

# Carlos Payá – Curriculum Vitae

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<b>Birthdate</b>	20 <sup>th</sup> January 1999	<b>Website</b>	carlosp24.github.io
<b>Birthplace</b>	Madrid, Spain	<b>ORCID</b>	0000-0001-5709-2290
<b>Nationality</b>	Spanish	<b>Github</b>	Carlosp24
<b>Latest update</b>	June 12, 2025		

## Personal Profile

I am a PhD candidate at the QUDYMA and Q4Q research groups at ICMM-CSIC, Madrid, under the supervision of Elsa Prada and Ramón Aguado. My research focuses on the theoretical study of topological superconductors with hybrid materials, with special emphasis on full-shell nanowires. I am particularly interested in the topological properties of superconducting materials and their potential applications in quantum computing.

## Education

<b>2023-Present</b>	<b>PhD in Condensed Matter Physics</b> - Universidad Autónoma de Madrid, Madrid, Spain
	<i>Tentative completion date</i> February 2027
	<i>Topic</i> Topological superconductors with hybrid materials: full-shell Majorana nanowires
	<i>Supervisors</i> Elsa Prada and Ramón Aguado
<b>2021-2022</b>	<b>Master in Condensed Matter Physics</b> - Universidad Autónoma de Madrid, Madrid, Spain
	<i>Grade</i> 9.45/10
	<i>Master's Thesis</i> Topological phase and Majorana zero modes in full-shell nanowires
	<i>Supervisor</i> Elsa Prada
<b>2017-2021</b>	<b>Bachelor in Physics</b> - Universidad Autónoma de Madrid, Madrid, Spain
	<i>Grade</i> 8.44/10
	<i>Bachelor's Thesis</i> Josephson junctions based on full-shell Majorana nanowires
	<i>Supervisor</i> Elsa Prada

## Employment History

<b>March 2023 - Present</b>	Instituto de Ciencia de Materiales de Madrid (ICMM), CSIC, Madrid, Spain
	<i>PhD Candidate, FPI grant</i>
	Quantum Dynamics of Materials (QUDYMA) and Quantum Materials for Quantum Technologies (Q4Q) groups.
<b>April - July 2025</b>	Niels Bohr Institute, University of Copenhagen, Denmark
	<i>Visiting PhD candidate</i>
	Karsten Flensberg's group.
<b>Nov 2021 - Sep 2022</b>	Instituto de Ciencia de Materiales de Madrid (ICMM), CSIC, Madrid, Spain
	<i>Research Assistant</i>
	Theory of Quantum Materials and Solid State Quantum Technologies group.

## Publications

## Conferences

## Teaching

### Supervised students

**Sep 2024 -** César Robles - Bachelor's Thesis

**June 2025** *Main supervisor: Elsa Prada*

Title: *Quasi-Majoranas in inhomogeneous full-shell hybrid nanowires*

## Outreach

**March 2023** - ICMM Superconductivity Outreach Team

**Present** *Lecturer and workshopper*

Regular activities: monthly talks and demonstrations for high-school students.

## Funding

## Skills

### Languages

<b>Spanish</b>	Native	
<b>English</b>	Fluent	C1 Advanced certification
<b>French</b>	Fluent	DALF C1 certification

### Programming

<b>OS</b>	MacOs, Linux (Debian and Ubuntu), Windows
<b>Programming Languages</b>	Python (advanced), Julia (advanced), C/C++ (basic), MySQL (basic)
<b>Web Development</b>	HTML5, CSS, JavaScript (basic)
<b>Scientific computing</b>	Mathematica (advanced), Quantica (Julia package, advanced), Numpy, Scipy
<b>Miscellaneous</b>	Makie (Julia package, advanced), matplotlib, Git, $\LaTeX$ , Office