

## MAIN PAL

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### EDUCATION

2023, April–present	Assistant Professor, Dep. of Physics, SVC, DU, New Delhi
2021, October 5– 2023, January 1	Assistant Professor, Depart. of Physics, Ramjas College, University of Delhi, New Delhi
2019 July–2021, August 31	Guest Teacher, <b>Depart. of Physics and Uni. Polytechnic</b> , JMI, New Delhi
2018 October 29–2021, October 28	Dr. D.S. Kothari Post-Doctoral Fellow, <b>CTP</b> , JMI, New Delhi
2017 March– 2018 October	Post-Doctoral Fellow, <b>Physical Research Laboratory (PRL: ISRO lab)</b> , Ahmedabad
2016 July-2017 March	Research associate, <b>Inter-Uni. Centre for Astronomy and Astrophysics (IUCAA)</b> , Pune
2010 Aug-2016 July	Ph.D. from <b>IUCAA</b> and degree awarded from <b>Jawaharlal Nehru Uni. (JNU)</b> , New Delhi
2009-2010	Project Student, <b>Aryabhata Research Inst. of Observational Sci. (ARIES)</b> , Nainital, India
2008-2009	Research Scholar, <b>Tata Institute of Fundamental Research (TIFR)</b> , Mumbai, India
2005-2007	M.Sc. Physics, (72.8%) <b>Department of Physics, C.C.S University Campus</b> , Meerut, India
2001-2004	B.Sc. Physics, Chemistry, Mathematics, (67.5%) <b>D.A.V. (PG) College</b> , M. Nagar, India
1999-2001	12th Physics, Chemistry, Maths, Eng., Hindi (63.4%) <b>K.I. College</b> , Kharar, M. Nagar, India
1997-1999	10th Science, Maths as major subjects (66%) <b>B.S.S. Inter College</b> , Luhsana, M. Nagar, India

### RESEARCH INTERESTS

Black hole high energy astrophysics, probing the central engine using multiwavelength emission, broad-band timing and spectroscopy, reverberation mapping.

### RESPONSIBILITIES OTHER THAN ACADEMICS

- Member of Admission Committee of the college, 2023-2025
- Lab maintenance and department library incharge
- **College Admission Committee Member**, Ramjas College, DU enclave, October-November 2021.
- **Poster manager**, **National Science Day**, 2015 **IUCAA**, Pune.

### INTERNATIONAL VISITS

- **University of Padova**, 9-15 April, 2018, Italy.
- **European Space Astronomy Centre, Spain**, July 20 - August 20, 2014
- **Xuyi observatory, Jiangsu, China**, September 2-13, 2013

### AWARDS

- IUCAA Visiting Faculty award, August 1, 2023 to July 31, 2026
- Local and lodging expenses awarded (550 Euro) for power-point presentation during April, 2018, Italy.
- Post-doctoral fellowship award in BHOLE project at Nanjing University, China, 2017, (Not availed).
- Post-doctoral fellowship award in University of Science and Technology of China, China, 2018, (Not availed).
- Post-doctoral fellowship award in Shandong University, Weihai, China, 2018, (Not availed).
- A month visit at European Space Astronomy Centre, Madrid, Spain and received ~ 3.5 lac INR as stipend (2014).
- Selected in Cospar Capacity Building workshop held in Xuyi, China and received 800 US dollar for travel (2013).
- Travel grant (100 Euro) for COSPAR Meeting in Mysore, India (2012).
- All India Rank 2 in JEST examination, 2010 <sup>1</sup>
- All India Rank 78 and 87 in GATE examination, in 2010 and 2007, respectively <sup>2</sup>
- CSIR NET/JRF 2007 for Junior Research Fellow <sup>3</sup>
- Presented my work at about ten International and National places and also attended about twenty five schools/workshops/conferences till now.
- Accepted 16 proposals for observations from astronomical satellites and telescopes.
- First rank in university entrance exam for M.Sc. and
- Cleared TIFR exam 2008

<sup>1</sup>A government fellowship awarded by the Government of India

<sup>2</sup>A government fellowship awarded by the University Grants Commission, India

<sup>3</sup>A government fellowship awarded by Council of Scientific and Industrial Research (CSIR)

