Ashwani Pandey

Ph.D. in Physics (Astronomy & Astrophysics)

Center for Theoretical Physics PAS
Al. Lotników 32/46,
02-668 Warsaw, Poland

ashwanitapan@gmail.com
Mob: +48579242688
ORCID: **0000-0003-3820-0887**

Area of Research

Extragalactic astronomy, high energy (X-rays/gamma-rays) astrophysics: active galactic nuclei (AGN), relativistic jets, blazars; Cloudy simulations

Research Experience

Nov 19, 2022–present	**Postdoctoral Fellow with Prof Bozena Czerny** Center for Theoretical Physics PAS, Warsaw, Poland
Jan 7, 2021–Nov 15, 2022	**Postdoctoral Fellow with Prof C. S. Stalin** Indian Institute of Astrophysics (IIA), Bengaluru, India
Jun 25, 2019–Jan 6, 2021	**Postdoctoral Fellow** Aryabhatta Research Institute of Observational Sciences (ARIES), Nainital, India

Education

2014–2019 (Degree awarded on Nov 1, 2019)	**Ph.D. in Physics (Astronomy & Astrophysics)** ARIES/Deen Dayal Upadhyaya (DDU) Gorakhpur University, U.P., India Title: **Multi-wavelength Studies of TeV Blazars** Supervisor: Dr. Alok Chandra Gupta (Scientist-F, ARIES, Nainital, India) Co-supervisor: Prof. S.N. Tiwari (DoP, DDU Gorakhpur University)
2011–2013	**Master of Science (M. Sc.) in Physics** Kumaun University, Nainital, U.K., India
2009-2010	**Bachelor of Education (B. Ed.)** Kumaun University, Nainital, U.K., India
2005–2008	**Bachelor of Science (B. Sc.) in Physics, Chemistry & Mathematics** Kumaun University, Nainital, U.K., India

Expertise

- **`CLOUDY`** photoionization code for simulations of astronomical clouds and their spectra
- Programming: **Python, IDL, Linux shell programming, HTML/CSS.**
- Version control system: **Git, Github**
- Applications
  - *Fermi* (γ−ray) data analysis software: **Fermitools, Fermipy**.
  - X-ray data analysis softwares of several X-ray satellites e.g. *NuSTAR, Chandra, XMM-Newton, Swift, NICER*: **HeaSoft, SAS, CIAO, FTOOLS, XSPEC, DS9**.
  - Optical data analysis software: **IRAF/DOPHOT**
  - Broadband SED modelling package: **JetSeT**

  - Text editors: **LaTeX, Visual Studio code, Libra/Microsoft Office**

- Experience in using High Performance Computing (HPC).
- Preliminary understanding of machine learning concepts and algorithms.

Observing experience

Successfully secured observing time for multiple projects through competitive proposal processes and conducted extensive observations utilizing the following telescopes for a range of astronomical investigations, including photometry, spectroscopy, and polarization studies.

- 3.6-m Devasthal Optical Telescope (DOT), ARIES, Nainital, India
- 2-m Himalayan Chandra Telescope (HCT), IIA, Hanle, India
- 1.3-m Devasthal Fast Optical Telescope (DFOT), ARIES, Nainital, India
- 1.04-m Sampurnanand Telescope (ST), ARIES, Nainital, India

Publications in Peer-reviewed Journals

27. *"New theoretical Fe II templates for bright quasars"*
Ashwani Pandey, Mary Loli Martínez-Aldama, Bożena Czerny, Swayamtrupta Panda, and Michal Zajaček
Astrophysical Journal Supplement Series, 2024 (under review).

26. *"Investigation of the correlation between optical and $\gamma-$ray flux variation in the blazar Ton 599"*
Bhoomika Rajput, Amit Kumar Mandal, **Ashwani Pandey**, C. S. Stalin, Walter Max-Moerbeck, and Blesson Mathew
Monthly Notices of the Royal Astronomical Society, 527, 11900–11914, 2024.

