Sapna Mishra Curriculum Vitae

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Academic Positions

Space Telescope Science Institute — Baltimore, USA
Postdoctoral Fellow — 2023 - present

Inter-University Centre for Astronomy & Astrophysics — Pune, India
Postdoctoral Fellow — 2021 - 2023

Aryabhatta Research Institute of observational sciencES — Nainital, India
Post Thesis Submission Fellow (PTSF) — 2020 - 2021

Education

Aryabhatta Research Institute of observational sciencES — Nainital, India
Ph. D — 2015 - 2020
– Thesis: Probing environment of AGNs based on their feedback processes
– Advisor: Prof. Hum Chand
– Degree Awarded: July 2021

Aryabhatta Research Institute of observational sciencES — Nainital, India
Pre-Ph. D Course work — 2014 - 2015

Department of Physics & Astrophysics, Delhi University — Delhi, India
Master of Science, Physics and Astronomy — 2012 - 2014

Miranda House College, Delhi University — Delhi, India
Bachelor of Science, Physics honors — 2012 - 2014

Research Interests

§5. The circumgalactic medium (CGM) of the Large Magellanic Cloud (LMC), understanding the evolution of galaxies in the Local Group (1 first author paper).

§4. Study the outskirts of the galaxy clusters to understand the gas inflow/outflow around these massive systems both at low and high redshifts (2 first author papers).

§3. The CGM of cluster galaxies to understand the environmental effects such as ram-pressure, overshooting and pre-processing (1 first author papers).

§2. Study the local environment of the high redshift (z: 2-4) quasars from the spectral variation of the associated absorption seen in the broad absorption line quasars (BALQSOs) (1 first author papers), and identifying if there is a blazar-like subclass, termed broad absorption line blazars (2 first-author papers).

§1. Variation of dN/dz (number density of the intervening absorbers per redshift) with different background objects such as blazars, GRBs, etc (1 first author paper).

Telescope time and grants as Principle Investigator

HST/COS, Cycle 32, "Probing the front-side of the Circumgalactic Medium of the Large Magellanic Cloud" (PID: GO-17757): 29 orbits

ESO/FORS2, Cycle P109, "MgII tomography of cluster outskirts using 11 background quasars" (PID: 109.23G6)

Devasthal Optical Telescope (DOT), 3.6m international telescope, India, DOT-2022-C1: "NIR spectroscopy of post-starburst galaxies to probe obscured star formation and stellar population", PID: DOT-2022-C1-P18

DOT, DOT-2021-C1,"Probing connection between the emission and absorption outflows in IR-bright BAL quasars", PID: DOT-2021-C1-P32.

DOT, DOT-2018-C1, "Resolving the narrow emission line region of the quadruply imaged quasar: RXS J113155.4-123155", PID: P325-2018A.

DOT, DOT-2017-C1, "Infrared properties of the jet dominated BALQSOs", PID: P31-2017A.

Himalayan Chandra Telescope (HCT), 2m national telescope, India, HCT-2021-C2, "Probing the spectral variability of X-Ray bright high ionization Broad absorption line Quasars", PID: HCT-2021-C2-P56.

HCT, HCT-2021-C1: "Intranight monitoring of blazar counter parts of BAL quasars, PID: HCT-2021-C1-P52.

HCT, 3 proposals in various cycles on "Probing environment of emerging Broad absorption line quasars", PIDs: HCT-2020-C2-P27, HCT-2020-C1-P170, HCT-2019-C3-P117.

Service, Mentoring, Teaching

Panel Support Scientist (PSS): moderated the TAC of HST Cycle, 32.

Panel Support Scientist (PSS): moderated the TAC of JWST, Cycle, 3.

Co-Organize: HotSci, 2024, colloquium series at STScI.

Served as a service observer at the Devasthal Optical Telescope (3.6m) during the COVID period, conducting observations on behalf of proposers.

Given optical data reduction training in ARIES Training School in Observational Astronomy (ATSOA), 2016, 2017, 2018, 2019, ARIES, Nainital, India.

Given high-resolution UVES spectra data reduction training in TMT workshop on large telescope data handling, Jan 15-27, 2017, IUCAA, Pune, INDIA.

Guided two master project students on the photometric and spectroscopic data reduction techniques during my Phd.

Scientific Talks

§20. ACP, Aspen, "Holistic picture of CGM", September 2024.

§19. CfA, Harvard, "Multiphase Madness", August 2024.

§18. Space Telescope Science Institute, "Spring Symposium", April 2024.

§17. Flatiron Institute, "Milky Clouds over Manhattan", February 2024.

§16. Space Telescope Science Institute, "Galaxy/AGN Journal Club", January 2024.

§15. Space Telescope Science Institute, "CoolSci", January 2024.

§14. IUCAA, India, "Galactic inflows and outflows on all Scales", February 2023

§13. Università Milano-Bicocca, Milan, "What matter(s) around galaxies", September 2022

§12. IUCAA, India, "Monthly Last Friday Talk series", January, 2022

§11. IISER, Tirupati, India, "Astronomical Society of India", Poster, March 2020.

§10. Department of Physics & Astrophysics, Delhi University, "Departmental Talk", October 2019.

§9. IUCAA, India, "Recent Trends in the study of Compact Objects Theory and Observations (RETCO-IV)', Poster, April 2019.

§8. Institut d'Astrophysique de Paris(IAP), Paris, FR, "massive black holes in evolving galaxies: from quasars to quiescence", Poster/Flash Talk, May 2018.

