

# Profile of Professor (Dr.) Pankaj Jain

## Current Positions

**Vice President (Academics)**, South Asian University

**Professor & Dean**, Faculty of Mathematical Sciences

**Dean**, Faculty of Physical Sciences

**Dean**, Faculty of Chemical Sciences

## Experience

Teaching: 35 years      Research: 37 years

## Education

- Bachelors (Hans Raj College, DU, 1984)
- Masters (Hans Raj College, DU, 1986)
- M.Phil (DU, 1987)
- Ph.D. (DU, 1996)

## Research Interest

- Function Spaces (with and without weights) : Lebesgue Spaces, Grand Lebesgue Spaces, Lorentz Spaces, Grand Lorentz Spaces, Orlicz Spaces, Banach Function Spaces, Sobolev Spaces and their variants.
- Weighted Norm Inequalities, Integral Operators
- Fourier Analysis, Numerical Analysis
- Quantum Calculus

## Ph.D. Students (21)

- |                         |                           |                                 |
|-------------------------|---------------------------|---------------------------------|
| 1. Bindu Bansal, 2002   | 8. Sandhya Jain, 2015     | 15. Prem B. Chand, 2021         |
| 2. Arun Pal Singh, 2002 | 9. Monika Singh, 2017     | 16. Vivek Panwar, 2022          |
| 3. Rajesh Hassija, 2003 | 10. Santosh Kumari, 2018  | 17. Amit Kumar, 2023            |
| 4. Babita Gupta, 2004   | 11. Jivan Jnawali, 2018   | 18. Rohit Manglik, 2023         |
| 5. Daulti Verma, 2009   | 12. Kriti Sethi, 2018     | 19. Pitamber Tiwari, 2024       |
| 6. Suket Kumar, 2010    | 13. Rajender Kumar, 2019  | 20. Saujanya Mohanty (Pursuing) |
| 7. Priti Upreti, 2011   | 14. Saikat Kanjilal, 2020 | 21. Aditi (Pursuing)            |

## Collaborators (48)

### From Outside India (24):

1. Om P. Ahuja (USA)
2. Chet Raj Bhatta (Nepal)
3. Victor Burenkov (UK)
4. Prem Bahadur Chand (Nepal)
5. Francisco I. Chicharro (Spain)
6. David Edmunds (UK)
7. Alberto Fiorenza (Italy)
8. Neus Garrido (Spain)
9. Amiran Gogatishvili (Czech Republic)
10. Henryk Hudzik (Poland)
11. Jivandhar Jnawali (Nepal)
12. Alois Kufner (Czech Republic)
13. Dag Lukkassen (Norway)
14. Anastasia Molchanova (Russia)
15. Lars-Erik Persson (Sweden)
16. Saburoh Saitoh (Japan)
17. Hans Juergen Schmeisser (Germany)
18. Guldarya Shambilova (Russia)
19. Vladimir Stepanov (Russia)
20. Nils Svanstedt (Sweden)
21. Tamara Tarraykova (UK)
22. Elena Ushakova (Russia)
23. Sergey Vodopyanov (Russia)
24. Anna Wedestig (Sweden)

### From India (24):

1. Aditi
2. Zamir A Ansari
3. Bindu Bansal
4. Chandrani Basu
5. Babita Gupta
6. Ved P Gupta
7. Rajesh Hassija
8. Pawan K Jain
9. Sandhya Jain
10. Saikat Kanjilal
11. Amit Kumar
12. Rajender Kumar
13. Santosh Kumari
14. Suket Kumar
15. Rohit Manglik
16. Saujanya Mohanty
17. Rahul Panchal
18. Vivek Panwar
19. Akhilesh Prasad
20. Kriti Sethi
21. Arun P Singh
22. Monika Singh
23. Priti Upreti
24. Daulti Verma

## Books

1. P.K. Jain, and **Pankaj Jain**, *General Measure and Integration*, New Age International Publishers, 2013.
2. P.K. Jain, V.P. Gupta and **Pankaj Jain**, *Lebesgue Measure and Integration*, New Age Inter-

national Publishers, 2nd Edition, 2011.

