Fabrizio Melges Ferro

fferro@uchicago.edu | https://fabrizioferro.github.io/

EDUCATION

The University of Chicago Chicago, IL, USA

Bachelor of Science in Physics & Bachelor of Science in Mathematics Expected, June 2025

Relevant Courses: Computational Techniques in Astrophysics, Honors Electricity and Magnetism, Honors Waves Optics and Heat, Experimental Physics I-III

Awards: Dean's List 2021-2022

Colegio Jardim Sao Paulo São Paulo, SP, Brazil

Diploma, December 2020

Awards: Full Scholarship for Outstanding Academic Achievement (2018-2020)

RESEARCH

Kavli Institute for Cosmological Physics Chicago, IL, USA

Undergraduate Research Assistant June 2023 - October 2023

- Used **Python3** along with the *healpy* library to analyze the Dark Energy Survey (DES) redMaPPer galaxy cluster catalog, the Planck-ATCA Co-eval observations, the SPT-SZ cluster map, and the AT20G Survey to find the distribution of AGNs in relation to galaxy clusters.
- Computed the angular correlation function between 29 AGNs and 6041 optical clusters.
- Developed a jackknife resampling algorithm to estimate the variance of the angular correlation function.

Independent Researcher | MRI Safety Principles For Physicians Chicago, IL, USA

Independent Researcher August 2024 - October 2024

- Authored a comprehensive abstract to increase accessibility of MRI safety protocols, and provide physicians with a clinical MRI workflow.

WORK

Department of Physics, The University of Chicago Chicago, IL, USA

Learning Assistant April 2025 - Present

- Guided undergraduate students in lab sections by providing theoretical background for experiments, assisting with experimental design, and troubleshooting equipment.
- Worked extensively with laboratory equipment including oscilloscopes, function generators, BNC cables, lasers, CCD cameras, spectrometers, and various detectors.
- Collaborated with Teaching Assistants to maintain an organized and safe lab environment

ACTIVITIES

Olympiads of Astronomy and Astrophysics

Participant

- *Latin American Olympiad of Astronomy and Astronautics (OLAA):* **Gold medalist** at the XI OLAA 2019 in México; competed against the top 51 students from 11 Latin American countries.
- *International Olympiad of Astronomy and Astrophysics (IOAA)*: **Bronze medalist** at the I GeCAA 2020, organized by Estonia; competed against the top 278 students from 40 countries.
- *Brazilian Olympiad of Astronomy (OBA)*: **Gold medalist** at the XXI OBA 2018 in Brazil. **Gold medalist** at the XXII OBA 2019 in Brazil. 1st place at the 2020 OBA selections for IOAA/OLAA; competed against the top 169 students from Brazil.

Olympic Nucleus for Incentive of Knowledge (NOIC) São Paulo, SP, Brazil

Director of the Astronomy Department December 2019 - September 2021

- Created study materials, problem sets, and guides to increase accessibility of astronomy to Brazilian students and give them the resources necessary to participate in international scientific olympiads.
- Co-founded an online astronomy course for Brazilian high-school students and designed the sections on relativity, stellar physics, celestial mechanics, and instrumentation.
- Co-wrote and edited an astronomy textbook to remedy the lack of affordable study materials available to Brazilian students.
- Reviewed applications, directed the recruitment process, and admitted new members to the astronomy department.

Olympic Mentoring Project São Paulo, SP, Brazil

Mentor March 2020 - May 2021

- Instructed a group of 5 high school students for the Brazilian Olympiad of Astronomy (OBA).
- Created and taught weekly 2-hour lectures on major astronomy concepts and techniques, for a full year.

SKILLS

Programming: Python3, Racket, C/C++

Tools: Numpy, Pandas, VPython, HEALPix, Matplotlib, Astropy, Skyfield

Water Rescue: Shallow and Deep Water Rescues, Spinal Injury Management, and Victim Extraction.

Language: Fluent in Portuguese, Fluent in English, Conversational in Spanish

CERTIFICATIONS:

American Red Cross Lifeguarding, CPR/AED for Professional Rescuers, First Aid

INTERESTS

Surfing, Freediving, Weightlifting