CURRICULUM VITAE

1. Name : **RANJAN KUMAR MOHANTY**

2. Address for Correspondence : **Department of Mathematics**
Faculty of Mathematical Sciences
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Tel. No(s): **0091-9811526705 (M)**

3. Date of Birth : **01 - 05 - 1961** (**First May Nineteen Sixty One**)

4. (a) Nationality : **Indian** (b) Religion : **Hindu**

5. (a) Marital Status : **Married** (b) Sex : **Male**

6. Academic Qualifications

M.Sc (Mathematics), Utkal University, 1984
Ph.D (Mathematics), Indian Institute of Technology, Delhi, 1990

7. Title of Ph.D Thesis : **Fourth Order Finite Difference Methods for Certain Mildly Non-linear Partial Differential Equations**

8. Name of Supervisor(s) : **Prof. M.K. Jain & Prof. R.K. Jain**
(01st -August-1985 to 31st -July-1990)
Department of Mathematics, IIT Delhi
New Delhi – 110 016, INDIA

9. Field of Research : **Numerical Analysis / Differential Equations**
(Computational Methods for Differential Equations)

10. Summary of Scientific Career (Academic & Teaching Experience):

Position held	Period	Nature of Work	University/ Institution
Research Scholar (Full-time)	August (1985) - to - July (1990)	Teaching & Research	Department of Mathematics, I.I.T. Delhi
Lecturer/ Assistant Professor (Permanent)	16th August 1990 - to - 21st June 1993	Teaching & Research	Department of Mathematics, Devi Ahilya University, Indore
Lecturer/ Sr. Lecturer/ Assistant Professor (Permanent)	24th June 1993 - to - 17th August 2000	Teaching & Research	Department of Mathematics, University of Delhi
Reader/ Associate Professor (Permanent)	18th August 2000 - to - 17th August 2008	Teaching & Research	Department of Mathematics, University of Delhi
Professor (Permanent)	18th August 2008 - to - 26th August 2012	Teaching & Research	Department of Mathematics, University of Delhi
Professor (Permanent)	27th August 2012 - to - 26th August 2015	Teaching & Research	Department of Applied Mathematics, South Asian University
Professor (Permanent)	27th August 2015 - to - 06th January 2016	Teaching & Research	Department of Mathematics, University of Delhi
Professor (Permanent)	07th January 2016 - to - 30th April 2026	Teaching & Research	Department of Mathematics, South Asian University
Adjunct Professor	From 20th February 2026	Research Collaboration	Department of Mathematics & Computing, NIT Jalandhar
Honorary Adjunct Professor	From 04th May 2026	Teaching & Research	Department of Mathematics, South Asian University

11. Courses Taught at Post-Graduate Level:

University/Institution	From - To	Courses Taught
(i) Dept of Mathematics, Devi Ahilya University, (ii) Dept of Mathematics, University of Delhi, (iii) Dept of Mathematics, South Asian University	16-August-1990 -to- 30-April-2026	Applied Numerical Analysis, Computational and Analytical Methods for Differential Equations, Computational Fluid Dynamics, Mechanics, Parallel Algorithms.

12. Administrative Experience:

Post	Organization/University	Duration		Experience (In Years & Months)
		From (Date)	To (Date)	
PRESIDENT (Acting)	South Asian University	11/07/2020	26/12/2023	03 Years & 06 months
DEAN of Faculty	Faculty of Mathematics & Computer Science (FMCS), South Asian University	03/09/2012	31/10/2013	5 years & 8 months
		01/05/2014	26/08/2015	
		07/01/2016	13/03/2019	
Head of the Department	Dept of Mathematics, South Asian University	11/05/2020	10/05/2022	02 Years
Chairperson, Library Advisory Committee (LAC)	South Asian University	18/01/2019	15/07/2020	1 year & 6 months
Chairperson, Board of Studies (BoS)	Faculty of Mathematics & Computer Science (FMCS), South Asian University	03/09/2012	31/10/2013	5 years & 8 months
		01/05/2014	26/08/2015	
		07/01/2016	13/03/2019	
Member, Board of Studies (BoS)	South Asian University	27/08/2012	30/04/2026	12 years & 08 months
	Central University Haryana	16/01/2019	15/01/2022	3 years
	Guru Jambeswar University	02/05/2018	01/05/2020	2 years
	Kurukshetra University	24/06/2012	23/06/2014	2 years
	Netaji Subhas University of Technology	11/04/2019	30/04/2026	07 years
	Babasaheb Bhimrao Ambedkar University	13/01/2022	12/01/2025	03 years
	Shri Vishwakarma Skill U niversity	11/03/2021	10/03/2024	03 years
	Delhi Technical University	21/04/2023	20/04/2025	2 years
	Thaper Institute of Engineering & Technology	23/05/2024	22/05/2026	2 years
	The North Cap University	03/08/2013	25/02/2017	3 years & 6 months
	University of Delhi	18/08/2008	26/08/2012	4 years
Member of Academic Council (AC)	South Asian University	03/09/2012	31/10/2013	09 years & 03 months
		01/05/2014	26/08/2015	
		07/01/2016	13/03/2019	
		11/07/2020 (Chairperson)	26/12/2023	
Member of Executive Council (EC)	South Asian University	03/09/2012	31/10/2013	09 years & 03 months
		01/05/2014	26/08/2015	
		07/01/2016	13/03/2019	
		11/07/2020 (Chairperson)	26/12/2023	
Chairperson, Finance Committee (FC)	South Asian University	11/07/2020	26/12/2023	3 years & 06 months
Chairperson, Finance Experts Committee (FEC)	South Asian University	11/07/2020	26/12/2023	3 years & 06 months
Governing Board (GB) Member	South Asian University	11/07/2020	26/12/2023	3 years & 06 months