25. *"UV Fe II emission model and its relation to broad-line time delays for HE 0413-4031 observed in the optical and IR bands"*
Michal Zajaček, S. Panda, **A. Pandey**, R. Prince, A. Rodriguez-Ardila, V. Jaiswal, B. Czerny, K. Hryniewicz, M. Urbanowicz, P. Trzcionkowski, M. Sniegowska, Z. Fałkowska, M. L. Martinez-Aldama, N. Werner
Astronomy & Astrophysics, 2023 (accepted for publication).

24. *"Origin of broadband emission from the transition blazar B2 1308+326"*
Ashwani Pandey, Pankaj Kushwaha, Paul J. Wiita, Raj Prince, Bozena Czerny, and C. S. Stalin
Astronomy & Astrophysics, 681, 116, 2024.

23. *"Broad-line region in active galactic nuclei: Dusty or dustless?"*
Ashwani Pandey, Bozena Czerny, Swayamtrupta Panda, Raj Prince, Vikram Kumar Jaiswal, and Mary Loli Martinez–Aldama
Astronomy & Astrophysics, 680, 102, 2023.

22. *"Investigating the origin of optical flares from TeV blazar S4 0954+65"*
Ashwani Pandey, Rumen Bachev, Bozena Czerny, Paul J. Wiita, Alok C. Gupta, Anton Strigachev, and Adam Popowicz
Astronomy & Astrophysics, 679, 28, 2023.

21. *"Wavelength-resolved reverberation mapping of intermediate-redshift quasars HE 0413-4031 and HE 0435-4312: Dissecting Mg II, optical Fe II, and UV Fe II emission regions"*
R. Prince, M. Zajacek, S. Panda, K. Hryniewicz, V.K. Jaiswal, B. Czerny et al. (including **Ashwani Pandey**)
Astronomy & Astrophysics, 678, 189, 2023.

20. *"Dusty plasma in active galactic nuclei"*,
B. Czerny, M. Zajaček, M. Naddaf, M. Sniegowska, S. Panda, A. Różanska, T. Adhikari, **A. Pandey**, et al.,
European Physical Journal D, 77, 56, 2023

19. *"Detection of minute-timescale $\gamma-$ray variability in BL Lacertae by Fermi-LAT"*,
Ashwani Pandey*, and C. S. Stalin,
Astronomy & Astrophysics, 668, 152, 2022.

18. *"Study of correlation between optical flux and polarization variations in BL Lac objects"*,
Bhoomika Rajput, **Ashwani Pandey**, C. S. Stalin, and Blesson Mathew
Monthly Notices of the Royal Astronomical Society, 517, 3236–3256, 2022.

17. *"Characterizing the optical nature of the blazar S5 1803+784 during its 2020 flare"*,
A. Agarwal, **Ashwani Pandey**, Aykut Özdönmez, Ergün Ege, Avik Kumar Das, Volkan Karakulak
Astrophysical Journal, 933, 42, 2022.

16. *"Variable mass accretion and failed wind explain changing look phenomena in NGC 1365"*,
Santanu Mondal, Tek P. Adhikari, Krzysztof Hryniewicz, C. S. Stalin, and **Ashwani Pandey**,
Astronomy & Astrophysics, 662, A77, 2022.

15. *"Intra-night optical variability monitoring of $\gamma-$ray emitting blazars"*,
K.Subbu Ulaganatha Pandian*, A.Natarajan, C.S.Stalin, **Ashwani Pandey**, S. Muneer and B. Natarajan,
Journal of Astrophysics and Astronomy, 43, 48, 2022.

14. *"Correlation between optical flux and polarization variations in Flat Spectrum Radio Quasars on diverse timescales"*,
Ashwani Pandey*, Bhoomika Rajput, and C. S. Stalin,
Monthly Notices of the Royal Astronomical Society, 510, 1809–1836, 2022.

13. *"γ-ray flux and spectral variability of blazar Ton 599 during its 2021 flare"*,
Bhoomika Rajput* and **Ashwani Pandey**,
Galaxies, 9, 118, 2021.

12. *"Investigation of the correlation patterns and the Compton dominance variability of Mrk 421 in 2017"*,
MAGIC Collaboration: V. A. Acciari et al., FACT Collaboration: D. Baack et al., Other groups and collaborations: F. D'Ammando et al., (including **Ashwani Pandey**),
Astronomy & Astrophysics, 655, A89, 2021.

