

Dionysios Gakis

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EDUCATION

Doctor of Philosophy in Astronomy

August 2024 – Present

The University of Texas at Austin

Austin, TX

Advisor: Prof. Keith Hawkins

Bachelor of Science in Physics (*graduated 1st in overall class*)

September 2020 – July 2024

University of Patras

Patras, Greece

Final grade: 9.68/10

Degree thesis: Thermoelectric effects in neutron star crusts

RESEARCH EXPERIENCE

The University of Texas at Austin, Department of Astronomy

August 2024 – Present

Graduate Research Assistant

Austin, TX

- **Advisor:** Prof. Keith Hawkins
- **Topic:** Determining stellar P abundances
- I aim to measure phosphorus abundances of stars in the Milky Way' disk and accreted dwarf galaxy, using data from HPF and IGRINS instruments.
- **Technical skills:** stellar spectroscopy, nucleosynthesis, large surveys, Bayesian statistics

National Observatory of Athens

March 2024 – May 2024

Undergraduate Research Intern

Athens, Greece

- **Advisor:** Dr. Stavros Akras
- **Topic:** Observational analysis of low-ionization structures and photometric classification
- I processed data on low-ionization structures in planetary nebulae and analyzed multi-band photometric data from Aristarchos Telescope to classify candidates as planetary nebulae or symbiotic stars.
- **Technical skills:** SAOImageDS9, IRAF, astronomical image reduction

Academia Sinica Institute of Astronomy and Astrophysics

July 2022 – August 2022

Undergraduate Research Intern (Summer Student Program)

Remotely

- **Advisor:** Dr. Rogério Monteiro-Oliveira
- **Topic:** Investigating environment effects in the Saraswati supercluster
- We mapped the luminous matter within the supercluster, assessed cluster spatial segregation by dynamical state and examined the central region's gravitational binding.
- **Technical skills:** R, Python, photometric data analysis, astronomical surveys, large-scale structure

Blue Marble Space Institute of Science

November 2021 – Present

Visiting Scholar (NYUAD Mars Research Group)

Remotely

- **Advisor:** Dr. Dimitra Atri
- **Topic:** Analysis of the radiation environment of Mars
- Our analysis includes radiation mapping, material behavior study and search for biosignatures.
- **Technical skills:** Geant4, ROOT, space radiation analysis, human spaceflight

University of Patras, Department of Physics
Undergraduate Research Assistant (Theoretical Astrophysics Group)

July 2021 – July 2024
Patras, Greece

- **Advisor:** Prof. Konstantinos N. Gourgouliatos
- **Topic:** Thermoelectric effects on the crust of neutron stars (March 2023 – July 2024)
- The suggestion of magnetic field amplification by temperature gradients is tested.
- **Technical skills:** Fortran, Biermann battery effect
- **Topic:** Gravitational dynamics of circumbinary systems (July 2021 – February 2023)
- Our study was aimed at describing orbits within Pluto’s moon system and circumbinary exoplanetary systems.
- **Technical skills:** Python, n-body problem, Fourier analysis

Blue Marble Space Institute of Science
Research Associate (Young Scientist Program)

May 2021 – October 2021
Remotely

- **Advisor:** Dr. Dimitra Atri
- **Topic:** Radiation and its effects on astronaut health in long-term space missions
- My research was focused on modeling radiation on the surface of Mars and exploring ways to mitigate exposure.

PUBLICATIONS

View publications through [Google Scholar](#) and [NASA/ADS](#).

Refereed Publications

- **D. Gakis** & D. Atri, *"Modeling the effectiveness of radiation shielding materials for astronaut protection on Mars"*, The European Physical Journal Plus 139 (8), 708 (2024), arXiv: 2205.13786.
- **D. Gakis** & K. N. Gourgouliatos, *"Revisiting thermoelectric effects in the crust of neutron stars"*, Astronomy & Astrophysics 690, A117 (2024), arXiv: 2402.14911.
- **D. Gakis** & K. N. Gourgouliatos, *"Orbital analysis of the Pluto-Charon moon system’s mutual interactions and forced frequencies"*, Astronomy & Astrophysics 670, A152 (2023), arXiv: 2301.02260.
- **D. Gakis** & K. N. Gourgouliatos, *"Orbits of the TOI-1338 and TIC-172900988 systems"*, Monthly Notices of the Royal Astronomical Society 519 (3), 3832-3842 (2023), arXiv: 2212.05016.
- **D. Gakis** & K. N. Gourgouliatos, *"Orbit determination of the moons of the Pluto-Charon system"*, Celestial Mechanics and Dynamical Astronomy 134 (2), 14 (2022), arXiv: 2202.13319.

Papers Under Review

- A. Kokori et al. (including **D. Gakis**), *"ExoClock Project IV: A homogenous catalogue of 620 exoplanet ephemerides for the Ariel space mission"*, Submitted to The Astrophysical Journal Supplement Series (2025).

Non-refereed Publications

- D. Atri et al. (including **D. Gakis**), *"Crewed Missions to Mars: Modeling the Impact of Astrophysical Charged Particles on Astronauts and Assessing Health Effects"*, (2022), arXiv: 2208.00892.