13. Member of the Editorial Board of Academic Journal(s) of repute:

- **Editorial Board Member,** *International Journal of Computer Mathematics* (2004-2007), Publisher- Taylor & Francis.
- **Editorial Board Member,** *Computational Methods for Differential Equations* (2013-Till date) Publisher- Springer Nature.
- **Was the Guest Editor of the Special Issue (dedicated to Prof M.K. Jain) of *'Journal of Computational Methods in Science & Engineering'*, Vol. 06, No. 1-2, 2006.**

14. Member of Professional/Academic Bodies:

(i) Life member of Indian Society of Industrial and Applied Mathematics (ISIAM).
(ii) Life member of Indian Academy for Mathematical Modeling and Simulation (IAMMS).
(iii) Life member of Odisha Mathematical Society (OMS).

15. Elected Fellow of Academies:

Fellow of National Academy of Sciences India (FNASc) – 2012.
Fellow of Indian Academy of Mathematical Modeling and Simulation (FIAMMS)–2018.

16. Scholarship/Fellowship awarded, if any **:**

(i) ***Chinese Academy of Sciences*** **(CAS)** ***Fellowship*****-2019** ***Awardee*****, supported by 'The Chinese Academy of Sciences, Beijing' under INSA-CAS Bilateral Exchange Program-2019 to carry out research in the area '*On the High Order Numerical Methods for Incompressible Fluid Flow Problems'* at the Institute of Computational Mathematics & Scientific/Engineering Computing, Academy of Mathematics & System Science, Chinese Academy of Sciences, Beijing, CHINA during the period 24th June 2019 to 21st July 2019.**

(ii) ***Royal Society Fellowship*****-2014** ***Awardee*****, supported by 'The Royal Society of Edinburgh' under INSA-RSE Bilateral Exchange Program-2014 to carry out research in the area '*On the Stability of Initial Value Problems on a Variable Mesh*' at University of Strathclyde, Glasgow, UK during the period 01st October 2014 to 28th October 2014.**

(iii) ***Fulbright-Nehru Senior Research Fellowship*****-2013** ***Awardee*****, supported by the 'United States-India Educational Foundation (USIEF)' to carry out research in the area '*Computational Fluid Dynamics'* at Louisiana Tech University, USA during the period 01st November 2013 to 30th April 2014.**

(iii) ***DFG Fellowship*****-2008** ***Awardee,*** **supported by 'The German Research Foundation' (The Deutsche Forschungsgemeinschaft) under INSA-DFG Bilateral Exchange Program-2008 to carry out research in the area *'Computational Methods for Singular Perturbed Differential Equations on a Shiskin Mesh'* at The Institute of Numerical Mathematics, Dresden University of Technology, Germany during the period 01st June 2008 to 31st August 2008.**

(iv) ***Royal Society Fellowship*****-2003** ***Awardee,*** **supported by 'The Royal Society of London', under INSA-RSL Bilateral Exchange Program-2003 to carry out research in the area '*Parallel Computational Methods for Differential Equations*' at The Nottingham Trent University, U.K. during the period 24th March 2004 to 23rd June 2004.**

(v) ***Commonwealth Fellowship*-2000** ***Awardee,*** **supported by 'The British Council' and 'Association of Commonwealth Universities', UK, to carry out research in the area '*Applied Numerical Analysis*' at The Nottingham Trent University, UK during the period 01st October 2000 to 30th September 2001.**

(vi) ***BOYSCAST Fellowship*-1996** ***Awardee,*** **supported by the 'Department of Science and Technology' Government of India, to carry out research in the area '*Parallel Numerical Methods*' at Loughborough University, UK during the period 01st May 1996 to 30th April 1997.**

(vii) ***'GATE Scholarship'*** **during the period 01st August 1985 to 31st March 1990, to carry out Research in Mathematics leading to a Ph. D degree at I.I.T. Delhi.**

(viii) ***'P.G. Merit Scholarship'*** **during the period 01st July 1981 to 30th June 1983, to carry out Post-graduate studies in Mathematics at Utkal University.**