## GRANTS/SCHOLARSHIPS

- 550 Euro for local and lodging at the University of Padova, Italy.
- 4300 Euro for one month visit to the ESAC, Madrid, Spain during July-August 2014.
- Travel grant ~ 70000 INR from Indian Space Research Organization (ISRO) for the visit to Spain during July-August 2014.
- Travel grant 800 US dollar from Cospar Capacity Building programme for the workshop held in Xuyi, China, 2013.
- Travel grant 100 Euro for COSPAR Meeting in Mysore, India (2012).
- Fellowship Rs. 12000/month as the JRF at the Tata Institute of Fundamental Research, Mumbai, 2008-2009.
- Fellowship Rs. 8100/month as the RA at the Aryabhata Research Institute of Observational Sciences, Nainital, 2009-2010.
- Fellowship Rs. 16000/month as the JRF at the Inter-University Centre for Astronomy and Astrophysics, Pune, 2010-2011.
- Fellowship Rs. 24000/month as the SRF at the Inter-University Centre for Astronomy and Astrophysics, Pune, 2011-2012.
- Fellowship Rs. 28000/month as the SRF at the Inter-University Centre for Astronomy and Astrophysics, Pune, 2012-2016.
- Fellowship Rs. 32000/month as the RA at the Inter-University Centre for Astronomy and Astrophysics, Pune, 2016-2017.
- Fellowship Rs. 7500/month as the PS at the Inter-University Centre for Astronomy and Astrophysics, Pune, Feb-March, 2017.
- Fellowship Rs. 36000/month as the PDF at the Physical Research Laboratory, Ahmedabad, March 2017-October 2018.
- Fellowship Rs. 54000 plus HRA/month as the DSKPDF at the CTP, Jamia Millia Islamia, New Delhi, October 2018–Present.

## REVIEWER/TOPIC EDITOR

- Monthly Notices of the Royal Astronomical Society”, Oxford Journal, Galaxies journal [TEd].

## REFeree

- Proposals for “AstroSat” space mission.

## REPUTED REFEREED/SUBMITTED PUBLICATIONS

- (15) Very High-energy Gamma-Ray Episodic Activity of Radio Galaxy NGC 1275 in 2022-2023 Measured with MACE [iopscience]  
Godambe, S plus **Main Pal** et al 2024, [I.F-8.8](#)
- (14) Spectral States of OJ 287 blazar from Multi-wavelength Observations with *AstroSat* [ADS]  
Singh, K.P. plus **Main Pal**, et al 2022, [I.F-5.4](#)
- (13) Complex UV/optical and X-ray variabilities in Seyfert 1 galaxy Mrk 509 [ADS]  
Neeraj Kumari, **Main Pal**, et al 2021, [I.F-5.7](#) (Published in PASA)
- (12) Spectro-Timing Analysis of a highly variable NLS11 galaxy NGC 4748 with AstroSat and XMM-Newton [ADS]  
**Main Pal**, et al 2021, [I.F-1.3](#) (Published in the JoAA)
- (11) Blazar OJ 287 After First VHE Activity: Tracking the Re-emergence of the HBL like Component in 2020 [ADS]  
P. Kushwaha, **Main Pal**, N. Kalita, N. Kumari, S. Naik, A. C. Gupta, E. M. de G. D. Pino, and M. Gu , [I.F-5.8](#) (Published the APJ)
- (10) Short-Term X-ray Variability during Different Activity Phases of Blazars S5 0716+714 and PKS 2155-304, [I.F-2.1](#) [MDPI]  
P. Kushwaha, & **Main Pal**, Galaxies, 2020, 8(3), 66
- (9) Strong Soft X-ray Excess in 2015 XMM-Newton Observation of BL-Lac OJ 287 [ADS]  
**Main Pal** & Pankaj Kushwaha, G.C. Dewangan, and P. K. Pawar, ApJ, 890(2020), 47, [I.F-5.8](#).
- (8) UV to X-ray Comptonisation delay in Mrk 493 [ADS]  
Adegoke, Gulab C. Dewangan, P. Pawar & **Main Pal**, ApJL, 870(2019)2, L13 , [I.F-8.4](#)
- (7) The ever-surprising blazar OJ 287: multi-wavelength study and appearance of a new component in X-rays [ADS]  
Kushwaha, P., Alok C. Gupta, Witta, Paul, J., **Main Pal** & others, MNRAS, 479, 1672-1684 (2018), [I.F-5.4](#)
- (6) Correlated X-ray/ultraviolet/optical emission and short term variability in a Seyfert 1 galaxy NGC 4593 [ADS]  
**Main Pal** & Sachindra Naik, MNRAS, 474, 5351-5162 (2018), [I.F-5.4](#)
- (5) Complex Optical/UV and X-ray variability of Seyfert 1 galaxy 1H 0419-577 [ADS]  
**Main Pal**, Gulab C. Dewangan, Ajit K. Kembhavi, Ranjeev Misra & S. Naik, MNRAS, 473, 3584-3597, 2018, [I.F-5.4](#)
- (4) Complex UV/X-ray variability of 1H 0707-495 [ADS]  
P. K. Pawar, G.C. Dewangan, I. Papadakis, M.K. Patil, **Main Pal** & A. K. Kembhavi, MNRAS, 472, 2823-2832, 2017, [I.F-5.4](#)
- (3) Correlated X-ray/UV/Optical variability and the nature of accretion disc in the bare Seyfert 1 galaxy Fairall 9 [ADS]  
**Main Pal**, Gulab C. Dewangan, S.D. Connolly & Ranjeev Misra; MNRAS, 466, 1777-1787, 2017, [I.F-5.4](#)
- (2) X-ray/UV variability and the origin of soft X-ray excess emission from II Zw 177 [ADS]  
**Main Pal**, Gulab C. Dewangan, Ranjeev Misra & Pramod K. Pawar; MNRAS, 457, 875-886, 2016, [I.F-5.4](#)
- (1) Variable X-ray reflection from 1H 0419-577 [ADS]  
**Main Pal**, Gulab C. Dewangan; MNRAS, 435, 1287, 2013, [I.F-5.4](#)

