

Shyam Harimohan Menon

Dept. of Physics & Astronomy
Rutgers University
NJ 08904, USA

✉ shyam.menon@rutgers.edu

🌐 <https://shm-1996.github.io>

🔗 [shm-1996](#)

🆔 0000-0001-5944-291X

Work & Research Experience

- Sep. 2023 – **Postdoctoral Researcher (Joint Rutgers-Flatiron Postdoctoral Fellow)**,
Present Dept. of Physics and Astronomy, Rutgers University, NY/NJ, USA
Advisors: Blakesley Burkhart & Rachel Somerville
- 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

Education

- Oct. 2019 – **Doctor of Philosophy, Astronomy & Astrophysics**,
Sep 2023 Research School of Astronomy & Astrophysics, Australian National University,
Canberra, Australia
Thesis title: The interplay of star formation and radiation feedback in the ISM
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

Honors & Grants

- Feb 2023 Joint Rutgers-Flatiron Postdoctoral Fellowship
- Feb 2023 CCAPP Postdoctoral Fellowship (declined)
- Feb 2023 CITA National Fellowship (declined)
- 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 undergrad + 2 high school

- March 2023 – **Dhaval Sai Srinivas, BS-MS student at IISER-Kolkata,**
present *Project title: The escape fraction of ionising photons in turbulent media*
- Jan – March 2022 **Hank Hua, undergraduate student at ANU,**
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: ApJ, MNRAS, J. Comput. Phys., JOAA,**
Papers Reviewed: 6
- Sept 2020 – Feb 2022 **Member of Seminars Committee, RSAA,**
Hosted >30 external colloquia and seminars at RSAA

- Oct 2020 – **Organiser, Star Formation Journal Club, RSAA**,
 present *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 – **Standard Mental Health First Aider (MHFA)**,
 present *Accredited MHFA by Mental Health First Aid Australia*

Publications

8 refereed publications: 6 first-author, 1 second-author, 1 collaborator

1. [Outflows Driven by Direct and Reprocessed Radiation Pressure in Massive Star Clusters](#) [10 Citations]
Menon, S.H., Federrath, C. & Krumholz, M.R, 2023, *MNRAS*, 521, 5160
2. [Infrared Radiation Feedback Does Not Regulate Star Cluster Formation](#) [12 Citations]
Menon, S.H., Federrath, C. & Krumholz, M.R, 2022, *MNRAS*, 517, 1313
3. [VETTAM: A scheme for radiation hydrodynamics with adaptive mesh refinement using the variable Eddington tensor method](#) [10 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](#) [15 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](#) [10 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](#) [21 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](#) [19 Citations]
Menon, S.H., Federrath, C., Kuiper, R., 2020, *MNRAS*, 493, 4643
8. [Hidden Gems on a Ring: Infant Massive Clusters and Their Formation Timeline Unveiled by ALMA, HST, and JWST in NGC 3351](#) [1 Citation]
 Sun, Jiayi; He, Hao,.. incl. **Menon, S.H.** 2024, *ApJ*, accepted

Seminars and Conference Talks

- April 2024 **Contributed Talk: STScI Spring Symposium, Baltimore**
- March 2024 **Invited Talk: ISM Salon, CCA Flatiron Institute**
- March 2024 **Invited Talk: Radiation Transport in Astrophysics, Heidelberg**
- Feb. 2024 **Contributed Talk: Building Galaxies From Scratch, Vienna**
- July 2023 **Colloquium: Tata Institute of Fundamental Research, Mumbai**

- July 2023 **Seminar: Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune**
- 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