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Summary

Curious and adaptable theoretical physicist with over six years of research experience in mathematical & physics modeling and analytical problem-solving. I consistently strive for a growth mindset and I am motivated to learn and develop new skills. My interdisciplinary and cooperative approach proven through diverse research physics projects and international collaborations, drives me to apply research-based learning strategies and analytical thinking to challenges in technology or financial sectors.

| Core Competencies

- Advanced mathematics: Complex mathematical modeling. Partial differential equation systems.
 Analytical and/or numerical computations to solve high-dimensional systems and non-linear equations. Stochastic modeling. Quantitative analysis. Quantum mechanics. Econophysics. Advanced differential geometry.
- Analytical profile: Critical thinking. Abstract reasoning. Mathematical rigor. Complex models synthesis. Problem decomposition. Pattern identification. Scenario analysis. Systematic analysis by addressing fundamental constituents of a problem. Key parameter determination for model building optimisation.

Technical proficiency:

- Python (5y): OOP, scientific libraries (NumPy, SciPy, Pandas), package management, documentation, data visualisation.
- Mathematica (8y): Symbolic computations, equation solving, automation, visualisation.
- Matlab (2y): Data analysis, numerical computations, visualisation.
- $\Delta T_F X(10y)$: Technical documentation, professional presentation, template customisation.
- Html (3y): Web content creation, structured markup, customisation.
- Professional skills: Project management. International mobility (Japan, UK, Sweden, Germany...).
 Grant writing. Technical communication across diverse audiences. Commitment to teaching, mentoring and inspiring growth mindset to others.
- Languages: Spanish (Native). English (Professional proficiency). Swedish (Upper-intermediate).
 Japanese, French (Basic comprehension)

| Professional Highlights

O Publication & Research Output:

- Publication of 5 peer-reviewed publications in high-impact theoretical physics journals.
- Developed rigorous differential geometry framework to prove consistency between ten-dimensional and four-dimensional cosmological constructions.
- Delivered first reliable embedding of braneworld model in string theory.
- 15+ invited and contributed presentations at international conferences and seminars (Europe, Japan, online)
- My research work has motivated other researchers to explore braneworld constructions from complementary perspectives.

• Funding:

- Daiwa + Sasakawa Foundation Grants (2025–2026): International travel grant awarded to cover expenses for research collaboration between Nottingham and Kyoto Universities ($\sim 8.000 \,\$$)
- **JSPS** Postdoctoral Fellowship + Kakenhi Grant (2024–2026): Prestigious fellowship + Grantin-Aid awarded by the Japanese Society for the Promotion of Science (~ 70.000 \$).
- CIM Ph.D. + Grant (2019-2024): Competitive doctoral funding based on project proposal presented by the candidate (~ 120.000 \$).

Teaching & Outreach:

- Teacher Assistant for 3 courses at Uppsala University during my Ph.D: Electrodynamics, Gravitation & Cosmology, Laboratory supervision (på Svenska).
- Supervision of three succesful master/bachelor students' theses.
- Creation of 6 pedagogical lecture/exercise notes shared with students to facilitate learning.
- Active engagement in science dissemination activities. Participation in JSPS dialogue for popular science talks to Japanese high-school students. Creation of artistic explanations of theoretical physics concepts.

| Education & Research

2024-2026 9

JSPS Postdoctoral position, Kyoto University, Kyoto, (Japan)

- O Focus: Project leadership, international collaborations.
- Achievements: Independent theoretical research on string cosmology, integration of two similar theoretical models under same descriptive formalism.
- \circ **Developed skills:** Project organisation, international networking, grant securing (~ 200.000 \$)

2019-2024

Doctor of Philosophy, Uppsala Universitet, Uppsala, (Sweden)

Blowing Bubbles from String Theory

- O Focus: Advanced mathematics, rigorous methodology, model building.
- Achievements: Developed original theoretical framework to connect abstract mathematics to observable cosmological phenomena. First consistent braneworld model embedding into string theory.
- Developed skills: Python and Mathematica expertise, mathematical modelling, research methodology, report writing, technical communication, didactical approaches.

2016-2019

Degree of Master of Science (120 ECTS), Uppsala Universitet, Uppsala, (Sweden)

Type IIB compactifications and string dualities

- O Focus: Specialised knowledge, abstract thinking, mathematical rigor.
- O Achievements: Mastered complex string theory analysis.
- **Developed skills:** Symbolic computation (Mathematica), pattern identification, theoretical framework development, scientific documentation in LATEX.

2010-2016

Bachelor in Physics (240 ECTS), Universidad Complutense de Madrid, Madrid, (Spain)

- O Focus: Physics knowledge foundation, analytical and critical thinking.
- Achievements: Fundamental physics specialisation.
- Developed skills: Complex problem decomposition, mathematical analysis, logical reasoning, systematic approach to physics models, introduction to Mathematica, Python and Matlab.