

# Ankush Mandal

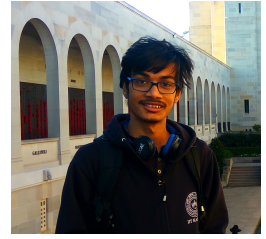
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## Research Interest

- 📖 Effect of active galactic nuclei (AGN) driven outflow on the host galaxy's interstellar medium, with particular focus on turbulence and star formation.
- 📖 Subgrid modelling of turbulence-regulated star formation mechanism in galactic scale simulations.
- 📖 Development of numerical schemes for computational fluid dynamics.
- 📖 High-performance computing.

## Education

- 2019 – present     📖 **Ph.D., IUCAA in Astrophysics.**  
Thesis title: *Modelling the impact of AGN-driven outflows on the star formation activity in galaxies.*
- 2017 – 2019     📖 **M.Sc., Indian Institute of Technology, Kanpur in Physics**  
Thesis title: *One-point probability distribution function from spherical collapse in different cosmology.*
- 2014 – 2017     📖 **B.Sc., Ramakrishna Mission Residential Collage, Narendrapur, Kolkata in Physics.**  
Gold medalist.


## Research Publications

### First Author Articles

- 1 \* **A. Mandal**, D. Mukherjee, and A. Mignone, “**A self-gravity module for the PLUTO code**,” *The Astrophysical Journal Supplement Series*, vol. 268, no. 40, 2023. 🔗 DOI: 10.3847/1538-4365/aced0a.
- 2 \* **A. Mandal**, D. Mukherjee, C. Federrath, N. P. H. Nesvadba, G. V. Bicknell, A. Y. Wagner, and M. Meenakshi, “**Impact of relativistic jets on the star formation rate: a turbulence-regulated framework**,” *Monthly Notices of the Royal Astronomical Society*, vol. 508, no. 4, pp. 4738–4757, Dec. 2021. 🔗 DOI: 10.1093/mnras/stab2822.
- 3 \* **A. Mandal**, C. Federrath, and B. Körtgen, “**Molecular cloud formation by compression of magnetized turbulent gas subjected to radiative cooling**,” *Monthly Notices of the Royal Astronomical Society*, vol. 493, no. 3, pp. 3098–3113, Apr. 2020. 🔗 DOI: 10.1093/mnras/staa468.
- 4 **A. Mandal** and S. Nadkarni-Ghosh, “**One-point probability distribution function from spherical collapse: early dark energy versus  $\Lambda$ CDM**,” *Monthly Notices of the Royal Astronomical Society*, vol. 498, 2020. 🔗 DOI: 10.1093/mnras/staa2073.

### Articles in Collaboration






- 1 M. Meenakshi, D. Mukherjee, A. Y. Wagner, N. P. H. Nesvadba, G. V. Bicknell, R. Morganti, R. M. J. Janssen, R. S. Sutherland, and **A. Mandal**, “**Modelling observable signatures of jet-ISM interaction: thermal emission and gas kinematics**,” *Monthly Notices of the Royal Astronomical Society*, vol. 516, 2022. 🔗 DOI: 10.1093/mnras/stac2251.

- 2 N. P. H. Nesvadba, A. Y. Wagner, D. Mukherjee, **A. Mandal**, R. M. J. Janssen, H. Zovaro, N. Neumayer, J. Bagchi, and G. Bicknell, “**Jet-driven AGN feedback on molecular gas and low star-formation efficiency in a massive local spiral galaxy with a bright X-ray halo**,” *Astronomy and Astrophysics*, vol. 654, 2021.  DOI: 10.1051/0004-6361/202140544.

## Upcoming Articles






- 1 **A. Mandal**, D. Mukherjee, C. Federrath, G. Bicknell, N. Nesvadba, and A. Mignone, “**In-situ formation of stars inside AGN-driven outflows**,” (*in preparation*),
- 2 **A. Mandal**, D. Mukherjee, C. Federrath, G. Bicknell, N. Nesvadba, and A. Mignone, “**Probing the role of self-gravity in clouds impacted by AGN-driven winds**,” (*submitted to MNRAS*),

## Skills





Languages	 English, Bengali, Hindi.
Coding	 C, Python, Fortran.
Simulation code	 PLUTO, FLASH.
Visualization	 Matplotlib, VisIt, yt.
Software	 Mathematica, L <sup>A</sup> T <sub>E</sub> X, MS Office.

## Miscellaneous Experience

### Awards and Achievements

2019-2024	 <b>Junior and Senior Research Fellowship</b> awarded by CSIR, India.
May 2019 - July 2019	 <b>Future Research Talent Travel Award</b> , Australian National University for collaborative research.
2017	 <b>Gold Medal</b> , Ramakrishna Mission Residential College, Narendrapur for being the overall topper in undergraduate study.
July 2014 - June 2019	 <b>Inspire Fellowship</b> , Department of Science and Technology (DST), Government of India.
2012	 <b>Merit-cum-means scholarship</b> , Government of West Bengal.

## Talks

-  “Impact of relativistic jets on the star formation rate: a turbulence-regulated framework”, 31<sup>st</sup> Texas Symposium, 12 - 16 Sep, 2022, Prague, Czech Republic.
-  “Effect of AGN-driven outflows on the star formation in galaxies”, Galflows 2023, 2-5 Feb, 2023, IUCAA, Pune, India.
-  “How do outflows from the AGN affect the star formation activity inside the host galaxy?”, 17<sup>th</sup> Oct, 2023, MPA, Garching, Germany.
-  “How do outflows from the AGN affect the star formation activity inside the host galaxy?”, Lorentz Centre Workshop@The importance of jet-induced feedback on galaxy scales, 22-27 Oct, 2023, Lorentz Centre, Leiden, Netherlands.

## References

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