

# ASIER GALICIA MARTÍNEZ

## PERSONAL INFORMATION

*Born in Spain, 21 December 1996*

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## EDUCATION

2019 - 2022 Delft University of Technology

*Master's Degree in  
Applied Physics*

**Faculty:** Faculty of Applied Sciences. · **Track:** *Physics for Quantum Devices and Quantum Computing.*

**Thesis:** *On the Hyperpolarisation of  $^{13}\text{C}$  Spins in Diamond.*

**Description:** I performed my master's thesis in Taminiau Lab where recent work led to the detection and imaging of 27 nuclear spins surrounding the Nitrogen-Vacancy centre. However, no experiment in Taminiau Lab had prepared and measured quantum states of more than 9 nuclear spins. In this thesis, we extended the addressable number of nuclear spins to 21 by implementing algorithms developed in previous works. We then used this new control over 21 spins to study dynamical nuclear polarisation, dephasing and spin diffusion in this complex coupled spin system.

**Supervisor:** Dr. T. H. Taminiau.

**Daily supervisor:** C. E. Bradley.

2014 - 2019 University of the Basque Country (UPV/EHU),  
Lejona

*Bachelor's Degree  
in Physics*

**GPA:** 9.24 (out of 10) · **Faculty:** Faculty of Science and Technology

**Thesis:** *Digital-Analog Quantum Computation.*

**Description:** During my bachelor's final project I worked on a novel paradigm in Quantum Computing, developed by the Qutis group, called Digital-Analog Quantum Computation (DAQC). More precisely, I developed an algorithm that simulates, under the DAQC paradigm, the evolution of an arbitrary all-to-all Ising Hamiltonian using as resource a nearest-neighbour Ising Hamiltonian. This thesis led to a publication.

**Supervisor:** Dr. Mikel Sanz

*Bachelor's Degree  
in Electronic  
Engineering*

**GAP:** 9.27 (out of 10) · **Faculty:** Faculty of Science and Technology

**Thesis:** *Estudio de la Movilidad de Bacterias Magnetotáticas.*

**Description:** During this bachelor thesis I worked on a program written in Python that analyses the trajectories of magnetotactic bacteria under an external magnetic field. I employed both Python and ImageJ in order to analyse the images obtained from an optic microscope, which led me to familiarise with these two programs and some scientific libraries in Python.

**Supervisor:** Prof. María Luisa Fernández-Gubieda Ruiz

## WORK EXPERIENCE

2022 Internship at RIKEN working on QuTiP.

*Internship QuTiP.*

A three month internship contributing to QuTiP. My contributions focused mainly in the plugin qutip-tensornetwork.

2021 Google Summer of Code, NumFOCUS (QuTiP)

*Google Summer of  
Code 2021*

A project that lasted 10 weeks working part-time on the open source package

QuTiP. My contributions focused mainly in the plugin qutip-tensorflow.

## 2017 Summer Internship, BCMaterials

*Internship in  
BCMaterials*

A two month summer internship where I participated in the development of a platform for the remote control of magnetotactic bacteria.

## PUBLICATIONS

J. Randall, C. E. Bradley, F. V. van der Gronden, **A. Galicia**, M. H. Abobeih, M. Markham, D. J. Twitchen, F. Machado, N. Y. Yao, T. H. Taminiau, *Observation of a many-body-localized discrete time crystal with a programmable spin-based quantum simulator*. Science, 374(6574), 1474-1478. DOI: 10.1126/science.abko603 .

**A. Galicia** , B. Ramon, E. Solano, and M. Sanz, *Enhanced connectivity of quantum hardware with digital-analog control*. Phys. Rev. Research 2 (3). DOI: 10.1103/PhysRevResearch.2.033103

## COMPUTER SKILLS

*Programming*

PYTHON, JAVA, FORTRAN, MATLAB, MATHEMATICA

*Software*

L<sup>A</sup>T<sub>E</sub>X, Linux, Git, Inkscape, ImageJ, MS Office, PSpice, Kaleidagraph

## OTHER INFORMATION

*QuTiP admin team*

I am part of QuTiP's admin team since January 2022.

*Languages*

SPANISH · Mother tongue

ENGLISH · Advanced (CAE Grade B - CEFR Level C1)

BASQUE · Intermediate (B1)

FRENCH · Basic (A1)