

CONTACT INFORMATION	Planetary Habitability Laboratory University of Puerto Rico at Arecibo Arecibo, PR 00614	Website: kortizceballos.github.io Cell Phone: +1-787-446-7551 E-mail: kevin.ortiz22@upr.edu
EDUCATION	Bachelor of Science in Physics with a second concentration in Philosophy <i>In Progress</i> University of Puerto Rico Río Piedras Campus, San Juan, Puerto Rico <ul style="list-style-type: none"> • Visiting student at Brown University for the academic year of 2017-2018 • Thesis: <i>Potentially Detectable Radio Emissions from Exoplanetary Systems: A Review.</i> 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 <i>present</i> Space Telescope Science Institute <ul style="list-style-type: none"> • Developing pixel-level decorrelation techniques for calibration of space telescope spectroscopic observations of exoplanet atmospheres. Researcher in Radio Astronomy May 2018 to <i>present</i> Planetary Habitability Laboratory , University of Puerto Rico at Arecibo <ul style="list-style-type: none"> • 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 <i>present</i> Mellon-Mays Undergraduate Fellowship , University of Puerto Rico Río Piedras Campus <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • 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 <ul style="list-style-type: none"> • Worked on the Astrogenomics Sequencing at the Karman Line (ASK-L) sounding rocket experiment, from initial design to construction of final payload. Programmed computer and telemetry systems with team, and helped prepare the payload. Team Scientist & Operations Officer Jan 2019 to May 2019 L'SPACE Undergraduate Mission Concept Academy , NASA <ul style="list-style-type: none"> • Worked on a Preliminary Design Review for the student-led Spectral Electromagnetic Exploration Rover (SEER) Mission Concept. Conducted research & designed the mission experiment & data acquisition. 	
AREAS OF INTEREST	<i>Planetary, Exoplanetary, and Observational Astrophysics</i> , 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. <i>Philosophy of Science and Astrophysics</i> , 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

As Principal Investigator:

Arecibo Observatory Director's Discretionary Time Urgent Proposal (Fall 2019):
Observing the 18 cm OH radical line in interstellar comet C/2019 Q4 (Borisov)
[Project A3390](#). **Allocated 12 hours total.**

As Co-Investigator:

Arecibo Observatory Fall 2020:
Radio Emissions from Dwarf Stars with Planets VI
Project A3123. **P.I.: A. Méndez. Allocated 40 hours total.**

Arecibo Observatory Spring 2020:
Radio Emissions from Dwarf Stars with Planets V
Project A3123. **P.I.: A. Méndez. Allocated 12.75 hours total.**

Arecibo Observatory Spring 2019:
Radio Emissions from Dwarf Stars with Planets IV
Project A3123. **P.I.: A. Méndez. Allocated 16 hours total.**

Special Program:

Submillimeter Array Interferometry School Program (2020):
Observing 3C 346 with the Submillimeter Array
[Special Program, 2020 School](#). **Accepted for special program, pending full proposal for time allocation. PI: K. Ortiz Ceballos.**

TELESCOPE
EXPERIENCE

Space Telescopes:

Hubble Space Telescope

Experience with data reduction and analysis of exoplanet transit observations using IRAC LIS and custom code. Worked with WFC3 and STIS data.

Transiting Exoplanet Survey Satellite (TESS)

Experience with data reduction and analysis of exoplanet transits from raw datasets.

Ground Telescopes:

Submillimeter Array

Substantial experience proposing observations, planning and scripting observations, calibrating raw data with MIR and imaging with CASA.

Arecibo Observatory

Extensive experience successfully proposing and planning for focused and large programs. Skilled in remote and on-site telescope operation, data reduction, analysis and visualization.

TECHNICAL
SKILLS &
EXPERIENCE

Astronomy: Radio telescope operation and astronomical observation planning. Both single-dish and interferometric radio astronomical data reduction and analysis, as well as visual and infrared data reduction from space telescopes. Interferometric imaging experience.

Programming & Analysis: Skilled with analysis software such as DS9, Astropy, NumPy, SciPy, MIR, CASA, and Arecibo Mock Spectrometer reduction software. Experience using Python packages such as Juliet for transiting exoplanet analysis. Experience programming dynamical simulations with the REBOUND software package.

