Diyaselis Delgado López

Ph.D. Candidate | Experimental High Energy Physics

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Graduate student and research associate in the Laboratory for Particle Physics and Cosmology (LPPC) at Harvard University, in Professor Carlos Argüelles-Delgado's group. Currently working in the IceCube Neutrino Observatory at the South Pole, with interests in neutrino phenomenology and Dark Matter studies.

🎓 EDUCATION

2020 - Present	Ph.D. in Experimental High Energy Physics, **Harvard University** (Expected Graduation - May 2025)
2015 - 2020	B.Sc. in Theoretical Physics and Applied Mathematics, **University of Puerto Rico - Mayagüez**

💼 PROFESSIONAL EXPERIENCE

Present
September 2020

Research Assistant | HARVARD UNIVERSITY, MA, USA
- Under the supervision of Prof. Carlos Argüelles Delgado.
- In consolidation of doctoral degree requirements.
- Thesis work on Dark Matter - Neutrino Interactions with the IceCube Neutrino Observatory
- R&D Construction and Hardware efforts for the TAMBO Experiment (*Machine Shop Training*)

Neutrino Physics | Astrophysics | *HEP - Phenomenology* | *BSM* | Dark Matter | Hardware

September 2023
August 2023

Research Assistant | CHIBA UNIVERSITY, Japan
- Under the supervision of Prof. Aya Ishihara.
- Worked on the Final Acceptance Testisting of the Digital Optical Modules for the IceCube Upgrade.

Neutrino Physics | Astrophysics | Hardware

August 2019
May 2019

Research Assistant | CORNELL UNIVERSITY, NY, USA
- Under the supervision of Prof. Jim Alexander, as part of the CLASSE-REU program.
- Evaluated strain gauge measurements of carbon fiber Dee for the CMS Phase-2 Upgrade of the Tracker Forward Pixel Detector.

HEP - Experimental | Detector Physics | Hardware

December 2018
June 2018

Research Assistant | CERN, Geneva, Switzerland
- Under the supervision of Dr. Kati Lassila-Perini, as part of the CERN Non-Member State Summer Student program.
- Working period of September to December was sponsored by the University of Michigan - Ann Arbor CERN REU program.
- Tested various analysis examples for preservation and reproducibility via computational workflows for the CMS experiment.
- Major contribution to the computational workflows for the analysis with CMS 2011-2012 raw data and Monte Carlo simulations to re-implement the Higgs boson discovery.

HEP - Experimental | Open-Data Analysis | Software Development

May 2020
August 2017

Research Assistant | UNIVERSITY OF PUERTO RICO - MAYAGÜEZ, PR, USA
- Under the supervision of Prof. Sudhir Malik.
- Analyzed event displays for optimized particle identification from proton-proton beam collisions in the CMS Detector, specialized searches for supersymmetry (SUSY) and top tagging.

HEP - Experimental | CMS | *BSM* | Analysis | Software Development | Machine Learning

🏆 AWARDS AND SCHOLARSHIPS

2024	**Award**, White Prize for Excellence in Teaching, DEPARTMENT OF PHYSICS, HARVARD, CAMBRIDGE, USA
2022	**Award**, TeVPA Research Video Award, KINSGTON, ON, CANADA
2022	**Fellowship**, European Physical Society Fellowship for the Intl. School of Nuclear Physics, ERICE, ITALY
2022	**Scholarship**, Jens Aubrey Westengard Scholarship, HARVARD UNIVERSITY, MA, USA
2022	**Scholarship**, Leon Rosenfeld Foundation, NIELS BOHR INSTITUTE, COPENHAGEN, DENMARK
2022	**Scholarship**, International Conference on High Energy Physics (ICHEP), BOLOGNA, ITALY
2020	**Fellowship**, Harvard Graduate School of Arts and Sciences Prize Fellowship, MA, USA
2020	**Award**, Enrico Fermi Award, DEPARTMENT OF PHYSICS, U. PUERTO RICO, MAYAGÜEZ, PR, USA
2017-2019	**Scholarship**, Retired Professor's Association (ACJ) Scholarship, MAYAGÜEZ, PR, USA