3. P.K. Jain, O.P. Ahuja and **Pankaj Jain**, *Functional Analysis*, New Age International Publishers, 4th Edition, 2025.
4. Co-edited a book "*Function Spaces and Applications*", CRC Press, New York/Narosa Publishing House, New Delhi, 2000. For European community the book has also been published by Alpha Science International Ltd., U.K.

This book is the Proceedings of the International Conference on "Function Spaces and Applications to the Partial Differential Equations" held at the University of Delhi during December 15-17, 1997. Other editors being D.E. Edmunds (U.K.), P.K. Jain (India), L.E. Persson (Sweden), A. Kufner (Czech Republic) and S. Saitoh (Japan).

5. **Pankaj Jain** and Hans-Jurgen Schemmiser, *Function Spaces and Inequalities*, Springer, 2017.  
This book is the Proceedings of the International Conference on "Function Spaces and Inequalities" held at South Asian University, New Delhi during December 08-12, 2017.

### Research Papers in Refereed International Journals

96. Sandhya Jain, Chandrani Basu and **Pankaj Jain**, *Mellin transform in connection with Wigner-Ville transform and linear canonical transform*, Int. Transform and Sp. Funct., to appear.
95. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *On slightly  $B^*$ -continuity for multifunctions*, Thai J. Math., to appear.
94. Arun Pal Singh, **Pankaj Jain** and Rahul Panchal, *On quasi-grand Lebesgue spaces and the Hausdorff operator*, Bull. Malaysian Math. Soc., to appear.
93. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *Fractional  $(p, q)$ -Mellin transform and its applications*, Bulletin of the Iranian Mathematical Society, 49 (2023), no. 4, Paper No. 47, 25 pp.
92. Akhilesh Prasad, Amit Kumar and **Pankaj Jain**, *The Weyl correspondence in the linear canonical transform domain*, Filomat, 37 (2023), 7431–7444.
91. Arun Pal Singh, Rahul Panchal, **Pankaj Jain** and Monika Singh, *Extrapolation theorems in Lebesgue and grand Lebesgue spaces for quasi-monotone functions*, Trans. A Razmadze Math. Inst., 177 (2023), 275–288.
90. Sandhya Jain and **Pankaj Jain**, *Hausdorff and Dunkl–Hausdorff operators in Lebesgue spaces for monotone functions and monotone weights*, Positivity, (2023). 27:10, <https://doi.org/10.1007/s11117-022-00962-6>.
89. Monika Singh and **Pankaj Jain**, *Hardy inequality in variable grand Lebesgue spaces for non-increasing functions*, Math. Notes, 113 (2023), 282–291. (Russian Version in: Matematicheskie Zametki, 113 (2023), 283–294.)
88. Monika Singh, Arun pal Singh and **Pankaj Jain** *Rubio de Francia extrapolation results for grand Lebesgue spaces defined on sets having possibly infinite measure*, Math. Ineq.& Appl., 25 (2022) 1079–1099.
87. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *Various convergences of multifunctions*, Trans. Razmadze Math. Inst., 176 (2022), 217–223.

86. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *Selection of slightly  $B^*$ -continuous multifunctions*, Eurasian Math. J., 13 (2022), 55–61.
85. Arun Pal Singh, Monika Singh, **Pankaj Jain** and Rahul Panchal, *Rubio de Francia extrapolation theorem in variable Lebesgue space for  $B_{p(\cdot)}$  weights*, Ricerche de Math., doi.org/10.1007/s11587-021-00659-0.
84. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *Two dimensional  $(P, Q)$ -Mellin transform and applications*, Asian-European J. Math. 15 (2022), doi.org/10.1142/S1793557122500814.
83. **Pankaj Jain**, *Classical inequalities for pseudo-integral*, Georgian Math. J., 29 (2022), 373–385.
82. **Pankaj Jain** and Rohit Manglik, *Certain inequalities for fractional  $(p; q)$ -calculus*, Tbilisi Math. J., 15 (2022), 71–88.
81. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *Reduced  $(p; q)$ -differential transform method and applications*, J. Ineq. Sp. Funct., 13 (2022), 24–40.
80. Sandhya Jain, Alberto Fiorenza and **Pankaj Jain**, *Boundedness of Dunkl-Hausdorff operator in Lebesgue spaces*, Rocky Mountain J. Math., 51 (2021), 2031–2044.
79. **Pankaj Jain** and Rohit Manglik, *Classical inequalities for  $(p; q)$ -calculus on finite intervals*, Bol. Soc. Mat. Mex., 45 (2021). <https://doi.org/10.1007/s40590-021-00355-x>.
78. Amiran Gogatishvili, **Pankaj Jain** and Saikat Kanjilal, *On bilinear Hardy inequality and corresponding geometric mean inequality*, Ricerche di Matematica, (2020), doi.org/10.1007/s11587-020-00536-2.
77. **Pankaj Jain**, Anastasia Molchanova, Monika Singh and Sergey Vodopyanov, *On grand Sobolev spaces and pointwise description of Banach function spaces*, Nonlinear Analysis, (2020), doi.org/10.1016/j.na.2020.112100.
76. Akhilesh Prasad, Zamir A. Ansari and **Pankaj Jain**, *Pseudo-differential operator in the framework of linear canonical transform domain*, Asian-European J. Math., 14 (2021), 2150117 (18pp).
75. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *On  $(p, q)$ -Mellin Transform and Applications*, Acta Mathematica Scientia, 41B (2021), 1719–1732.
74. **Pankaj Jain**, Chandrani Basu and Vivek Panwar,  *$B^*$ -continuity for multifunctions based on clustering*, Azerbaijan J. Math., 11 (2021), 3–14.
73. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *On  $g$ -Mellin transform: construction, convexity and applications*, J. Ineq. Sp. Funct., 12 (2021), 23–41.
72. Alberto Fiorenza and **Pankaj Jain**, *A family of equivalent norms for Lebesgue spaces*, Arch. Math., 116 (2021), 179–192.
71. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *Finite Mellin transform for  $(p, q)$  and symmetric calculus*, J. Pseudo-Differ. Oper. Appl., 11 (2020), 1595–1620.
70. Prem Bahadur Chand, Francisco I. Chicharro and **Pankaj Jain**, *On the design and analysis of high order Weerakoon-Fernando methods based on weight functions*, Comp. Math. Methods, (2020), doi:10.1002/cmm4.1114.

69. **Pankaj Jain** and Prem Bahadur Chand, *Derivative free iterative methods with memory having higher R-order of convergence*, Int. J. Nonlinear Sc. Numer. Simulation, 21 (2020), 641-648.
68. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *On  $B^*$ -Clopen Continuity, Oscillation and Convergence*, Tbilisi Math. J., 13 (2020), 129-140.
67. **Pankaj Jain**, Santosh Kumari and Monika Singh, *Mixed norm inequalities for Lebesgue spaces*, Proc. National Acad. Sc. India, Section A, 90 (2020), 783-787.
66. **Pankaj Jain**, Saikat Kanjilal, Vladimir D. Stepanov and G. Shambilova, *Bilinear weighted Hardy-type inequalities in discrete and  $q$ -calculus framework*, Math. Inequal. Appl., 23 (2020), 1279-1310.
65. **Pankaj Jain**, Rajender Kumar and Akhilesh Prasad, *Generalized Schwartz Type Spaces and LCT Based Pseudo Differential Operator*, Trans. A Razmadze Math. Inst., 174 (2020), 93-106.
64. **Pankaj Jain**, Sandhya Jain and Vladimir D. Stepanov, *LCT based integral transforms and Hausdorff operators*, Eurasian Math. J., 11 (2020), 57-71.
63. **Pankaj Jain**, Arun Pal Singh, Monika Singh and Vladimir D. Stepanov, *On duality of grand Bochner-Lebesgue spaces*, Math. Notes, 107 (2020), 247-256.
62. Prem Bahadur Chand, Francisco I. Chicharro, **Pankaj Jain** and Kriti Sethi, *Optimal fourth order Weerakoon-Fernando type methods for multiple roots and their dynamics*, Medit. J. Math., 67 (2019), 15 pp.
61. **Pankaj Jain**, Vladimir D. Stepanov and G. Shambilova, *Discrete Bilinear Hardy Inequalities*, Doklady Math., 100 (2019), 554-557. Russian version: Doklady Akademii Nauk, 479 (2019), 445-448.
60. Prem B. Chand, Francisco I. Chicharro, Neus Garrido and **Pankaj Jain**, *Design and complex dynamics of Potra-Pták-type optimal methods for solving nonlinear equations and its applications*, Mathematics, 7, 942 (2019), 1-21.
59. **Pankaj Jain**, Chandrani Basu and Vivek Panwar, *On some generalized  $B^*$ -continuity,  $B^*$ -coverings and  $B^*$ -separations*, Eurasian Math. J., 10 (2019), 28-39.
58. **Pankaj Jain**, Saikat Kanjilal and Lars-Erik Persson, *Hardy-type inequalities over balls in  $\mathbb{R}^N$  for some bilinear and iterated operators*, J. Ineq. Special Funct., 10 (2019), 35-48.
57. **Pankaj Jain**, Arun Pal Singh, Monika Singh and Vladimir D. Stepanov, *Sawyer duality principle in grand Lebesgue spaces*, Math. Nachr. 292 (2019), 841-849.
56. **Pankaj Jain**, Saikat Kanjilal, Vladimir D. Stepanov and Elena Ushakova, *Bilinear Hardy Steklov operators*, Math. Notes, 104 (2018), 223-232.
55. **Pankaj Jain**, Saikat Kanjilal, Vladimir D. Stepanov and Elena Ushakova, *On Bilinear Hardy Steklov operators*, Dokl. Math., 98 (2018), 634-637.
54. **Pankaj Jain**, Prem Bahadur Chand and Kriti Sethi, *Efficient numerical methods of Aitken type and their dynamics*, Eurasian Math. J., 9 (2018), 58-72.
53. Henryk Hudzik, **Pankaj Jain** and Rajender Kumar, *On generalized fractional cosine and sine transforms*, Georgian Math. J., 25 (2018), 259-270.

