

Tyco Brahe Mera – Curriculum Vitae

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EDUCATION

Florida State University – Ph.D., Astrophysics Tallahassee, FL | August 2022 - Expected Graduation May 2026

Thesis: *3D Structures of Supernovae through IR Signatures of CO and SiO*

Advisor: Peter Hoeflich

Florida State University – M.S., Physics

Tallahassee, FL | August 2020 - August 2022

Brown University – Sc.B., Honors, Astrophysics

Providence, RI | Aug 2016 - May 2020

Thesis: *A Pedagogical Demonstration/Lecture Plan for the Introduction of Gravitational Wave Astronomy*

Advisor: Robert Coyne

EMPLOYMENT

Los Alamos National Laboratory, Graduate Research Assistant

Los Alamos, NM | July 2022 - Aug 2023

- Implemented the second order numerical fast sweeping method for the Eikonal equation from the previous summer into the lab shared FSM++ GitHub directory with proper test requirements using GoogleTest suite

Los Alamos National Laboratory, XCP Summer Workshop Student

Los Alamos, NM | June 2022 - Aug 2022

- Collectively designed a second order numerical fast sweeping method for the Eikonal equation
- Found 70% better accuracy over the first order solution for a single point initialization in a constant field
- Implemented a distributed memory parallel fast sweeping method for both first and second order solutions
- Enhanced computational performance over the serial method, where the weak scaling tended towards ideal

Florida State University, Teaching Assistant

Tallahassee, FL | Aug 2020 – Present

- Teaches the Introduction to Astronomy Laboratory to groups of 20-30 students
- Actively engages the classroom with 15-20 min introductory lectures to guide students through the laboratory
- Patiently works with students to fully understand astronomical concepts from spectroscopy to telescopes
- Encourages students to think beyond the laboratory about how the concept is used in science today

College Advising Corps, Matriculation Coach

Providence, RI | Summer 2019

- Successfully prevented *summer melt* for 42 recent RI high school graduates from undeserved communities
- Developed a executable program that produces a list of recommended majors to study for each RI college

Brown University Academic Support Services, Academic Coach

Providence, RI | Aug 2019- May 2020

- Coached college students one on one in time management, study strategies, scheduling, etc.
- Collaboratively worked with the Dean of Academic Support Services to implement new workshops
- Managed 30+ person workshops organized around academic skills (presenting, preparing for exams, etc.)

Presentations

“CO Clumping in SN2024ggi”, Florida SN Ia Workshop, St. George Island, Florida, May 18th, 2025

“Radiative Transfer of Clumps in Supernova Envelopes”, Astro Seminar at Florida State University, Tallahassee, Florida, April 15th, 2025

“CO and SiO clumping in Core-Collapse Supernovae”, Annual POISE/CSP Meeting, St. George Island, Florida, November 16th, 2024

“CO and SiO Dust from Core-Collapse Supernovae”, Astro Seminar at Florida State University, Tallahassee, Florida, April 19th, 2023

“Detonation Waves & Probing the Progenitor Structure of Thermonuclear Supernovae by the FeII Line”, Astro Seminar at Florida State University, Tallahassee, Florida, September 14th, 2022

“Fast and Accurate Detonation Wave Calculations”, XCP Summer Student Presentations, Los Alamos National Laboratory, Los Alamos, New Mexico, August 18th, 2022

“Thermonuclear Supernovae as a Source of Galactic Positrons”, 88th Southeastern Section of the American Physical Society, Florida State University, Tallahassee, Florida, November 19th, 2021

“Estrategias de Estudio y Administracion del Tiempo”, Education Department Conference Talk, Universidad Laica Eloy Alfaro de Manabi, Manta, Ecuador, May 26th, 2021

Honors and Community Involvement

Student Star Finalist, Florida State University	Oct, 2025
Mentor, Florida Georgia Louis Stokes Alliance for Minority Participation in STEM	Aug 2024 - Aug 2025
Graduate Student Mentor, Future Physicist Society at Florida State University	Aug 2023 - Aug 2025
Anna Runyan Endowment Award, Florida State University Department of Physics	May 2022
Planetarium Presenter, Pat Thomas Planetarium at Florida State University	Aug 2020 - Present
Fellow, American Physical Society Bridge Program	Aug 2020 - Aug 2022

Skills

Computer Skills: Fortran (6 yrs experience), Python (7), C++ (2), Open MPI (6), Stellarium (6)

Languages: Spanish (basic/intermediate)

Interest: Calisthenics, Mountain Biking, Running, Skimboarding