- **Python:** Intermediate, advanced for astronomy applications.
- **IDL:** Beginner to intermediate

Other Software Programs & Skills: Autodesk Inventor, JMARS, L^AT_EX, Adobe Photoshop, Premiere & Lightroom. Skilled with management of networks and some server infrastructure.

OS: macOS, Unix, Linux, Windows

RESEARCH AWARDS	<p>Barry Goldwater Scholarship Awarded for the academic year 2020-2021.</p> <p>USRA Distinguished Undergraduate Scholarship Awarded the Thomas R. McGetchin Scholarship for planetary science. 1 of 4 such awards given in 2019 by the Universities Space Research Association (USRA).</p> <p>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.</p> <p>Puerto Rico Louis Stokes Alliance for Minority Participation (PR-LSAMP) Award Awarded to fund radio astronomy work at the Planetary Habitability Laboratory. Hosted at the University of Puerto Rico at Arecibo, 2019-2020.</p> <p>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.</p>
OTHER AWARDS	<p>Dean's List, University of Puerto Rico Río Piedras Campus Honor Studies Program, University of Puerto Rico Río Piedras Campus University of Puerto Rico Endowment Research Award United Nations Millennium Fellowship Nominated to Sigma Xi Membership Santander-MIT Digital Transformation Award</p>
TRAVEL AWARDS	<p>First Billion Years: Habitability Conference Travel Award 50th Lunar and Planetary Science Conference Travel Award (funded by PRSGC)</p>
PROFESSIONAL DEVELOPMENT	<p>Submillimeter Array 2020 Interferometry School Jan 2020 Submillimeter Array, Smithsonian Astrophysical Observatory and Academia Sinica IAA <ul style="list-style-type: none"> 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. <i>Held at Hilo, Hawai'i.</i> </p> <p>NASA Proposal Writing and Evaluation Experience Aug 2019 to Dec 2019 Lucy Student Pipeline Accelerator and Competency Enabler (L'SPACE), NASA <ul style="list-style-type: none"> 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, participated in a proposal team and a proposal review board subject to NASA protocols. </p>
SCIENCE POLICY LEADERSHIP & OUTREACH	<p>Science Policy Ambassador Feb 2019 to <i>Present</i> Puerto Rico Science Policy Action Network (PR-SPAN) <ul style="list-style-type: none"> 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. </p> <p>AAS Congressional Visit Day Volunteer 2020 TBD American Astronomical Society <ul style="list-style-type: none"> 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. </p>

EDUCATION,
OUTREACH &
SERVICE
NASA OSIRIS-REx Mission Ambassador

2020 to present

As Ambassador, volunteer representing the mission to the public and engaging in direct activities such as informal talks and discussion in local groups. Includes training from NASA in public engagement. **In training, activities postponed due to COVID-19.**

Circle of University Astrobiology - UPR Río Piedras, 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 micrometeorite 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 University of Puerto Rico, Río Piedras Campus.

LEADERSHIP &
UNIVERSITY
SERVICE

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 sole 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. *Committees: Law & University Regulations, Dean Selection Committee.*

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. *Committees: Academic Issues and Orientation Committee (Presided), Law & Regulation Committee.*

General Student Council Representative

Sep 2018 to Sep 2019

Represented the Faculty of Natural Sciences at the General Student Council. *Committees: Directive (ex-officio observer), 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, taking part in university system-level advocacy for the student community.

