

RICCO CABRAL VENTEREA

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Riverside, CA 92507

EDUCATION

PhD	University of California, Riverside Astronomy	<i>Aug 2025 – Present</i>
	University of Perugia Visiting Fulbright Research Scholar	<i>Oct 2024 – Jun 2025</i>
BA	Cornell University Astronomy with Astrophysics Concentration <i>with honors: magna cum laude</i> Minor in Physics	<i>Aug 2020 – May 2024</i>

RESEARCH EXPERIENCE

Department of Physics and Astronomy , University of California, Riverside	<i>Aug 2025 – Present</i>
Center for Experimental Cosmology and Instrumentation	
Graduate Research Assistant	
Advisor: Professor Steve Choi	

- Develop angular power spectra from cosmology observatories.

Department of Physics and Geology , University of Perugia, Perugia, Italy	<i>Oct 2024 – Jun 2025</i>
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Fulbright Research Scholar	
Advisors: David Pelosi, Professor Nicola Tomassetti	
• Created database for solar properties measured by global observatories. • Developed cross-correlation study between solar modulation and solar proxies.	

Cornell Center for Astrophysics and Planetary Science , Ithaca, NY	<i>Jan 2024 – May 2024</i>
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Student Research Assistant III	
Advisors: Professor Nicholas Battaglia, Dr. John Orlowski-Scherer	
• Developed database containing asteroid thermal emission flux measurements using AWS.	

School of Physics and Astronomy , University of Minnesota, Twin Cities, Minneapolis, MN	<i>Jun 2023 – Sep 2024</i>
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LIGO Scientific Collaboration	
A3D3 AI Institute	
Research Assistant	

Advisors: William Benoit, Professor Michael Coughlin

- Work in implementing machine learning algorithms to clean and analyze gravitational wave strain data collected from the Laser Interferometer Gravitational-Wave Observatory Livingston and Hanford sites.
- Generated constant-Q transforms for high signal-to-noise gravitational wave event simulations.
- Developed a user-interface to create distributions of black hole parameter simulations.

Nexus Scholars Program, Cornell University, Ithaca, NY *May 2022 – Jul 2022*

Research Assistant

Advisor: Professor Nicholas Battaglia

- Continued full-time research in measuring thermal emission of objects in the asteroid belt.
- Detected large asteroids with a high degree of confidence and generated light curves. Presented results at a symposium.

Department of Astronomy, Cornell University, Ithaca, NY *Sep 2021 – May 2024*

Research Assistant

Advisors: Professor Nicholas Battaglia, Dr. John Orlowski-Scherer

- Determined flux measurements from thermal emission data of objects in the asteroid belt. Data collected by the Atacama Cosmology Telescope.

National Aeronautics and Space Administration, Remote *May 2021 – Aug 2021*
Lucy Student Pipeline Accelerator and Competency Enabler
Mission Concept Academy

Astrophysicist

- Submitted a Preliminary Design Review on a science reconnaissance mission for water ice mapping in the lunar South Polar Region.

Summer Student Theoretical Physics Research Session, Remote *Jun 2021*
Student Researcher

Advisors: Professors Jim Gates, Kory Stiffler, Konstantinos Koutrolikos

- Learned topics in supersymmetry with a mathematical emphasis.
- Covered areas in group theory, Lie algebra, differential geometry, tensor algebra, Lagrangian dynamics, Clifford algebra, gauge theory, and supersymmetry algebra.
- Gained experience in LaTeX.

National Aeronautics and Space Administration, Remote *Jan 2021 – Apr 2021*
Lucy Student Pipeline Accelerator and Competency Enabler
Proposal Writing and Evaluation Experience Academy

Technical Team Member

- Submitted a research proposal on human health and performance in low-earth orbit.

