

ROSARIO CECILIO-FLORES-ELIE

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RESEARCH INTERESTS

Ocean worlds, Enceladus, Europa, Titan, planet-moon interaction, exoplanet detection and characterization, exoplanet atmospheres, habitability dynamics, field research, geophysics, cryosphere, and climate change

EDUCATION

CORNELL UNIVERSITY

Ph.D. in Geological Sciences

Starting: Aug. 2024

Ithaca, NY

THE GRADUATE CENTER CUNY

MS in Astrophysics

Expected graduation: Aug. 2024

New York, NY

LEHMAN COLLEGE CUNY

BS in Physics, Dean's List

2022

Bronx, NY

ALFRED UNIVERSITY

MSEd in Literacy Education

2015

Alfred, NY

LEHMAN COLLEGE CUNY

BA in Sociology, Minor: Childhood Bilingual Education, Dean's List

2013

Bronx, NY

RESEARCH EXPERIENCE

GRADUATE RESEARCH FELLOW - AMERICAN MUSEUM OF NATURAL HISTORY -DEPT. OF ASTROPHYSICS

Aug. 2022 – Present

Advisor: Dr. Jacqueline Faherty

New York, NY

- Employ Python for data visualization, mapping mass ratios, binding energies, and planetary-moon separations to delve into celestial dynamics with the aim of establishing parallels with exoplanetary systems.
- Analyzed 100 NASA's TESS mission light curves from young co-moving stars utilizing a Lomb-Scargle periodogram to ascertain the best-fit rotation period, detect stellar activities, solar flares, fast rotators, and signs of binarity.

REU -WATER QUALITY IN THE YUCATAN PENINSULA -NORTHERN ILLINOIS UNIVERSITY

June 2021 – August 2021

Advisor: Dr. Philip J. Carpenter

Dekalb, IL

- Conducted geophysical surveys in Riviera Maya, Mexico using SuperStingTM to locate subsurface karst conduits near cenotes, advancing regional karst hydrogeology knowledge with a focus on the Holbox Fracture Zone.
- Employed electrical resistivity methods to locate subsurface karst conduits near cenotes, revealing significant findings, including an air cavity under the field site, Agua Azul's soccer field, and a saturated karst conduit just 5 meters below the surface.

NASA L'SPACE ACADEMY - MISSION CONCEPT ACADEMY (MCA)

Aug. 2020 – Dec. 2020

Team 11 - Northern Lights: Scientific Research and Outreach - (Student Project)

Online

- Collaborated with a team of eleven students, contributing to the Preliminary Design Review (PDR) of a secondary payload lander mission for Enceladus, with a specific focus on the Bagdad Sulcus in the South Pole-Tiger Stripe region.
- Conducted extensive research on advanced scientific instruments, including mass spectrometers and geophysical sonar technologies. Utilized Java Mission-planning and Analysis for Remote Sensing (JMARS) to pinpoint suitable landing sites.
- Spearheaded an educational outreach STEM initiative to serve 45 low-income public schools in New York City.

NASA L'SPACE ACADEMY - PROPOSAL WRITING AND EVALUATION EXPERIENCE (NPWEE)

May. 2020 – Aug. 2020

Team 7 - UV Voyagers: Investigating Water Quality Metrics - (Student Project)

Online

- Collaborated with a team of seven students to develop water quality metrics for a prototype with UV disinfection, enhancing water systems for the International Space Station (ISS) and future spacecraft.

- Researched and ensured cost-effective, technically feasible solutions for water quality metrics and UV disinfection, aligning with NASA's objectives within a \$ 10,000 seed funding budget.

TEACHING EXPERIENCE

SECOND GRADE - DUAL LANGUAGE TEACHER Aug. 2013 – Sept. 2022
PS/IS 218 Rafael Hernandez Dual Language Magnet School Bronx, NY

- Implemented dual language methodologies and pedagogy to deliver engaging and effective instruction to 25-50 second-grade students, fostering high levels of achievement through a side-by-side model in English and Spanish.
- Developed educational materials and scaffolding strategies to support diverse learners, including students with disabilities and multilingual learners.

SECOND GRADE TEAM - CURRICULUM LEAD Aug. 2014 – Sept. 2022
PS/IS 218 Rafael Hernandez Dual Language Magnet School Bronx, NY

- Crafted customized literacy units catered to the distinct experiences and learning needs of second-grade students, meticulously aligning content with both state and federal educational standards.

STUDENT TEACHER MENTOR Sept. 2015 – Dec. 2021
PS/IS 218 Rafael Hernandez Dual Language Magnet School Bronx, NY

- Provided mentorship to 1-2 student-teachers annually, sharing my expertise and pedagogical knowledge to support their professional growth and development.
- Engaged in monthly teacher leader/mentor meetings, gaining insights from the US PREP Program and Lehman College CUNY to enhance support strategies for student-teachers.

