

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

## MASTER STUDENT

to work on

### EXPLOITING THE SPIN-ORBIT COUPLING IN SPINTRONIC NANODEVICES

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.

Spin orbitronics is an expanding field in Condensed Matter Physics that aims to utilize different phenomena in magnetism and spintronics caused by the spin-orbit coupling. One of the most studied phenomena is the interconversion between spin currents and charge currents in novel materials and interfaces, which has a strong potential to be harnessed for energy-efficient logic and memory tasks for processing of information. In this project, we aim to explore the spin Hall effect in heavy metals, the Edelstein effect at Rashba interfaces or the spin-momentum locking at topological insulators to help implementing the recent proposal by Intel of a magneto-electric spin-orbit logic.

Some examples can be seen in our recent joint papers with Intel: *Nature Electron.* 3, 309 (2020), *Nano Lett.* 22, 7992 (2022), or *Nature Commun.* 15, 1902 (2024).

In this **project**, the Master student will be responsible for the design and the fabrication of nanodevices (thin film deposition, electron beam lithography, etching). The student will be also involved in the magneto-transport measurements (high magnetic fields and low temperatures), data analysis, and drafting of results.

The position is offered in the **Nanodevices Group**, led by **Luis E. Hueso** ([l.hueso@nanogune.eu](mailto:l.hueso@nanogune.eu)) and co-led by **Fèlix Casanova** ([f.casanova@nanogune.eu](mailto:f.casanova@nanogune.eu)). More information can be found at <https://www.nanogune.eu/en/research>.

Note: This is an experimental project. The Master student will carry out all experiments at CIC nanoGUNE in Donostia/San Sebastián.

The position is expected to start in **01/09/2025** and for a total length of **up to 10 months** (01/09/2025 - 30/06/2026).

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

- a. A complete CV
- b. Academic Record and Cover Letter grouped in a single PDF file

The **deadline** for applications is **22/06/2025**.

#### 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.*