11. *"Breaks in the X-ray spectra of high redshift blazars and the intervening medium"*,
Haritma Gaur, Prashanth Mohan*, **Ashwani Pandey**,
Astrophysical Journal, 914, 46 (11pp), 2021.

10. *"NuSTAR View of TeV Blazar Mrk 501"*,
Ashwani Pandey
Galaxies, 8(3), 55, 2020.

9. *"Optical Variability of Three Extreme TeV Blazars"*,
Ashwani Pandey*, Alok C. Gupta, G. Damljanovic, Paul J. Wiita, O. Vince, and M. D. Jovanovic,
Monthly Notices of the Royal Astronomical Society, 496, 1430−1444, 2020.

8. *"Optical Variability of the TeV Blazar 1ES 0806+524 on Diverse Timescales"*,
Ashwani Pandey*, Alok C. Gupta, S. O. Kurtanidze, Paul J. Wiita, G. Damljanovic, R. Bachev, Jin Zhang, O. M. Kurtanidze, A. Darriba, R. A. Chigladze, G. Latev, M. G. Nikolashvili, S. Peneva, E. Semkov, A. Strigachev, S. N. Tiwari, and O. Vince,
Astrophysical Journal, 890, 72 (11pp), 2020.

7. *"Full Orbital Solution for the Binary System in the Northern Galactic Disk Microlensing Event Gaia16aye"*,
Lukasz Wyrzykowski*, P. Mroz, K. A. Rybicki, M. Gromadzki, Z. Kolaczkowski, et al. (including **Ashwani Pandey**),
Astronomy & Astrophysics, 633, A98, 2020.

6. *"Characterizing Optical Variability of OJ 287 in 2016−2017"*,
Alok C. Gupta*, Haritma Gaur, Paul J. Wiita, **Ashwani Pandey**, P. Kushwaha, S. M. Hu, O. M. Kurtanidze, E. Semkov, G. Damljanovic, A. Goyal, M. Uemura, A. Darriba, Xu Chen, O. Vince, M. F. Gu, Z. Zhang, R. Bachev, R. Chanishvili, R. Itoh, M. Kawabata, S. O. Kurtanidze, T. Nakaoka, M. G. Nikolashvili, L. Stawarz, & A. Strigachev,
Astronomical Journal, 157, 95 (12pp), 2019.

5. *"Optical Flux and Spectral Variability of the TeV Blazar PG 1553+113"*,
Ashwani Pandey*, Alok C. Gupta, Paul J. Wiita, & S. N. Tiwari,
Astrophysical Journal, 871, 192 (8pp), 2019.

4. *"X-ray Intraday Variability of the TeV Blazar Mrk 421 with Chandra"*,
Vishi Aggrawal, **Ashwani Pandey**, Alok C. Gupta*, Paul J. Wiita, K. K. Yadav, & S. N. Tiwari,
Monthly Notices of the Royal Astronomical Society, 480, 4873−4883, 2018.

3. *"X-ray Flux and Spectral Variability of Six TeV Blazars with NuSTAR"*,
Ashwani Pandey*, Alok C. Gupta, & Paul J. Wiita,
Astrophysical Journal, 859, 49 (11pp), 2018.

2. *"X-ray Intra-day Variability of Five TeV Blazars with NuSTAR"*,
Ashwani Pandey*, Alok C. Gupta, & Paul J. Wiita,
Astrophysical Journal, 841, 123 (17pp), 2017.

1. *"Multiband Optical Variability of the Blazar OJ 287 During Its Outbursts in 2015-2016"*,
Alok C. Gupta*, Aditi Agarwal, Alka Mishra, H. Gaur, P. J. Wiita, M. F. Gu, O. M. Kurtanidze, G. Damljanovic, M. Uemura, E. Semkov, A. Strigachev, R. Bachev, O. Vince, Z. Zhang, B. Villarroel, P. Kushwaha, **Ashwani Pandey**, T. Abe, R. Chanishvili, R. A. Chigladze, J. H. Fan, J. Hirochi, R. Itoh, Y. Kanda, M. Kawabata, G. N. Kimeridze, S. O. Kurtanidze, G. Latev, R. V. Muñoz Dimitrova, T. Nakaoka, M. G. Nikolashvili, K. Shiki, L. A. Sigua, & B. Spassov,
Monthly Notices of the Royal Astronomical Society, 465, 4423−4433, 2017.