52. **Pankaj Jain**, Arun Pal Singh, Monika Singh and Vladimir D. Stepanov, *Sawyer duality principle in grand Lebesgue spaces*, Dokl. Math., 97 (2018), 18–19. Russian version: Dokl. Akad. Nauk., 478 (2018), 131–132.
51. **Pankaj Jain** and Kriti Sethi, *Aitken type methods with high efficiency*, Trans. A Razmadze Math. Inst., 172 (2018), 223–237.
50. **Pankaj Jain** and Monika Singh, *Hilbert inequality on grand function spaces*, Ricerche Mat., 67 (2018), 481–490.
49. **Pankaj Jain** and Sandhya Jain, *Generalized convolution inequalities and application*, Medit. J. Math., (2017), 14: 159. doi.org/10.1007/s00009-017-0961-3.
48. **Pankaj Jain**, Babita Gupta, *Mapping properties of Hardy-type operators involving general functions*, J Math. Ineq., 11 (2017), 551–564
47. **Pankaj Jain**, Monika Singh and Arun P. Singh, *Integral operators on fully measurable weighted grand Lebesgue space*, Indag. Math., 28 (2017), 516–526.
46. **Pankaj Jain**, Monika Singh and Arun P. Singh, *Duality of fully measurable grand Lebesgue space*, Trans. A Razmadze Math. Inst., 171 (2017), 32–47.
45. **Pankaj Jain** and Kriti Sethi, *Newton-type iterative methods for finding Zeros Having higher multiplicity*, Cogent OA 3 (2016).
44. **Pankaj Jain**, Monika Singh and Arun P. Singh, *Hardy type integral inequalities for quasi-monotone functions*, Georgian Math. J., 2016.
43. **Pankaj Jain**, Chet Raj Bhatta and Jivandhar Jnawali, *Newton Type Iterative Methods with High Efficiency*, J. Num. Anal. Approx. Theory, 45 (2016), 14–26,
42. **Pankaj Jain** and Sandhya Jain, *O’Neil type convolution inequalities in Lorentz spaces*, Proc. National Acad. Sc. India, Section A, 86 (2016), 267–271.
41. **Pankaj Jain**, Monika Singh and Arun P. Singh, *Hardy type operators on grand Lebesgue spaces for non-increasing functions*, Trans. A Razmadze Math. Inst., 170 (2016), 34–46.
40. **Pankaj Jain**, Chet Raj Bhatta and Jivandhar Jnawali, *Modified Newton type methods with higher order convergence*, Jordanian J. Math. Stat., 8 (2015), 327–341.
39. **Pankaj Jain**, Sandhya Jain and Rajender Kumar, *On Fractional Convolutions and Distributions*, Integral Transform and Special Functions, 26 (2015), 885–899.
38. **Pankaj Jain** and Sandhya Jain, *Weighted spaces related to Bochner integrable functions*, Georgian Math. J, 22 (2015), 71–79.
37. **Pankaj Jain** and Sandhya Jain, *Normability and duality in the two-dimensional Lorentz spaces*, Eurasian Math J., 5 (2014), 79–91.
36. **Pankaj Jain** and Sandhya Jain, *On Young type inequalities for generalized convolution*, Proc. A. Razmadze Math. Inst., 164 (2014), 45–61.
35. **Pankaj Jain**, Lars-Erik Persson and Priti Upreti, *On Products of Generalized Orlicz Spaces*, Math. Ineq. Appl., 15 (3) (2012), 663–674.
34. **Pankaj Jain** and Santosh Kumari, *On grand Lorentz spaces and the maximal operator*, Georgian Math. J., 19 (2) (2012), 235–246.