17. Foreign Country Visited (in research collaboration) :

(a) **England: Worked as a Post-Doctoral Fellow at the Parallel Algorithm Research Centre, Department of Computer Studies, Loughborough University, UK in collaboration with Prof. D.J. Evans during the period 01/May/1996 – 30/April/1997.**

(b) **England: Worked as a Post-Doctoral Fellow in the Department of Computing, The Nottingham Trent University , UK in collaboration with Prof. D.J. Evans during the period 01/October/2000 – 30/September/2001.**

(c) **England: Worked as a Post-Doctoral Fellow in the School of Computing and Mathematics, The Nottingham Trent University, UK in collaboration with Prof. D.J. Evans during the period 24/March/2004 –23/June/2004.**

(d) **Germany: Worked as a Post-Doctoral Fellow at the Institute of Numerical Mathematics, Dresden University of Technology, Germany in collaboration with Prof. Christian Grossmann during the period 01/June/2008– 31/August/2008.**

(e) **USA**: **Worked as a Post-Doctoral Fellow in the Department of Mathematics & Statistics, Louisiana Tech University, USA in collaboration with Prof. Weizhong Dai during the period 01/November/2013 – 30/April/2014.**

(f) **Scotland: Worked as a Post-Doctoral Fellow in the Department of Mathematics and Statistics, University of Strathclyde, Glasgow, UK in collaboration with Prof. Sean McKee during the period 01/October/2014 – 28/October/2014.**

(g) **China: Worked as a Post-Doctoral Fellow at the Academy of Mathematics & System Science, Chinese Academy of Sciences, Beijing, China in collaboration with Prof. Li Yuan during the period 24/June/2019 – 21/July/2019.**

18. Any other academic recognition:

Featured in the list of World's top 2% scientists released by Stanford University in Applied/Computational Mathematics (2020,2021, 2022, 2023, 2024, 2025).

19. Research Interest:

Numerical Methods for Non-linear Partial Differential Equations and their stability/convergence analysis, Computational Fluid Dynamics, Numerical Parallel Algorithms, Singularly Perturbation Problems.

20. Details of Research Projects Undertaken (as a Principal Investigator):

Organization's Name	Nature of Project	Duration of Project	Amount of grant (Rupees)	Status
South Asian University	Sanctioned by DST(SERB) under Core Research Grant - Fast Numerical Methods in Exponential Form for Multi-dimensional Second- and Fourth-order Quasilinear Parabolic Partial Differential Equations (CRG/2018/004608)	03 years (28/03/2019 –to- 27/03/2022)	22, 03, 622	Completed
South Asian University	Sanctioned by DST(SERB) under MATRICS Project (PAC Mathematical Science)- On the Spline Solution of Multi-dimensional Hyperbolic Equations (MTR/2017/000163)	03 years (25/06/2018 -to- 24/06/2021)	6,60,000	Completed
University of Delhi	Sanctioned by University of Delhi under R & D Doctoral Research Programme - High Order Off-step Discretization for Multi-dimensional Hyperbolic Equations	01 year (July 2012 – June 2013)	1,40,000	Completed
University of Delhi	Sanctioned by University of Delhi under R & D Doctoral Research Programme - High Accuracy Approximation for Multi-dimensional Quasi-linear Hyperbolic Equations	01 year (July 2011 – June 2012)	1,20,000	Completed
University of Delhi	Sanctioned by University of Delhi under R & D Doctoral Research Programme - Arithmetic Average Discretization for Multi-dimensional Non-linear Wave Equations	01 year (July 2010 – June 2011)	1,00,000	Completed
University of Delhi	Sanctioned by University of Delhi under R & D Doctoral Research Programme - Computational Methods for the Solution of Fourth Order Partial Differential Equations	01 year (July 2009 – June 2010)	1,00,000	Completed
University of Delhi	Sanctioned by University of Delhi under R & D Doctoral Research Programme - Parallel Numerical Algorithms for Non-linear Integro-Differential Equations	01 year (July 2008 – June 2009)	1,00,000	Completed
University of Delhi	Sanctioned by University of Delhi under R & D Doctoral Research Programme - Parallel Numerical Methods for Non-linear Differential Equations.	01 year (July 2007 – June 2008)	1,00,000	Completed

21. List of supervision of awarded Doctoral (Ph.D) Thesis

[1] **Kochurani George** (1996): "Fourth Order Finite Difference Methods for Multi-dimensional Non-linear/Linear Singular Hyperbolic Equations with Variable Coefficients", *Department of Mathematics*, *University of Delhi.*

[2] **P.K. Pandey** (1997): "Finite Difference Methods of Order Two and Four for the System of Multi-dimensional Non-linear Biharmonic Equations", *Department of Mathematics*, *University of Delhi.*

[3] **Shivani Dey** (2000): "Single Cell High Order Approximations for $(\partial u / \partial n)$ for Multi-dimensional Quasi-linear Elliptic Partial Differential Equations", *Department of Mathematics, University of Delhi.*