Irondale High School, New Brighton, MN *Sep 2019 – May 2020*

Student Researcher

Advisor: Shane Wood

- Verified Einstein's Special Theory of Relativity using previous QuarkNet cosmic ray muon flux studies.
- Studied the effect of zenith angle on cosmic ray muon flux using the QuarkNet Cosmic Ray Muon Detector. Data collected at Irondale High School.
- Proposed and conducted an experiment in cosmic ray muons.

TEACHING EXPERIENCE

University of California, Riverside, Riverside, CA *Sep 2025 – Present*

Teaching Assistant, Department of Physics and Astronomy

- Teaching assistant for PHYS 40A: General Physics, a course introducing classical mechanics to undergraduates.
- Write weekly quizzes.
- Grade quizzes and laboratory reports.
- Supervise undergraduates in laboratory settings.

PUBLICATIONS

Journal Publications

Marx E., Benoit W., Gunny A., et al., Machine-learning Pipeline for Real-time Detection of Gravitational Waves from Compact Binary Coalescences. 2025, PRD, 111

Orlowski-Scherer J., **Venterea R.**, Battaglia N., et al., The Atacama Cosmology Telescope: Millimeter Observations of a Population of Asteroids or: ACTeroids. 2024, ApJ, 964, 2

Venterea R., Orlowski-Scherer J., Næss S., et al., Sub-Millimeter Observations of Asteroids Using the Atacama Cosmology Telescope. 2023, American Astronomical Society Meeting Abstracts, 55, 2:104.12

Venterea R., Ekka U., An Introduction to Quantum Computing. 2022, JURP, 31, 1

Journal Papers in Review

Venterea R.C., Orlowski-Scherer J., Battaglia N., et al., The Atacama Cosmology Telescope: Release of A database of millimeter ObservatioNs of Asteroids Using acT (ASTRONAUT). 2025, ApJS

Campolongo E., Chou Y.T., Govorkova E., et al., Building Machine Learning Challenges for Anomaly Detection in Science. 2025, Nat. Commun.

Venterea R., Ekka U., An Analysis of Muon Flux from Angle Variation of the QuarkNet Cosmic Ray Detector. 2023, TPT

Reports

Venterea R. C., Predictions of the Solar Modulation Potential of Cosmic Rays Using Sunspot Number. 2025, U.S. Student Fulbright Program

Doku F., Ekka U., **Venterea R.**, Executive Summary for the Spread of Misinformation and Levels of Censorship. 2021

Muralidhar A., Medvec M., Fujishima B., et al., Preliminary Design Review - Ad Lunam Hopper. 2021, National Aeronautics and Space Administration Lucy Student Pipeline Accelerator and Competency Enabler Mission Concept Academy

Mota A., Sin J., Garcia S., et al., Astronaut-Friendly 3 in 1 Edible Cutlery to Promote Bone Health. 2021, National Aeronautics and Space Administration Lucy Student Pipeline Accelerator and Competency Enabler Proposal Writing and Evaluation Experience Academy

Manuscripts

He Y., **Venterea R.**, Wu X., Food Distribution by Mobile Food Pantries: A Design for Optimized Schedule. 2020

PRESENTATIONS AND INVITED LECTURES

Presentations

Barão F., Bertucci B., Fiandrini E., et al., Analysis of Time Variability of Galactic Cosmic Rays. 2025, International Cosmic Ray Conference 2025

Venterea R., Orlowski-Scherer J., Battaglia, N., Næss S., et al., Sub-Millimeter Observations of Asteroids Using the Atacama Cosmology Telescope. 2024, Emerging Researchers in Exoplanet Science Symposium IX

Venterea R., Millimeter Observations of Asteroids Using the Atacama Cosmology Telescope. 2024, Cornell Undergraduate Research Board Spring Symposium

Venterea R., Galaxies and Asteroids. 2024, 13th Semi-Annual CURBx Research Conference

Marx E., Benoit W., Gunny A., et al., A search for binary mergers in archival LIGO data using aframe, a machine learning detection pipeline. 2024, April Meeting

