



CURRICULUM VITAE

Dr. Ashish Pathak
Assistant Professor
Department of Mathematics
Institute of Science
Banaras Hindu University
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Experience :

- Assistant Professor, Banaras Hindu University , January 2016 - Present.
- Assistant Professor, Dr. Harisingh Gour University (A Central University), Sagar, M.P., June, 2013 - December, 2015
- Assistant Professor, Department of Mathematics , Sikkim Manipal Institute of Technology, East Sikkim since August 2008 — June 2013.

Educational Qualifications :

- **Doctor of Philosophy**
Institute : Banaras Hindu University, Varanasi, U.P., India.
Thesis title : Certain Properties of the Wavelet Transform
Thesis Supervisor : Prof. R. S. Pathak
Year : 2009

- **Master of Science**
University : Banaras Hindu University, Varanasi, U.P., India.
Subject : Mathematics.
Division & Year : First, 2005.
- **Bachelor of Science**
University : V.B.S. Purvanchal University, Jaunpur, U.P., India.
Subject : Mathematics, Physics & Chemistry.
Division & Year : First, 2003.
- The CSIR-UGC NET in MATHEMATICAL Sciences (Year 2007)

Research Interests :

- Area of Research: Integral Transform & Wavelet analysis.
- Specialization: Wavelet, Wavelet transform, Distribution Theory.

Publications:

International Journal

1. **Pathak, Ashish**; Shrish Pandey, Besov type spaces associated with Lebedev-Skalskaya wavelet transform, *Mathematical Methods in the Applied Sciences*, 2023
2. **Pathak, Ashish**; Shrish Pandey, Kontorovich-Lebedev wavelet transform on Besov type spaces, *Integral Transforms and Special Functions*, 2023
3. **Pathak, Ashish**; Kumar, Dileep, Existence of Unconditional Wavelet Bases for L^p -Norm over a Local Fields of positive Characteristic, *Int. J. Wavelets Multiresolut. Inf. Process.*, accepted (2023).
4. **Pathak, Ashish**; Guru P Singh, Wavelets for Nonuniform Non-Stationary MRA on $H^s(\mathbb{K})$, *Bol. Soc. Parana. Mat.*, 41 (2023) 1-10.
5. **Pathak, Ashish**; Yadav, Prabhat; Dixit, M. M. An asymptotic expansion of continuous wavelet transform for small dilation parameter, *Journal of Indian Mathematical Society*. 89, Issue 1-2, 2022.
6. **Pathak, Ashish**; Prabhat K. Yadav, Asymptotic expansion of Wavelet Transform For Small Values of a : An oscillatory case, *Int. J. Appl. Comput. Math.* 8, 5 (2022).
7. **Pathak, Ashish**; Guru P Singh, Biorthogonal Wavelet Packets in $H^s(\mathbb{K})$, *Int. J. Appl. Comput. Math.* 8, 4 (2022).

8. **Pathak, Ashish**; Shrish Pandey, Besov-type spaces for the k -Hankel wavelet transform on the real line, *Concr. Oper.* 2021; 8:114–124.
9. **Pathak , Ashish**; Kumar, Dileep, A characterization of orthonormal multilevel wavelet families in sobolev space over local fields of positive characteristic, *Tamkang journal of mathematics*, 52 (3) (2021), 349-361.
10. **Pathak , Ashish**; Kumar, Dileep; Singh, Guru P. The necessary and sufficient conditions for wavelet frames in Sobolev space over local fields. *Bol. Soc. Parana. Mat.* (3) 39 (2021), no. 3, 81–92.
11. **Pathak , Ashish**; Singh, Guru P. Biorthogonal wavelets in Sobolev space over local fields of positive characteristic. *Int. J. Appl. Comput. Math.* 6 (2020), no. 2, Paper No. 25, 13 pp.
12. **Pathak , Ashish**; Kumar, Dileep Characterization of multiwavelets and MRA wavelets in $H_s(F)$. *Int. J. Appl. Comput. Math.* 5 (2019), no. 6, Paper No. 143, 17 pp.
13. **Pathak , Ashish**; Singh, Guru P. Wavelets in Sobolev space over local fields of positive characteristics. *Int. J. Wavelets Multiresolut. Inf. Process.* 16 (2018), no. 4, 1850027, 16 pp.
14. **Pathak , Ashish**; Yadav, Prabhat; Dixit, M. M. An asymptotic expansion of continuous wavelet transform for large dilation parameter. *Bol. Soc. Parana. Mat.* (3) 36 (2018), no. 3, 27–39.
15. **Pathak , Ashish**; Pathak, R. S. Moment asymptotic expansions of the wavelet transforms. *Bol. Soc. Parana. Mat.* (3) 35 (2017), no. 1, 237–245.
16. **Pathak , Ashish** Continuous wavelet transform on local fields. *Bol. Soc. Parana. Mat.* (3) 34 (2016), no. 2, 113–121.
17. Pathak, R. S.; **Pathak , Ashish** Asymptotic expansions of the wavelet transform for large and small values of b . *Int. J. Math. Math. Sci.* 2009, Art. ID 270492, 13 pp.
18. Pathak, R. S.; **Pathak , Ashish** On convolution for wavelet transform. *Int. J. Wavelets Multiresolut. Inf. Process.* 6 (2008), no. 5, 739–747.

