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

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**Pre-Doctoral Researcher**

to work on??

**Quantum computing with spins in silicon**

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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 a multidisciplinary and dynamic research team passionate about building a scalable quantum computer based on silicon technology. The PhD degree will be awarded by the University of the Basque Country (UPV-EHU).

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.

**Key responsibilities**

- 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.

**Qualifications**

- Top tier education in Physics, Electrical Engineering, or a related field, studied to master's degree level.
- Background in solid-sate 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.

**Conditions**

- A PhD stipend/salary for the duration of the project (4 years).
- Access to state-of-the-art cryogenic laboratory facilities and computational resources.
- Opportunities for research stays at partner academic and industrial institutions, participation in conferences, and involvement at international collaborations.
- Comprehensive health insurance (as per nanoGUNE and EU regulations).

**How to apply**

Interested candidates should apply by filling in the **form** in the **link below** and by submitting the following documents in a **single PDF file**:
• A detailed CV, including academic background and relevant experience. We particularly welcome experimental experience in a laboratory setting.
• Contact information for two references.

For informal enquiries, interested candidates are welcome to contact Prof. Jose M. Pitarke jm.pitarke@nanogune.eu .

The **position** is expected to **start** on **01/09/2024**.
The **deadline** for applications is **31/03/2024**.

*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.*