## REFEREED PROCEEDINGS

- (5) AstroSat View of Blazar OJ 287: A Complete Evolutionary cycle of HBL Component from End-Phase to Disappearance and Re-emergence [HEP]  
Kushwaha, P.K., Singh K. P., A. Sinha, **Main Pal** et al, ICRC 2022, PoS, 395.
- (4) Short-term variabilities in X-ray/Optical/UV emission from Seyfert 1 galaxy NGC 4593 [ADS]  
Sachindra Naik, **Main Pal** & Neeraj Kumari, International BINA conference proceeding, Vol. 88, pp. 143-151, 2019.
- (3) Soft X-ray excess emission in NLS1 galaxies [SISSA]  
**Main Pal**, Proceeding of Science, 2018, PoS(NLS1-2018)033, Trieste, Italy-2018, I.F.-0.02
- (2) Complex Optical/UV to X-ray spectral variability of 1H 0419-577 [ADS]  
**Main Pal**, Gulab C. Dewangan, Ranjeev Misra & Pramod K. Pawar; BASI, 12, 143, 2015, I.F.-2.3
- (1) X-ray/UV variability of narrow-line Seyfert 1 galaxies [ADS]  
Gulab C. Dewangan, Pramod K. Pawar & **Main Pal**; BASI, 12, 57, 2015, I.F.-2.3

## RESEARCH NOTES

- (3) The correlated response of the narrow FeK emission line to the primary continuum changes in the Seyfert galaxy NGC 2992 [IOPPS]  
R. Ghosh, **Main Pal**, Research Notes of the AAS, Vol. 5, 35, 2021.
- (2) A Time Resolved View of the X-Ray Spectral Variability of the Seyfert-1 Galaxy ESO 511-G030 [ADS]  
**Main Pal**, Research Notes of the AAS, 5, 34, 2021
- (1) The distance of the narrow FeKalpha emitting region for a sample of Compton thin type-II active galactic nuclei  
**Main Pal**; RNAAS, 2021, accepted for publication.

## SUCCESSFUL PROPOSALS (ASTROSAT, XMM-NEWTON, SALT, HCT)

OJ 287	Short-term (intra-night) near-infrared variability studies of BL Lac blazar OJ 287
OJ 287	Nature of Jet and Non-Jet Emission in BL-Lac OJ 287
NGC 4748	The nature of accretion disk in a narrow line Seyfert galaxy NGC 4748
NGC 4748	Probing the nature of accretion disk in a narrow line Seyfert galaxy NGC 4748
NGC 4748	Four continuous nights for NGC 4748 with Mount Abu Observatory, Physical Research Laboratory, Ahmedabad
UGC 6728	X-ray/UV/Optical/IR variability of the bare AGN UGC 06728
Mrk 359	Soft X-ray excess and X-ray/UV variability in a NLS1 MRK 359
NGC 1365	X-ray/UV occultations in NGC 1365
PG1404+226	Probing the response of warm-absorbers to the variable continuum in PG1404+226
IC 4329A	Probing the interplay between the accretion disk and hot corona in IC 4329A
Sample	Investigation of growth rate of Compton thick active galactic nuclei using <i>AstroSat</i>
TON S180	Probing accretion disk and UV/Xray connection in NLS1 galaxy TON S180
Mrk 1014	X-ray/UV connection and the nature of accretion disk in a high accretion rate AGN Mrk 1044
Cen X-3	Investigating the cause of long duration low intensity phases of Cen X-3 with <i>AstroSat</i>
NGC 1316	Ultraviolet studies of merger remnant galaxy NGC 1316
Swift J0243.6+6124	The newly discovered pulsar at the peak of its current outburst