[4] **Urvashi Arora** (2000): "High Accuracy Difference Schemes for Certain Mildly Quasi-linear Hyperbolic Equations", *Department of Mathematics, University of Delhi.*

[5] **Dinesh Kumar** (2002): "Single Cell Discretization of $O(k^2+h^4)$ for the Estimates of $(\partial u / \partial n)$ for Multi-dimensional Mildly Quasi-linear Parabolic Equations", *Department of Mathematics, University of Delhi.*

[6] **Navnit Jha** (2003): "Alternating Group Explicit Methods for the Numerical Solution of Two Point Singular Boundary Value Problems", *Department of Mathematics, University of Delhi.*

[7] **Noopur Khosla** (2005): "Highly Accurate Variable Mesh Two Parameter Alternating Group Explicit Methods for the solution of Boundary Value Problems", *Department of Mathematics, University of Delhi.*

[8] **Swarn Singh** (2007): "New Highly Accurate Discretization for the Solution and the Estimates of $(\partial u / \partial n)$ for Singularly Perturbed Non-linear Multi-dimensional Elliptic and Parabolic Partial Differential Equations", *Department of Mathematics, University of Delhi.*

[9] **Prempal Singh** (2010): "Non-linear Dynamical Systems and Chaos Synchronization", *Department of Mathematics, University of Delhi.* (Jointly with Dr. Ayub Khan)

[10] **Roopesh Tehri** (2010): "Studies on Chaos Control and Chaos Indicators in Dynamical Systems", *Department of Mathematics, University of Delhi.* (Jointly with Dr. L.M. Saha)

[11] **Bharti** (2011): "Hyperbolicity, Energy Variability and Chaos in Nonlinear Dynamical Systems", *Department of Mathematics, University of Delhi.* (Jointly with Dr. L.M. Saha)

[12] **Neeti Goel** (2011): "Chaos Control in Various Problems of Dynamical Systems", *Department of Mathematics, University of Delhi.* (Jointly with Dr. L.M. Saha)

[13] **Deepika Dhall** (2012): "High Accuracy Numerical Methods for the Solution of Non-linear Boundary Value Problems", *Department of Mathematics, University of Delhi.*

[14] **Suruchi Singh** (2012): "A Class of Efficient Finite Difference Discretization for the Solution of Second Order Quasi-linear Hyperbolic Equations", *Department of Mathematics, University of Delhi.*

[15] **Vijay Dahiya** (2013): "Spline Methods for the Numerical Solution of Partial Differential Equations", *Department of Mathematics, DCR University of Science & Technology.*

[16] **Venu Gopal** (2013): "Numerical Treatment for the Solution of Multi-dimensional Second Order Nonlinear Hyperbolic Equations", *Department of Mathematics, University of Delhi.*

[17] **Sadananda Prasad** (2013): "On Evolutionary Behaviour and Chaos Measure in Discrete Dynamical Systems", *Department of Mathematics, University of Delhi.* (Jointly with Dr. L.M. Saha)

[18] **B.N. Mishra** (2014): "Single Cell High Accuracy Discretization for the Solution of Multi-dimensional Non-linear Bi- and Tri-harmonic Elliptic Boundary Value Problems", *Department of Mathematics, Utkal University.*

[19] **Jyoti Talwar** (2015): "Alternating Group Explicit Methods for the Solution of Nonlinear Differential Equations", *Department of Mathematics, University of Delhi.*

[20] **Nikita Setia** (2015): "High Accuracy Off-step Discretizations for the System of Multi-dimensional Quasi-linear Elliptic and Parabolic Partial Differential Equations", *Department of Mathematics, University of Delhi.*

[21] **Ravindra Kumar** (2016): "Efficient Numerical Algorithms for Quasi-linear Elliptic and Hyperbolic Partial Differential Equations", *Department of Mathematics, University of Delhi.*

[22] **Vinod Chauhan** (2016): "Efficient Numerical Algorithms for Higher Even Order Nonlinear Two Point Boundary Value Problems on a Variable Mesh", *Department of Mathematics, University of Delhi.*

[23] **Deepti Kaur** (2017): "High Accuracy Compact Difference Methods for Multi-dimensional Fourth Order Quasi-linear Parabolic Partial Differential Equations", *Department of Mathematics, University of Delhi.*

[24] **Sucheta Nayak** (2018): "Numerical Solution of the System of Nonlinear Singular Two Point Boundary Value Problems on a Variable Mesh", *Department of Mathematics, Jamia Milia Islamia, New Delhi.*

[25] **Gunjan Khurana** (2018): "High Accuracy Half-step Discretizations for the Solution of Multi-dimensional Quasi-linear Hyperbolic Partial Differential Equations", *Department of Mathematics, South Asian University.*