33. **Pankaj Jain** and Sandhya Jain, *On Anisotropic Weighted Sobolev Inequalities*, Proc. A. Razmadze Math. Inst., 158 (2012), 57-65.
32. Alberto Fiorenza, Babita Gupta and **Pankaj Jain**, *Hardy inequalities in Lebesgue space with mixed norm*, Canadian Math. Bull., 54 (4) (2011), 630-644.
31. Victor Burenkov, **Pankaj Jain** and Tamara Tararykova, *On boundedness of the Hardy operator in Morrey-type spaces*, Eurasian Math J., 2 (1) (2011), 52-80.
30. **Pankaj Jain** and Suket Kumar, *Weighted inequalities of Hardy-type on amalgams*, Real Analysis Exchange, 34 (2) (2009), 483-499.
29. **Pankaj Jain** and Suket Kumar, *Boundedness of Hardy operators on generalized amalgams*, Math. Ineq. Appl., 12 (3) (2009), 549-562.
28. **Pankaj Jain** and Priti Upreti, *Certain Properties of Generalized Orlicz Spaces*, J. Inequal. Pure & Applied Math. (JIPAM), 10 (2) (2009), Article 37, 10pp.
27. Alberto Fiorenza, Babita Gupta and **Pankaj Jain**, *Maximal theorem for weighted grand Lebesgue spaces*, Studia Math., 188 (2) (2008), 123-133.
26. **Pankaj Jain** and Daulti Verma, *Multidimensional Mean inequalities in certain Banach functions spaces*, Real Analysis Exchange, 33 (1) (2008), 125-141.
25. Alberto Fiorenza, Babita Gupta and **Pankaj Jain**, *Compactness of integral operators in Lebesgue space with mixed norm*, Math. Ineq. Appl., 11 (2) (2008), 335-348.
24. **Pankaj Jain**, Lars-Erik Persson and Priti Upreti, *Inequalities and properties of some generalized Orlicz classes and spaces*, Acta Math. Hungar., 117 (1-2) (2007), 161-174.
23. **Pankaj Jain**, *Steffensen-type methods for solving non-linear equations*, Appl. Math. Comp., 194 (2) (2007), 527-533.
22. **Pankaj Jain**, Pawan K. Jain and Babita Gupta, *On a conjecture of Kufner and Persson*, Rocky Mountain J. Math., 37 (6) (2007), 1941-1951.
21. Victor Burenkov, **Pankaj Jain** and Tamara Tararykova, *On Hardy Steklov and geometric Steklov operators*, Math. Nachr., 280 (11) (2007), 1244-1256.
20. **Pankaj Jain**, Babita Gupta and Daulti Verma, *Mean inequalities in certain Banach functions spaces*, J. Math. Anal. Appl., 334 (1) (2007), 358-367.
19. **Pankaj Jain**, Pawan K. Jain and Babita Gupta, *Higher dimensional compactness of Hardy operators involving Oinarov-type kernels*, Math. Ineq. Appl., 9 (2006), 739-748.
18. **Pankaj Jain**, Pawan K. Jain and Babita Gupta, *On certain weighted integral inequalities with mixed norm*, Italian J. Pure Applied Math., 18 (2005), 23-32.
17. **Pankaj Jain** Lars-Erik Persson and Arun P. Singh, *On geometric mean inequalities with exponential weights*, Soochow Math. J., 30 (4) (2004), 391-400.
16. **Pankaj Jain**, Pawan K. Jain and Babita Gupta, *Compactness of Hardy-type operators over star shaped regions in  $\mathbb{R}^N$* , Canadian Math. Bull., 47(4) (2004), 540-552.
15. Babita Gupta, **Pankaj Jain**, Lars-Erik Persson and Anna Wedestig, *Weighted geometric mean inequalities over cones in  $\mathbb{R}^N$* , J. Inequal. Pure & Applied Math., 4(4) (2003), Article 48.

