Kevin N. Ortiz Ceballos *(He/Him/Él)* — *Curriculum Vitae*

Contact Information

Planetary Habitability Laboratory
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Education

Bachelor of Science in Physics with a second concentration in Philosophy *In Progress*
University of Puerto Rico Río Piedras Campus, San Juan, Puerto Rico
- Visiting student at Brown University for the academic year of 2017-2018
- Thesis: *Potentially Detectable Radio Emissions from Exoplanetary Systems: A Review.*

High School Diploma (with High Honors) 2016
Escuela Secundaria de la Universidad de Puerto Rico (UHS), San Juan, Puerto Rico

Research Positions

Astronomy Research Intern Jun 2020 to *present*
Space Telescope Science Institute
- Developing pixel-level decorrelation techniques for calibration of space telescope spectroscopic observations of exoplanet atmospheres.

Researcher in Radio Astronomy May 2018 to *present*
Planetary Habitability Laboratory, University of Puerto Rico at Arecibo
- In charge of preparing & submitting observing proposals, running observations, reducing and analyzing data (IDL & Python), and working with the educational component of incorporating students into observations and communicating the PHL's research.

Fellow in Philosophy of Science and Astrophysics Jun 2019 to *present*
Mellon-Mays Undergraduate Fellowship, University of Puerto Rico Río Piedras Campus
- Exploring data-generation in interferometry through epistemological analysis, constructing a corresponding data model, and studying astronomical image-making to inform how we communicate its results.

Astrophysics Undergraduate Researcher Jun 2019 to Aug 2019
Banneker Institute, Center for Astrophysics | Harvard & Smithsonian
- Programmed dynamical simulations of exoplanetary systems using Python and REBOUND. Identified origin of transit timing variations from simulation results.

Mission Development Experience

Lead Computer Engineer & Team Scientist Aug 2019 to May 2020
RockSat-X Project, University of Puerto Rico Río Piedras Campus
- Working on the Astrogenomics Sequencing at the Karman Line (ASK-L) sounding rocket experiment, from initial design to launch in August 2020. Tasks include programming computer and telemetry systems, and payload preparation and construction.

Team Scientist & Operations Officer Jan 2019 to May 2019
L'SPACE Undergraduate Mission Concept Academy, NASA
- Worked on a Preliminary Design Review for the Spectral Electromagnetic Exploration Rover (SEER) Mission Concept. Conducted research & designed the mission experiment & data acquisition.

Areas of Interest

Planetary, Exoplanetary, and Observational Astrophysics, with a particular focus on radio astronomical studies of solar system bodies and exoplanetary systems; potential radio detections of exoplanets; observational astrobiology and exoplanet characterization; radio interferometry; and multiwavelength observational astrophysics.

Philosophy of Science and Astrophysics, with a particular focus on the epistemology of data generation in observational astrophysics; models of data in interferometric methods; image-making in astronomy; as well as an interest for the ethics of astronomy and land.

Awarded Telescope Time

Submillimeter Array Interferometry School Program (2020):
Observing 3C 346 with the Submillimeter Array
Special Program, 2020 School. **Principal Investigator: K. Ortiz Ceballos. Allocated 3 hours.**

Arecibo Observatory Director's Discretionary Time Urgent Proposal (2019):
Observing the 18 cm OH radical line in interstellar comet C/2019 Q4 (Borisov)
Project A3390. **Principal Investigator: K. Ortiz Ceballos. Allocated 12 hours.**

Arecibo Observatory Spring 2019 and Spring 2020 (as Co-Investigator):
Radio Emissions from Dwarf Stars with Planets IV & V
Project A3123. **Principal Investigator: A. Méndez. Allocated 48 hours total.**

Research Awards

Barry Goldwater Scholarship
Awarded for the academic year 2020-2021.

USRA Distinguished Undergraduate Scholarship
Awarded the Thomas R. McGetchin Scholarship for planetary science.
1 of 4 such awards given in 2019 by the Universites Space Research Association (USRA).

Mellon-Mays Undergraduate Fellowship
Awarded to fund philosophy and theory of astrophysics work at the Department of Philosophy.
Hosted at the University of Puerto Rico, Río Piedras Campus, 2019-2021.

Louis Stokes Alliance for Minority Participation Award
Awarded to fund radio astronomy work at the Planetary Habitability Laboratory.
Hosted at the University of Puerto Rico at Arecibo, 2019-2020.

Puerto Rico Space Grant Consortium NASA Fellowship
Awarded to fund radio astronomy work at the Planetary Habitability Laboratory.
Hosted at the University of Puerto Rico at Arecibo, 2018-2019.

