






SAMANEH AGHELPASAND

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EDUCATION

- **M. Sc. in Astronomy and Astrophysics**

Alzahra University, Tehran, Iran

September 2019 – March 2023

Grade: 15.21/20 | GPA: 3.3/4 (Thesis included)

- **M. Sc. in Astronomy and Astrophysics**

(Coursework Completed; left due to the departure of the supervising faculty member)

K.N. Toosi University, Tehran, Iran

September 2016 – June 2018

- **B. Sc. in Physics**

Islamic Azad University, Tehran, Iran

September 2011 – June 2016

Grade: 14.66/20 | GPA: 3.10/4 (Thesis included)

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RESEARCH AND ACADEMIC PROJECTS

- **B.Sc. Thesis: Electromagnetic Detection of ELF/VLF Signals Emitted by Meteors/ Advisor:** Dr. Mahmoodreza Sharifian/ **Duration:** 12 months (September 2015- September 2016) / **Description:** Fabricated a loop antenna and developed signal processing techniques for detecting sferics and meteor radio signals, contributing to advancements in planetary science.

- **M.Sc. Thesis: Designing a Neural Network of Long Short-Term Memory to Find the Exoplanets from The Kepler Space Telescope Data/ Supervisor:** Dr. Taghi Mirtorabi/ **Duration:** 14 months (January 2022-March 2023)/ **Description:** Learned deep learning approaches & applied them to astronomical datasets, studying light curves and various indirect exoplanet detection techniques.

- **Collaborative Research:**

- ***The Discovery of Polarized Water Vapor Megamaser Emission in a Molecular Accretion Disk/ Collaborators:*** Prof. Jack Gallimore and Dr. Violette Impellizzeri, Dr. Boy Lankhaar, Dr. Feng Gao, and Virginia Hostetter. / **Duration:** 12 months (October 2023- October 2024)/ **My Focus:** Studied proper motions of H₂O maser emission in NGC 1068 using VLBA multi-epoch data.

- **ASPIRE Summer School Program at the University of Amsterdam / Duration:** June 28 - August 6, 2024/ **Advisors:** Prof. J.W.T. (Jason) Hessels (Canada Excellence Research Chair (CERC) in Transient Astrophysics) and Dr. Ziggy Pleunis (University of Amsterdam) / **Project:** Fast Radio Bursts (FRBs) using Python; learned about radio polarimetry and applied fitting algorithms to connect FRB polarimetry to source models.

- **VLBA Observations of Proper Motions of Water Masers in the Cepheus A HW2 Star-Forming Region/ Duration:** Summer 2023 - present/ **Advisors:** Prof. Jack Gallimore (Bucknell University) and Dr. Violette Impellizzeri (Head of the Astronomy & Operations Department at ASTRON)/ **My Focus:** Study the disk around Cepheus A using Very Long Baseline Interferometry (VLBI) techniques; learned to use AIPS and Difmap software for data analysis.

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PUBLICATIONS

- Galimore, J.F., Impellizzeri, V., Aghelpasand, S., Hostetter, V., Gao, F., & Lankhaar, B. "The Discovery of Polarized Water Vapor Megamaser Emission in a Molecular Accretion Disk." *Astrophysical Journal Letters*. Published 2024 October 25 [[ApJL](#)]

- Aghelpasand, S., Galimore, J.F., Impellizzeri, V., & Najafi, F. "VLBA Observations of Proper Motions of Water Masers in the Cepheus A HW2 Star-Forming Region." *Communications*

of BAO (ComBAO), Volume 71, Issue II,
December 2024. Status: Under Review.

- Aghelpasand, S., Howaida, P., & Ahadi, M. "**Electromagnetic Detection of ELF/VLF Signals Emitted by Geminids 2017 Meteors.**" Accepted as a poster presentation at the *31st IPM Physics Spring Conference*, Institute for Research in Fundamental Sciences, May 15, 2024.[link](#)

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COMPUTER SKILLS

• **Programming:** Proficient in Python and its scientific libraries (NumPy, Matplotlib, SciPy, Astropy, Pandas) for data processing and analysis (used in my M.Sc thesis); familiar with C++ and C programming languages.

• **Radio Astronomy Software (Utilized in my research collaborations):**

- Experienced in AIPS for reducing and analyzing radio interferometric data.
- Proficient in Difmap for modeling and imaging radio interferometric data.

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HONORS and Scholarship

• **Master's National Entrance Exam (Kunkur):** Ranked 92 among 10,000 applicants and full funding granted for M.Sc. in Astronomy and Astrophysics (Summer 2019)

• First Place in the Radio Telescope National Competition, Semnan University (March 2015). In this competition, we build a loop antenna to detect radio signals directly from meteors in ELF/VLF bands.

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TEACHING EXPERIENCE

Graduate Teaching Assistant, Alzahra University:

• **Astrophysics I (September 2021- January 2022):** Assisted in course delivery, graded assignments, and developed test questions.

• **Numerical Calculations (September 2020- January 2021):** Managed coursework grading and created assessment materials.

• **Science philosophy (September 2019- January 2020):** Supported the professor in lectures, graded student submissions, and contributed to exam preparation.

SELECTED PRESENTATIONS

• "VLBA Observations of Proper Motions of Water Masers in the Cepheus A HW2 Star-Forming Region," The 4th Regional Astronomical Workshop (4RAW), Armenia, September 17, 2024. [link](#)

• "Electromagnetic Detection of ELF/VLF Signals Emitted by Geminids 2017 Meteors," 31st IPM Physics Spring Conference, virtual, May 15, 2024. [link](#)

• "Designing a Neural Network of Long Short-Term Memory to Find Exoplanets from Kepler Data," Iranian Astronomy Research Meeting, Zanzan Graduate University, June 14-16, 2023. [link](#)

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INTERNATIONAL WORKSHOPS AND CONFERENCES ATTENDED

• **The 9th Byurakan International Summer School (9BISS)** for Young Astronomers (September 9-13, 2024), Armenia: Granted accommodation and meals. [link](#)/ In this summer school, I connected with international peers and acquired hard skills, including using Topcat software for cross-matching techniques with various datasets, such as GAIA.

• **The 4th Regional Astronomical Workshop (4RAW)** (September 16-20, 2024), Armenia: Granted accommodation and meals.[link](#)/ At this workshop, I identified new international collaborators for prospective research projects and had the opportunity to enhance my presentation skills in front of highly educated colleagues.

• **IAU/I-HOW Radio Astronomy Workshop**, Erciyes University, Kayseri, Türkiye (September 4-15, 2023): Full funding granted. [link](#)/ In this program, I connected with highly qualified advisors from renowned institutes worldwide, establishing ongoing collaborations.

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LANGUAGES

- Persian: Native
- English: IELTS Band 6.5 (no skills below 6)