Department's 102nd Annual Report (1st April 2024 to 31st March 2025): Mathematics

Name of the Department: Mathematics

Name of the Faculty: Mathematical Sciences

Major Activities and Achievements:

The Department of Mathematics at the University of Delhi was established in 1947 and ever since its inception, department has always strived to be amongstthe best mathematics departments in the country. The department currently offers M.Sc. and Ph.D. programs in Mathematics. The Department has been receiving various supports and grants including UGC's SAP-DRS, SAP-DSA, DST-FIST, DST-PURSE, NBHM, DAE, India. The Department of Mathematics QSWorld ranking 2025 is 201-250 and the subjectwise QS ranking 2025 within India is 8th. During April 2024 – March 2025, the Faculty members of the department have Research Projects of approx. Rs. 69.97 Lacs and have published around 63 Research papers in journals of international repute. Department placement cell has organized many webinars and workshops for students to develop skills. Approximately 19 companies like Axtria, CourseLeap, Aakash, Deloitte, MathCo etc visited the Department and selected many students with the highest package offered in 2024-25 as 13 LPA.

Students with Distinctions:

- Arjun, student of PhD (I year), qualified Joint CSIT-UGC NET JRF June 2024.
- Neha Agrawal, student of PhD (I year), qualified Joint CSIT-UGC NET JRF June 2024.
- Rahul Gogoi, student of PhD (II year), qualified Joint CSIT-UGC NET JRF June 2024.
- Hiba Kulsum, M.Sc. Mathematics-II got selected to participate in Sakura Science Programme 2024 held in Kyoto Japan
- Saksham Malik, student of PhD (II year), qualified Joint CSIT-UGC NET JRF June 2024.
- Bikram Podder, student of PhD (II year), qualified GATE 2025.
- Rishabh, student of MSc (II year), qualified Joint CSIT-UGC NET JRF June 2024 and GATE 2025.
- Kunal Tomer, student of MSc (I year), qualified GATE 2025, AIR 45.

Research Publications

1.	Mavi, Sneha & Bishnoi, Anuj (2025). On characterizations of approximation types using MacLane-Vaquie chains, <i>Journal of Algebra and Its Applications</i> , 24(1) 2550008 (12 pages).	https://doi.org/10.1142/S0219498 825500082
2.	Mahajan, Arpit; Thakur, Rahul & Das, Ruchi (2024) Sensitivity and unpredictability in semiflows on topological spaces, <i>Communications in Nonlinear Science and Numerical Simulation</i> , 133, 107949	https://doi.org/10.1016/j.cnsns.20 24.107949
3.	Kumar Devender & Das Ruchi (2024) Topological pseudo orbit tracing property, topological sensitivity and topological entropy, <i><u>Filomat</u></i> 38(14):5041-5049	https://doi.org/10.2298/FIL24140 41K