Other Awards

FBY: Habitability Travel Award
LPSC L Travel Award (funded by PRSGC)
United Nations Millennium Fellowship
Santander-MIT Digital Transformation Award
Dean's List, UPRRP
Honor Studies Program, UPRRP
UPR Endowment Research Award
Nominated to Sigma Xi Membership

Technical Skills

Astronomy: Radio telescope operation and observation planning, on-site and remotely; astronomical spectroscopy and single-dish and interferometric radio astronomical data reduction.
Programming & Analysis: Python, IDL, shell scripting. DS9, Astropy, MIR, CASA.
Other Software: Autodesk Inventor, JMARS, LaTeX, Adobe Photoshop, Premiere & Lightroom
OS: macOS, Unix, Linux, Windows

Professional Development

Submillimeter Array 2020 Interferometry School Jan 2020
Submillimeter Array, Smithsonian Astrophyisical Observatory and Academia Sinica IAA
- Learned how to plan and write observation scripts for the Submillimeter Array, as well as how to coordinate and propose observations. Calibrated and reduced interferometric data with MIR and IDL, and imaged and analyzed results using CASA as part of the hands-on component of the school.

NASA Proposal Writing and Evaluation Experience Aug 2019 to Dec 2019
Lucy Student Pipeline Accelerator and Competency Enabler (L'SPACE), NASA
- Learned how to effectively write concept proposals that turn innovative ideas into reality. Gained experience in the process of writing, reviewing, and scoring NASA proposals, through participating in a proposal team and in a proposal review board subject to NASA protocols.

SCIENCE POLICY OUTREACH

Science Policy Ambassador Feb 2019 to *Present*
Puerto Rico Science Policy Action Network (PR-SPAN)

- As Ambassador of PR-SPAN, in charge of informing the development and implementation of federal, state and local policies based on scientific evidence. Specific tasks include editing of PR-SPAN newsletter and materials, assistance in event organizing, and advocating directly to federal, state, and local legislators and policymakers.

AAS Congressional Visit Day Volunteer 2020 TBD
American Astronomical Society

- Selected to advocate directly to Congress in Washington DC on behalf of the AAS for federal support and funding for space and astronomical science. **Postponed due to COVID-19, new date TBD.**

INVITED TALKS

Observing the First Interstellar Comet 2I/Borisov from the Arecibo Observatory

- Seminar Series, Arecibo Observatory. Arecibo, Puerto Rico. Scheduled Feb 19th, 2020.

Mapping the Habitable Universe from Puerto Rico

- Planetary Sciences Seminar Series, UCF. Orlando, Florida. Feb 7th, 2020

CONFERENCE ABSTRACTS

Oral session indicated by *

[6] 2020. **Ortiz Ceballos, K.N.**, Howell, E.S., Méndez, A., Fernandez, Y.R., Lovell, A.J., et al., Observing Interstellar Comet 2I/Borisov for Radio OH Lines with the Arecibo Observatory. Lunar and Planetary Science Conference LI, Abstract #3078.

[5] 2020. **Ortiz Ceballos, K.N.***, Pérez, J., Rediscovering the First Astronomical Observatory of Puerto Rico. 235th Meeting of the American Astronomical Society, Abstract #139.05.

[4] 2020. **Ortiz Ceballos, K.N.**, Quinn, S., Hadden, S., Yahalomi, D., Montet, B., N-body simulations of a warm Jupiter near resonance with a sub-Neptune. 235th Meeting of the American Astronomical Society, Abstract #174.26.

[3] 2020. Yahalomi, D.A., et al. including **Ortiz Ceballos, K.N.**, Discovery of a Warm Jupiter near Resonance with an Exterior sub-Neptune. 235th Meeting of the American Astronomical Society, Abstract #174.23.

[2] 2019. **Ortiz Ceballos, K.N.**, Méndez, A., Zuluaga, J., Heller, R., Alexander, D., Pacini, A., Arecibo REDS: The Stellar Activity of Stars with Potentially Habitable Planets. The First Billion Years: Habitability, Abstract #1038.

[1] 2019. **Ortiz Ceballos, K.N.**, Méndez, A., Zuluaga, J., Heller, R., Alexander, D., Pacini, A., Arecibo REDS: The Stellar Activity of Stars with Potentially Habitable Planets. Lunar and Planetary Science Conference L, Abstract #3161.

MANUSCRIPTS & PUBLICATIONS

Astrophysics: *Two manuscripts currently in preparation to be submitted to AAS Journals*

[2] 2020. **Ortiz Ceballos, K.N.**, Howell, E.S., Méndez, A., Fernandez, Y.R., Lovell, A.J., et al., Radio OH Observations of Interstellar Comet 2I/Borisov. In preparation, submission expected 2020.

[1] 2020. Méndez, A., Zuluaga, J., **Ortiz Ceballos, K.N.**, Heller, R., Alexander, D., Pacini, A., Anglada-Escudé, G., Arecibo REDS I: A Peculiar Flare from Barnard's Star. In preparation, submission expected 2020.

Philosophy: *One manuscript submitted for publication to the UPR journal [IN]Genios, currently under peer-review.*

[1] 2020. **Ortiz Ceballos, K.N.**, What's in an Image of a Shadow? The Image of M87* and the Philosophy of Shadows. Submitted, expected in Volume 6 Issue 2 of [IN]Genios.