## SELECTED CONTRIBUTED/INVITED TALKS/POSTERS

- “Broadband X-ray spectral variability of a Seyfert 1 1H 0419-577” at Harish-Chandra Research Institute, Allahabad, February 2012
- “X-ray spectral variability of a Seyfert 1 1H 0419-577” Physical Research Laboratory, April 2012, Ahmedabad, India
- “Broadband spectral variability of 1H 0419-577 : Complex absorption or reflection” at COSPAR, July 2012, Mysore, India [ADS]
- “Complex XMM-Newton X-ray spectra of a NLS1 IRAS 13224-309” at COSPAR workshop, September 2013, Xuyi, China,
- “X-ray to UV emission and the origin of the soft X-ray excess in a NLS1 II Zw 177” at Hard X-ray Astronomy: *AstroSat* and Beyond, September 24-26, 2014, Goa, India
- “Broadband X-ray spectral variability and the origin of soft X-ray excess in a narrow line Seyfert galaxy Mrk 335” at LAXPC workshop, TIFR Balloon facility, December 15-17, 2014, Hyderabad, India
- Variations in continuum and Fe-K absorbers in NGC 3516, Astronomical Society of India, NCRA Pune, February 17-20, 2015

- “Fast outflows in X-rays” at Cloudy workshop, September 21-26, 2015, IUCAA, India
- Soft X-ray excess in NLS1 galaxies, April 9-15, 2018, Padova, Italy
- An introduction to X-ray astronomy, October 11-12, 2018, NWIFSSSI, CU Jammu, India
- Real Nature of accretion disk in NGC 4395, October 11-12, 2018, NWIFSSSI, CU Jammu, India
- Probing the central engine of active galactic nuclei, February 28, 2019, CTP, JMI, New Delhi India
- Soft X-ray excess in a NLS1 Mrk 766, RECTO-IV, April 17-20 2019, IUCAA, Pune, India
- Real nature of accretion disk around the supermassive black hole in active galactic nuclei, July 30-31, 2020, Depart. of Computer, GKV, Haridwar India
- Reality of accretion disk around the supermassive black hole, July 30-31, 2020, Depart. of Computer, GKV, Haridwar India
- Probing the central engine of active galactic nuclei, July 30-31, 2020, Depart. of Physics, CCSU, Meerut, India
- Observed soft X-ray excess from the vicinity of the Supermassive Black Hole, October 18-19, 2020, Depart. of Physics, LKU, Lucknow, India
- Spectral and timing study of an NLS1 NGC 4748, January 19-21, 2021, Conference on 5 years of AstroSat, ISRO, India
- X-ray/UV view of an NLS1 NGC 4748, 39th ASI meeting, February 18-23, 2021; IUCAA, Pune-IIT Indore-ISSER Mohali-ICTS-TIFR Bengaluru, India
- **Chair-person**, International Conference on Cosmology and Gravity (CosmoGrav22), March 23-24, 2022, Gurukul Kangri University, Haridwar, Uttarakhand, India

## TEACHING/COLLABORATION

Regular basic physics courses to under-graduates	Department of Physics/Uni. Polytec, JMI, New Delhi, July 2019–till date.
Hands on sessions on data analysis	For master level students/faculties from <b>Indian universities/colleges</b> during PhD work.
Hands on sessions on data analysis	For students/faculties from <b>South Africa in 2015</b> .
Collaborations in India	Research work with universities's students (Pramod et al. 2017 (Nanded University), <b>published in MNRAS</b> and also co-mentored Oluwashina Adegoke partly for his research work (completed his PhD from IISc , Bengaluru, India); already co-mentored Kapil Tirpuday (ISSER, Pune) for his master level dissertation work). At present, Neeraj Kumari , a PhD student from PRL, Ahmedabad is being co-mentored by me.

## PROFESSIONAL REFERENCES

- **Prof. Gulab C. Dewangan (PhD supervisor)**, E-mail: gulabd@iucaa.in ; Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India
- **Prof. Ajit K. Kembhavi**, E-mail: akk@iucaa.in ; Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India
- **Prof. Sachindra Naik** , E-mail: snaik@prl.res.in; Physical Research Laboratory, Ahmedabad, India Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India
- **Prof. Alok C. Gupta**, E-mail: alok@aries.res.in; Aryabhata Research Institute of Observational Sciences, Nainital, India
- **Prof. Rathin Adhikari**, E-mail: radhikari@jmi.ac.in/rathin\_adhikari@yahoo.com ; Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi, India
- **Prof. Mohammad Sami**, E-mail: samijamia@gmail.com ; Centre for Theoretical Physics, Jamia Millia Islamia, New Delhi, India
- **Prof. Ranjeev Misra**, E-mail: rmisra@iucaa.in ; Inter-University Centre for Astronomy and Astrophysics (IUCAA), Pune, India