4. Kumar, Devender & Das, Ruchi (2024). An Open Cover Specification Property. <i>J Dyn Control Syst</i> 30 (4) 11 pages.	<u>https://doi.org/10.1007/s10883-</u> 024-09716-x
5. Mahajan, Arpit; Thakur, Rahul & Das, Ruchi (2024) Sensitivity in hyperspatial and product systems via Furstenberg families, <i>Topology and its Applications</i> , 349, 108907	https://doi.org/10.1016/j.topol.20 24.108907
6. Nageshwar, R., Khan, A. G. & Das, T. (2024), Bi-asymptotic c-expansivity, <i>J. Math. Anal. Appl.</i> 532, no. 1, Paper No. 127955, 12 pp	https://doi.org/10.1016/j.jmaa.202 3.127955
 Khan, A. G., Kumar, R. & Das, T. (2025) Weak forms of shadowing and stability for set-valued maps. <i>Topology and its Applications</i>. 361, Paper No. 109182, 13 pp. 	https://doi.org/10.1016/j.topol.202 4.109182
 Khan, A. G., Morales, C. A. & Das, T. (2024) Persistent properties from the Gromov-Hausdorff viewpoint. <i>Proceedings of the Edinburgh Mathematical Society</i>. (2) 67, no. 4, 1229–1240. 	https://doi.org/10.1017/S0013091 524000592
9. Kumar R., Gaur, A. , Singh A. (2025). Comparable overrings of a commutative rings. <i>Contributions to Algebra and Geometry</i> , 66 (1), 61-78.	https://doi.org/10.1007/s13366- 023-00724-9
10. Gaur, A. , Kumar R. (2024). Maximal non-valuative domains. <i>Proceedings-Mathematical Sciences</i> , 134, 1-12.	https://doi.org/10.1007/s12044- 024-00781-7
 Kumar Y., Mishra P.R., Samanta S., Gaur, A. (2024), A systematic construction approach for all 4×4 involutory MDS matrices. <i>Journal of Applied Mathematics and Computing</i>, 70 (5), 4677-4697. 	https://doi.org/10.1007/s12190- 024-02142-z
 Mohit & Jain R. (2024): Birkhoff-James orthogonality in certain tensor products of Banach spaces II. <i>Banach Journal of Mathematical Analysis</i>. 18 (3), 47 (16pp), 	https://doi.org/10.1007/s43037- 024-00356-8
 Kumar S. & Upadhyay, A. (2025). The Solvability and Sensitivity of Nonautonomous Fractional Differential Inclusions Steered by Mixed Brownian Motion, <i>Mathematical Methods in the Applied Sciences</i>. 	https://doi.org/10.1002/mma.1071 2
14. Sharma P., Kumar, S. & Nisar K. S. (2025): Existence and convergence of approximate solutions for nonlinear measure driven differential systems, <i>Asian-European Journal of Mathematics</i> .	https://doi.org/10.1142/S1793557 125500202

15.	Rani, S. & Kumar, S., (2025): Dynamics of Soliton Solutions and Various Evolving Formations of the Jaulent–Miodek and Zakharov–Kuzetsov Equations Utilizing the Newly Proposed Extended Generalized Approach, <i>Qualitative Theory of Dynamical Systems</i> , 24 (2), Art. No. 101, pp. 1-32.	https://doi.org/10.1007/s12346- 025-01260-8
16.	Kumar, S. & Dhiman, S. K., (2025): Dynamics of various solitonic formations and other solitons of a (4+1)-dimensional Davey-Stewartson-Kadomtsev-Petviashvili equation using a newly designed analytical method, <i>Modern Physics Letters B</i> , Art. No. 2550126, pp. 1-15.	https://doi.org/10.1142/S0217984 92550126X
17.	Kumar, S., Rani, S. & Mann, N., (2025): Analytical Soliton Solutions to a (2 + 1)-Dimensional Variable Coefficients Graphene Sheets Equation Using the Application of Lie Symmetry Approach: Bifurcation Theory, Sensitivity Analysis and Chaotic Behavior, <i>Qualitative Theory of Dynamical Systems</i> , 24 (2), Art. No. 80, pp. 1- 27.	https://doi.org/10.1007/s12346- 025-01232-y
18.	Mann, N. & Kumar, S. (2025): In-depth analysis and exploration of rogue wave, lump wave, and different solitonic patterns to the Painleve-integrable $(3 + 1)$ D nonlinear evolution equations using a new extended methodology, <i>Modern Physics Letters B</i> , Art. No. 2550093, pp. 1-22.	https://doi.org/10.1142/S0217984 925500939
19.	Mohan, B., Kumar, S. & Kumar, R., (2024): On investigation of kink- solitons and rogue waves to a new integrable (3+1)-dimensional KdV- type generalized equation in nonlinear sciences, <i>Nonlinear Dynamics</i> , 113 (9), Art. No. 113291, pp. 10261-10276.	https://doi.org/10.1007/s11071- 024-10792-8
20.	Mohammad, M., Trounev, A. & Kumar, S. (2024): High-precision Euler wavelet methods for fractional Navier-Stokes equations and two-dimensional fluid dynamics, <i>Physics of Fluids</i> , 36 (12), Art. No. 127143, pp. 1-11.	https://doi.org/10.1063/5.0235658
21.	Mohan, B. & Kumar, S. (2024): Painlevé analysis, restricted bright- dark N-solitons, and N-rogue waves of a (4+1)-dimensional variable- coefficientgeneralized KP equation in nonlinear sciences, <i>Nonlinear</i> <i>Dynamics</i> , 113 (10), pp. 11893–11906.	https://doi.org/10.1007/s11071- 024-10645-4
22.	Majid, S. Z., Asjad, M.I., Kumar, S. & Muhammad, T., (2024): Dynamical Study with Exact Travelling Waves with High Amplitude Solitons to Clannish Random Walker's Parabolic Equation, <i>Qualitative Theory of Dynamical Systems</i> , 24 (1), Art. No. 14, pp. 1- 23.	https://doi.org/10.1007/s12346- 024-01175-w
23.	Rani, S., Kumar, S. & Kumar, R. (2024): Dynamical Study of Newly Created Analytical Solutions, Bifurcation Analysis, and Chaotic Nature of the Complex Kraenkel–Manna–Merle System, <i>Qualitative</i> <i>Theory of Dynamical Systems</i> , 23 (Suppl 1), Art. No. 287, pp. 1-28.	https://doi.org/10.1007/s12346- 024-01148-z
24.	Mohan, B. & Kumar, S. (2024): Rogue-wave structures for a generalized (3+1)-dimensional nonlinear wave equation in liquid with	https://doi.org/10.1088/1402- 4896/ad7cd9

