

HAMID HASSANI



PhD Student in Physics at the University of Alberta, hhassani@ualberta.ca

RESEARCH INTERESTS

Astrophysics and Radio/Infrared/Ultraviolet Astronomy, Physics of Interstellar Medium, Star Formation and Quenching, Thermal/Non-Thermal Processes, Cooling/Heating Processes. Magnetic Field/Polarisation, Dust/Gas Evolution of Galaxies.

EDUCATION

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| 2021-Expected | Ph.D. Doctor of Philosophy in Physics, University of Alberta, Canada.
Thesis: Star Formation Laws in the Local Universe.
<i>Advisor: Dr. Erik Rosolowsky.</i> |
| 2018-2021 | M.Sc. Physics, Astronomy and Astrophysics, Shahid Beheshti University, Iran.
Thesis: Role of Thermal and Non-Thermal Processes in Evolution of Massive Star Formation in Magellanic Clouds.
<i>Advisers: Dr. Fatemeh Tabatabaei, Dr. Sadollah Nasiri Gheydari,</i> |
| 2015-2018 | B.Sc. Physics, Yazd University, Iran.
Thesis: Nucleosynthesis of Heavy Elements by Neutron Capture Process in Massive Stars.
<i>Adviser: Dr. Mohammad Eslami-Kalantari.</i> |

RESEARCH EXPERIENCES

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| 2021-Now | Research Assistant at University of Alberta, Canada:
Studying star formation processes in nearby galaxies through collaborative efforts with the PHANGS group, utilizing AstroSat and JWST observations.
<i>Advisor: Dr. Erik. Rosolowsky.</i> |
| 2021-2022 | LEAPS Summer School (Leiden/ESA Astrophysics Program for Summer Students, selected among 300 students):
Studying star formation rate calibrations through LOFAR/MUSE observations in edge-on galaxies.
<i>Advisor: Dr. Sarah Leslie.</i> |
| 2019-2021 | Research Assistant at School of Astronomy, Institute for Research in Fundamental Sciences (IPM), Iran:
Studying the thermal/non-thermal emissions in the Magellanic Clouds through a close collaboration with Dr. Annie Hughes at IRAP.
<i>Advisor: Dr. F. Tabatabaei</i> |
| 2018-2019 | Research Assistant at Yazd University, Iran:
Nucleosynthesis of heavy elements by neutron capture process in massive stars with NucNet package. |

Advisor: Dr. M. Eslami-Kalantari

2017-2019

Research Assistant at Yazd University, Iran:

Studying X-ray emission of Supernova Remnants, spectral analysis of Chandra observations with CIAO Package.

Advisor: Dr. Z. Rezaei

VOLUNTEER EXPERIENCES AND COMMUNITY SERVICE

- Physics department organizer for the Astro-PH and Astro Seminar weekly meetings, University of Alberta (2022-now).
- Member of the PHANGS outreach group for [YouTube](#) (2023-now).
- **Vice President External** at the Graduate Students' Association (GSA), University of Alberta, representing more than 10,000 graduate students beyond the campus (2023-now).
- **Co-Chair** at Alberta Graduate Provincial Advocacy Council (ab-GPAC), representing more than 20,000 graduate students across Alberta to the provincial government (2023-now).
- **Vice-chair** at Edmonton Student Alliance (ESA), representing nearly 100,000 post-secondary students across Edmonton, Alberta, Canada (2023-now).
- Graduate student representative at the Alumni Council of the University of Alberta (2023-now).
- Ambassador of the Graduate Physics Student Association (GPSA) at the University of Alberta (2022-Now).
- Physics student representative at the Graduate Students' Association (GSA) of the University of Alberta (2022 - Now).
- Volunteer host at EAS (European Astronomical Society Annual Meeting) 2021 Conference.
- Head of Student Astronomical Society at Yazd University and election of our forum as the best student society in both research and outreach activities (2016-2017).
- Member of Society of Physics Students at Yazd University (2015-2017).
- Public talk at ESO outreach program for everyone and worldwide [[Link](#)] [[Youtube](#)] (Title: Dust at dusk, Infrared observations as a tracer of interstellar dust emission), supported by Haus der Astronomie of Germany.
- Teaching astronomical data analysis methods using infrared and radio observations [[online course](#)].

