

Shyam Harimohan Menon

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Education & Research Experience

- Oct. 2019 – **Doctor of Philosophy, Astronomy & Astrophysics**,
April 2023 Research School of Astronomy & Astrophysics, Australian National University,
(expected) Canberra, Australia
Thesis title: Impacts of Stellar Feedback on Star Formation
Advisors: A/Prof. Christoph Federrath & Prof. Mark Krumholz
- Aug. 2014 – **Integrated Bachelor and Master of Technology (Hons.), Engineering Physics**,
May 2019 Department of Physics, Indian Institute of Technology (BHU),
Varanasi, India
Thesis title: [HI Fragmentation in the Turbulent Interstellar Medium](#)
Advisor: A/Prof. Prasun Dutta
- May 2018 – **Summer Research Scholar**,
August 2019 University of Tübingen,
Tübingen, Germany
Project title: Impact of ionising radiation on the turbulent ISM
Advisor: Dr. Rolf Kuiper
- May 2017 – **MITACS Globalink Summer Internship**,
August 2017 University of Western Ontario,
London, Canada
Project title: Numerical Magneto-hydrodynamic simulations with the Athena code
Advisor: Prof. Shantanu Basu

Honors & Grants

- Oct 2021 ANU Olin J Eggen Research Award (\$2500 AUD),
Awarded to a PhD student for excellence in research
- Oct 2022 Vice-Chancellors Travel Grant (\$1500 AUD)
- March 2022 RSAA Travel Grant (\$7000 AUD)
- Oct 2019 ANU PhD Scholarship (\$29000 AUD p.a.)
- Oct 2019 ANU RSAA Supplementary Research Scholarship (\$ 2500 AUD p.a.)
- August 2018 Graduate Aptitude Test in Engineering (GATE) Postgraduate Scholarship
- May 2018 Eberhard Karls Universität Tübingen Summer Research Stipend
- May 2017 Mitacs Globalink Research Internship Award
- April 2013 Kishore Vaigyanik Protsahan Yojana (KVPY) Scholarship

Students Mentored

2 high school + 1 undergrad

- Jan – March **Mentor: Hank Hua (ANU undergraduate student)**,
2022 *Project title: Effects of spiral arms on the Two Point Correlation Function*

- March – Nov 2021 **Mentor, McNamara-Saunders Astronomical Teaching Telescopes Project,**
Mentored Luka Stevanovic, a grade 10 high school student on a project to measure the period of the I-Carinae Cepheid-variable star.
- March – Nov 2022 **Mentor, McNamara-Saunders Astronomical Teaching Telescopes Project,**
Mentored Tinura Abeyrathne, a grade 11 high school student on galaxy photometric color-morphology correlations.

Teaching Experience

- Oct 2022 **Guest Lecture, ASTR 4012 – Astrophysical Gas Dynamics,**
Guest Lecture on The Physics of Radiation Hydrodynamics
- Feb 2022 – present **Teaching Assistant, ASTR 1003 – Astronomy & Space,**
Respond to student queries on the course forum and assist in tutorials
- Aug – Dec 2018 **Teaching Assistant, PHY 1002 – Introduction to Engineering Electromagnetics,**
Duties involved one tutorial session per week and assistance in preparing tutorials for this undergraduate course
- Jan – May 2018 **Teaching Assistant, PHY 304 – Computational Physics,**
Duties involved one laboratory session per week, assisting students in implementing numerical methods and recipes taught in theory classes.
- March 2022 – present **Tutor, Canberra Tutors – High School Mathematics and Physics,**
Conduct private tutorial sessions for grade 11 & 12 students for their physics and mathematics coursework..

Synergistic Activities

- May 2022 – present **Member, PHANGS Collaboration,**
Working with the PHANGS collaboration on quantifying how star formation is distributed in galaxies.
- Feb 2022 – present **Chair, Seminars Committee, RSAA,**
Heading the seminars team; responsible for organising, hosting and inviting speakers for colloquia
- July 2021 – present **Reviewer, Monthly Notices of the Royal Astronomical Society (MNRAS),**
Total Reviewed Papers: 3
- Oct 2022 – present **Reviewer, Journal of Astrophysics and Astronomy (JOAA),**
Total Reviewed Papers: 1
- Sept 2020 – Feb 2022 **Member of Seminars Committee, RSAA,**
Hosted >30 external colloquia and seminars at RSAA
- Oct 2020 – present **Organiser, Star Formation Journal Club, RSAA,**
Established, and led a fortnightly journal club at RSAA discussing recent arXiv papers broadly in star formation
- Jan 2020–present **Member, Astronomical Society of Australia (ASA),**
Active student member of the ASA, and its theoretical astrophysics working group ANITA.
- Jan 2020–present **Student Representative, Work, Health & Safety Committee, RSAA,**
Formally representing the student cohort in ensuring a safe and healthy workplace.
- Sep 2021 – present **Standard Mental Health First Aider (MHFA),**
Accredited MHFA by Mental Health First Aid Australia

