Aster Winkler

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EDUCATION

Brown University, *Sc.B. Astrophysics [4.0 GPA]* Providence, RI | **Expected Graduation May 2026**

- Relevant Year 1 Courses: Analytical Mechanics; Astronomy and Astrophysics; Multivariable Calculus (Physics/Engineering); Introduction to Relativity, Waves, and Quantum Physics; Linear Algebra; Computing Foundations: Data
- Relevant Year 2 Courses: Extragalactic Astronomy; Applied Ordinary Differential Equations; Electricity and Magnetism; Applied Partial Differential Equations I; Advanced Classical Mechanics; Experiments in Modern Physics
- Relevant Year 3 Courses: Introduction to Cosmology, Quantum Mechanics A, Thermodynamics and Statistical Mechanics, Graduate Level Astrophysics and Cosmology, Quantum Mechanics B, Planetary Geology

SAT: Overall: 1570, Reading and Writing: 790, Math: 780

American International School of Budapest (AISB) Nagykovácsi, Hungary | Aug. 2015 - May 2022

- International Baccalaureate Diploma Score: 45/45, Valedictorian of Class of 2022
- Awards: Presidential Award for Educational Excellence 2022, Academic Excellence in Physics, Math, Biology, Chemistry, Psychology, German, English, Theory of Knowledge

RESEARCH EXPERIENCE

Northwestern CIERA REU: Synthetic Observations of Stellar Streams June 2025 - Aug. 2025

- Offered a position in the 2025 cohort of the 9-week CIERA REU program at Northwestern
- Worked with Dr. Tjitske Starkenburg on conducting synthetic observations of simulated globular cluster stellar streams using optics and bands of the Wide Field Instrument of the Nancy Grace Roman space telescope

NASA Rhode Island Space Grant June 2024 - Sept. 2024

- Awarded the NASA Rhode Island Space Grant to work with Professor Ian Dell'Antonio on extending the previous summer's UTRA research, primarily by refining and expanding the capability of the previously developed code, and by running the code on a wider group of candidate clusters
- Presented results at the April 2025 Rhode Island Space Grant Symposium
- Current work is on improving results from a simulated filament in order to compare with experimental results

UTRA: Detecting the Weak Gravitational Lensing Signal From Filaments June 2023 - Aug. 2023

- Awarded an Undergraduate Teaching and Research Award by Brown University to work with Professor Ian Dell'Antonio on developing code to detect the presence of galaxy filaments
- Identified several candidate clusters suspected of hosting galaxy filaments and ran the developed code on these clusters to search for potential weak gravitational lensing signals

JOB AND LEADERSHIP EXPERIENCE

Astronomy and Astrophysics Teaching Assistant Jan. 2023 - May 2025

- Helped facilitate PHYS 220 and PHYS 270 labs by aiding in the operation of telescopes, organization of student participants, and addressing student questions
- Aided in the set-up and operation of Barus and Holley Observatory 16" telescope
- Led student problem-solving workshops

Brown Astronomy Club, *Co-President* Mar. 2023 - May 2024

- Planned, organized, and led astronomical viewing sessions using the Barus and Holley Observatory and Ladd Observatory, focused on making astronomy and astrophysics engaging and accessible to the wider Brown community

Brown Physics DUG (Departmental Undergraduate Group) /
Brown SPS (Society of Physics Students) Chapter, *Coordinator* Oct. 2022 - Present

- Plan, organize, and lead events for the Brown undergraduate physics community designed to build community and celebrate our collective love of physics

AISB Astronomy Club, *Founder and Leader* Feb. 2020 - May 2022

- Founded AISB's first astronomy club, organizing weekly lessons and discussions on astronomy and astrophysics
- Led regular observation sessions after school and planned semester projects for club members designed to encourage independent inquiry in astronomy

National Science Foundation's NOIRLab Teen Astronomy Cafe, *Youth Leader* May 2021 - May 2022

- Worked with a team of astronomers and other youth leaders to organize and run monthly workshops designed to make high-level astronomy topics accessible to high-school students around the world

SKILLS AND INTERESTS

Technical Skills:

- Proficient in Google Apps, Microsoft Excel, SQL, Python programming, Linux/command line
- Set-up and operation of reflector telescopes with manual or computerized equatorial mounts, navigation of the night sky
- Set-up and operation of 16" Schmidt-Cassegrain telescope of the Brown University Barus and Holley Observatory
- Shooting and processing of astrophotography

Languages: fluent in English, B1/B2 level German
Interests: astrophotography, classic science fiction, telescope mirror making, writing, hiking, traveling