	gas bubbles, Physica Scripta, 99 (10), Art. No. 105291, pp. 1-11.	
25.	Hamid, I. & Kumar, S. (2024): Newly formed solitary wave solutions and other solitons to the (3+1)-dimensional mKdV-ZK equation utilizing a newmodified Sardar sub-equation approach, <i>Modern</i> <i>Physics Letters B</i> , Art. No. 2550027, pp. 1-17	https://doi.org/10.1142/S0217984 925500277
26.	Mohan, B. & Kumar, S. (2024): Generalization and analytic exploration of soliton solutions for nonlinear evolution equations via a novel symbolic approach in fluids and nonlinear sciences, <i>Chinese Journal of Physics</i> , 92, pp. 10-21.	https://doi.org/10.1016/j.cjph.202 4.09.004
27.	Kumar, S. , Rani, S. & Ma, WX. (2024): Lie symmetries modulation instability, conservation lws, and the dynamic waveform-patterns of several invariant solutions to a (2+1)-dimensional Hirota Bilinear equation, <i>Discrete and Continuous Dynamical Systems - Series S</i> , 18 (4), pp. 1054-1074.	https://doi.org/10.3934/dcdss.202 4136
28.	Kumar, S. & Kukkar, A., (2024): Dynamics of several optical soliton solutions of a (3+1)-dimensional nonlinear Schrödinger equation with parabolic law in optical fibers, <i>Modern Physics Letters B</i> , 39 (9), Art. No. 2450453, pp. 1-27.	https://doi.org/10.1142/S0217984 924504530
29.	Kumar, S. & Hamid, I., (2024): New interactions between various soliton solutions, including bell, kink, and multiple soliton profiles, for the (2+1)-dimensional nonlinear electrical transmission line equation. <i>Optical and Quantum Electronics</i> , 56 (7), Art. No. 1173, pp. 1-24.	https://doi.org/10.1007/s11082- 024-06960-0
30.	Mann, N., Kumar, S. & Ma, WX., (2024): Dynamics of analytical solutions and Soliton-like profiles for the nonlinear complex-coupled Higgs field equation. <i>Partial Differential Equations in Applied Mathematics</i> , 10 (3), Art. No. 100733, pp. 1-17.	https://doi.org/10.1016/j.padiff.20 24.100733
31.	Kushwaha, M. S. , Raghavan, K. N. & Sankaran, V., (2025). Simple Procedures for Left and Right Keys of Semi-Standard Young Tableaux, <i>Algebras and Representation Theory</i>	https://doi.org/10.1007/s10468- 024-10299-1
32.	Kushwaha, M. S. , Raghavan, K. N. & Sankaran, V., (2025). Crystals for Kostant - Kumar Modules of csl2, <i>Indian Journal of Pure and Applied Mathematics</i> ,	https://doi.org/10.1007/s13226- 024-00739-5
33.	Moar, A. & Lalitha, C. S. (2024). An algorithm to solve polytopic set optimization problems based on a partial set order relation. <i>Positivity</i> , 29(5).	https://doi.org/10.1007/s11117- 024-01089-6
34.	Rimpi, Aanchal & Lalitha, C. S. (2025) Strong second-order optimality conditions for Geoffrion proper efficient solution in nonsmooth constrained vector optimization. <i>Annals of Operational Research</i> ,	https://doi.org/10.1007/s10479- 025-06584-x
35.	Naz, A.; Nagpal, S. & Ravichandran, V. (2024). Exponential radii of starlikeness and convexity of some special functions. <i>Ramanujan Journal</i> , 65(1), 391–427.	https://doi.org/10.1007/s11139- 024-00902-w

