

Santiago Peña Martínez

PHYSICIST

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Education

Colegio la Quinta del Puente

BILINGUAL BACCALAUREATE DIPLOMA WITH AN EMPHASIS ON SCIENCE AND MULTIMEDIA

Bucaramanga, Colombia

Jun. 2015

Universidad Nacional de Colombia sede Bogotá

B.S. IN PHYSICS

- Recipient of a scholarship for top score admission exam
- Member of the research group: *Caos y Complejidad* of the Physics department of Universidad Nacional de Colombia
- Undergraduate research student in the project called *Quantum randomness and quantum measurement in a unitary setting*

Bogotá D.C., Colombia

Aug. 2015 - Jul. 2020

Université d'Aix-Marseille

MSC. M1 IN PHYSICS

- Merit based grant from the Institute of the Physics of the Universe of Aix-Marseille University

Marseille, France

Sept. 2020 - Jun. 2021

Université d'Aix-Marseille

MSC. M2 IN PHYSICS

- Merit based grant from the Institute of the Physics of the Universe of Aix-Marseille University

Marseille, France

Sept. 2021 - Jul. 2022

Université Paris Cité, Laboratoire APC

PHD IN ASTROPARTICLE PHYSICS

- Accepted for early admission.

Paris, France

Oct. 2022 - Present

Programming Skills

Python, Julia, C++, Mathematica, Matlab, Fortran, LaTeX, Bash, Linux

Languages

Spanish, English, French (DELF B2)

Experience

Undergraduate Research, Caos y Complejidad (Prof. Thomas Dittrich)

UNDERGRADUATE RESEARCHER QUANTUM RANDOMNESS AND QUANTUM MEASUREMENT IN A UNITARY SETTING

- Classical approach for entanglement between meter and environment as analogy to a quantum measurement.

Bogotá D.C., Colombia

Nov. 2017 - Jul. 2020

Tutorship

UNDERGRADUATE TUTOR AT NATIONAL UNIVERSITY OF COLOMBIA

- Tutoring sessions for the undergraduate courses Analytical Mechanics 1 & 2 consisting of 10 hours per week during three months summing 130 hours.

Bogotá D.C., Colombia

Apr. 2020 - Aug. 2020

School on machine learning for quantum matter and technology, Universidad de los Andes

STUDENT

- School on machine learning techniques to study problems on condensed matter physics, quantum information and related fields.

Bogotá D.C., Colombia

May. 2019

Summer Research Program, University of Delaware

INTERN

- Worked with the IceCube-IceTop research group at UD under guidance of professor David Seckel for the summer. Research involved using IceCube software to propagate muons and tau particles in ice looking for similarities between muons and high energy taus.

Newark, DE, USA

Jun-Aug. 2019

M1 Research Internship, Centre de Physique des Particules de Marseille (CPPM)

INTERN

- Modelling of underwater photon propagation to improve sea water parameters for the KM3NeT neutrino telescope. Supervised by Dr. Jürgen Brunner.

Marseille, France

Apr.-Jun. 2021

Tutorship

UNDERGRADUATE TUTOR AT AIX-MARSEILLE UNIVERSITÉ

- Tutoring for first year physics students summing 20 hours.

Marseille, France

Oct. 2021 - Dec. 2021

M2 Research Internship, Laboratoire Astroparticule et cosmologie (APC)

INTERN

- Neural Networks and Graph Neural Networks for energy and Björken γ reconstruction with KM3NeT. Supervised by Dr. João Coelho.

Paris, France

Mar.-Jul. 2022

Doctoral research, Laboratoire Astroparticule et cosmologie (APC)

RESEARCHER

- Deep learning applied to neutrino oscillations with KM3NeT. Supervised by Dr. João Coelho and Prof. Antoine Kouchner.

Paris, France

Oct. 2023 - Present

Events, Honors & Awards

INTERNATIONAL

2019 **Poster**, Semiclassical methods in quantum physics and applications

Natal, Brazil

2023 **Poster**, International Cosmic Ray Conference (ICRC2023)

Nagoya, Japan

DOMESTIC

2018 **Finalist**, XI Integral contest of the Universidad Nacional de Colombia - Sede Medellín

Medellín, Colombia

2023 **Talk**, Journées de Rencontre des Jeunes Chercheurs (JRJC 2023)

Saint-Jean-de-Monts, France

Publications

JOURNAL ARTICLES

Dittrich, T., Peña Martínez, S. (2020). Toppling Pencils—Macroscopic Randomness from Microscopic Fluctuations. *Entropy*, 22(9), 1046.

Extracurricular

Scuba diving, Hiking, Drums, Guitar