INVITED TALKS	<p>Observing the First Interstellar Comet 2I/Borisov from the Arecibo Observatory</p> <ul style="list-style-type: none"> • Seminar Series, Arecibo Observatory. Arecibo, Puerto Rico. Feb 19th, 2020. <p>Mapping the Habitable Universe from Puerto Rico</p> <ul style="list-style-type: none"> • Planetary Sciences Seminar Series, UCF. Orlando, Florida. Feb 7th, 2020
PROGRAM FINAL PRESENTATIONS	<p>Pixel-Level Decorrelation for Space Telescope Spectroscopy, STScI Program Presentation.</p> <ul style="list-style-type: none"> • Space Telescope Science Institute. Held online due to COVID-19. Sched. Jul 30th, 2020. <p>A Warm Jupiter in Resonance with a sub-Neptune, Banneker Institute Program Presentation.</p> <ul style="list-style-type: none"> • Center for Astrophysics Harvard & Smithsonian. Cambridge, MA. Aug 9th, 2019.
CONFERENCE ABSTRACTS	<p><i>Oral session indicated by [*]. Long-form abstract indicated by [†], PDF accessible with link.</i></p> <p>[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. Print-only abstract due to COVID-19.</p> <p>[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.</p> <p>[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.</p> <p>[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.</p> <p>[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.</p> <p>[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.</p>
MANUSCRIPTS & PUBLICATIONS	<p>Astrophysics: <i>Two manuscripts currently in preparation to be submitted to AAS Journals, and a white paper submitted to the Planetary Sciences and Astrobiology Decadal Survey 2023-2033.</i></p> <p>[3] 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.</p> <p>[2] 2020. Méndez, A., Zuluaga, J., Ortiz Ceballos, K.N., Heller, R., Alexander, D., Pacini, A., Anglada-Escudé, G., Arecibo REDS I: A Peculiar Triple Flare from Barnard's Star. In preparation, submission expected 2020.</p> <p>[1] 2020. Méndez et al. incl. Ortiz Ceballos, K.N., Habitability Models for Planetary Sciences. White Paper for the Planetary Sciences and Astrobiology Decadal Survey 2023-2033. arXiv:2007.05491 [astro-ph.IM].</p> <p>Philosophy: <i>One manuscript submitted for publication to the UPR journal [IN]Genios, currently under peer-review.</i></p> <p>[1] 2020. Ortiz Ceballos, K.N., What's in an Image of a Shadow? The Image of M87* and the Philosophy of Shadows. Submitted, under review for Volume 7 of [IN]Genios.</p>

OTHER TALKS & PRESENTATIONS	<ul style="list-style-type: none"> • <i>"Observations of the First Interstellar Comet 2I/Borisov from the Arecibo Observatory"</i> Contributed Talk. XVIII Physics & Chemistry Forum, UPR Arecibo, Puerto Rico, 2019 • <i>"Observando el cometa interestelar 2I/Borisov con el Observatorio de Arecibo"</i> Contributed Outreach Talk. Arecibo Observatory, Puerto Rico, 2019 • <i>"Models of Data in Radio Astronomy"</i> Contributed Talk. 5th World Day of Philosophy, UPRRP. San Juan, Puerto Rico, 2019 • <i>"What's In a Picture of a Shadow? Looking at a Black Hole"</i> Contributed Talk. MMUF Southeastern Regional Conference. Houston, Texas, 2019 • <i>"What's In a Picture of a Shadow? Looking at a Black Hole"</i> Special Session Talk. 12th Knowledge Cities World Summit. Florianópolis, Brasil, 2019 • <i>"Trojan Asteroids Near the Orbit of Jupiter"</i> Invited Outreach Talk. Puerto Rico Astronomy Society. San Juan, Puerto Rico, 2019 • <i>"Arecibo Radio Emissions from Dwarf Stars with Potentially Habitable Planets"</i> Research Oral Presentation. 53rd JTM / 38th PRISM Meeting, Mayagüez, Puerto Rico, 2019 • <i>"Arecibo REDS: Radio Emissions from Red Dwarf Stars with Planets"</i> Contributed Talk. XVII Physics & Chemistry Forum, UPR Arecibo, Puerto Rico, 2018 • <i>"String Theory: Towards a New Paradigm Beyond Falsifiability?"</i> Symposium Talk. 1st Philosophy Symposium, PCUPR, Ponce, Puerto Rico, 2018
PROFESSIONAL MEMBERSHIPS	<hr/> <p>National American Astronomical Society Undergraduate Member Historical Astronomy Division Member Society of Physics Students National Member</p> <p>State & Local Puerto Rico Astronomy Society Student Member Puerto Rico Society of Philosophy Member UPRRP Philosophy Students Association Member</p> <hr/>
BIOGRAPHICAL INFORMATION	<p>Citizenship: United States of America Languages: Fluent in English and Spanish. Experienced as Spanish-English interpreter.</p>

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