36.	Raj, A. & Nagpal, S. (2024). Stable close-to-convexity and radius of full convexity for sense-preserving harmonic mappings. <i>Rocky Mountain Journal of Mathematics</i> , 54(5), 525–540.	https://doi.org/10.1216/rmj.2024. 54.525
37.	Divya, Patel, A. (2025). Shock wave structure in carbon dioxide using one and multi-temperature model, <i>Indian Journal of Physics</i> ,	https://doi.org/10.1007/s12648- 024-03539-z
38	Kumar, V., Patel, A . Kumar, M. (2025). Dynamics of solitons and modulation instability in a (2+1)-dimensional coupled nonlinear Schrödinger equation, <i>Mathematics and Computers in Simulation</i> , 235, 95-113,	https://doi.org/10.1016/j.matcom. 2025.03.022
39	Patel, A ., Garg, Y. (2024). Lie group of similarity analysis of shock waves in viscous flow under magnetic field, <i>Chinese Journal of Physics</i> , 92, 1531–1547.	https://doi.org/10.1016/j.cjph.202 4.11.014
40	Patel, A. , Pandey, K. (2024). Self-similar flow behind a shock wave in a gas under the effect of viscosity, heat conduction, and variable ambient density, <i>Physica Scripta</i> , 99(10).	https://doi.org/10.1088/1402- 4896/ad6f4f
41	Makwana, Yash., Panigrahi, Anupama, (2024). A Complete Break of a Homomorphic Encryption Algorithm based on Polynomial Rings. <i>Ganita</i> , 74(2), 375-385.	https://bharataganitaparisad.com/ wp- content/uploads/2025/01/chap31 24101_anupama.pdf
42	Yadav, R.P., Rai, P. & Sharma, K.K. (2025). Analysis of finite element method for unsteady convection reaction-diffusion problem with discontinuous data, <i>International Journal of Computer</i> <i>Mathematics</i> , (online)	https://doi.org/10.1080/00207160. 2025.2462745
43	Aasna & Rai , P . (2025). Error analysis of SDFEM for time-dependent singularly perturbed problem with interior turning point, <i>Journal of Applied Mathematics and Computing</i> (online), 100328,	https://doi.org/10.1007/s12190- 025-02416-0
44	Kumar, S., Pandey, R.K. & Rai, P. (2024). Sharp bounds on Hankel and Hermitian–Toeplitz determinants of associated Sakaguchi functions, <i>Lithuanian Mathematical Journal</i> , 64(4), pp. 491–506.	https://doi.org/article/10.1007/s10 986-024-09652-0
45	Rai, P. & Kumar, S. (2024). Differential Subordination and Coefficient Functionals of Univalent Functions Related to cos z, <i>Armenian Journal of Mathematics</i> , 16(9), pp. 1–18.	https://doi.org/10.52737/1829116 3-2026.16.09-1-18
46	Sharma, A. & Rai, P. (2024). Numerical approximation of parabolic singularly perturbed problems with large spatial delay and turning point, <i>Engineering Computations (Swansea, Wales)</i> , 41(5), pp. 1141–1170.	https://doi.org/10.1108/EC-09- 2023-0534
47	Kumar, S., Pandey, & R.K., Rai, P. (2024). Certain sharp estimates of Ozaki close-to-convex functions, <i>Asian-European Journal of Mathematics</i> , 17(6), 2450047.	https://doi.org/10.1142/81793557 124500475
48	Anand, S., Rai, P. & Kumar, S. (2024). Close-To-convex functions associated with a rational function, <i>Mathematica Slovaca</i> , 74(2), pp.	https://doi.org/10.1515/ms-2024-

