

FRITZ ALI AGILDERE

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Research Interests

Active Galactic Nuclei & Feedback • Galaxy & Cluster Evolution • Accretion Phenomena • Relativistic Fluid Dynamics • Compact Object Physics • Multimessenger Astronomy

Educational History

Master of Science in Astrophysics

October 2025 – September 2027

Master in Astrophysics and Space Science

Multiple Countries

- International Degree Program Delivered by a Consortium of European Universities:
 - [University of Rome Tor Vergata](#) (Italy)
 - [Côte d'Azur University](#) (France)
 - [University of Bremen](#) (Germany)
 - [University of Belgrade](#) (Serbia)
- Fully Funded Recipient of an [Erasmus Mundus Joint Master](#) Scholarship.
- Current Average Grade: 28.8 / 30.0

Master of Science in Physics (Transferred)

October 2024 – September 2025

Technical University of Dortmund

Germany

- Completed Graduate Level Coursework in Theoretical Elementary Particle Physics and Advanced Quantum Mechanics, as well as Specialized Laboratory Experiments.
- Transitioned to Specialized International Degree Program Dedicated to Astrophysics.
- Overall Grade: 1.5 (Very Good)

Bachelor of Science in Physics

October 2021 – September 2024

Technical University of Dortmund

Germany

- Final Thesis: *Neutrinos via Charm Decays in Astrophysical Sources*
Technical University of Dortmund & Ruhr University Bochum
 - Decays of Short Lived Charmed Hadrons Potentially Contribute Significantly to Total Neutrino Flux at Very High Energies.
 - Estimated Relative Importance in Emission from Newborn Magnetars and Accretion Disks in Galactic Cores through Semianalytical Approach.
 - Explored Future Detection Prospects and Identified Issues with Current Literature.
 - Student Participation in the General Assembly of the Collaborative Research Center *Cosmic Interacting Matters* at [Ruhr University Bochum](#).
- Overall Grade: 1.3 (Very Good)
 - Research Project: 1.0 (Very Good)

Academic Employment

Teaching Assistant

April 2023 – September 2025

Department of Physics, Technical University of Dortmund

Germany

Instructed Students, Supervised Foundational Experiments and Graded Scientific Reports for Introductory Laboratory Course in the Undergraduate Physics Program.

Teaching Assistant

September 2024 – October 2024

Department of Physics, Technical University of Dortmund

Germany

Tutored Science and Engineering Students for the Mathematical Preliminary Course.

Teaching Assistant

October 2022 – March 2023

Department of Computer Science, Technical University of Dortmund

Germany

Taught Students in Practical Course for the Introduction to Programming Module.

Professional Development

Winter School on Modern Methodologies in Space Science

February 2026

Master in Astrophysics and Space Science, University of Rome Tor Vergata

Italy

Engaged in Academic School Workshops Exploring Advanced Data Science Applications, Machine Learning Pipelines and Bayesian Inference for Contemporary Space Sciences.

German Italian Physics Exchange

September 2025

Italian Association of Physics Students, University of Trieste

Italy

Visited Bilateral Scientific Exchange Conference Exploring Advanced Research Facilities and Cutting Edge Theoretical Physics Methodologies.

Lights of Tuscany

May 2025

Italian Association of Physics Students, University of Pisa & University of Florence

Italy

Attended International Physics Conference Seminar Series Focusing on Quantum Optics, Photonics and Contemporary Research Methodologies.

International Conference of Physics Students

August 2024

Georgian Association of Physics Students, Free University of Tbilisi

Georgia

Participated in Global Physics Forum Connecting Distinguished Researchers and Student Lecturers Across Diverse Fields of Study.

Awards & Honors

Erasmus Mundus Joint Master Scholarship

October 2025 – September 2027

European Education and Culture Executive Agency

Multiple Countries

Awarded a Highly Competitive Merit Based Full Scholarship Funded by the European Union for the [Master in Astrophysics and Space Science](#) Selected From Global Pool of Applicants.

Scholarship Nomination

June 2021

Märkische Schule Wattenscheid

Germany

Nominated by High School Leadership for the Prestigious [German Academic Scholarship Foundation](#) as a Distinction for Graduates Showing Academic Excellence Nationwide.

High School Graduation Honors

June 2021

Märkische Schule Wattenscheid

Germany

- Recognition by the Minister President as a Top Performing Graduate in the State.
- [German Physical Society](#) Award for Outstanding Achievements in Physics.
- [German Mathematical Society](#) Award for Outstanding Achievements in Mathematics.

Skills & Experience

Programming

Python ◦ C ◦ C++ ◦ Java ◦ SQL ◦ HTML ◦ CSS ◦ Unix Shell Script ◦ MATLAB ◦ \LaTeX

Libraries

numpy ◦ scipy ◦ pandas ◦ matplotlib ◦ sklearn ◦ astropy ◦ astroquery

Languages

Native German ◦ Fluent English ◦ Basic Turkish ◦ Elementary French & Spanish

Engagement

- Ongoing Membership in Scientific Networks and Student Organizations:
 - [Young German Physical Society](#)
 - [International Association of Physics Students](#)
- Organizing Role for [German Physical Society](#) High School Graduate Meeting.
- Completed Study Abroad Year at [Pugwash District High School](#) in Canada.
- Volunteer in [Tiny Forest](#) Local Urban Environmental Project.

Relevant Background

Mathematics: Real & Complex Valued Analysis ◦ Function & Distribution Theory ◦ Linear Algebra & Operators ◦ Ordinary & Partial Differential Equations ◦ Variational Calculus ◦ Multidimensional Integral & Differential Calculus ◦ Spectral Analysis ◦ Fourier & Laplace Integral Transformations ◦ Hilbert Spaces ◦ Data Mining & Analysis ◦ Machine Learning Applications ◦ Statistical & Numerical Methods ◦ Differential Forms ◦ Group Theory

Physics: Analytical Mechanics & Chaotic Systems ◦ Classical Electrodynamics ◦ Optics ◦ Quantum Mechanics ◦ Quantum Field Theory ◦ Renormalization ◦ Nuclear & Elementary Particle Physics ◦ Thermodynamics & Statistics ◦ Solid State Physics ◦ Special & General Relativity ◦ Fluid Dynamics Simulations ◦ Introductory & Advanced Laboratory

Astrophysics: Astroparticle Physics ◦ Radiative Processes ◦ Stellar Astrophysics ◦ Active Galactic Nuclei ◦ Interstellar Matter ◦ Computational Astrobiology ◦ Astrophysical Plasma Spectroscopy & Dynamics ◦ Cosmology ◦ Cosmic Rays