

Academic Short CV: AYAN BISWAS

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Nationality: Indian; **Date of Birth:** 16 Dec. 1996

Education:

- 2022- Present: Ph.D., Department of Physics, Engineering Physics and Astronomy, Queen's University, Canada, Supervisor- Dr. Gregg A. Wade
Research Assistant, Physics Dept., Royal Military College of Canada.
- 2018-2022: I.Ph.D. (M.Sc. + 2 yrs) Astrophysics, National Centre for Radio Astrophysics, Tata Institute of Fundamental Research). Project Guide- Dr. Poonam Chandra.
- 2018–2020: M.Sc. course work and Graduate School, Pune University, IUCAA & NCRA
- 2015– 2018: B.Sc. Physics, Scottish Church College, Calcutta University.

Research Interests:

- ❖ **Ph.D. topic:** Multi-wavelength observation and modeling of magnetic massive stars.
- ❖ **Ph.D. topic:** Aspects of binarity in the life and afterlife of magnetic stars.
- ❖ Radio Emission from exoplanetary systems.
- ❖ Radio and X-ray emission from stripped envelope supernovae.
- ❖ Low-frequency study of solar corona.
- ❖ Multiwavelength study of binary AGNs.

Academic Fellowships:

- ❖ Research Grant from Queen's University + RMC (30K CAD/year for 4 year duration).
- ❖ Junior Research Fellowship(JRF). Dept of Atomic Energy, Govt of India. 2018-present.
- ❖ DST-Inspire Scholarship. Dept of Science and Technology, Govt. of India, 2015-2019.

Awarded Telescope Time:

- ❖ **Radio:** 29 proposals accepted for the uGMRT, MeerKAT, ATCA, and VLA (11 as PI, 18 as Co-I).
- ❖ **Radio:** 518 hours of telescope time in uGMRT (210 hours as PI, 308 hours as Co-I).
- ❖ **Radio:** 9 hrs of VLA obs. as a PI, 244 hrs. (Co-I); 14 hrs. of MeerKAT obs. (PI), 48 hrs of ATNF (Co-I)
- ❖ **X-ray:** 110 kilo-seconds (30 hours) of telescope time in the XMM-Newton telescope as a PI (Cycle 21).
- ❖ **X-ray:** 80 kilo-seconds of telescope time in the Chandra telescope as Co-I (Cycle 24).
- ❖ **Optical:** ~10 hours PI proposal accepted in CFHT (ESPaDOnS).
- ❖ **Optical:** PI proposals accepted in 3.6 m Devasthal Optical Telescope, Himalayan Chandra Telescope.

Conference and Workshops:

- ❖ "European Astronomical Society Annual Meeting", Kraków, Poland, Jul 10-14, 2023.
- ❖ "Astrophysical Polarimetry in the Time-Domain Era", INAF, Lecco, Italy, Aug 27- Sep 1, 2022
- ❖ "International Conference on OBA Stars", St. Petersburg University, Russia, April 26-30, 2021.
- ❖ "8th VLA Data Reduction Workshop", Virtually in Socorro, New Mexico, 15 March - 1 April, 2021.
- ❖ "MOBSTER virtual international conference", organized by University of Delaware, 2020.

- ❖ “International Pulsar Timing Array (IPTA)”, June 2019, NCRA, Pune.
- ❖ Workshop on Pulsar Timing, Student Week, IPTA, June 2019, IISER Pune, Pune.
- ❖ “Meter Wavelength Sky-II”, International conference on Radio Astronomy, 2019, NCRA.
- ❖ “Gravity on Different Length Scales”, National Conference, February 2019, IACS, Kolkata.
- ❖ Workshop on Statistical Mechanics, organized by SINP, Scottish Church College, Kolkata., 2018

Talks:

- ❖ In "EAS Annual Meeting" conference, July 14, 2023; titled "Magnetospheric Interaction in the Unique Doubly-Magnetic Close Binary- Epsilon Lupi".
- ❖ In “Astrophysical Polarimetry in the Time-Domain Era” conference; August 30, 2022; titled “Detection of Magnetospheric Interaction in Magnetic Hot Binary”.
- ❖ In STARS-2021 (St. Petersburg, Russia): April, 2021, titled “First Extensive Radio Study of Two Unique Magnetic Binary Stellar Systems’
- ❖ In MOBSTER international conference, July 15, 2020, titled ”Understanding The Unique Binary - Plaskett’s Star”; doi: [10.5281/zenodo.5534853](https://doi.org/10.5281/zenodo.5534853)

Publications:

