Alexander J. Dimoff

Max Planck Institute for Astronomy (MPIA), Heidelberg, Germany

Date of Birth: 11. December, 1994
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Education

Goethe University Frankfurt
PhD in Astrophysics, Germany *2022–2025*
Research focus: nuclear astrophysics; spectroscopy, binary stellar evolution, nuclear experiments.
Advisors: Prof. Dr. Camilla J. Hansen, Sen. Lec. Dr. Richard J. Stancliffe

San Diego State University
M.Sc. in Astronomy, USA *2019–2021*
Thesis: Apsidal Motion in Eclipsing Binaries.
Advisor: Prof. Dr. Jerome Orosz

Pennsylvania State University
B.Sc. in Astrophysics, USA *2013–2017*
Minors: Physics, German Language & Culture.
Advisor: Evan Pugh Prof. Dr. James Kasting

Research

Max Planck Institute for Astronomy
Postdoctoral Researcher, Heidelberg, Germany *2025–Present*
Star-planet connections through n-capture elements, radiogenic heating in exoplanets.

Goethe University Frankfurt Institute of Applied Physics and MPIA
Doctoral Researcher, Frankfurt and Heidelberg, Germany *2022–2025*
Spectroscopy, stellar abundances, radial velocities, binary accretion and evolution, nuclear reaction cross-sections.

San Diego State University
Master's Researcher, San Deigo, USA *2020–2021*
Orbital dynamics of massive binaries, apsidal motion, stellar structure.

Pennsylvania State University
Post-graduate Research Assistant, Pennsylvania, USA *2017–2019*
Isotope fractionation in stellar nebulae, modeling equilibrium and kinetic chemistry.

Teaching and Mentoring

Goethe University Frankfurt
Master's Student Co-Supervision, Frankfurt, Germany *2024–2025*
Orbital dynamics and exoplanet studies; limb-darkening laws for high-metallicity stars.

Goethe University Frankfurt
Teaching Assistant, Frankfurt, Germany *2022–2024*
Courses: Astronomy I & II (2 semesters).

San Diego State University
Teaching Associate, San Diego, USA *2021*
Astronomy 101 lecture course (1 semester).

San Diego State University
Teaching Associate, San Diego, USA *2020–2021*
Astronomy 109 laboratory (3 semesters).

San Diego State University
Certification, San Diego, USA *2020*
Flexible Course Design Institute for Graduate Students (training in accessible course design).

Awards and Scholarships

- William and Nhung Booth Scholarship (2021)
- Ruth and Clifford Smith Astronomy Fellowship (2020)
- Reginal F. Bueller Endowment Scholarship (2020)
- William F. Lucas SDAA Endowment Scholarship (2020)
- Awona W. Harrington Astronomy Scholarship (2020)
- NASA Pennsylvania Space Grant (2017)

Skills

Languages: English (native), German

Programming: Python, Bash, FORTRAN, Julia, ROOT

Libraries: NumPy, SciPy, Astropy, Pandas, Scikit-Learn, JAX, Numba, Matplotlib

Tools: Git, LaTeX, HPC (MPI/OpenMP, Slurm), ADQL/SQL

Methods: MCMC, Bayesian Inference, Maximum Likelihood, Gaussian Processes, Cross-Correlation, Uncertainty Quantification, Data Visualization

Professional Development

- Max Planck International Research School (IMPRS), PhD student (2022 - 2025)
- Student Representative MPIA, Max Planck Society (2022 – 2024)
- Sustainability Committee Member, MPIA (since 2023)
- Organizer, MPIA Galaxies and Cosmology department retreat (2023)
- Workshops and Schools: ESO Stellar Spectroscopy Workshop (2024), ECR Astronuclear School (2024), Russbach Winter School (2023), Ondrejov Observing School (2022), NPA-X Summer School CERN (2022)

Conferences and Presentations (selected)

- 2025 - s-Process Signatures of Binary Interaction across the Milky Way (AIP, Potsdam, Germany)
- 2025 – Modeling the Progenitors of Low-Mass Post-Accretion Binaries (sirEN Conference, Italy)
- 2025 - Modeling the Progenitors of Low-Mass Post-Accretion Binaries (ESO, Chile)
- 2024 – Connecting Binary Accretion and Abundances (Nuclear Physics and Astrophysics XI, Germany)
- 2024 – Tracing Carbon from AGB Stars through Binary Accretion (NAOJ, Tokyo)
- 2024 – S-Process Nucleosynthesis in AGB Stars (IAP Seminar, Frankfurt; XIV Torino AGB Workshop, Italy)
- 2023 – s- and i-Process Nucleosynthesis (i-Process Workshop, Cyprus; Russbach Winter School, Austria)
- 2022 – Spectral Observations of s-Process Stars (ChETEC-INFRA, Italy; Ondrejov School, Czech Republic)