

RICCO CABRAL VENTEREA

Last updated 30 May 2024

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7990 Eastwood Road
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EDUCATION

- PhD** University of California, Riverside *Aug 2025*
Astronomy
- BA** Cornell University *Aug 2020 – May 2024*
Astronomy with Astrophysics Concentration *with honors*
Minor in Physics

RESEARCH EXPERIENCE

Cornell Center for Astrophysics and Planetary Science, Ithaca, NY

Jan 2024 – May 2024

Student Research Assistant III

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

- Develop database containing asteroid thermal emission flux measurements using AWS.

School of Physics and Astronomy, University of Minnesota, Twin Cities, Minneapolis, MN

Jun 2023 – Present

LIGO Scientific Collaboration

A3D3 AI Institute

Research Assistant

Advisors: William Benoit, Professor Michael Coughlin

- Current 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.
- Generate 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 – Present*
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 – Dec 2019*

Student Researcher

Advisor: Shane Wood

- 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.

PUBLICATIONS

Journal Publications

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

Marx E., Benoit W., Gunny A., et al., A Machine-learning Pipeline for Real-time Detection of Gravitational Waves from Compact Binary Coalescences. 2024, Nat. Astro.

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

Journal Papers in Preparation

Venterea R.C., Orłowski-Scherer J., Battaglia N., et al., The Atacama Cosmology Telescope: Release of A databaSe of millimeTer ObservatiONs of Asteroids Using acT (ASTRONAUT). 2024, ApJS

Reports

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

Magazine Articles in Review

Venterea R., The Importance of Astrosociology. 2021, Astrosociological Insights.

Manuscripts

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

PRESENTATIONS AND INVITED LECTURES

Presentations

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, APS 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, APS 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

GRANTS

Current Research

GBT/24B-184 (John Orłowski-Scherer)
National Radio Astronomy Observatory
August 2024 – December 2024

Investigating Anomalous Flux from the Asteroids (511) Davida and (423) Diotima
Research Assistant

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

HONORS AND AWARDS

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	<i>2022</i>
Meritorious Award for Differential Equations Modeling SIMIODE Challenge	<i>2021</i>

D. E. Shaw Latitude Fellowship 2021

National Name Exchange 2021

COMMUNITY SERVICE

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

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

Coursework
Compute Ontario Advanced Research Computing Training *June 2022*
Introduction to Python

Cornell University, Ithaca, New York *May 2022 – July 2022*
Attended weekly meetings in professional development that emphasized career goals and
improving communication and research skills

Coursework
SciNet High Performance Computing Consortium *January 2022*
Databases in Scientific Computing

Coursework
SciNet High Performance Computing Consortium *January 2022*
Introduction to GPU Programming

Coursework
SciNet High Performance Computing Consortium *December 2021*
Intro to SciNet, Niagara, and Mist

Coursework

SciNet High Performance Computing Consortium
Intro to the Linux Shell

November 2021

PROFESSIONAL AFFILIATIONS

American Astronomical Society	<i>2021 – Present</i>
American Physical Society	<i>2021 – Present</i>
Association of Latino Professionals For America	<i>2021 – Present</i>
National Italian American Foundation	<i>2024 – Present</i>
National Society of Hispanic Physicists	<i>2021 – Present</i>
Sigma Xi	<i>2022 – Present</i>
Society for the Advancement of Chicanos and Native Americans in Science	<i>2023 – Present</i>
Society of Hispanic Professional Engineers	<i>2021 – Present</i>
Society of Physics Students	<i>2021 – Present</i>

COMPUTER SKILLS

Programming: Python, MATLAB, R, Java, LaTeX, Unix shell

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

EXTRACURRICULARS

LEAP Atmospheric Physics Using AI Simulate higher resolution atmospheric processes within E3SM-MMF, a climate model supported by the U.S. Department of Energy.	<i>2024 – Present</i>
Future GRADS MentorSHPE Mentoring program for prospective graduate students from underrepresented backgrounds emphasizing networking and writing graduate application essays. Hosted by the Society of Hispanic Professional Engineers.	<i>2023 – 2024</i>
SIMIODE Challenge Using Differential Equations Modeling VI Modeled the spread and censorship of misinformation on social media platforms via differential equations with an epidemiological approach. Presentation won Meritorious Award.	<i>2021</i>

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

Stargazing, playing classical music, reading science fiction and classical literature, fishing for small mouth bass