EDUCATION, OUTREACH & SERVICE

Circle of University Astrobiology, Vice President 2019 to *present*
Organization for science and non-science students interested in astrobiology at the University of Puerto Rico Río Piedras. As Vice President, have helped organize events and projects such as micrometorite hunts, campus flora geotagging, and a historical and restoration project with Puerto Rico's first astronomical observatory.

- **Media Appearance:** "Long-lost astronomy observatory in Puerto Rico rediscovered by university students", article by Doris Elin Urrutia for Space.com.

PHL Outreach Program, Observer and Presenter 2018 to *present*
Have helped bring over 40 students and community members to take part in on-site observations at the Arecibo Observatory, as well as take part in the Laboratory's outreach efforts through social and traditional media.

- **Media Appearance:** "Ciencia y Meteorología: Reconocen a jóvenes por sus investigaciones", outreach interview by meteorologist Ada Monzón for Noticentro morning news segment in December, 2019, together with two other PHL students.

Swearer Tutoring Enrichment in Math and Science (STEMS) Program, Tutor 2018
Algebra tutor for 9th graders at Hope High School in Providence, RI as part of the STEMS Program at Brown University.

Multi-faith Organizing for College Hill Activism (MOCHA), Co-founder/director 2018
Founded MOCHA at Brown University in the spring of 2018. This organization helped coordinate activism for social justice between religiously-oriented activist groups in the Brown/RISD community.

Voluntary Calculus Tutor 2017
Calculus I, II & III voluntary tutor at the Faculty of Natural Sciences, University of Puerto Rico, Río Piedras Campus.

OTHER TALKS & PRESENTATIONS

- *"Observations of the First Interstellar Comet 2I/Borisov from the Arecibo Observatory"*
Contributed Talk. XVIII Physics & Chemistry Forum, UPR Arecibo, Puerto Rico, 2019

- *"Observando el cometa interestelar 2I/Borisov con el Observatorio de Arecibo"*
Contributed Outreach Talk. Arecibo Observatory, Puerto Rico, 2019

- *"Models of Data in Radio Astronomy"*
Contributed Talk. 5th World Day of Philosophy, UPRRP. San Juan, Puerto Rico, 2019

- *"What's In a Picture of a Shadow? Looking at a Black Hole"*
Contributed Talk. MMUF Southeastern Regional Conference. Houston, Texas, 2019

- *"What's In a Picture of a Shadow? Looking at a Black Hole"*
Special Session Talk. 12th Knowledge Cities World Summit. Florianópolis, Brasil, 2019

- *"Trojan Asteroids Near the Orbit of Jupiter"*
Invited Outreach Talk. Puerto Rico Astronomy Society. San Juan, Puerto Rico, 2019

- *"Arecibo Radio Emissions from Dwarf Stars with Potentially Habitable Planets"*
Research Oral Presentation. 53rd JTM / 38th PRISM Meeting, Mayagüez, Puerto Rico, 2019

- *"Arecibo REDS: Radio Emissions from Red Dwarf Stars with Planets"*
Contributed Talk. XVII Physics & Chemistry Forum, UPR Arecibo, Puerto Rico, 2018

- *"String Theory: Towards a New Paradigm Beyond Falsifiability?"*
Symposium Talk. 1st Philosophy Symposium, PCUPR, Ponce, Puerto Rico, 2018

University Service & Leadership

All positions held at the University of Puerto Rico, Río Piedras campus.

Academic Senator for the Faculty of Natural Sciences Sep 2018 to Sep 2019
Served as the student representative for the Faculty of Natural Sciences at the Academic Senate. Worked with student, faculty, and administration Senators to set the curriculum and academic regulations of the University, among other duties of the Senate.

Spokesperson for the Senate Student Caucus Apr 2019 to Sep 2019
Led the student delegation at the Academic Senate, presiding over caucus meetings, drafting resolutions, and representing the student body on the Senate floor.

Natural Sciences Student Council Representative Sep 2018 to Sep 2019
Represented the Physics Department at the Council. Presided over the Academic Issues and Orientation Committee, and belonged to the Law and Regulation Committee.

General Student Council Representative Sep 2018 to Sep 2019
Represented the Faculty of Natural Sciences at the General Student Council. Belonged to the Gender & Equity Issues Committee

Representative, National Student Confederation of Puerto Rico Sep 2018 to Apr 2019
Represented the Río Piedras campus of the University of Puerto Rico at the Confederation.

Professional Memberships

National
American Astronomical Society | Undergraduate Member
Historical Astronomy Division | Member
Society of Physics Students | National Member

State & Local
Puerto Rico Astronomy Society | Student Member
Puerto Rico Society of Philosophy | Member
UPRRP Philosophy Students Association | Member

Biographical Information

Citizenship: United States of America
Languages: Fluent in English and Spanish. Experienced as Spanish-English interpreter.

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https://kortizceballos.github.io/Ortiz_Ceballos_CV.pdf