National Journal

19. **Pathak , Ashish**; Singh, Rajeev Kumar; Mandal, B. N.. Numerical solution of Abel's integral equations using Gegenbauer wavelet, *Investigations in Mathematical Sciences*, Vol.4(1), 2014, 43-52, ISSN: 2250-1436
20. **Pathak , Ashish**. Numerical Evaluation of the Hankel Transform Using Chebyshev Multi-wavelet Basis, *Madhya Bharti*, Vol. LVIII, pp. 29-34, 2014. ISSN NO. 0972-7434

21. **Pathak , Ashish**; Yadav, Prabhat; Dixit, M. M. Asymptotic expansion of wavelet transform for large values of b , Investigations in Mathematical Sciences, Vol.5(2), 2016, 87-92, ISSN: 2250-1436

Book Chapter

1. Pathak R.S. ; **Pathak,Ashish** “Asymptotic Expansion of the Wavelet Transform with error Term” Wavelet Transform (Monograph), Atlantis Studies in Mathematics for Engineering and Science-Vol.4,(2009)(145-154), Amsterdam-Paris, (Atlantis Press / World Scientific) ISBN: 978-90-78677-26-0. Editor: Professor Charles K Chui (Stanford University, USA)).
2. Pathak R.S. ; **Pathak,Ashish** “Asymptotic Expansion of the Wavelet Transform for small Value of dilation a ” Wavelet Transform (Monograph), Atlantis Studies in Mathematics for Engineering and Science-Vol.4,(2009)(154-158), Amsterdam-Paris, (Atlantis Press / World Scientific) ISBN: 978-90-78677-26-0. Editor: Professor Charles K Chui (Stanford University, USA)).

Book

- Kumar, Sandeep; **Pathak,Ashish**; Khan, Debashis Mathematical theory of subdivision. Finite element and wavelet methods. CRC Press, Boca Raton, FL, 2020. xv+230 pp. ISBN: 978-1-138-05158-4

Ph.D. supervision:

- Dr. Prabhat Yadav (**Degree awarded, 2016**); Asymptotic approximations of continuous wavelet transformations.
- Dr. Rajeev Kumar Singh (**Degree awarded, 2016**); Use of wavelet in numerical solutions of integral equations.
- Dr. G. P. Singh (**Degree awarded, 2021**): Wavelet analysis of Sobolev space over local fields of positive characteristic.
- Dr. Dileep Kumar (**Degree awarded, 2022**); Characterization of some wavelets on Sobolev space over local fields of positive characteristic
- Mr. Shrish Pandey (Ongoing, 2019)
- Mr. Dharmendra Kr. Chaurasia (ongoing, 2022)
- Mr. Ashwani Rao (ongoing, 2022)
- Mr. Anurag Mishra (ongoing, 2022)

M.Tech supervision:

- Mr. Fani Mani (Degree awarded, 2010): Wavelet analysis of Multi-level Inverters.

PG Project supervision:

- Degree awarded - 05.

Research Projects:

- Start-Up Research Grant (UGC) entitled "Wavelet and its application to solve integral equation and differential equation." sponsored by UGC, New Delhi, India (Sanctioned Amount: Rs. 6.00 Lakh, Sanctioned Year:2014, Completed).
- Start-Up Research Grant (Banaras Hindu University) entitled " Wavelet and its application to solve singular integral equation.." sponsored by (BHU) UGC, New Delhi, India (Sanctioned Amount: Rs. 1.00 Lakh, Sanctioned Year:2017, Completed).