	339–354.	0026
49	Aasna & Rai, P. (2024). SDFEM for Time-Dependent Singularly Perturbed Boundary Turning Point Problem, <i>International Journal of</i> <i>Computational Methods</i> , 2450062.	https://doi.org/10.1142/S0219876 224500622
50	Dimpi & Singh, Hemant Kumar (2025), Connected Fixed Point Sets of Involutions on $HP^n \times S^m$, <i>Bulletin of the Iranian Mathematical Society</i> , 51, 21pp.	https://doi.org/10.1007/s41980- 024-00935-3
51	Kumari, Anju & Singh, Hemant Kumar (2024), Finitistic spaces with the orbit space $FP^n \times S^m$, <i>Journal of Algebra and Its Applications</i> , 2550311, 16 pp.	https://doi.org/10.1142/S0219498 825503116
52	Kumari, Anju & Singh, Hemant Kumar (2025), Finitistic Spaces with Orbit Space a Product of Projective Spaces, <i>The Journal of the Indian Mathematical Society</i> , 92(1), 142-157.	https://doi.org/10.18311/jims/202 5/34711
53	Sharma, D. & Singh, R. (2024), Evolution of characteristic shocks in two-phase modified Chaplygin flow consisting of source term, <i>Communications in Nonlinear Science and Numerical Simulation</i> (<i>Elsevier</i>), 131, 107891.	https://doi.org/10.1016/j.cnsns.20 24.107891
54	Chaudhary, B. K. & Singh, R. , (2024) Spherical steepened wave in interstellar van der Waals dusty gas clouds, <i>Physics of Fluids</i> (AIP USA), 36, 086141.	https://doi.org/10.1063/5.0215115
55	Sharma, D. & Singh, R. , (2025), Interaction of an acceleration wave with a characteristic shock in two-phase real modified Chaplygin model containing a variable source term, <i>Mathematics and Computers</i> <i>in Simulation (Elsevier)</i> , 230, 53–67	https://doi.org/10.1016/j.matcom. 2024.10.028
56	Chill, R., Sharma, P. & Srivastava, S., (2024). Real interpolation of functions with applications to accretive operators on Banach spaces. <i>Journal of Differential Equations</i> , 402, 554–592.	https://doi.org/10.1016/j.jde.2024. 05.024
57	Anand, J., Lata, S. & Srivastava, S. (2024). Weighted and Unweighted Composition Operators Close to Isometries. <i>mediterranean journal of mathematics</i> 21, 144.	https://doi.org/10.1007/s00009- 024-02688-z
58	Kumar, D. & Srivastava, S. (2024) Quantum extensions of classical Jacobi semigroups. <i>Semigroup Forum</i> 109, 513–536.	https://doi.org/10.1007/s00233- 024-10481-3
59	Pappu, Rastogi, S. & Srivastava, S. (2025). Eventual positivity, perturbations and delay semigroups. <i>Positivity</i> 29, 12.	https://doi.org/10.1007/s11117- 024-01105-9
60	Jyoti & Vashisht, L.K. (2024). On matrix-valued Riesz bases over LCA groups. International Journal of Wavelets, <i>Multiresolution and Information Process</i> , 22 (5), Art. No. 2450019, pp. 1-16.	https://doi.org/10.1142/S0219691 32450019X
61	Jyoti & Vashisht, L.K. (2024). A note on matrix-valued orthonormal bases over LCA groups, Infinite Dimensional Analysis, <i>Quantum Probability and Related Topics</i> . Online published	https://doi.org/10.1142/S0219025 724500061

