

Joseph Cordero Mercado

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EDUCATION

2015 - present	Ph.D. in Physics (ABD)	Northwestern University	GPA: 3.52
2015 - 2017	M.S. in Physics	Northwestern University	GPA: 3.52
2010 - 2015	B.S. in Physics	University of Puerto Rico, Mayagüez	GPA: 3.87

SKILLS

Proficient	Python (numpy, pandas, matplotlib, scikit-learn, dask), Bash Shell
Intermediate	C++ (object oriented), SQL, Labview, Statistics
Basic	HTML, PHP, Machine Learning

EXPERIENCE

06/2018 - present	<u>Differential Cross Section of $Z+\gamma$ production in proton-proton collision</u>	Evanston, IL
	<ul style="list-style-type: none">Developed a Python framework to conduct data analysis on terabytes of particle accelerator data.Performed statistical tests to mitigate detector and simulation effects from data.Utilize monte carlo simulations and fitting routines to separate signal from a background model	
06/2015 - 06/2018	<u>Hybrid Ion and Neutral Trap for Ultracold Chemistry</u>	Evanston, IL
	<ul style="list-style-type: none">Planned, designed and built a benchtop experimental set-up for atom and ion trappingBuilt custom electronics for reliable operation of the ion/atom trapping experiment (ex. PID Controllers for laser power and temperature stability)Designed and built custom optical systems that increased light capture from 1% to 4% for shorter integration timesProgrammed control software with millisecond accuracy in Labview and Python PyQt5 module	
01/2018 - 05/2018	<u>High School Teacher at Beacon Academy</u>	Evanston, IL
	<ul style="list-style-type: none">Design all teaching material (lecture, quiz, exams), while also working a full-time Ph.D. studentActively communicated with senior co-worker to coordinate work and teaching dutiesAs the local physics expert, I clarified and provided feedback on the class topics to my co-workerPlayed an instrumental role in the students' progression, as expressed by the senior co-worker.	
10/2017 - 12/2017	<u>High School Teacher Assistant at Beacon Academy</u>	Evanston, IL
	<ul style="list-style-type: none">Helped the entire student class increase their interest in physics through one-on-one mentoringTeaching approach yielded higher student grades, as expressed by the director	

PROJECTS

02/2020 - present	<u>Personal MySQL Recipe Database</u>	Evanston, IL
	<ul style="list-style-type: none">Collect data in Google Spreadsheet format to provide ease of use to non-technical collaboratorUtilize Google Spreadsheet API to populate the MySQL database hosted in my personal serverFront-end in development (HTML and PHP) to provide non-technical users a UI	
07/2018 - 08/2018	<u>Personal Wiki hosted on a LAMP stack</u>	Evanston, IL
	<ul style="list-style-type: none">Configured an Ubuntu Apache web server to setup a personal wiki powered by MoinMoin and accessible by a public domain nameThis wiki page is used to provide extensive documentation on my thesis and personal projects	

LEADERSHIP ROLES

07/2018 - present	<u>Professional Development Chair - Minority Student Group SACNAS</u>	Evanston, IL
	<ul style="list-style-type: none">Organize workshops, including Science communication, Search-apply-negotiate for your job, etc.	
10/2018 - 11/2019	<u>Co-Chair Diversity and Equity - Physics Graduate Student Council</u>	Evanston, IL
	<ul style="list-style-type: none">Planned and moderated student discussions aimed to promote equity and a welcoming atmosphere to all. Topics include microaggressions, implicit bias, affirmative action, gender equality, etc.Received positive feedback from students regarding the usefulness of the discussions	

AWARDS

06/2017 - present	NSF-Graduate Research Fellowship Program	Evanston, IL
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