[26] **Sachin Sharma** (2019): "High Accuracy Numerical Methods Based on Spline Approximations for 1-D Quasilinear Parabolic and Time-dependent Biharmonic Equations", *Department of Mathematics, University of Delhi.*

[27] **Md Hasan Sarwer** (2019): "High Accuracy Compact Numerical Methods for Nonlinear Biharmonic Problems of First Kind", *Department of Mathematics, South Asian University.*

[28] **Geetan Manchanda** (2021): "High Accuracy Numerical Methods in Exponential form for the Solution of Non-linear Boundary Value Problems", *Department of Mathematics, Jamia Milia Islamia. New Delhi.*

[29] **Bishnu Pada Ghosh** (2021): "High Resolution Numerical Approximations for Nonlinear Initial and Hyperbolic Initial-boundary Value Problems", *Department of Mathematics, South Asian University.*

[30] **Divya Sharma** (2023): "High Resolution Numerical Algorithms in Exponential Form for the Solutions of One and Two Space Dimensional Quasilinear Parabolic Equations", *Department of Mathematics, South Asian University.*

[31] **Niranjan** (2026): "Sixth-order Compact Approximations for Nonlinear Elliptic and Parabolic Partial Differential Equations", *Department of Mathematics, South Asian University.*

22. Presentations at Training Programmes/Conferences/Workshops/Symposia as a Resource Person/Invited Speaker/Plenary Speaker

- Delivered a series of *four* lectures as a resource person on 'Parallel Numerical Methods for Nonlinear Differential Equations' in the workshop 'Numerical Methods in Science & Engineering Computations', Utkal University, during 18th-25th February, 2007.

- Delivered a lecture on 'BLAGE Algorithm for 2D Elliptic Equation' at the Institute of Numerical Mathematics, Dresden University of Technology, Germany during June-August, 2008.

- Delivered an invited talk on 'AGE Iteration Method for Nonlinear Two Point Boundary Value Problems' in the workshop 'Engineering Applications of Mathematics', DCR University of Science & Technology, during 18th-19th December, 2008.

- Delivered a series of *four* lectures as a resource person on 'Alternating Group Explicit Methods for Nonlinear Partial Differential Equations' in the workshop 'Advanced Numerical Technique', BHU, during 8th-9th July, 2009.

- Delivered an invited talk on 'Alternating Group Explicit Method for the solution of nonlinear two point boundary value problems' in the International Conference on Recent Trends in Mathematics and its Applications (IRCTMA-09), Jamia Milia Islamia, New Delhi, during 30th-31st March, 2009.

- Delivered a series of *four* lectures as a resource person on 'Numerics of Partial Differential Equations' in the workshop 'Advanced Instructional School', Panjab University, during 18th-23rd June, 2012.

- Delivered a series of *four* lectures as a resource person on 'Computational Methods for Partial Differential Equations' in the workshop 'Computing Techniques & Applications', BHU, during 4th-5th July, 2012.

- Delivered an invited talk on "Cubic Spline Approximation for Two Dimensional Non-linear Elliptic Boundary Value Problems" in the '11*th Biennial Conference of the Indian Society of Industrial and Applied Mathematics*', Gautam Budha University, Greater Noida, during 15-16 December, 2012.

- Delivered a series of six lectures as a resource person on 'Numerical Solution of Partial Differential Equations' under NPDE-TCA, PG Level Training Program at IIT Madras during June 3-5, 2013.

- Delivered an invited talk on 'Cubic spline method for the solution of 1D Non-linear wave equations' in the International Conference on Mathematical Modeling and Numerical Simulation-2013, Babasaheb Bhimrao University, Lucknow, during July 01-03, 2013.

- Delivered a lecture on 'On the Compact Numerical Methods for Elliptic Boundary Value Problems with Singular Coefficients' at Louisiana Tech University, USA on 22-April-2014 under Fulbright-Nehru SR Fellowship program.

- Delivered an invited talk on 'A Stable Numerical Method for 2D Nonlinear Biharmonic Problems of First Kind: Application to Navier-Stokes Equations of Motion ' in the International Conference on Emerging Trends in Computational and Applied Mathematics at ITM University, Gurgaon, held on 03-June-2014.

- Delivered a series of 06 lectures as a resource person on 'Finite Difference Methods for Heat Equations' under NPDE-TCA, PG Level Training Program at IIT Guwahati during June 13-17, 2014.

- Delivered a lecture on 'Robust Numerical Methods for Elliptic Boundary Value Problems with Singular Coefficients: Application to Navier-Stokes Equations of Motion' at University of Stratchclyde, Scotland on 14-October-2014 under INSA-RSE bilateral exchange program.

- Delivered an invited talk on 'Compact Cell Numerical Method for Fourth Order Elliptic Boundary Value Problems: Application to Navier-Stokes Equations of Motion' in the International Conference on Algebra, Geometry, Analysis and their Applications, at Jamia Millia Islamia, New Delhi, held on 28-November-2014.