ACADEMIC VISITS

- California Institute of Technology and Carnegie Observatories (US), Host: Dr Janice Lee. (2023).
- Infrared Processing and Analysis Center (IPAC) (US) (2023).
- The Ohio State University (US), Host: Dr. Adam Leroy (2023).
- University of Maryland (US), Host: Dr. Alberto Bolatto (2023).
- Johns Hopkins University (US), Host: Dr. David Thilker (2023).
- Space Telescope Science Institute - STScI (US), Host: Dr. Janice Lee (2023).
- Universidad Complutense de Madrid (Spain), host: Dr. Patricia Sánchez-Blázquez (2023).
- Royal Observatory of Madrid (Spain), host: Dr. Miguel Querejeta (2023).

OBSERVATION TIME FOR TELESCOPES (APPROVED)

2023	PI: AstroSat (15 Hours) PHANGS AstroSat-Dwarfs: Star Formation in Low-Metallicity Medium
2023	PI: AstroSat (12 Hours) PHANGS AstroSat-Color: Star Formation and dust attenuation properties of star-forming galaxies
2023	CO-I: James Webb Space Telescope - JWST (150 Hours) A JWST Census of the Local Galaxy Population: Anchoring the Physics of the Matter Cycle
2023	CO-I: Hubble Space Telescope (HST) 1. Resolving gas, star formation and feedback in nearby galaxies with an HST+JWST+ALMA Treasury (169 Orbits) . 2. Zooming in on HII regions: a comprehensive view of dust attenuation and embedded star formation in local galaxies (19 Orbits) .
2022	CO-PI: AstroSat (60 Hours) PHANGS-AstroSat: Measuring Radiative Feedback in Nearby Galaxies.
2022	CO-PI: MeerKat (60 Hours) A Complete Picture of Atomic Gas, Molecular Gas, and Star Formation in Ten of the Best-Studied MeerKAT-Visible Galaxies.
2022	CO-I: HST (24 Orbits) A panoramic study of low-density star formation in XUV disk galaxy NGC 3621: Testing for environmental dependency of clusters, OB associations, and the stellar hierarchy.

PUBLICATIONS

2023	PHANGS-JWST First Results: The 21 μm Compact Source Population H. Hassani, E. Rosolowsky, A. Leory, et al. (APJL , 2023). <i>Embedded dusty star formation regions are exclusively found in the centers of galaxies, thanks to our JWST observations.</i>
2023	The PHANGS-AstroSat Atlas of Nearby Star Forming Galaxies H. Hassani, E. Rosolowsky, J. Postma, et al. (submitted at APJS). <i>This survey paper presents the first-ever UV maps of 30+ galaxies, captured at the highest angular resolution supported by the Canadian Space Agency fund.</i>
2022	The role of thermal and non-thermal processes in the ISM of the Magellanic Clouds H. Hassani, F. Tabatabaei, A. Hughes, et al. (MNRAS Journal , 2022). <i>Mapping the strength of the magnetic fields in these galaxies with the highest resolution for the first time.</i>
2023	PHANGS-JWST First Results: Mid-infrared emission traces both gas column density and heating at 100pc scales A. Leroy et al. (including H.Hassani) (APJL , 2023).
2023	PHANGS-JWST First Results: Mapping the 3.3 μm Polycyclic

Aromatic Hydrocarbon Vibrational Band in Nearby Galaxies with NIRCAM Medium Bands

K. Sandstorm et al. (including H.Hassani) ([APJL](#), 2023).

2023

PHANGS-JWST First Results: The Influence of Stellar Clusters on PAHs in Nearby Galaxies

D. Dale et al. (including H.Hassani) ([APJL](#), 2023).

2022

A 2–3 mm high-resolution molecular line survey towards the centre of the nearby spiral galaxy NGC 6946

C. Eibensteiner et al. (including Hassani) ([A&A Journal](#), 2022).

2022

Linking stellar populations to H II regions across nearby galaxies I. Constraining pre-supernova feedback from young clusters in NGC 1672

A. T. Barnes, et al. (including Hassani) ([A&A Journal](#), 2022).

[Full list of publications](#)

TALKS AND PRESENTATIONS

2023

PHANGS-JWST First Results: The 21 μ m Compact Source Population

Contributed talk at Olympian Symposium – Star formation in the era of JWST, Greece [[link](#)].