14. **Pankaj Jain** and Babita Gupta, *Compactness of Hardy Steklov operator*, J. Math. Anal. Appl., 288 (2003) 680-691.
13. **Pankaj Jain** and Rajesh Hassija, *Some remarks on two dimensional Knopp type inequalities*, Applied Math. Letters, 16(4) (2003), 459-464.
12. **Pankaj Jain**, Pawan K. Jain and Babita Gupta, *On certain double sized integral operators over multidimensional cones*, Proc. A. Razmadze Math. Inst., 131 (2003), 39-60.
11. **Pankaj Jain**, Pawan K. Jain and Bindu Bansal, *Certain imbeddings of weighted Sobolev spaces*, Math. Ineq. Appl., 6 (1) (2003) 105-120.
10. **Pankaj Jain**, Pawan K. Jain and Bindu Bansal, *Certain imbeddings of Sobolev spaces with power type weights*, Indian J. Math., 44 (3) (2002) 303-321.
9. **Pankaj Jain**, Lars-Erik Persson and Anna Wedestig, *Multidimensional Cochran and Lee type inequalities with weights*, Proc. A. Razmadze Math. Inst., 129 (2002), 17-27.
8. **Pankaj Jain**, Dag Lukkassen, Lars-Erik Persson and Nils Svanstedt, *Imbeddings of anisotropic Orlicz-Sobolev spaces and applications*, Math. Ineq. Appl., 5 (2) (2002), 181-195.
7. **Pankaj Jain**, Lars-Erik Persson and Anna Wedestig, *Carleman-Knopp type inequalities via Hardy inequalities*, Math. Ineq. Appl., 4 (3) (2001), 343-355.
6. **Pankaj Jain** and Lars-Erik Persson, *Remarks on recent results of Oguntuase and Imoru*, J. Math. Anal. Appl., 255 (2001), 105-108.
5. **Pankaj Jain**, Pawan K. Jain and Bindu Bansal, *Continuous and compact imbeddings of weighted Sobolev spaces*, Acta Sci. Math. (Szeged), 66 (2000), 665-677.
4. **Pankaj Jain** and Arun P. Singh, *A characterization for the boundedness of geometric mean operator*, Applied Math. Letters, 3 (8) (2000), 63-67.
3. **Pankaj Jain**, *On imbeddings of weighted Sobolev spaces*, Note di Matematica, 15(1) (1995), 31-43.
2. Pawan K. Jain and **Pankaj Jain**, *Certain imbeddings of weighted Orlicz-Sobolev spaces*, J. Analysis (1995), 229-239.
1. **Pankaj Jain**, *On imbeddings of weighted Sobolev spaces on an unbounded domain*, Publications De L'institut Mathematique, Nouvelle serie tome 56 (70) (1994), 79-89

### Research Papers in Refereed International Proceedings

7. **Pankaj Jain**, Monika Singh and Arun P. Singh, *Recent trends in grand Lebesgue spaces, Function Spaces and Inequalities*, In: Function Spaces and Inequalities (Eds: Pankaj Jain and Hans-Jürgen Schmeisser), Springer, (2015), 137-159.
6. **Pankaj Jain**, Monika Singh and Arun P. Singh, *Weighted norm inequalities for Hardy type operators on monotone functions*, Contemporary Mathematics, AMS, 645 (2015), 145-160.
5. **Pankaj Jain**, Pawan K. Jain and Arun P. Singh, *A two dimensional Knopp inequality with weights, Analysis and Applications* (in the honour of Professor T. Pati), Narosa Publishing House (2002), 93-100.