- ❖ **Biswas, A.**, et al. "*Discovery of Magnetospheric Interactions in the Doubly-Magnetic Hot Binary ϵ Lupi*"; 2023d, MNRAS, 523, 5155, doi: [10.1093/mnras/stad1756](https://doi.org/10.1093/mnras/stad1756)
- ❖ Shultz, M. E., Owocki, S. P., ud-Doula, A., **Biswas, A.**, et al. “*MOBSTER - VI. The crucial influence of rotation on the radio magnetospheres of hot stars*”. MNRAS, V-513, Issue 1, pp.1429-1448, June, 2022. doi: [10.1093/mnras/stac136](https://doi.org/10.1093/mnras/stac136)
- ❖ Kansabanik, D., Mondal, S., Oberoi, D., **Biswas, A.**, & Bhunia, S. “*Robust Absolute Solar Flux Density Calibration for the Murchison Widefield Array*”; 2022a, ApJ, 927, 17, doi: [10.3847/1538-4357/ac4bba](https://doi.org/10.3847/1538-4357/ac4bba)
- ❖ Mondal, S., Oberoi, D., & **Biswas, A.**, “*Study of radio transients from the quiet Sun during an extremely quiet time*”; 2023a ApJ, 943, 2, 122, February; doi: [10.3847/1538-4357/aca899](https://doi.org/10.3847/1538-4357/aca899)
- ❖ Bawaji, S., Alam, U., Oberoi, D., Mondal, S., & **Biswas, A.**, "*A machine learning based algorithm for detecting Weak Impulsive Narrowband Quiet Sun Emissions and characterizing their morphology*"; 2023e, ApJ, 954, 17, doi: [10.3847/1538-4357/ace042](https://doi.org/10.3847/1538-4357/ace042)
- ❖ Mondal, S., Oberoi, D., **Biswas, A.**, & Kansabanik, D., "*Characterizing the Spectral Structure of Weak Impulsive Narrowband Quiet Sun Emissions*"; 2023c, ApJ, 953, 7, doi: [10.3847/1538-4357/acdf4f](https://doi.org/10.3847/1538-4357/acdf4f)
- ❖ Das, B., Petit, V., Nazé, Y., Corcoran, M. F., Cohen, D. H., **Biswas, A.**, et al. "*Discovery of extraordinary X-ray emission from magnetospheric interaction in the unique binary stellar system ϵ Lupi*", 2023b, MNRAS, 522, 5805, doi: [10.1093/mnras/stad1276](https://doi.org/10.1093/mnras/stad1276)
- ❖ Trigilio, C., **Biswas, A.**, et al. "*Inferring magnetic fields in exoplanets through Auroral Radio Emission: the case of YZCeti b*", 2023f submitted to ApJL; doi: [10.48550/arXiv.2305.00809](https://doi.org/10.48550/arXiv.2305.00809)

Conference Proceedings & Others:

- ❖ **Biswas, A.**, Chandra, P., “*Understanding The Unique Binary - Plaskett's Star*”, Proceedings of the MOBSTER-1 virtual conference held 12-17 July 2020, id.31; doi: [10.5281/zenodo.5534853](https://doi.org/10.5281/zenodo.5534853)
- ❖ Oberoi, D., Mondal, S., Sharma, R., Bawaji, S., Alam, U., & **Biswas, A.**, "*Understanding Weak Impulsive Narrowband Quiet Sun Emissions (WINQSEs)*" 2023, IAU Proceedings; doi: [10.1017/S1743921322005099](https://doi.org/10.1017/S1743921322005099)
- ❖ Mondal, S., Oberoi, D., **Biswas, A.**, et al., “*First radio evidence for ubiquitous magnetic reconnections and impulsive heating in the quiet solar corona*”, 23rd EGU General Assembly, 2021, doi: [10.5194/egusphere-egu21-14168](https://doi.org/10.5194/egusphere-egu21-14168)

- ❖ Mondal, S., Oberoi, D., **Biswas, A.**, & Kansabanik, D., “*Characterising the Properties of Weak Impulsive Narrowband Quiet Sun Emissions and Their Relationship with EUV Bursts*”, AGU Fall Meeting 2021, id. SH15E-2059; bibcode: [2021AGUFMSH15E2059M](#)
- ❖ Alam, U., et al. (including **Biswas, A.**) "*Applying Unsupervised Machine Learning to Characterize Weak Impulsive Narrowband Quiet Sun Emissions in the Radio Spectrum*"; AGU Fall Meeting 2021, id. SH12B-06., bibcode: [2021AGUFMSH12B..06A](#)
- ❖ Shultz, M. E., Owocki, S. P., ud-Doula, A., **Biswas, A.**, et al., “*VizieR Online Data Catalog: MOBSTER. VI. Radio magnetospheres of hot stars*”, VizieR On-line Data Catalog: J/MNRAS/513/1429. Originally published in: 2022MNRAS.513.1429S; bibcode: [2022yCat..75131429S](#)
- ❖ Chandra, P., Bera, A., **Biswas, A.**, Mondal, S., & Nayana, A. J, "*uGMRT radio upper limits on hydrogen-poor super-luminous supernova SN 2017ens*" The Astronomer's Telegram, No. 14448; bibcode: [2021ATel14448....1C](#)

Other Achievements:

- ❖ Pre-selected for PhD at Inter University Centre for Astronomy and Astrophysics (IUCAA) through INAT exam, in 2017.
- ❖ Selected for scholarship and project at Australian National University (ANU), 2019.
- ❖ Selected for M.Sc. at Indian Institute of Technology, Kharagpur (and Bombay) through JAM exam.

Teaching Assistantship:

- ❖ 2022 Fall: APSC 102: Experimentation and design; APSC 111: Classical Mechanics
- ❖ 2023 Winter: ASTR 101: Astronomy I; ENPH/PHYS 372 Thermodynamics
- ❖ 2023 Summer: PHYS 118: Basic Physics (ASO)
- ❖ 20223 Fall: APSC 102: Experimentation and design; APSC 111: Classical Mechanics

Language and Software:

- ❖ Communication Language: English, Bengali, Hindi.
- ❖ Familiar OS: Windows, Ubuntu, Debian, CentOS, MacOS
- ❖ Diploma in Information Technology Application in 2015.
- ❖ Programming Language: Python, Python3, Fortran.

Expertises:

- ❖ Expertise in the general radio astronomy data reduction software CASA.
- ❖ Familiar with X-ray data analysis softwares such as CIAO, XSPEC, XMM-SAS etc..
- ❖ Beginner level knowledge in optical astronomy.

Contact Info:

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