👥 Community Involvement and Outreach

> Harvard LPPC YouTube Channel, Science Communication Initiative, focused on general audience educational videos.
> IAIFI Affiliate Member, NSF AI Institute for Artificial Intelligence and Fundamental Interactions.
> IceCube Diversity Taskforce Member, IceCube Collaboration.
> IceCube Collaboration MasterClass (English & Spanish), Outreach activity for Middle and High school students.
> SACNAS Affiliate Member, Society for Advancement of Chicanos/Hispanics & Native Americans in Science.
> Women in Physics Member, Harvard University Chapter

📖 Teaching Experience

Present
September 2022

Teaching Fellow | Harvard University, MA, USA
> I was a teaching assistant in the following Undergraduate Level Physics classes:

Introductory Electromagnetism and Statistical Physics (Fall 2022)   Electromagnetism Lab (Fall 2023)

May 2020
January 2018

Teaching Assistant | University of Puerto Rico - Mayagüez, PR, USA
> I was a teaching assistant in the following Undergraduate Level General Science classes:

Calculus   General and Advanced Physics   Probability and Statistics   Computational Techniques in Science and Engineering

💻 Conferences and Workshops

Selected Talks and Seminars

LBNL Institute for Nuclear and Particle Astrophysics, Berkeley, CA Seminar Talk		March 2024
XX International Workshop on Neutrino Telescopes, Venice, Italy Parallel Talk		October 2023
São Paulo Advanced School on Multi-Messenger Astrophysics, São Paulo, Brazil Parallel Talk		May 2023
International School of Nuclear Physics, Ettore Majorana Foundation, Erice, Italy Plenary Talk		September 2022
TeVPa, Queen's University, Kingston, Canada Parallel Talk		August 2022
NBIA Neutrino Summer School, Niels Bohr Institute, Copenhagen, Denmark Seminar Talk		July 2022
APS April Meeting, New York City, NY, USA Parallel Talk		April 2022
Dark Ghosts, University of Granada, Granada, Spain Parallel Talk		March 2022
CMSDAS, Fermi National Laboratory (Fermilab), Batavia, IL, USA Parallel Talk		January 2020
Physics Symposium, University of Puerto Rico, Mayagüez, PR, USA Plenary Talk		September 2019
CERN Student Symposium, CERN, Geneva, Switzerland Parallel Talk		December 2018

Selected Poster Sessions

Neutrino 2024, Milan, Italy	June 2024
Jane Street GRF Workshop, New York, USA	April 2024
MANTS, Bochum, Germany	March 2024
ICHEP, Bologna, Italy	July 2022
SPS PhysCon, Providence, RI, USA	November 2019
APS CUWiP Meeting, Northwestern University, Evanston, IL, USA	January 2019
CERN Summer Student Poster Session, CERN, Geneva, Switzerland	August 2018

📑 Peer-reviewed Publications

Selected Publications in Particle Physics

Searches for Connections between Dark Matter and High-Energy Neutrinos with IceCube, IceCube Collaboration. JCAP10(2023)003.
Contribution: Reviewed and edited plots and content for final draft submission.

Selected Publications in Astrophysics and Astroparticle Physics

Dark Matter decay to neutrinos, C.A. Argüelles, D. Delgado, A. Friedlander, A Kheirandish, I. Safa, A.C. Vincent, and H. White. Preprint arXiv: 2210.01303. Accepted to Phys. Rev. D.
Contribution: Computed the galactic contribution from gamma-ray experiments; aided the galactic computation of the neutrino experiments.
> *Also in* Proceedings of 41st International Conference on High Energy Physics — PoS(ICHEP2022)

Selected Publications in Statistics, Computing, and Experimental Methods

Open data provenance and reproducibility: a case study from publishing CMS open data, EPJ Web Conf. 245 (2020) 08014. T. Šimko, H. de Bittencourt, E. Carrera, Edgar, D. Delgado, C. Lange, K. Lassila-Perini, A. Lintuluoto, L. Lloret, T. McCauley, J. Okraska, D. Prelipcean, and M. Savaniakas.

Contribution: Contributed to the development of the platform and implemented testing examples using CMS Open Data.