Carlos Alberto Garcia Diaz

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RESEARCH INTERESTS:

Absorption spectroscopy, spectroscopic line shapes, laser-based sensors, gravitational lensing, galaxy clusters, dark matter, dust-obscured star-forming galaxies, infrared and submillimeter observations, galaxy and star formation

EDUCATION:

Delaware State University, Dover Delaware **Expected Graduation: May 2021**

***Major**: Physics **Minor:** Math* | **GPA:** 4.0

Related Coursework: *Quantum Mechanics I; Math Methods of Physics I, II; Ordinary Differential Equations; Electricity and Magnetism I, II; Calculus I, II, III; Scientific Programming; Linear Algebra ; Signals and Systems; Modern Physics*

WORK EXPERIENCE:

Delaware State University, Dover, DE (August 2019 – Present)

Undergraduate Lab Assistant

- Used MATLAB to model spectroscopic line shapes and plot methane data from NASA Goddard Earth Sciences database. Submitted Abstract to talk at SPIE conference in April 2021.
- Involved in academic research of Fast real-time fitting of direct absorption spectroscopy signals for high precision infrared laser-based greenhouse gas sensors

University of Texas at Austin, TX (Postponed to summer 2021 due to COVID-19) Director email: cmcasey@utexas.edu

Texas Astronomy Undergraduate Research experience for Under-represented Students (TAURUS)

- This will be a 10-week experience where I am set to research dust-obscured star-forming galaxies using observations form millimeter wave observatories, like the Atacama Large Millimeter Array.
- Three nights observing at the McDonald Observatory
- Pending completion of my project, I will have the opportunity to present my work at a meeting of the American Astronomical Society.

University of Michigan, Ann Arbor, MI (May 2019 – July 2019)

Summer Research Opportunity Program (SROP)

- Presented Poster of results to my mentor, research group, and a symposium
- Estimated the core mass of 36 SDSS Giant Arcs Survey (SGAS) galaxy clusters
- Used MATLAB to apply an empirical correction resulting in a more accurate estimation method
- Developed a MATLAB code to create a circle of best fit using Right Ascension and Declination coordinates

Delaware State University, Dover, DE (August 2018 – May 2019)

Math and Physics Tutor

- Logged all tutor sessions both electronically and on paper
- Provided academic development help to students for math up to Calculus III and physics courses
- Worked with other tutors and the student's success director to create an academically encouraging environment

Delaware State University, Dover, DE (June 2019 – August 2019)

Supplemental Instructor (SI)

- Assured they met mathematical standards for college level courses
- Worked with teachers directly to teach students material for one-hour sessions every day
- Taught incoming freshmen how to have a smooth academic transition from high school to college

STRATEGIC LEADERSHIP:

- (2020-present) | National Society of Black Engineers (NSBE) Chapter Vice President: Organized academic and career support for physics and engineering majors of Delaware State University. Attending multiple conferences to work with NSBE chapters of different schools.
- (2018-2019) | Story Sharing: Went to United Methodist churches in the Delaware – Maryland Area to spread awareness of immigration issues by sharing my story as a Deferred Action for Childhood Arrivals (DACA) recipient.

ACTIVITIES/AWARDS:

- (2017-Present) | Recipient | Dream.US Opportunity full ride scholarship
- (2019-2020) | Volunteer Tutor | NSBE and Delaware State University
- (2019) | Recipient | Idaho Growers Shipper Association Scholarship
- (2019) | Recipient | Wilcox Fresh Scholarship