- Delivered an invited talk on ' Biharmonic Problems of First Kind: Estimates of Vorticity Function' in the International Conference on Recent Trends in Mathematical Analysis and its Applications, at IIT Roorkee on 23-December-2014.

- Delivered an invited talk on 'Compact Cell Numerical Methods for Fourth Order Elliptic Boundary Value Problems' in the International Workshop on Statistical and Numerical Trends in Science and Engineering at Jaypee Institute of Information Technology, Noida on 01-January-2015.

- Delivered an invited talk on 'Compact Cell Numerical Methods for Nonlinear Biharmonic Problems of First Kind' in the International Conference on Emerging areas of Mathematics for Science and Technology at Punjabi University, Patiala, on 31-January-2015.

- Delivered an invited talk on 'Compact Cell Discretization for Nonlinear Biharmonic Equations with Dirichlet and Neumann Boundary Conditions' in the International Conference on Optimization, Computing and Business Analysis for Sustainable Developments' at Central University of Rajasthan, on 21-February-2015.

- Delivered an invited talk on 'Alternating Group Explicit Method for 1D Elliptic Boundary Value Problems' in the Advanced Workshop on Finite Difference Methods for Differential Equations at South Asian University, New Delhi on 16-March-2015.

- Delivered an invited talk on 'BLAGE Iterative Method for the Solution of Two Dimensional Diffusion Convection Equation' in the Advanced Workshop on Finite Difference Methods for Differential Equations at South Asian University, New Delhi on 16-March-2015.

- Delivered a series of six lectures as a resource person on 'Finite Difference Methods for Multi-dimensional Heat Equations' under NPDE-TCA, PG Level Training Program at IIT Kanpur, during May 27-30, 2015.

- Delivered a lecture on 'Numerics of Nonlinear Biharmonic Problems of First Kind: Application to Navier-Stokes Equations of Motion' at University of Hyderabad on 22-July-2015.

- Delivered an invited talk on 'Numerics of Fourth Order Nonlinear Elliptic Partial Differential Equations with Dirichlet and Neumann Boundary Conditions: Application to Fluid Flow Problems' in the National Conference on Recent Trends in Mathematical Sciences at Shri Mata Vaishnodevi University, Katra on 08-October-2015.

- Delivered an invited talk on 'A high accuracy two-step super stable implicit method for second order nonlinear initial value problems' in the International Conference on Differential Geometry, Algebra and Analysis (ICDGAA-2016), Jamia Milia Islamia, New Delhi, during 15-17 November, 2016.

- Delivered an invited talk on 'A New Two-step Stable Implicit Method of Order Three for General Second Order Non-linear Initial Value Problems on a Quasi-variable Mesh' in the International Conference on Recent Advances in Theoretical and computational PDEs with application (ICRATCPDE-2016), Panjab University, Chandigarh, during 5-9 December, 2016.

- Delivered a keynote talk on 'AGE Algorithms for Nonlinear Two-point Boundary Value Problems' in the International Workshop on Computational Intelligence (IWCI 2016), Jahangirnagar University, Dhaka, Bangladesh, during 12-13 December, 2016.

- Delivered an invited talk on 'On the Stability Analysis of a Second Order Initial-Value Problem on a Graded Mesh: Application to Physical Problems in the International Conference on Interdisciplinary Mathematics, Statistics and Computational Techniques (ICIMSCT-2016), Manipal University, Jaipur, during 22-24 December, 2016.

- Delivered an invited talk on 'A Two-step Super Stable Implicit Method of Order Four for Second Order Nonlinear Initial Value Problem' in the International Conference on Mathematics and Applications (ICMA-2017), Ramjas College, University of Delhi, during 26-28 April, 2017.

- Delivered an invited talk (plenary speaker) on 'BLAGE Algorithm for the Solution of 2D Elliptic Diffusion-Convection Equation' in the International Conference on Computational Modeling & Simulation (ICCMS-2017), University of Colombo, Sri Lanka, during 17-19 May, 2017.

- Delivered an invited talk on 'Block Alternating Group Explicit Iterative Method – Application to Diffusion-Convection Equation' in the International Conference on Advances in Computational Mathematics (ICACM-2017), University of Dhaka, Bangladesh, during 27-28 May, 2017.

- Delivered an invited talk on 'Numerics of Nonlinear Biharmonic Problems of First Kind: Application to Navier-Stokes Equations of Motion' in the 'International Conference on Recent advances in PDEs: Theory, Computations and applications', IIT Bombay, during 8th-10th June, 2017.

- Delivered an invited talk on 'Numerics of Navier Stokes Equations of Motion in terms of Streamfunction' in the 'International Symposium on Computational Mathematics, Optimization and Computational Intelligence', IIT Indore, during 17th-19th July, 2017.

- Delivered an invited talk on 'Parallel Algorithms: Application to Difference Equations' in the 'International Workshop on Data Analytics and Machine Intelligence', Institute of Engineering, Tribhuvan University, Kathmandu, Nepal, during 11th-13th December, 2017.

