



Departamento de
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Materia Condensada
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STM-engineered spin arrays for qubit control and Majorana bound states

Quantum technologies are advancing toward platforms that enable deterministic control of matter at the atomic scale. We demonstrate individually addressable electron-spin qubits in solid-state systems assembled with atomic precision. Using a scanning tunneling microscope (STM) for both fabrication and readout, we create well-defined spin arrays and directly control their coupling and quantum states at the single-qubit level. Extending this method to superconducting surfaces allows exploration of hybrid spin-superconductor systems, where correlated interactions generate emergent quantum states, including Majorana bound states. These measurements provide insight into states relevant for topological quantum computation and establish atomically engineered surface spins as a scalable platform for studying quantum phenomena and developing future quantum devices.

Deung-Jang, Choi is an Ikerbasque Associate Professor at Centro de Física de Materiales (MPC/CFM,UPV-CSIC). Her research line focuses on harnessing the potential of surface-supported spins for quantum technologies. Her work is dedicated to advancing the manipulation and control of individual spins on surfaces. Her expertise spans precision engineering of superconductor-supported magnetic systems, and the cutting-edge application of time-dependent modes in scanning tunneling microscopy.

Con la colaboración de:



Facultad de Ciencias
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26 marzo

HORA: 12:30

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