Benoit W., Marx E., Gunny A., et al., A machine-learning pipeline for real-time detection of gravitational waves from compact binary coalescences. 2024, April Meeting

Venterea R., Millimeter Observations of Asteroids Using the Atacama Cosmology Telescope. 2023, Cornell University Undergraduate Research Poster Forum

Venterea R., Millimeter Observations of Asteroids Using the Atacama Cosmology Telescope. 2023, Cornell Undergraduate Research Board Spring Symposium

Venterea R., Observations of Asteroids with ACT. 2023, University of Rochester 2nd Annual Undergraduate Astronomy Research Seminar

Venterea R., Asteroids and ACT. 2022, Atacama Cosmology Telescope Collaboration Meeting

Venterea R., Looking at Asteroids. 2022, Cornell University Nexus Scholars Program Capstone Presentations

Venterea R., Curvature. 2021, Cornell University DRP Talks

Doku F., Ekka U., **Venterea R.**, Problem C: Submitted a Tweet, Now What? 2021, SIMIODE Challenge Using Differential Equations Modeling

Venterea R., A Brief Introduction to Quantum Field Theory. 2021, Cornell University DRP Talks

Muralidhar A., Medvec M., Fujishima B., et al., Team 21 - Ad Lunam. 2021, National Aeronautics and Space Administration Lucy Student Pipeline Accelerator and Competency Enabler Mission Concept Academy PDR Presentation

Doku F., Ekka U., **Venterea R.**, Using Quantum Computing to Classify Solar Flares. 2021, HackUTD: The VII Seas

Invited Lectures

Venterea R. C., QuarkNet Workshop: My Academic Journey, 2024, QuarkNet, University of Minnesota, Twin Cities

GRANTS

Past Research

Nicola Tomassetti
Fulbright U.S. Student Program
€ 13,800
October 2024 – July 2025
Developing a Web Application for Cosmic-ray and Space Physics Data Research Assistant

GBT/24B-184 (John Orlowski-Scherer)
National Radio Astronomy Observatory
August 2024 – December 2024
Investigating Anomalous Flux from the Asteroids (511) Davida and (423) Diotima
Research Assistant

HONORS AND AWARDS

Dean's Distinguished Award	<i>2025 – 2026</i>
JS Enrichment Fund	<i>2024 – 2025</i>
Foundations of Citizen Science	<i>2024</i>
Heising-Simons Foundation Grant	<i>2024</i>
Dean's Distinguished Award , declined	<i>2024 – 2025</i>
Alpha Phi Alpha Fraternity Memorial Scholarship	<i>2020 – 2024</i>
Fulbright U.S. Student Program Scholar	<i>2024 – 2025</i>
Wells Fargo Foundation HSF Scholarship	<i>2023</i>
Discover Scholar at the University of Chicago	<i>2023</i>
Grainger Engineering MERGE Scholar	<i>2023</i>
ASPIRE Illinois Scholar at the University of Illinois Urbana-Champaign	<i>2023</i>
Dean's List of the College of Arts and Sciences for Excellence in Scholarship	<i>2021, 2023</i>
Hispanic Scholarship Fund Scholar	<i>2020 – 2021, 2022 – 2024</i>
Summer Experience Grant	<i>2023</i>
Hispanic Scholarship Fund Finalist	<i>2022 – 2024</i>
Undergraduate Research Fund	<i>2023</i>
Einhorn Discovery Grant	<i>2023</i>
FOCUS Scholar at the Georgia Institute of Technology	<i>2023</i>
Society of Hispanic Professional Engineers Undergraduate Scholarship	<i>2022 – 2023</i>

Inaugural Session of the Nexus Summer Scholars Program	2022
Meritorious Award for Differential Equations Modeling SIMIODE Challenge	2021
D. E. Shaw Latitude Fellowship	2021
National Name Exchange	2021

COMMUNITY SERVICE

American Physics Society National Mentoring Community
Mentor, August 2024 – Present
Mentee accepted at MSU, Howard.