§7. Dèpartement d'Astrophysique, Gèophysique, Universitè de Liège, Liège, Belgium, December 2017.

§6. ARIES, India, "ARIES Training School in Observational Astronomy (ATSOA)", March 2018, March 2017, February 2016.

§5. ARIES, India, "Tuesday Seminar series", February 2017.

§4. IUCAA, India, "Thirty Meter Telescope (TMT) Conference", January 2017.

§3. ARIES, India, "Belgo-Indian Network for Astronomy and Astrophysics (BINA)", Poster/Flash Talk, November 2016.

§2. ARIES, India, "Tuesday Seminar series", May 2016.

§1. IUCAA, India, "Cloudy Workshop", September 2015.

Awards and Distinctions

2023: FONDECYT Chilean fellowship.

2014: All India "Graduate Aptitude Test in Engineering" (GATE), India.

2012: All India "Joint Admission Test for Master (JAM)", India

2012: Selected as top 10% graduate level student in Delhi University.

List of publications

First-author publications

§7. **Mishra, Sapna**; Fox, Andrew; Krishnarao, Dhanesh; Lucchini, Scott; D'Onghia, Elena; Cashman, Frances; Barger, Kathleen; Lehner, Nicolas; Tumlinson, Jason, 2024, ApJ Letters (accepted), arXiv:2410.11960, *"The Truncated Circumgalactic Medium of the Large Magellanic Cloud"*.

§6. **Mishra, Sapna**, *Muzahid Sowgat, Dutta Sayak, Srianand, Raghunathan, Charlton, Jane, 2024, MNRAS, 527, 3858, "Characterizing cool, neutral gas, and ionized metals in the outskirts of low-z galaxy clusters"*.

§5. **Mishra, Sapna**, & Muzahid Sowgat, 2022, ApJ, 933, 229, *"Discovery of a Cool, Metal-rich Gas Reservoir in the Outskirts of $z \approx 0.5$ Clusters"*.

§4. **Mishra, Sapna**, Gopal-Krishna, Chand H., Chand K., Kumar A., Negi V., 2021, MNRAS Letters, 2021, 507, 46, *"A search for blazar activity in broad-absorption-line quasars"*.

§3. **Mishra, Sapna**, Vivek M., Chand H., Joshi R, 2021, MNRAS, 504, 3187, *"Appearance versus disappearance of broad absorption line troughs in quasars"*.

§2. **Mishra, Sapna**, Krishna G, Chand H, Chand K, Ojha V, 2019, MNRAS Letters, 489, L42, *"Are there broad absorption line blazars?"*.

§1. **Mishra Sapna**, Chand H, Krishna G, Joshi R., Shchekinov Y. A., Fatkhullin T. A., 2018, MNRAS, 473, 5154, *"On the incidence of MgII absorbers along the blazar sightlines"*.

Co-author publications

§5. Dutta, Sayak; Muzahid, Sowgat; Schaye, Joop; **Mishra, Sapna**; Chen, Hsiao-Wen; Johnson, Sean; Wisotzki, Lutz; Cantalupo, Sebastiano, 2024, MNRAS, 528, 3745, *"MUSEQuBES: mapping the distribution of neutral hydrogen around low-redshift galaxies"*.

§4. Gopal-Krishna, Chand K., Chand H., Negi V., **Mishra, Sapna**, Britzen S., Bisht S., 2023, MNRAS, 518, 13, *"Intranight optical variability of low-mass active galactic nuclei: a pointer to blazar-like activity"*.

§3. Kumar B., Negi V., Ailawadhi B., **Mishra, Sapna**, Pradhan B., Misra K., Hickson P., Surdej J., 2022, JAA, 43, 10, *"Upcoming 4m ILMT facility and data reduction pipeline testing"*.

§2. Chand K., Gopal-Krishna, Omar A., Chand H., **Mishra, Sapna**, Bisht S., Britzen S, 2022, MNRAS, 511, 13, *"Intranight variability of ultraviolet emission from powerful blazars"*.

§1. Ojha V., Chand H., Gopal-Krishna, **Mishra, Sapna**, Chand, K, MNRAS, 2020, 493, 3642, *"Comparative intra-night optical variability of X-ray and γ-ray detected narrow-line Seyfert 1 galaxies"*.

Conference Proceedings & GCN Circular

§4. Kumar, Amit; Gupta, Rahul; Dastidar, Raya; Dimple; Ghosh, Ankur; **Mishra, Sapna**; et al. 2020GCN.29030....1K, *"GRB 201203A: 1.3m DFOT, optical upper limits"*.

§3. Kumar A., Aryan, A., Pandey S.B., **Mishra, Sapna**; et al. 2020GCN.27564....1K, *"GRB 200412B: Optical afterglow detection with 1.3m DFOT"*.

§2. **Sapna Mishra**, H. Chand, et al. 2018, Bulletin de la Société Royale des Sciences de Liège, 87, 325, *"Revisiting the incidence of Mg II absorbers along the blazar sightlines"*.

§1. Hum Chand, Suvendu Rakshit, Priyanka Jalan, Vineet Ojha, Raghunathan Srianand, Mariappan Vivek, **Sapna Mishra** et al. 2018, Bulletin de la Soci1́été Royale des Sciences de Liège, 87, 291, *"Probing the central engine and environment of AGN using ARIES 1.3-m and 3.6-m telescopes"*.