- Delivered an invited talk on 'Alternating Group Explicit Iterative Method for 1D Quasilinear Parabolic Equations' in the '49th Annual Iranian Mathematics Conference', Iran University of Science & Technology, Tehran, Iran, during 22nd -24th August, 2018.

- Delivered a series of four lectures as a resource person on 'Finite Difference Methods for Parabolic and Hyperbolic Partial Differential Equations' in the 'Advanced Computational Techniques for Differential Equations with MATLAB', IIT Roorkee, during 18th-22nd September, 2018.

- Delivered a talk on 'Unconditionally Stable Scheme of an Evolution Equation', in the Department of Mathematics, Guru Jambheshwar University of Science & Technology, Hisar on 5th March, 2019.

- Delivered an invited talk on 'On the Stability of Second order 2D Hyperbolic Equations with Significant First Derivative Terms' in the 'National Workshop on Applied Mathematics', University of Jammu, on 30th May, 2019.

- Delivered a series of four lectures as a resource person on 'Numerics of Elliptic & Hyperbolic type Partial Differential Equations' in the 'National Workshop on Advanced Numerical Techniques and its Applications', Graphic Era Hill University, Dehradun, during 6th-11th May, 2019.

- Delivered a talk on 'Review of Numerical Methods: Some Fluid Flow Problems' in the Academy of Mathematics and System Science, Chinese Academy of Sciences, Beijing on 28th June, 2019.

- Delivered a talk on 'On the Stability of High Accuracy FDMs for Second Order 2D Hyperbolic Equations with Significant First Derivative Terms' in the Academy of Mathematics and System Science, Chinese Academy of Sciences, Beijing on 9th July, 2019.

- Delivered a special talk on 'Role of Differential Equation in Applied Mathematics' in the '10th Research Scholar Day', Department of Mathematics, IIT Kharagpur, on 31st August, 2019.

- Delivered a plenary talk on 'High Accuracy Compact ADI Method for 2D Transmission Line Equation on an Unequal Mesh', in the International Conference on Dynamical Systems and Numerical Methods, Jamia Milia Islamia, New Delhi, during 20-21 May, 2022.

- Delivered an expert lecture on 'High Accuracy Bi-parametric ADI Method for 2D Telegraphic Equation', in the short term course on- Recent development in Numerical Methods for Partial differential equations, NIT Hamirpur, Himachal Pradesh, during May 30-June 3, 2022.

- Delivered a plenary talk on 'Bi-parametric Unconditionally Stable Alternating Direction Implicit (ADI) Method for 2D Uniform Transmission Line Equation' in 6th International Conference on Recent Advances in Mathematical Sciences and its Applications (RAMSA-2022), Jaypee Institute of Information Technology (JIIT), Noida, during December 08-10, 2022.

- Delivered an invited talk on 'Unconditionally Stable ADI Method for 2D Uniform Transmission Line Equation with Unequal Mesh Size Discretization' in 5th International Conference on Frontiers in Industrial and Applied Mathematics (FIAM-2022), Central University of Haryana, Haryana, during December 22-23, 2022.

- Delivered an invited talk on 'Unconditionally Stable Operator Splitting Method for 2D Telegraph Model Equation with Unequal Mesh Size Discretization' in the International Conference on Mathematical Analysis and Applications & 50th Annual Conference of ODISHA MATHEMATICAL SOCIETY (ICMAA-2023), organised by Institute of Mathematics and Applications, Bhubaneswar-751029, during January 21-22, 2023.

- Delivered a keynote talk on 'An Unconditionally Stable ADI Method of Order of Accuracy (2,4,4) for 2D Transmission Line Equation on an Unequal Mesh' in the International Conference on 'Differential Equations & Control Problems', organised by School of Mathematical & Statistical Sciences, IIT Mandi, Himachal Pradesh-175005, during June 15-17, 2023.

- Delivered a keynote talk on 'An Unconditionally Stable Alternating Direction Implicit Method of Order of Accuracy (2, 4, 4) for Two-dimensional Transmission Line Equation on an Irrational Domain' in the 2nd International Conference on 'Recent Advances in Mathematical Sciences and Interdisciplinary Areas', organised by GLA University, Mathura- 281406, during June 22-24, 2023.

- Delivered an invited talk on 'Application of high accuracy compact numerical method to Navier-Stokes equations in terms of streamfunction-velocity formulation' in the International Conference on 'Advances in Mathematics (ICAM-2023)', organised by Thapar Institute of Engineering and Technology, Patiala, during September 28-30, 2023.

- Delivered a plenary talk on 'Compact high resolution method for Navier-Stokes equations of motion in terms of Streamfunction-velocity formulation' in the 2nd International Conference on 'Mathematical Analysis and Application in Modelling (ICMAAM-2023)', organised by Department of Mathematics, Jadavpur University, Kolkata, during October 9-11, 2023.

