

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

Quantum Computing with Spins in Silicon

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.

We are pleased to offer a PhD position in the field of silicon-based quantum computing at nanoGUNE. The project will focus on developing scalable quantum computing hardware based on silicon transistors to solve some of society's most pressing computational challenges. Silicon-based approaches to quantum information processing offer advantages for scaling such as high qubit density, record qubit coherence lifetimes for the solid state, and the ability to leverage the advanced nanofabrication methods of the semiconductor industry.

The selected candidate will join the **Quantum Hardware group**, led by **Prof. Gonzalez Zalba Fernando** (f.gonzalez@nanogune.eu), a multidisciplinary and dynamic research team passionate about building a scalable quantum computer based on silicon technology. More information can be found at <https://www.nanogune.eu/en/research/groups/quantum-hardware>.

Moreover, the PhD will have a strong industrial component given the close collaboration with the quantum computing start-up, **Quantum Motion**. The PhD degree will be awarded by the University of the Basque Country (UPV-EHU).

The **aim** of the **project** is to:

- Conduct research focused on developing scalable quantum processors based on silicon spin qubits.
- Design scalable qubit architectures with increasingly higher qubit connectivity.
- Perform electrical characterization of silicon devices at millikelvin temperatures and high magnetic fields.
- Perform dynamical operations on spin qubits using high frequency electronic equipment.
- Collaborate with interdisciplinary teams, including machine learning experts, device modelling specialist, integrated circuit designers, and quantum algorithm developers.
- Analyze and interpret experimental data, contributing to scientific publications, patents, and presentations.
- Engage with the wider international research community by participating in conferences, workshops, and collaborative projects.

The **successful candidate** will have a:

- Top tier education in Physics, Electrical Engineering, or a related field, studied to master's degree level.
- Background in solid-state physics, semiconductor devices, quantum information, and/or analogue circuits is desirable.
- Experience in data analysis and programming, particularly in the use of Python, Git, and Gitlab.
- Excellent communication skills in English, both written and verbal.

- Ability to work independently and as part of a collaborative research team.

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.

The position is **expected to start in 01/09/2025**.

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 **12/04/2025**.

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.