4. **Pankaj Jain**, Pawan K. Jain and Rajesh Hassija, *Inequalities involving dual of some averaging operators*, In : *Geometry, Analysis and Applications* (Ed.: R.S. Pathak), World Scientific (2001), 349-357.
3. **Pankaj Jain**, Lars-Erik Persson and Anna Wedestig, *From Hardy to Carleman and general mean type inequalities*, *Function Spaces and Applications*, Narosa Publishing House (1999), 117-130.
2. **Pankaj Jain** and Pawan K. Jain, *Imbeddings of weighted Sobolev spaces (a survey)*, *Function Spaces and Applications*, Narosa Publishing House, New Delhi (1999), 98-116.
1. Pawan K. Jain and **Pankaj Jain**, *Certain recent refinements of Sobolev inequalities (a survey)*, *Topics in Fourier Analysis, Approximation Theory and Their Applications*, Wiley Eastern Ltd. (1997), 101-114.

## Invited Talks (73)

### Outside India (38)

1. Luleå University of Technology, Sweden, March 1999.
2. Narvik University of Technology (HIN), Norway, September 1999.
3. Luleå University of Technology, Sweden, December 1999.
4. University of Barcelona, Spain, March, 2000.
5. Academy of Sciences, Czech Republic, July 2002.
6. Istituto per le Applicazioni del Calcolo "Mauro Picone" - Sezione di Napoli, Consiglio Nazionale delle Ricerche (C.N.R.), Italy, June 2003.
7. Dipartimento di Costruzioni e Metodi Matematici in Architettura, Università di Napoli, Italy, June 2003.
8. University of Sevilla, Spain, June 2003.
9. Academy of Sciences, Czech Republic, May 2006.
10. Luleå University of Technology, Sweden, June 2009.
11. University of Vienna, Austria, July 2009.
12. University of Oulu, Finland, June 2010.
13. University Federico II of Naples, Italy, May/June 2011.
14. Alfred Renyi Institute of Mathematics, Budapest, Hungary, June 2011.
15. Friedrich Schiller University of Jena, Germany, September 2011.
16. Southern Illinois University, USA May 2014.
17. Vanderbilt University, USA, May 2014.
18. Vienna University, Austria, June 2014.
19. Czech Academy of Sciences, Czech Republic, June 2014.

20. Babes-Boylai University, Romania, July 2015.
21. Adam Mickiewicz University, Poland, June 2016.
22. Charles University, Prague, Czech Republic, July 2016.
23. Charles University, Prague, Czech Republic, May - June 2017.
24. Novosibirsk State University, Novosibirsk, Russia, August 2017.
25. Adam Mickiewicz University, Poznan, Poland, September 2017.
26. University of Nis, Serbia, May 2018.
27. University of Kragujevac, Serbia, May 2018.
28. Vienna University, Austria, June 2018.
29. Tribhuvan University, Butwal, Nepal, January 2019.
30. Kutahya Dumlupinar University, Turkey, July 2019.
31. Alfred Renyi Institute of Mathematics, Budapest, Hungary, August 2019.
32. University of Colombo, Sri Lanka, November 2021.
33. Charles University, Prague, Czech Republic, 2022.
34. Congress of Romanian Mathematicians, Romania, 2023.
35. Georgian Mathematical Union, Georgia, 2023.
36. Karlstad University, Sweden, 2024
37. Nepal Math Society, Nepal, 2024
38. Kathmandu University, Nepal, 2025

**In India(36)**

1. University of Jammu, February 1995.
2. University of Jammu, February 1996.
3. Jamia Millia Islamia, August 1996.
4. University of Delhi, December 1997.
5. Banaras Hindu University, March 1998.
6. Government Autonomous Model Science College, Gwalior, March 1995.
7. IMS Conference, Aligarh Muslim University, December 1995. (Paper Presentation)
8. University of Delhi, November 1996. (Paper Presentation)
9. University of Calcutta, November 2002.
10. University of Jammu, February 2004.
11. University of Jammu, February 2005.

