ADAM PARKOSIDIS

Science Park 904, 1098XH
Anton Pannekoek Institute for Astronomy
University of Amsterdam
Amsterdam, North Holland, The Netherlands

EDUCATION

Master of Science | ***Physics and Astronomy*** | ***'Cum Laude'*** 2021 – 2023
University of Amsterdam-Vrije Universiteit Amsterdam, The Netherlands

- Thesis: *Mass Transfer in Hierarchical Triple Systems: The Case of Roche-Lobe filling Outer Star*

Bachelor of Science | ***Physics*** 2013 – 2020
Aristotle University of Thessaloniki, Greece

- Thesis: *Dynamic Perturbations in Protoplanetary Cosmic Dust Discs in the Presence of a Giant Planet: Possible Detection with ALMA*

PUBLICATIONS

Reframing the wide eccentric binary problem: Eccentricity as a probe of mass-transfer physics 2026, ApJ
A. Parkosidis, S. Toonen, E. Laplace, V. Schaffenroth

Rethinking mass transfer: a unified semianalytical framework for circular and eccentric binaries. II. Orbital evolution due to non-conservative mass transfer 2026, A&A
A. Parkosidis, S. Toonen, E. Laplace, F. Dosopoulou

Rethinking mass transfer: a unified semianalytical framework for circular and eccentric binaries. I. Orbital evolution due to conservative mass transfer 2026, A&A
A. Parkosidis, S. Toonen, F. Dosopoulou, E. Laplace

Episodic outbursts during brown dwarf formation 2025, A&A
A. Parkosidis, D. Stamatellos, B. Riaz

SCIENTIFIC EXPERIENCE

PhD Candidate in Astrophysics 2023 – Present
Anton Pannekoek Institute, UvA, The Netherlands

Technical Support Scientist 2023
ASTRON, Dwingeloo, The Netherlands

- Supported LOFAR Unified Calculator for Imaging (LUCI) tool development by testing, debugging, and integrating new Python functionalities
- Developed observation and processing templates utilizing LOFAR's Telescope Manager Specification System following proposal approval
- Authored documentation and user guides on instrument capabilities and operational procedures
- Performed quality control of data products generated by the Long-Term Archive (LTA) pipelines, producing reports and performance summaries

Research Intern in Computational Astrophysics 2021
Jeremiah Horrocks Institute, UCLan, United Kingdom

- Applied the PHANTOM smoothed particle hydrodynamics (SPH) code for large-scale numerical simulations of protoplanetary disks
- Utilized the UCLan High-Performance Computing (HPC) cluster for parallel execution and resource-optimized SPH model runs
- Processed, analyzed, and visualized simulation data using Python (NumPy, pandas, matplotlib, seaborn) and SPLASH

Space Debris Data Analyst 2020 – 2023
SpaceDot, Thessaloniki, Greece

- Collaborated with 80+ engineers and scientists to integrate debris mitigation data into mission design

- Performed orbit propagation and collision analyses with ESA's DRAMA software to ensure compliance with international space debris mitigation standards
- Developed Python scripts for automating orbital simulations, data analysis, and visualization of on-orbit collision risk scenarios
- Contributed technical content to the System Design and Mission Requirements (SDMR) and Orbital Collision Risk Assessment (OCRA) documents for the Critical Design Review (CDR) phase

Funding & Grants

Leids Kerkhoven-Bosscha Fonds (LKBF)
Years granted: 2024, 2025, 2026

Talks

When Mass Transfer Makes Orbits Eccentric: Connecting Theory and Observation 2026
European Astronomical Society Lausanne, CHE

Eccentricity as a Probe of Mass-transfer Physics 2026
Colloquium: Institute of Astronomy KU Leuven, BEL

Mass Transfer in Eccentric Binaries: A Unified Framework & New Insights 2025
Binary Stars in a New Era Lijiang, CHN

Mass Transfer in Eccentric Binaries: A Unified Framework & New Insights 2025
Netherlands Astronomy Conference Nijmegen, NL

Technical Skills

Operation Systems: Linux (Ubuntu), Microsoft Windows
Programming: Python, Bash, C, F77/F95
Machine Learning & Deep Learning: PySR, Keras, Pandas, PyTorch, Scikit-Learn, TensorFlow
Data Visualization: Matplotlib, Seaborn, Plotly, gnuplot
Document Creation: Microsoft Office Suite, LibreOffice Suite, Google Suite, LaTex
Other Technologies: Smoothed Particle Hydrodynamics (SPH), Git

Scientific Computing

SPH codes: PHANTOM, SEREN
Stellar Evolution codes: MESA
N-body codes: SWIFT, HUAYNO
Python Packages: NumPy, SciPy, SymPy, DISKLAB, Astropy, PICASO
Space Debris Risk Assessment & Mitigation Analysis: DRAMA
Other software: AMUSE, Mathematica

Teaching Experience & Student Supervision

University Lectures 2026
- 'Convection' (M.Sc. course: 'Structure & Evolution of Stars')

Summer projects 2024
- Magdalena Andrea Vilaxa Campos "Modeling Mass Transfer Between Stars" (MSc level)

Teaching Assistant 2022 – 2025
Anton Pannekoek Institute, UvA, The Netherlands
- 'Atmospheres & Radiative Transfer' (M.Sc. course, 4 times)
- 'Structure & Evolution of Stars' (M.Sc. course, 2 times)
- 'Disks & Accretion' (M.Sc. course)

AUTh, Greece 2018
- 'Observational Astronomy' (BSc course)

Private Tutor 2018 – 2019
Thessaloniki, Greece
- Tutored and prepared secondary education students for their final exams in the school subjects of Physics and Math

TRAININGS & SCHOOLS

Binary compact objects on eccentric orbits and their gravitational-wave signatures 2026
Corfu, Greece

ICESUN Summer School 2025: Binary Stars and Compact Objects 2025
Yunnan Observatories, China

MESA Summer School 2025
KU Leuven, Belgium

Nordic Winter School on Multimessenger Astrophysics 2024
Skeikampen, Norway

Mastering your PhD 2024
University of Amsterdam, The Netherlands

COLLABORATION MEMBERSHIPS

The Binarity at LOw Metallicity (BLOeM) 2026 – Present

Laser Interferometer Space Antenna (LISA) 2025 – Present

LANGUAGES

Greek: Native
English: Fluent
Dutch: Elementary
German: Elementary

VOLUNTEERISM

Guide and telescope operator 2018 – 2019
Observatory of AUTh

- Operated the optical telescope at the Aristotle University of Thessaloniki Observatory during visits by primary, junior high, and high school students.