Contact Information

marco.ciafardini@gmail.com
https://regularhexahedron.github.io/

Education

Licenciatura en Ciencias Físicas — March 2018 - October 2024
Faculty of Exact and Natural Sciences - University of Buenos Aires

- "Licenciatura" is a (1+5)-year degree. The first year, 'Cíclo Básico Común (CBC)", is a required set of foundational courses at the University of Buenos Aires, covering general subjects before the degree itself.
- "GPA": 9.39/10 (excluding CBC)

Research Experience

MSc. Thesis Student — March 2023 - March 2024
Relativistic Quantum Theories and Gravitation Group, Institute of Astronomy and Space Physics, University of Buenos Aires

- Title: *Reducción Dimensional del Sector de NS-NS: Perspectivas desde Simetrías*
- Directors: Carmen A. Núnez, Diego Marqués

My thesis focused on studying the symmetries and dualities in String Theory and their impact on low-energy effective theories; particularly, the way symmetries in the NS-NS sector uniquely determine the reduced action under toroidal compactification.
It is the case that some symmetries of the higher dimensional theory are preserved in lower dimensions, others are broken, and occasionally, there are symmetry enhancements. Namely, symmetries that are broken in the dimensional reduction can actually be realized after it, as a global symmetry principle with constrained parameters.
The work continued by implementing it to fix couplings in the (11 Maximal SUGRA circle dimensional reduction) 10-dimensional Type IIA low-energy effective action.

Undergraduate Research Assistant (as a student of *Laboratorios 6 y 7*) March 2022 - December 2022
Department of Condensed Matter Physics, Research and Applications Management, National Atomic Energy Commission (CNEA)

- Directors: María A. Barral, Verónica L. Vildosola, Federico A. Viva

Conducted research on the impact of the adsorption morphology of Li on Au as a substrate in isotope separation.
Performed simulations based on Density Functional Theory with "VASP" to study the adsorption process, as well as electrochemical depositions and structural characterizations.

- Presented research findings at *"107° Reunión de la Asociación de Física Argentina" (2022)* with a poster titled *"Separación Isotópica de Litio por Electrodeposición"*.

Publications

- **Ciafardini, M.**, Marqués, D., Núñez, C.A., *et al.* "Hidden symmetries from extra dimensions", *J. High Energ. Phys.* 2025, 72 (2025) DOI: 10.1007/JHEP02(2025)072.
- Marina S. Bellora, Federico M. Cabello, María A. Barral, **Marco Ciafardini**, Federico A. Viva, Horacio R. Corti, and Verónica L. Vildosola, "Effect of the Substrate and the Morphology on Electrochemical Separation of Lithium Isotopes: Insights from DFT", *The Journal of Physical Chemistry C* 2023 127 (44), 21713-21720. DOI: 10.1021/acs.jpcc.3c04679.

Teaching Experience

Undergraduate Teaching Assistant in *Mecánica Clásica* — March 2025 - August 2025
Department of Physics, Faculty of Exact and Natural Sciences - University of Buenos Aires

Undergraduate Teaching Assistant in *Física Teórica 1* — March 2024 - December 2024
Department of Physics, Faculty of Exact and Natural Sciences - University of Buenos Aires

Undergraduate Teaching Assistant in *Física 1* — March 2023 - August 2023
Department of Physics, Faculty of Exact and Natural Sciences - University of Buenos Aires

Primarily addressed student inquiries regarding course exercises, assisted in grading mid-term exams and prepared class materials and lessons in courses of 150-250 students.

Python Workshop — April 2022
Faculty of Exact and Natural Sciences - University of Buenos Aires

Participated in the delivery of a Python workshop organized by and for students whose main goal was to introduce newcomers to the Python language, primarily with the aim of facilitating their adaptation to lab courses.

Outreach Activities

Collaborator at the "Physics Week" — June 2022
Department of Physics, Faculty of Exact and Natural Sciences - University of Buenos Aires

Participated in a outreach event aimed at high school students, conducting experimental demonstrations at the "Waves and Sound" station.

Languages

Spanish	Native
English	IELTS UKVI - 7.5 Overall Band Score, as of 31/01/2025
	C1 Advanced - 196/210, as of 30/11/2022
French	

(Unofficial) Academic Transcript

Course	Description	Grade (/10)	Date of the Final Exam
Matemática 1	Multivariable Calculus	10	07/08/2019
Matemática 2	Linear Algebra	9	13/12/2019
Matemática 3	Vector Calculus & ODEs	10	20/12/2019
Matemática 4	Complex Analysis, Integral Transforms & PDEs	10	05/03/2021
Cálculo Numérico	Numerical Analysis	6	23/02/2023
Estadística en Física Experimental	Probability and Statistics	10	02/08/2021
Física 1	Newtonian Mechanics	10	23/07/2019
Física 2	Waves and Optics	10	06/03/2020
Física 3	Electromagnetism	10	25/02/2021
Física 4	Thermodynamics & Introduction to Quantum Mechanics	6	18/02/2021
Mecánica Clásica	Classical Mechanics	10	04/08/2021
Física Teórica 1	Electromagnetism	10	12/12/2022
Física Teórica 2	Quantum Mechanics	10	22/12/2021
Física Teórica 3	Statistical Mechanics	9	03/08/2023
Teoría Cuántica de Campos	Quantum Field Theory	10	04/05/2023
Relatividad General	General Relativity	9	10/03/2023
Estructura de la Materia 1	Fluid Dynamics	9	30/04/2024
Estructura de la Materia 2	Solid-State Physics	10	01/08/2024
Estructura de la Materia 3	Quantum Chemistry	9	02/08/2024
Estructura de la Materia 4	Particle Physics	9	07/10/2024
Laboratorio 1	Mechanics Lab	9	23/07/2019
Laboratorio 2	Waves and Optics Lab	9	22/12/2020
Laboratorio 3	Electromagnetism Lab	10	21/07/2021
Laboratorio 4	-	10	15/12/2021
Laboratorio 5	"Modern Physics" Lab	9	28/03/2022
Laboratorio 6	-	10	07/09/2022
Laboratorio 7	-	10	19/12/2022
Tesis de Licenciatura	MSc. Thesis	10	20/03/2024