

The Nanoscience Cooperative Research Center, CIC nanoGUNE, located in Donostia / San Sebastian, Basque Country (Spain), is currently looking for a

PRE-DOCTORAL RESEARCHER

to work on

Spin Coherence and Quantum Control in Graphene Nanostructures

NanoGUNE is a research center devoted to conducting world-class nanoscience research for a competitive growth of the Basque Country. NanoGUNE is a member of the Basque Research and Technology Alliance ([BRTA](#)) and is recognized by the Spanish Research Agency as a *María de Maeztu* Unit of Excellence.

CIC nanoGUNE invites applications for a doctoral researcher position within the **ERC Advanced Grant project CONSPIRA** (Coherent Control of Spin Chains in Graphene Nanostructures, ERC-AdG 101097693). This is an exceptional opening for a motivated and talented physicist to work at the intersection of quantum nanoscience, molecular magnetism, and quantum electrodynamics — a frontier where the next generation of quantum information platforms is being conceived and built.

CONSPIRA sets out to demonstrate that atomically engineered graphene nanostructures can host, communicate, and coherently control quantum spin states — electronic and nuclear — with a precision and tunability unmatched by any existing solid-state platform. This is fundamental science with a long horizon: the kind of research that rewrites textbooks.

This doctoral position is focused on the experimental programme of CONSPIRA, and involves:

- **Electron Spin Resonance combined with Scanning Tunnelling Microscopy (ESR-STM)**, using a unique instrument developed within the project that integrates low-temperature STM with quantum electrodynamics circuitry.
- **Characterisation and quantum control of collective spin states** in graphene nanostructures, including measurement of fundamental spin parameters with ultimate energy, time and space resolution.

We are looking for candidates with:

- A Master's degree (or equivalent) in Physics, Quantum Technology, or a closely related field.
- A strong foundation in quantum mechanics and solid-state or condensed matter physics.
- Intellectual curiosity, experimental rigour, and the resilience to work at the research frontier.
- Good oral and written communication skills in English.
- Prior experience with microwave technology, cryogenic systems, or quantum devices is distinct.

We promote teamwork in a diverse and inclusive environment and welcome all kinds of applicants regardless of age, disability, gender, nationality, race, religion, or sexual orientation.

WHERE: The successful candidate will join the **Quantum Probe Microscopy group** led by Prof. José Ignacio Pascual, embedded in the vibrant scientific ecosystem of CIC nanoGUNE and the broader Donostia International Physics community. The **QPM** group combines Low-Temperature Scanning Tunnelling Microscopy with theoretical modelling of elementary processes in quantum materials to gain fundamental understanding of electronic optical and magnetic phenomena in condensed matter and to develop routes to manipulate their properties at the scale of their atomic and molecular components. More information can be found at <https://www.nanogune.eu/en/research/groups/quantum-probe-microscopy>.

WHEN: The position is expected to start in 01/09/2026

HOW: Candidates should **apply** by completing the form below and attaching the following documents:

- a. A complete CV
- b. A cover letter and at least two reference letters grouped in a single PDF file

The **deadline** for applications is **30/06/2026**.

NOTES:

(i) All applicants will receive an answer after the end of the selection process; but please note that due to the large number of submissions that are expected, we cannot provide individual feedback.

(ii) Additional information about nanoGUNE's commitment towards [HR excellence in Research and Gender Equality](#) are available on our website.

(iii) We encourage you to subscribe to our [HR mailing list](#) to receive information related to nanoGUNE's open positions and open calls for different training and talent attraction programs.