

# Fabrizio Melges Ferro

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## 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 - Present

- Independently writing an abstract under the guidance of Dr. Steffen Sammet to increase accessibility of MRI safety protocols, and provide physicians with a clinical MRI workflow.

## 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 IOAA 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.

## **Le Vorris and Vox Circus**

Chicago, IL, USA

*Instructor*

September 2023 - Present

- Organized weekly classes and instructed groups of 10 students in partner acrobatics.
- Organized, choreographed, and performed partner acrobatics acts.

# **WORK**

## **Gerald Ratner Athletics Center**

Chicago, IL, USA

*Lifeguard*

October 2023 - September 2024

- Monitor swimmers, provide rescue and emergency care as needed.
- Maintain equipment and facilities, ensuring all lifesaving gear is in excellent condition and accessible.
- Participated in regular in-service training sessions to maintain high standards of readiness and skill.

# **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