Publications

7 refereed publications: 6 first-author, 1 second-author

1. [Outflows Driven by Direct and Reprocessed Radiation Pressure in Massive Star Clusters](#)
Menon, S.H., Federrath, C. & Krumholz, M.R, 2022, Submitted to MNRAS
2. [Infrared Radiation Feedback Does Not Regulate Star Cluster Formation](#) [3 Citations]
Menon, S.H., Federrath, C. & Krumholz, M.R, 2022, MNRAS, 517, 1313
3. [VETAM: A scheme for radiation hydrodynamics with adaptive mesh refinement using the variable Eddington tensor method](#) [6 Citations]
Menon, S.H., Federrath, C., Krumholz, M.R, Kuiper, R., Wibking, B.D, Jung, M., 2022, MNRAS, 512, 401
4. [First extragalactic measurement of the turbulence driving parameter: ALMA observations of the star-forming region N159E in the Large Magellanic Cloud](#) [8 Citations]
Sharda, P., **Menon, S.H.**, Federrath, C., Krumholz, M. R., Beattie, J. R., Jameson, K. E., Tokuda, K., Burkhart, B., Crocker, R. M., Law, C. J., Seta, A., Gaetz, T. J., Pingel, N. M., Seitzzahl, I. R., Sano, H., and Fukui, Y., 2022, MNRAS, 509, 2180
5. [The dependence of the hierarchical distribution of star clusters on galactic environment](#) [6 Citations]
Menon, S.H., Grasha, K., Elmegreen, B.G., Federrath, C., Krumholz, M.R., Calzetti, D., Sánchez, N., Linden, S.T., Adamo, A., Messa, M., Cook, D.O., Dale, D.A., Grebel, E.K., Fumagalli, M., Sabbi, E., Johnson, K.E., Smith, L.J., Kennicutt, R.C., 2021, MNRAS, 507, 5542
6. [On the compressive nature of turbulence driven by ionizing feedback in the pillars of the Carina Nebula](#) [13 Citations]
Menon, S.H., Federrath, C., Klaassen, P., Kuiper, R., Reiter, M., 2021, MNRAS, 500, 1721
7. [On the turbulence driving mode of expanding H II regions](#) [13 Citations]
Menon, S.H., Federrath, C., Kuiper, R., 2020, MNRAS, 493, 4643

Seminars and Conference Talks

- Nov. 2022 **CIERA Theory Seminar, Northwestern University**
- Nov. 2022 **CCAPP Seminar, Ohio State University**
- Nov. 2022 **Lars Hernquist Group Meeting, Centre for Astrophysics, Harvard**
- Nov. 2022 **RandoAstro Seminar, Canadian Institute of Theoretical Astrophysics**
- Oct. 2022 **Coffee Seminar, Institute of Advanced Studies**
- Oct. 2022 **Galread Seminar, Princeton University**
- Oct. 2022 **Cosmology Seminar, MPA Garching**
- Aug. 2022 **Contributed Talk - Star Formation in Different Environments, Quy Nhon, Vietnam**
- July 2022 **Contributed Talk - A Holistic View of Stellar Feedback and Galaxy Evolution, Ascona**
- July 2022 **Planet and Star Formation (PSF) Seminar - Max-Planck-Institut for Astronomy, Heidelberg**
- June 2022 **Invited Seminar - Centre de Recherche Astrophysique de Lyon (CRAL)**
- June 2022 **Star Formation Seminar - CEA, Saclay**
- June 2022 **Poster - From Stars to Galaxies II, Gothenburg**
- June 2022 **Contributed Talk - NBIA Workshop on Radiation Transfer in Astrophysics, Copenhagen**
- Dec. 2021 **Invited Colloquium, Indian Institute of Astrophysics, Bangalore**

- Nov. 2021 **Contributed Talk, IAU Symposium 362 - The Predictive Power of Computational Astrophysics**
- May 2021 **Contributed Talk, ISM 2021, Beirut - Structure, Characteristic Scales, and Star Formation**
- Feb. 2021 **Contributed Talk, Australian National Institute for Theoretical Astrophysics science workshop**
- Sept. 2020 **Contributed Talk, Annual meeting of the Astronomische Gesellschaft, Germany**
- March 2020 **Invited Talk, Modelling High-Mass Stellar Feedback Workshop, Tübingen, Germany**
- Jan. 2020 **Australian National Institute for Theoretical Astrophysics science workshop**

Relevant Skills

Languages:, English, Malayalam, Tamil, Hindi, Sanskrit

Programming Experience:, C, C++, Fortran, Python, Mathematica, Bash

Codes/Softwares:, FLASH, PLUTO, PETSc, Hypre, Athena, yt, CUDA

Voluntary Training:, Mental Health First Aid, Understanding and Responding to Sexual Violence