

Dionysios Gakis

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EDUCATION

Doctor of Philosophy in Astronomy

The University of Texas at Austin

Advisor: Prof. Keith Hawkins

August 2024 – Present

Austin, TX

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

University of Patras

Final grade: 9.68/10

Degree thesis: Thermoelectric effects in neutron star crusts

September 2020 – July 2024

Patras, Greece

RESEARCH EXPERIENCE

National Observatory of Athens

Undergraduate Research Intern

March 2024 – May 2024

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

Undergraduate Research Intern (Summer Student Program)

July 2022 – August 2022

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

Visiting Scholar (NYUAD Mars Research Group)

November 2021 – Present

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 – Present

Patras, Greece

- **Advisor:** Prof. Konstantinos N. Gourgouliatos
- **Topic:** Thermoelectric effects on the crust of neutron stars (March 2023 – Present)
- 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.

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 <i>COST Action: CA18104 - Revealing the Milky Way with Gaia; Vilnius, Lithuania & Barcelona, Spain</i>	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

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

SEMINARS & WORKSHOPS

- 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
<ul style="list-style-type: none">• 12th National Conference for Amateur Astronomers	
Literature Group Member	2022 – Present
<ul style="list-style-type: none">• ExoClock Project; tasks include exoplanet literature checking and writing articles for newsletters.	
Teaching volunteer	2021 – Present
<ul style="list-style-type: none">• 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
<ul style="list-style-type: none">• Writing articles for <i>Sciworthy</i>, <i>Astrobites</i> explaining research in everyday language	
Science outreach	2021 – Present
<ul style="list-style-type: none">• Co-organizing local public outreach astronomy events (talks, stargazing events, solar observations, school presentations)	
Teacher assistant	2019 – Present
<ul style="list-style-type: none">• 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
<ul style="list-style-type: none">• Article by EurekaAlert!	
Online news	June 2022
<ul style="list-style-type: none">• Article by Universe Today	

SKILLS

Computer skills
<ul style="list-style-type: none">• 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, Geant4• Text processing: L^AT_EX, MS Office
Languages
<ul style="list-style-type: none">• Greek (native), English (proficient), German (intermediate)
Other skills
<ul style="list-style-type: none">• 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. Konstantinos N. Gourgouliatos

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Dr. Rogério Monteiro-Oliveira

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