Reach the World
November 2024 – April 2025
Described my academic journey abroad to K-12 classrooms.

National Institute of Development Advancement Certified Chapter Leader Program
Facilitator, July 2023

National Academic Quiz Tournaments 2023 High School National Championship Tournament
Full-time scorekeeper, May 2023

Nexus Scholars Program Information Session 2023
Student panelist, October 2022

Zooniverse
Citizen scientist, 2022 – 2023

PROFESSIONAL TRAINING

Fulbright Media Literacy Seminar, Rome, Italy *Mar 2025*
Discussed the implications of artificial intelligence in the global geopolitical sphere.

University of Minnesota, Twin Cities, Minneapolis, Minnesota *Jul 2024 – Aug 2024*
Zwicky Transient Facility Summer School

University of California, Riverside, Riverside, California *Jul 2024 – Aug 2024*
NSF GRFP Application Workshop Series

Coursework
Compute Ontario Advanced Research Computing Training *Jun 2022*
Using JupyterLab

Coursework

Compute Ontario Advanced Research Computing Training
Introduction to Python

Jun 2022

Cornell University, Ithaca, New York

May 2022 – Jul 2022

Attended weekly meetings in professional development that emphasized career goals and improving communication and research skills

Coursework

SciNet High Performance Computing Consortium
Databases in Scientific Computing

Jan 2022

Coursework

SciNet High Performance Computing Consortium
Introduction to GPU Programming

Jan 2022

Coursework

SciNet High Performance Computing Consortium
Intro to SciNet, Niagara, and Mist

Dec 2021

Coursework

SciNet High Performance Computing Consortium
Intro to the Linux Shell

Nov 2021

PROFESSIONAL AFFILIATIONS

Association of Latino Professionals For America *2021 – Present*

National Society of Hispanic Physicists *2021 – Present*

Society for the Advancement of Chicanos and Native Americans in Science *2023 – Present*

Society of Hispanic Professional Engineers *2021 – Present*

COMPUTER SKILLS

Programming: Python, MATLAB, R, Java, LaTeX, Unix shell, JavaScript, HTML, CSS

Applications: GitHub, Jupyter Notebook, JupyterLab, Google Colab, ArcGIS, JMARS, Visual Studio Code, Google Docs Editors, Microsoft Office, MobaXterm, SigmaPlot, Zotero, Amazon AWS

EXTRACURRICULARS

Future GRADS MentorSHPE *2023 – 2024*

Mentoring program for prospective graduate students from underrepresented backgrounds emphasizing networking and writing graduate application essays. Hosted by the Society of Hispanic Professional Engineers.

SIMIODE Challenge Using Differential Equations Modeling VI 2021

Modeled the spread and censorship of misinformation on social media platforms via differential equations with an epidemiological approach. Presentation won Meritorious Award.

Directed Reading Program 2021

Learned topics in quantum field theory. Learned topics in differential geometry. Presented on both subject areas.

HackUTD: The VII Seas 2021

Collaborated in a team of three to implement a quantum computer algorithm to classify solar flare data. Successfully implemented with an accuracy of 98% 24 hours in advance.

Cornell Society of Physics Students 2020 – 2024

Cornell Math Club 2020 – 2021

Cornell Astronomical Society 2020 – 2024

Cornell Chess Club 2020 – 2024

Competed in the 2023 – 2024 United States Amateur East Championships. Captain of the Cornell C Team.

Cornell Mathematical Contest in Modeling 2020

Helped develop an algorithm to optimize scheduling for the Food Bank of the Southern Tier.

Cornell Undergraduate Research Board 2020

Mentoring program for undergraduate students planning research careers emphasizing professional development, presenting research, and interacting with professors.

LANGUAGES

English: Native Language

Italian: Intermediate in Listening, Speaking, Reading, and Writing

HOBBIES

Learning, stargazing, playing classical music, reading, fishing for small mouth bass