Astronomer's Telegram

- *"Optical brightening of BL Lacertae observed on 26 October and 02 November 2022"*,
Ashwani Pandey, Jayesh Sarswat, Ravi Joshi, Vivek Jha, Kiran Wani,
ATel #15749, 2022.

Paper Reviewed

I served as a referee for three papers: one in the Astrophysical Journal Supplement Series (ApJS), one in the Astrophysical Journal (ApJ), and one in the Astronomical Journal (AJ).

Seminars/Conferences/Schools

- International conference/workshop

  1. Poster presentation on **"Broad-line region in active galactic nuclei: Dusty or dustless?"** in the conference **"The restless nature of AGN: 10 years later"** at Naples, Italy, during June 26-30, 2023.
  2. Attended **"Broadband Spectral and Timing Studies with Astrosat, Chandra and XMM-Newton : A COSPAR capacity building workshop"** during March 9-20, 2019 at IISER Mohali, India.
  3. Oral presentation on **"X-ray Intraday Flux and Spectral Variability of TeV Blazars with** *NuSTAR***"** in the conference titled **"Half a Century of Blazars and Beyond"** at Torino, Italy, during June 11-15, 2018.
  4. Oral presentation on **"X-ray Intra-day Variability of Five TeV Blazars with *NuSTAR*"** in the conference titled **"Wide Band Spectral and Timing Studies of Cosmic X-ray Sources"** at TIFR, Mumbai, India, during January 10-13, 2017.

- National conference/workshop

  1. Oral presentation on **"Detection of minute-timescale $\gamma-$ray variability in BL Lacertae by** *Fermi***-LAT"** in the 41st Annual Meeting of the Astronomical Society of India (ASI) hosted by Indian Institute of Technology Indore, India during March 1-5, 2023.

2. Thesis presentation on **"Multi-wavelength Studies of TeV Blazars "** in the 38th Annual Meeting of the Astronomical Society of India (ASI) hosted by Indian Institute of Science Education & Research (IISER) Tirupati, Transit Campus during February 13-17, 2020.
3. Oral presentation on **"X-ray Intra-day Variability of Five TeV Blazars with *NuSTAR*"** in the conference titled **"REcent Trends in the study of Compact Objects: Theory and Observation (RETCO-III)"** at IIST, Thiruvananthapuram, Kerala, India, during June 05-07, 2017.
4. Attended a workshop on **"ASTROSAT Data Analysis"** held at Tezpur University, from 3-5 May, 2017.

Personal Details

Date of Birth: 03 June, 1988
Marital status: Married
Languages: English, Hindi

Sex: Male
Nationality: Indian

Google Scholar Publication Details (as at March 11, 2024)

Citations: 343
h-index: 10
i10-index : 11
Link: `https://scholar.google.co.in/citations?user=rdFCKx8AAAAJ&hl=en`

For more information

Web-page: `https://ashwani-88.github.io/`
ResearchGate profile: `https://www.researchgate.net/profile/Ashwani-Pandey-4`
LinkedIn profile: `https://www.linkedin.com/in/ashwani-pandey-a9952945/`

References

- **Prof Bozena Czerny** (Present Mentor)
  Center for Theoretical Physics PAS,
  Warsaw, Poland
  Mob: +48 603 956 648
  Email: bcz@cft.edu.pl

- **Prof Alok C. Gupta** (Thesis-supervisor)
  Aryabhatta Research Institute of Observational Sciences (ARIES),
  Nainital-263001,
  Uttarakhand (U.K.), India
  Mob: +91-7895966668
  Email: acgupta30@gmail.com

- **Prof Paul J. Wiita** (Collaborator)
  The College of New Jersey,
  2000 Pennington Road, Ewing, NJ 08628-0718, USA
  Email: wiitap@tcnj.edu