FELLOWSHIPS AND AWARDS

PUBLIC FACING TRANSLATION CUNY SciCOM - BEST POSTER June 2023
CUNY Science Communication Symposium

STUDENT TRAVEL GRANT December 2021
American Geophysical Union (AGU)

PUBLICATIONS

Other co-authors:

I. Rothermich, A., et al. (incl **Cecilio-Flores-Elie, R.**) 2024. "89 New Ultracool Dwarf Co-Moving Companions Identified With The Backyard Worlds: Planet 9 Citizen Science Project". *The Astronomical Journal*

CONFERENCES AND SYMPOSIUMS

"EXPLORING MASS RATIOS IN PLANETARY-MOON SYSTEMS: INSIGHTS FROM OUR SOLAR SYSTEM AND BEYOND" January 2024
Poster Presenter - American Astronomical Society (AAS) New Orleans, LA

"MASS RATIOS OF PLANETS AND ACTIVE MOONS: INSIGHTS FOR OCEAN WORLD OBSERVATION" December 2023
Poster Presenter - American Geophysical Union (AGU) San Francisco, CA

PUBLIC FACING TRANSLATION - "OCEAN WORLDS: TO ENCELADUS AND BEYOND" June 2023
Poster Presenter - CUNY Science Communication Symposium New York, NY

"KARST CONDUIT IDENTIFICATION USING GEOPHYSICAL SURVEYS IN NORTHERN YUCATÁN, MÉXICO" October 2022
Poster Presenter - NDISTEM SACNAS Conference San Juan, PR

"KARST CONDUIT IDENTIFICATION USING GEOPHYSICAL SURVEYS IN NORTHERN YUCATÁN, MÉXICO" December 2021
Oral Presenter - American Geophysical Union (AGU) New Orleans, LA

OUTREACH AND TALKS

FROM STARS TO MOONS: CELESTIAL INTERACTIONS - TALK

Lang Science Program - American Museum of Natural History

February 2024

New York, NY

“DECODING THE NIGHT SKY - EXPLORING MAYA ASTRONOMY”

Science StoryTellers - Variety Boys and Girls Club of Queens

April 2023

Queens, NY

SCIENCE COMMUNICATION

APRENDIZAJE AUTOMATICO PARA FISICA Y ASTRONOMIA - COURSE

Astromaquinaros-Spanish Translator

April 2023 – Present

New York, NY

- Collaborate with a team of four to accurately translate Dr. Viviana Acquaviva’s “Machine Learning for Physics and Astronomy” online course from English to Spanish. Ensure precise translation of PowerPoint lessons, Jupyter notebook exercises, and quizzes, facilitating comprehensive engagement for Spanish-speaking students through Open Learning at Flatiron Institute.
- Create informative 10-15 minute instructional videos in Spanish, providing clear explanations of methods and guiding through Jupyter notebook exercises to enhance the learning process.

WORKSHOPS AND TRAINING

ASTROTECH - ASTRONOMICAL INSTRUMENTATION SUMMER SCHOOL

UC Berkeley

July 2023

Berkeley, CA

- Engaged in a hands-on five-day workshop focused on crafting astronomical instruments. Learned optomechanics, optics, and instrumentation techniques under expert guidance.
- Collaborated within interdisciplinary teams, actively participating in an optics laboratory setting while honing expertise in optomechanical aspects of instrument development, contributing to the successful construction and testing of an astronomical spectrograph.

NEXSCI - SAGAN EXOPLANET SUMMER WORKSHOP

California Institute of Technology

July 2023

Pasadena, CA

- Engaged in an immersive learning experience focused on the latest advancements in exoplanet atmosphere observations, theoretical modeling, and interpretation, led by prominent experts in the field.
- Participated in interactive sessions analyzing data from the James Webb Telescope and exoplanet atmospheres, advancing comprehension of formation, composition, and dynamic processes.

SKILLS

Programming Python, Machine Learning, Java Mission-planning and Analysis for Remote Sensing (JMARS)

Editing Software Overleaf LaTeX editor

Instrumentation Supersting Geophysical Instrument

Languages Bilingual and bi-literate in English and Spanish

Certifications NYS Childhood Education (grade 1-6); Bilingual Extension (grade Pre-k-12)

Other American Red Cross First Aid/CPR/AED

PROFESSIONAL SOCIETY MEMBERSHIPS

American Geophysical Union (**AGU**)

American Astronomical Society (**AAS**)

Society for Advancement of Chicanos/Hispanics and Native Americans in Science (**SACNAS**)

The League of Underrepresented Minoritized Astronomers (**LUMA**)

GeoLatinas