Talks/Deliver a lecture/presented paper:

Conferences/Seminars/Short term courses/Workshops

1. Wavelets on Sobolev space over local fields of positive characteristics, National Conference on Harmonic Analysis and Applications during December 02-04, 2022 organized by Department of Mathematics Computing ,IIT (ISM) Dhanbad.
2. Integrability of the continuum Hankel-Clifford wavelet kernel, An International Online workshop on Advanced Topics in mathematics. Centre for Applied Mathematics, IIIT-Naya Raipur, October 01-05, 2020.
3. Wavelet on local fields, Short Term Advanced Training Programme on INTEGRAL TRANSFORMATIONS, DISTRIBUTIONS AND WAVELET ANALYSIS (Phase-II) Oct. 8-12,2018(IIT (ISM) Dhanbad).
4. On convolution of wavelet transform, Short Term Advanced Training Programme on INTEGRAL TRANSFORMATIONS, DISTRIBUTIONS AND WAVELET ANALYSIS (Phase-II) Oct. 8-12,2018(IIT (ISM) Dhanbad).
5. Inversion formula for Wavelet transforms, Short Term Advanced Training Programme on INTEGRAL TRANSFORMATIONS, DISTRIBUTIONS AND WAVELET ANALYSIS (Phase-II) Oct. 8-12,2018(IIT (ISM) Dhanbad).

6. Wavelet and wavelet transform, Short Term Advanced Training Programme on INTEGRAL TRANSFORMATIONS, DISTRIBUTIONS AND WAVELET ANALYSIS (Phase-II) Oct. 8-12,2018(IIT (ISM) Dhanbad).
7. General Integral Transform and convolutions ,QIP Short Term course on Algebra, Analysis Applications July 2017 IIT BHU Varanasi.
8. Multiresolution analysis and wavelets in Sobolev space over local fields of positive characteristic, International workshop wavelet frame Application-III, 14-21 December 2017, Department of Mathematics, Kirori Mal College, Delhi University, New Delhi.
9. Wavelet in Sobolev space over local fields of positive characteristics”20th Ramanujan symposium International conference on Fourier Analysis and wavelet March 21-25, 2017 Ramanujan Institute for Advance study in mathematics University of Madras India.
10. Biorthogonal Wavelets in Sobolev space over local fields of positive characteristics” International Conference on Mathematical Sciences and Application February 23-25, 2018.
11. Asymptotic Expansion of Wavelet transform” International conference of TIMCAMS December 14-17, 2016 DSTCIMS BHU.
12. Asymptotic Expansion of Wavelet Transform” in an International Workshop, Wavelet, Frame and Applications-II, Department of Mathematics, Kirori Mal College, University of Delhi, , New Delhi, India .(24-30 December, 2014).
13. An Efficient Algorithm for Evaluation of Hankel Transform by using B-polynomial Multi-wavelet, Application of Mathematical Methods in Physical Problem (Sponsored by D.S.T New-Delhi), Department of Mathematics, Sikkim Manipal Institute of Technology, Majitar, East Sikkim-737136(December 18th – December 23rd, 2009)
14. Wavelets on local fields of positive characteristic , in One Week (Online) Faculty Development Programme on “Mathematical Analysis and its Applications” during 26th – 31st July, 2021 organized in collaboration with Department of Mathematics, Vivekananda College, University of Delhi.
15. Delivered lecture entitled ”Fourier transform and it’s application” in the Refresher course on ”Mathematical Tools for Physical and Computational Sciences” (24 September , 08 October, 2021), organized by the UGC-HRDC, Dr. Harisingh Gour University, Sagar,M.P., India.
16. Delivered lecture entitled ”Wavelet transform and it’s application” in the Refresher course on ”Mathematical Tools for Physical and Computational Sciences” (24 September , 08 October, 2021), organized by the UGC-HRDC, Dr. Harisingh Gour University, Sagar,M.P., India

Conferences/Seminars/Short term courses/Workshops organized:

- National Conference Of Academy For Progress Of Mathematics “RECENT ADVANCES IN MATHEMATICAL ANALYSIS AND APPLICATIONS ” DST-Centre for Interdisciplinary Mathematical Sciences, Institute of Science, Banaras Hindu University, Varanasi-221 005, U.P., India, during 7-8 May 2022.
- 32th Annual Conference MS-BHU on “Recent Trends in Mathematical Analysis and its Applications” Department of Mathematics, Faculty of Science, Banaras Hindu University, Varanasi-05. During 17-18 February 2017.
- DST sponsored workshop “Application of Mathematics in Industries and Technology (AMIT-2012)” from December 5-11, 2012 at Department of Mathematics, Sikkim Manipal Institute of Technology, Sikkim, India.