2023

The PHANGS-AstroSat Atlas of Nearby Star Forming Galaxies

Contributed talk at CASCA 2023 Annual General Meeting The Broad Spectrum of Canadian Astronomy, Canada [[Link](#)].

2020

Role of Thermal and Non-thermal Processes in the ISM of Magellanic Clouds.

H. Hassani, F. Tabatabaei, A. Hughes, J. Chastenet, S. Nasiri;

Contributed talk at Annual Meeting of the Astronomische Gesellschaft 2020 (AG) [[Link](#)].

2020

Role of Thermal and Non-thermal Processes in Evolution of Massive Star Formation in Magellanic Clouds.

H. Hassani, F. Tabatabaei, A. Hughes, J. Chastenet, S. Nasiri;

Contributed talk at Radio2020 & Glow Assembly [[Link](#)].

2020

Role of Thermal and Non-thermal Processes in the ISM of Magellanic Clouds.

H. Hassani, F. Tabatabaei, A. Hughes, J. Chastenet, S. Nasiri;

27th Physics Spring Conference at Institute for Research in Fundamental Sciences (IPM) [[Link](#)].

CONFERENCE POSTERS

2021

Star formation and magnetic field in the Magellanic Clouds.

H. Hassani, F. Tabatabaei, A. Hughes, et al.

EAS (European Astronomical Society Annual Meeting) 2021 Conference [[Link](#)].

2021

Star formation and magnetic field in the Magellanic Clouds.

H. Hassani, F. Tabatabaei, A. Hughes, et al.

A precursor view of the SKA Sky, SKA 2021 Conference [[Link](#)].

2020

Mixing of the thermal dust and gas in the ISM of Magellanic Clouds.

H. Hassani, F. Tabatabaei, A. Hughes, et al.

ESO Ground-based thermal infrared astronomy – past, present and future
[[Link](#)] [[Youtube](#)].

2020

Role of Thermal and Non-Thermal Processes in Evolution of Massive Star Formation in Magellanic Clouds based on Low-Frequency Radio Observations.

H. Hassani, F. Tabatabaei, A. Hughes, et al.

23rd Meeting on Research in Astronomy at IASBS [[Conference Page](#)].

HONORS AND AWARDS

- Alberta Graduate Excellence Scholarship (AGES) - \$12000.
- Dr Isaac Yakoub Isaac Graduate Scholarship in Physics - \$1000.
- Funding from the Canadian Space Agency for the PhD duration at the University of Alberta.
- IPM annual grant in Astronomy and Astrophysics for research project “Role of Thermal and Non-Thermal Processes in Evolution of Massive Star Formation in Magellanic Clouds” (From 2019-now).
- Fully-funded Ph.D. position in Physics and Astrophysics at Charles University, Czechia (46000\$), Declined.
- Top 10% in MSc University exam entrance (2018).
- Top 5% among Astronomy and Astrophysics MSc students at Shahid Beheshti University.

COMPUTER SKILLS

Operating Systems	MacOS, Windows, Linux.
Analysis	AIPS, DS9, OpenCV, ROOT, CIAO, CASA, GEANT4.
Programming	Python, Gfortran, BASH, MYSQL, PHP, HTML, JavaScript, AngularJS, Typescript, Hybrid Mobile App Development, IONIC (iOS & Android).

REFERENCES

Prof. E. Rosolowsky rosolowsky@ualberta.ca

Professor, 2-115 Centennial Ctr For Interdisciplinary SCS II 11335
Saskatchewan Drive NW, University of Alberta, Edmonton, Canada

Dr. A. Hughes Annie.Hughes@irap.omp.eu

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44346, F-31028 Toulouse cedex 4, France, +33561556649

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