HONORS, AWARDS & SCHOLARSHIPS, SELECTED

Travel support grant
IAU Symposium 399; Melbourne, Australia

July 2025

Travel support grant
COST Action: CA18104 - Revealing the Milky Way with Gaia; Vilnius, Lithuania & Barcelona, Spain

July 2023 & September 2023

Travel support grant <i>44th COSPAR Scientific Assembly; Athens, Greece</i>	July 2022
Silver medal <i>1st Global e-Competition in Astronomy & Astrophysics</i>	October 2020
Prize Scholarship <i>The Great Moment for Education Initiative, Eurobank</i>	September 2020
Bronze medal <i>13th International Olympiad on Astronomy and Astrophysics; Keszthely, Hungary</i>	August 2019
1st Prize <i>National Olympiad on Physics</i>	April 2019
Scientific Honor <i>Awarded by the President of the Hellenic Republic for scientific excellence</i>	February 2019
Honorable Mention <i>12th International Olympiad on Astronomy and Astrophysics; Beijing, China</i>	November 2018

CONFERENCE PRESENTATIONS

IAU Symposium 399: Indigenous Astronomy in the Space Age • Talk: "Echoes of Star Stories: Integrating Indigenous narratives into modern stellar astrophysics"; Melbourne, Australia	July 2025
The Milky Way Revealed by Gaia: The Next Frontier Conference • Talk: "Impact, Inclusiveness and Outreach: Outputs from the MW-Gaia WG5 School"; Barcelona, Spain	September 2023
2023 Asia-Pacific Regional IAU Meeting • Poster: "Is the massive Saraswati supercluster going to disappear in the future?" (non-presenting author); Koriyama, Japan	August 2023
16th Hellenic Astronomical Conference • Poster: "Transit Timing Variations in exoplanetary systems through the ExoClock Project"; Athens, Greece	June 2023
12th Hellenic Conference for Amateur Astronomers • Talk: "eclass.orionas.gr: Preparing students for astronomy competitions from the viewpoint of teacher assistants"; Patras, Greece	October 2022
73rd International Astronautical Congress • Talk: "Radiation protection and shielding materials for crewed missions on the surface of Mars", arXiv: 2210.01061; Paris, France	September 2022
44th COSPAR Scientific Assembly • Talk: "A study of the moon orbits in the Pluto-Charon system"; Athens, Greece	July 2022
65th Open Readings Conference • Poster: "Regolith as radiation protective material for astronauts on Mars"; Online	March 2022
University of Aberdeen Aviation and Space Medicine Society Conference • Talk: "Cosmic radiation as a hazard for astronauts on the surface of Mars"; Online	February 2022

SEMINARS & WORKSHOPS

- Machine Learning in Planetary Dynamics Workshop** April 2025
- Selected participant: Worked on topics including simulation-based inference, large language models and chaotic systems (Flatiron Institute); New York City, NY
- Stars, Planets and ISM Seminar (UT Austin)** September 2024
- Talk: "Thermoelectric Effects in Neutron Star Crusts"; Austin, TX
- Code/Astro Workshop** July 2024
- Selected participant: Worked on astronomy software development (Northwestern University); Evanston, IL
- Kryoneri Observatory School** September 2023
- Selected participant: Worked on observational astrophysics; Kryoneri, Greece
- Petnica Summer Institute** August 2023
- Selected participant: Summer school focused on theoretical astrophysics; Petnica, Serbia
- MW-Gaia WG5 School** July 2023
- Selected participant: Topics related to improving inclusion and impact in the science process; Vilnius, Lithuania
- ASIAA Summer Program Seminar** August 2022
- Talk: "Investigating environment effects in the Saraswati supercluster"; Online
- Astromatic Summer School** August 2022
- Selected participant: Worked on artificial intelligence, machine learning, scientific computing and their applications on astrophysics (Université de Montréal); Montreal, Canada
- BlueSciCon Seminar** August 2021
- Talk: "Martian geological features as radiation protective shields"; Online

SERVICE & VOLUNTEERING

- Local Organizing Committee Member** October 2022
- 12th National Conference for Amateur Astronomers
- Literature Group Member** 2022 – Present
- ExoClock Project; tasks include exoplanet literature checking and writing articles for newsletters.
- Teaching volunteer** 2021 – Present
- Teaching and preparation of the national team, for participation in the International Olympiad on Astronomy and Astrophysics and the Junior International Olympiad on Astronomy and Astrophysics
- Popular science writer** 2021 – Present
- Writing articles for Sciworthy, Astrobites explaining research in everyday language
- Science outreach** 2021 – Present
- Co-organizing local public outreach astronomy events (talks, stargazing events, solar observations, school presentations)
- Teacher assistant** 2019 – Present
- Volunteer for preparation of students for participation in the National Astronomy & Space Engineering Olympiad. Teaching duties include student mentoring, material preparation and assignments' evaluation. Classes are provided by "Orion" Astronomy Society of Patras e-classroom.

MEDIA COVERAGE

Online news

August 2024

- [Article by EurekAlert!](#)

Online news

June 2022

- [Article by Universe Today](#)

AWARDED TELESCOPE TIME

McDonald Observatory HET (HPF)

56.4 hours (PI)

SKILLS

Computer skills

- Operating systems: Linux, OS X, Windows
- Programming languages: Python, C++, Fortran, R, MATLAB, HTML, SQL/ADQL, bash/shell
- Tools: Git, GitHub
- Software: IRAF, SAOImageDS9, TOPCAT, iSpec, BACCHUS, Turbospectrum, MESA, Geant4
- Text processing: \LaTeX , MS Office

Languages

- Greek (native), English (proficient), German (intermediate)

Other skills

- Observational Astronomy – Telescope Handling
- Data analysis

SOCIETIES

- Space Generation Advisory Council (SGAC)
- Network of Researchers on the Chemical Evolution of Life (NoRCEL)
- “Orion” Astronomy Society of Patras; Secretary 2022-2024
- Student European Low Gravity Research Association (SELGRA)

REFERENCES

Prof. Keith Hawkins

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Prof. Konstantinos N. Gourgouliatos

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Dr. Dimitra Atri

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Dr. Rogério Monteiro-Oliveira

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