

Position Offered: UNIVERSITY GRADUATE

Project: *Quantum computing of complex nanophotonic systems for optical control of quantum emitters*

Technological and scientific fields: Photonics; Functional and multifunctional materials (photonic, magnetic, hybrid, thin films and coatings); Information and Communication Technologies

Location: San Sebastián, Basque Country, Centro de Física de Materiales, <https://cfm.ehu.es/>

Research Group/PI: Theory of Nanophotonics, Rubén Esteban, <https://cfm.ehu.es/nanophotonics/>

PROJECT SUMMARY

The objective of this project is to investigate the possibilities offered by quantum computing to analyze complex configurations of interest in nanophotonics based on the interaction of plasmonic resonators with quantum emitters such as molecules or quantum dots. The circuits designed will be executed in IBM quantum computers. The work will be carried out together with two PIs with strong experience in the study of quantum effects in plasmonics.

PROFESSIONAL PROFILE

Minimum requirements:

- Master (or equivalent title) in physics or related field
- Proficiency in English
- Strong background on physics and particularly on quantum physics
- Practical experience in Quantum Computing

Merits to be considered:

- Knowledge of Nanophotonics
- Practical experience on using quantum computing to calculate time dynamics of physical systems and/or chemical modelling
- Knowledge of Qiskit and other programming languages
- Knowledge of open quantum systems
- Strong recommendation letter

WHAT IS OFFERED

Opportunity to develop expertise on the treatment of physical (nanophotonic) systems with quantum computers, as well as to gain a broad background on quantum effects in nanophotonics. Collaboration with different experimental and theoretical international groups including with members of IBM Quantum.

Training stays in internationally renown groups, likely in IBM Dublín or IBM Zurich (3 month or more in total).

At least 60 ECTS in training in digital competences, with emphasis on quantum technologies.

Contract conditions:

Indefinite contract for a University Graduate associated with the Momentum Project of 4 years' duration according to Spanish science law. Gross annual salary (37.000 € - 41.000 €).

Start of contract: before 31 December 2024

PRINCIPAL INVESTIGATOR CONTACT

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