twisted graphene multilayers</i>	<b>Beatriz Viña</b> <i>Controlling magnetic interactions between <math>S=1/2</math> spins at unusually large distances</i>	<b>Haojie Guo</b> <i>Decoupled superconducting states in <math>4\text{H}_b\text{-TaS}_2</math></i>	<b>Anuva Aishwarya</b> <i>Spectroscopic visualization of robust sign-changing s-wave superconductivity in monolayer <math>\text{Fe}(\text{Se},\text{Te})</math> on <math>\text{Bi}_2\text{Te}_3</math></i>	<b>Haoyu Hu</b> <i>Spectroscopy of strongly correlated topological states: <math>\text{NbSe}_2</math>, Twisted Bilayer Graphene, and <math>\text{WSe}_2</math></i>
12:20 – 12:40	<b>Chen-Yue Hao</b> <i>Robust flat bands in twisted trilayer graphene quasicrystals</i>	<b>Felix Lupke</b> <i>Interplay of inelastic tunneling gap, magnetic states and Faraday screening in graphene/<math>\text{Fe}_3\text{GeTe}_2</math> heterostructures</i>	<b>Sandra Sajan</b> <i>Mapping superconductivity in the incoherent CDW mosaic phase of a transition metal dichalcogenide</i>	<b>Somesh Ganguli</b> <i>Realization of heavy fermion phase diagram in van der Waals heterostructures</i>	<b>Zhizhan Qiu</b> <i>Electron-hole crystals in a Mott insulator <math>\alpha\text{-RuCl}_3</math></i>
12:40 – 13:00	<b>Gautam Rai</b> <i>Dynamical correlations and order in twisted bilayer graphene</i>	<b>Chenxiao Zhao</b> <i>Construction and manipulation of low-dimensional many-body Spin Systems based on nanographenes</i>	<b>Nurit Avraham</b> <i>Correlated and topological states in the transition metal dichalcogenide <math>4\text{H}_b\text{-TaS}_2</math></i>	<b>Tatiana Webb</b> <i>Uncovering the mesoscale structure of quantum and topological phases with low temperature atomic force microscopy</i>	<b>Wei Li</b> <i>Stripe charge order and its interaction with Majorana bound states in <math>2\text{M-WS}_2</math> topological superconductor</i>
Lunch	Lunch				<p>* Registration at Miramar Palace on Monday from 8:30</p> <p>** Conference dinner at Txirrita Sagardotegia (Calle San Bartolomé 32, Donostia-San Sebastián)</p>
15:00 – 15:45	<b>Shahal Ilani</b> <i>News from the Quantum Twisting Microscope</i>	<b>Katharina Franke</b> <i>Tuning one- and two-impurity Kondo systems by a moiré superstructure</i>	<b>Nadine Hauptmann</b> <i>Influence of the surface corrugation to the CDW contrast of <math>2\text{H-NbSe}_2</math> in SPM images</i>	<b>Lin He</b> <i>Quantum confinement of Dirac fermions</i>	
15:45 – 16:05	<b>Shiyong Wang</b> <i>STM study of the strongly correlated states in Rhombohedral graphene few-layers</i>	<b>A. Rodríguez-Sota</b> <i>SP-STM study of frustrated antiferromagnetic Mn islands on Ir(111) &amp; coexistence with Mn trimer clusters</i>	<b>Fernando de Juan</b> <i>Domain wall networks from intertwined CDWs in monolayer <math>\text{TiSe}_2</math></i>	<b>Aran Garcia-Lekue</b> <i>Addressing orbital confinement at edges and pores of carbon nanoarchitectures</i>	
16:05 – 16:25	<b>Árpád Pásztor</b> <i>Ambiguous chirality and periodic strain patterns in moiré systems: a cautionary tale about geometric phase analysis</i>	<b>Jeison Fischer</b> <i>Spin polarization of an Anderson impurity in <math>\text{MoS}_2</math> mirror twin boundaries</i>	<b>Huiru Liu</b> <i>Manipulation of intrinsic polaron in two-dimensional transition-metal halides</i>	<b>Carolin Gold</b> <i>Engineering and imaging microscopic properties in graphene heterostructures</i>	
16:25 – 16:45	<b>Florie Mesple</b> <i>Bilayer graphene with biaxial heterostrain relaxes in a giant atomic swirl</i>	<b>Lewis Powell</b> <i>Magnetic-field induced phase transition in a centrosymmetric superconductor <math>\beta\text{-PdBi}_2</math></i>	<b>Bruno Schuler</b> <i>Layer-dependent charge transfer lifetimes and ultrafast THz-STM of Se vacancies in <math>\text{WSe}_2</math></i>	<b>Mads Brandbyge</b> <i>First principles investigations of tunnelling into and contact to graphene</i>	
16:45 – 17:30	COFFE BREAK / POSTER SESSION I		COFFE BREAK / POSTER SESSION II		
17:30 – 18:15	<b>Feng Wang</b> <i>Electron solids in two-dimensional semiconductor heterostructures</i>	<b>Vincent Renard</b> <i>Observation of Kekulé vortices around hydrogen adatoms in graphene</i>	<b>S. Refaely-Abramson</b> <i>Excited-state dynamics in materials: an ab initio approach</i>	<b>Agustin Schiffrin</b> <i>Gate control of correlated-electron phases in a 2D metal-organic framework (17:30 - 17:50)</i>	
18:15 – 18:35	<b>Taner Esat</b> <i>A quantum sensor for atomic-scale electric and magnetic fields</i>	<b>Ellis Thompson</b> <i>Direct visualization of twisted molybdenum ditelluride with scanning tunneling microscopy-spectroscopy</i>	<b>Daniel Hernangómez</b> <i>A theoretical perspective of electronic and optical properties of TMDC-graphene interfaces</i>	<b>Jorge Lobo</b> <i>2D-Ferromagnetism unveiled on an atom-thick &amp; extended 2D-MOF (17:50 - 18:10)</i>	
				<b>Hongde Yu</b> <i>Metal-free magnetism in 2D polymers (18:10 - 18:30)</i>	
20:30	CONFERENCE DINNER**				

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