12. University of Gwalior, July 2009.
13. Calcutta Mathematical Society Conference, Kolkata, December 2010.
14. Indian Society of Mathematics and Mathematical Sciences Conference, Gorakhpur February 2011.
15. Calcutta Mathematical Society Conference, Kolkata, September 2011.
16. Indian Mathematical Society Conference, Varanasi, (to take place in January 2013)
17. Indian Society of Mathematics and Mathematical Sciences, Gorakhpur, February 2013.
18. Aligarh Muslim University, Aligarh, February 2014.
19. Aligarh Muslim University, Aligarh, December 2015.
20. MD University, Rohtak, March 2017.
21. Aligarh Muslim University, Aligarh, November 2017.
22. Indian Mathematical Society Conference, Shri Venketeshwara University, Tirupati, December 2017.
23. Central University of Jammu, Jammu, October 2018.
24. Indian Mathematical Society Conference, Shri Mata Vaishno Devi University, Jammu, November 2018.
25. Calcutta Mathematical Society Conference, Kolkata, December 2018.
26. University of Jammu August, 2019.
27. Babu Banarasi Das University, Lucknow, November, 2019.
28. Ashoka University, Haryana, December, 2019.
29. Calcutta Mathematical Society, December, 2019.
30. Jaypee Institute of Information Technology, January, 2020.
31. NITTTR, Bhopal, November 2020.
32. Shri Ram Swaroop Memorial University, Lucknow November 2021.
33. IIT (ISM), Dhanbad, 2022.
34. Gurugram University, Gurugram, 2024.
35. Indira Gandhi University, Rewari, 2024.
36. Indian Math Society, Pune, 2024.

## Grants and Fellowships

### International Grant

1. Indo-Russian S&T Project Grant – DST (2016-2019) (Completed)

### Research Grant

2. Research Grant – UGC (1997-99) (Project Completed)
3. Research Grant – UGC (2002-04) (Project Completed)
4. Research Grant for Three years (2005-07) – DST (Project Completed)
5. Research Grant for Three years (2005-08) – CSIR (Project Completed)
6. Research Grant for Three years – (2009-12) – NBHM (Project Completed)
7. Research Grant for Three years – (2010-13) – DST (Project Completed)
8. Research Grant for Three years – (2015-18) – CSIR (Project Completed)
9. Research Grant MATRICS (2018-2021) – DST (On going)

### Fellowships

10. Exchange Programme to U.K. – Royal Society and INSA (1998, 3 months)
11. BOYSCAST Fellowship for Sweden – DST (1999, 1 year)
12. Exchange Programme to U.K. – Royal Society and INSA (2003, 3 months)
13. Indo-UK Network Programme – Royal Society and DST (2006, 3 months)
14. Exchange Programme to Germany\* – INSA
15. Exchange Programme to Poland – INSA, Polish Academy (2016, one month)

### Travel Grants

16. Travel Grant for International Conference at Czech Republic – NBHM (1998)
17. Travel Grant for International Conference at Memphis, USA\* – NBHM (2001)
18. Travel Grant for International Conference at Czech Republic – DST, CSIR (2002)
19. Travel Grant for International Conference at Spain – NBHM (2003)
20. Travel Grant for International Conference at Czech Republic – DST, UGC (2006)
21. Travel Grant for International Conference at Croatia\* – CSIR (2008)
22. Travel Grant for international Conference at Finland – DST (2010)
23. Travel Grant for International Conference at Germany – University of Delhi (2011)
24. Travel Grant for International Conference at Romania – DST (2015)
25. Travel Grant for International Conference at Czech Republic – CSIR (2017)

## **Editorial Board Membership**

1. Editor-in-Chief of the Journal of Indian Mathematical Society
2. International Journal of Applied Mathematical Sciences
3. Eurasian Mathematical Journal
4. Journal of Inequalities and Special Functions
5. Advances in Inequalities and Applications

## **Mathamatical Genealogy**

Banach– Mazur – Orlicz – Hudzik – Pankaj Jain

## **Membership of the Learned Societies**

1. Indian Mathematical Society - Life Member
2. Allahabad Mathematical Society - Life Member
3. Jammu Mathematical Society - Life Member
4. American Mathematical Society (2003 – Till Date)