

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 joining density-functional theory (SIESTA) with Quantum solvers (QISKIT)

NanoGUNE is a research center devoted to conducting world-class nanoscience research for a competitive growth of the Basque Country. NanoGUNE is recognized by the Spanish Research Agency as a *María de Maeztu* Unit of Excellence. It is located in the university campus in San Sebastián, close to other excellent institutions such as the Donostia International Physics Center (DIPC) and the Materials Physics Center, constituting a vibrant international research community.

The **position** is offered in the Theory Group, led by Emilio Artacho (e.artacho@nanogune.eu). The candidate will join a **research line** in computational and theoretical condensed matter physics applied to various scientific problems in materials and nanoscience. More information can be found at <https://www.nanogune.eu/theory>.

The aim of the **project** is to contribute to the method development for the calculations invoking SIESTA and IBM's QISKIT for the use of quantum computing to solve on the correlated electrons described in an active space while embedded in a larger system described with density-functional theory. It involves setting up embedding techniques and coding them in a framework in which SIESTA is called for the non-correlated part and various quantum solvers coded in QISKIT are called for the highly-correlated electrons. IBM's quantum computers will be used in conjunction with conventional high-performance supercomputers to solve selected problems in condensed matter physics, nano and biophysics. The project is in collaboration with the research laboratory IBM Quantum at IBM Research in Zürich.

The successful **candidate** will have a Masters degree (Bologna level or equivalent) in a topic related to condensed matter physics or theoretical chemistry after graduating in physics or chemistry.

Additionally, the candidate should demonstrate experience in the following skills:

- Good grades in Bachelors and Masters degrees in physics, chemistry or close-by subjects including courses on quantum, statistical and solid-state physics.
- Good working knowledge of English, understanding, reading, writing and speaking. Knowledge of Spanish or Basque is not required.
- Experience in programming.

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 01/01/2027 and for a total length of up to 48 months (01/01/2027 - 31/12/2030) in the Theory Group.

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

- a. A complete CV and a certificate of grades of Bachelors and Masters degrees
- b. A cover letter and a reference letter grouped in a single PDF file

The **deadline** for applications is **15/11/2026**.

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.*