- Delivered an invited talk on 'Numerical parallel algorithms for two-point nonlinear boundary value problems' in the 'Refreshers course on Mathematical and Computational Technique for Real World Problems', organised by UGC-Human Resource Development Centre, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, on December 09, 2023.
- Delivered an invited talk on 'Stability analysis of FDMs for second order hyperbolic PDEs' in the 'Refreshers course on Mathematical and Computational Technique for Real World Problems', organised by UGC-Human Resource Development Centre, Guru Ghasidas Vishwavidyalaya (A Central University), Bilaspur, on December 11, 2023.
- Delivered an invited talk on 'Sixth-order Accurate Compact Approximation for 2D Helmholtz Equation and Implication of Three-step BLAGE Iteration Method' in the 5th International Conference on Mathematical Techniques and Applications (ICMTA-2024), organized by SRM Institute of Science & Technology, Chennai during January 02-04, 2024.

- Delivered a plenary talk on 'On the Application of 3-stage Block AGE Iteration Method for the Solution of 2D Helmholtz Equation using Sixth Order Compact Approximation' in the International Conference on Mathematics and Applications (ICMA-2024), organized by Mata Sundri College for Women, University of Delhi, Delhi-110002 during January 10-12, 2024.
- Delivered an invited talk on 'A New Two-level Compact Implicit Scheme of Order of Accuracy (2,4,4) in Exponential Form for 2D Nonlinear Parabolic Equations: Application to CDR Equations' in the International Symposium on Recent Trends in Numerical Methods for Convection-Diffusion-Reaction (CDR) Models, Fluids and Allied Topics, organized by Department of Mathematics & Statistics, IIT Kanpur, Kanpur-208016 during January 20-21, 2024.
- Delivered an invited talk on 'Application of Three-step block-AGE Iteration Method: Sixth-order Accurate Compact Scheme for 2D Helmholtz Equation' in the National Conference on the Recent Development in Mathematical Sciences (NCRDMS-2024), organized by School of Mathematics & Statistics, University of Hyderabad, Hyderabad-500046 during February 12-14, 2024.
- Delivered an invited talk on 'High Resolution Compact Approximation for NS Equations of Motion in terms of Velocity-Stream Function Interpretation' in the International Meet on 'Computational Mathematics and Applications' & 52nd Annual Conference of ODISHA MATHEMATICAL SOCIETY (IMCMA-2025), organized by Institute of Mathematics and Applications, Bhubaneswar-751029, during January 11-12, 2025.
- Delivered an invited talk on 'High Resolution Compact Numerical Method for the Lid-driven Square Cavity Problem' in the National Conference on the Recent Development in Mathematical Sciences (NCRDMS-2025), organized by School of Mathematics & Statistics, University of Hyderabad, Hyderabad-500046 during February 05-07, 2025.
- Delivered a plenary talk on 'Fast Compact Algorithm for Viscous NS Equations of Motion in terms of Stream Function and Determination of Pressure' in the International Conference on Biological Data Analysis & Computation using Mathematical Modelling and Network Sciences (IC-BDA & C-MM-NS-2025), organized by School of Computational & Integrative Sciences, Jawaharlal Nehru University, New Delhi-110067 during July 28-30, 2025.
- Delivered an invited talk on 'Nine-point Compact Scheme for Biharmonic NS Equations of Motion in terms of ψ and Computation of Pressure' in the National Conference on Applied and Interdisciplinary Mathematical Sciences (ICAIM-2025), organized by The A.H. Siddiqi Centre for Advanced Research in Applied Mathematics and Physics, Sharda University, Greater Noida, U.P.-201310 during November 20-22, 2025.
- Delivered an invited talk on 'An O(4) Two-step Super-stable Method for a Certain Second Order IVPs' in the International Conference on 'Advances in Analysis and Its Applications' & 53rd Annual Conference of ODISHA MATHEMATICAL SOCIETY (ICAAA-2026), organized by Institute of Mathematics and Applications, Bhubaneswar-751029, during January 31-February 01, 2026.
- Delivered an invited talk on 'On the Super Stability of a Second Order IVP via Additive Parameter Technique' in the International Conference on Recent Trends in Mathematics and Computing (ICRTMC-2026), Jamia Milia Islamia, New Delhi, during 16-18 February, 2026.

23. List of Research Publications:

[1] M.K. JAIN, R.K. JAIN and **R.K. MOHANTY**, "A Fourth Order Difference Method for Elliptic Equations with Non-linear First Derivative Terms", *Numerical Methods for Partial Differential Equations*, Vol. 5, pp. 87-95 (1989).

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[12] **R.K. MOHANTY** and M.K. JAIN, "The Numerical Solution of the System of 3-D Non-linear Elliptic Equation with Mixed Derivatives and Variable Coefficients using Fourth Order Difference Methods", *Numerical Methods for Partial Differential Equations,* Vol. 11, pp. 187-197 (1995).

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