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 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 supervision of Professor Carlos Argüelles Delgado.

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

August 2019 – May 2019 | **Research Assistant | Cornell University, NY, USA**
- Under the supervision of Professor 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 Professor 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

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 **Grant**, 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
2019 **Scholarship**, Retired Professor's Association (ACJ) Scholarship, Mayagüez, PR, USA
2017 **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) | Elementary Particle Physics (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

Invited Talks and Seminars

International School of Nuclear Physics, Ettore Majorana Foundation, Erice, Italy — Plenary Talk — September 2022

Dark Ghosts, University of Granada, Granada, Spain — Parallel Talk — March 2022

Talks and Seminars

APS April Meeting (Virtual), Minneapolis, Minnesota, USA — Parallel Talk — April 2023

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

TeVPa (Virtual), Chengdu, China — Parallel Talk — December 2021

ComHEP (Virtual), Chengdu, China — Parallel Talk — December 2021

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

JTM/PRISM Conference, University of Puerto Rico, Mayagüez, PR, USA — Parallel Talk — May 2019

CERN Student Symposium, CERN, Geneva, Switzerland — Parallel Talk — December 2018

Poster Sessions

ICHEP, Bologna, Italy — July 2022

Neutrino 2022 (Virtual), Seoul, South Korea — May 2022

AstroDark (Virtual), KAVLI IPMU, Tokyo, Japan — December 2021

SPS PhysCon, Providence, RI, USA — November 2019

APS April Meeting, Denver, CO, USA — April 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, Preprint arXiv: 2205.12950. IceCube Collaboration. Submitted to JCAP.
Contribution: Reviewed and edited plots and content for final draft submission.

Selected Publications in Astrophysics and Astroparticle Physics

Dark Matter decay to neutrinos, Preprint arXiv: 2210.01303. C.A. Argüelles, D. Delgado, A. Friedlander, A Kheirandish, I. Safa, A.C. Vincent, and H. White.
Contribution: Computed the galactic contribution from gamma-ray experiments; aided the galactic computation of the neutrino experiments.

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.