62	Jarrah, A. M., Khanna, N., Zothansanga, A. & Kumar, D.,(2024). A Short Note on Generalized Variation Diminishing Wavelets, <i>Iranian Journal of Science</i> .	<u>https://doi.org/10.1007/s40995-</u> 024-01689-7
63	Kumar, V., A., Zothansanga, A. & Kumar, R., (2024). A Note on Interated pg Frames in Banach spaces, <i>Poincare Journal of Analysis</i> & <i>Applications</i> , Vol. 11, No. 2, 253-261.	https://doi.org/10.46753/pjaa.202 4.v011i02.013

Research Projects:

- Ruchi Das, Department of Mathematics, has been sanctioned an amount of ₹5,00,000/- for a research project entitled, 'Sensitivity and its Stronger Forms in Non-autonomous Topological Dynamical Systems' as PI. The grant has been provided by Faculty Research Programme Grant- IoE, University of Delhi, and covers the duration from August 2024 to May 2025.
- Tarun Das, Department of Mathematics, has been sanctioned an amount of ₹5,00,000/- for a research project entitled, 'On consequences of expansivity and shadowing via asymptotic behavior' as PI. The grant has been provided by Faculty Research Programme Grant- IoE, University of Delhi, and covers the duration from August 2024 to May 2025.
- Atul Gaur, Department of Mathematics, has been sanctioned Rs 17,97,400, for research project On φ-rings as Co-PI. The grant has been provided by SERB, DST, Govt. of India and covers the duration from September 26, 2023 to September 25, 2026.
- Atul Gaur, Department of Mathematics, has been sanctioned an amount of ₹3,00,000/- for a research project entitled, 'Maximal non P-subrings/ extensions for some ring theoretic properties' as PI. The grant has been provided by Faculty Research Programme Grant- IoE, University of Delhi, and covers the duration from August 2024 to May 2025.
- Surendra Kumar, Department of Mathematics, has been sanctioned an amount of ₹5,00,000/for a research project entitled, 'Controllability Analysis of Non-autonomous Impulsive Differential Systems' as PI. The grant has been provided by Faculty Research Programme Grant- IoE, University of Delhi, and covers the duration from August 2024 to May 2025.
- Sachin Kumar, Department of Mathematics, has been sanctioned an amount of ₹5,00,000/- for a research project entitled, 'ymbolic computation and dynamic structural analysis of exact analytical solutions for nonlinear partial differential equations using a variety of mathematical methodologies' as PI. The grant has been provided by Faculty Research Programme Grant- loE, University of Delhi, and covers the duration from August 2024 to May 2025.
- C.S. Lalitha, Department of Mathematics, has been sanctioned an amount of ₹5,00,000/- for a research project entitled, 'Abstract Convexity and Stability in Set Optimization' as PI. The grant has been provided by Faculty Research Programme Grant- loE, University of Delhi, and covers the duration from August 2024 to May 2025.
- Sumit Nagpal, Department of Mathematics, has been sanctioned an amount of ₹3,00,000/- for a research project entitled, 'Construction Techniques for Univalent Harmonic Mappings' as PI. The grant has been provided by Faculty Research Programme Grant- loE, University of Delhi, and covers the duration from August 2024 to May 2025.
- Arvind Patel, Department of Mathematics, has been sanctioned an amount of ₹3,00,000/- for a research project entitled, 'Shock waves in a viscous gas under the effect of heat conduction and magnetic field' as PI. The grant has been provided by Faculty Research Programme Grant- IoE, University of Delhi, and covers the duration from August 2024 to May 2025.
- Pratima Rai, Department of Mathematics, has been sanctioned an amount of ₹5,00,000/- for a research project entitled, 'Bounds on Hermitian-Toeplitz determinants and other coefficient functionals of certain Analytic functions' as PI. The grant has been provided by Faculty Research Programme Grant- loE, University of Delhi, and covers the duration from August 2024 to May 2025.

- Hemant Kumar Singh, Department of Mathematics, has been sanctioned an amount of ₹5,00,000/- for a research project entitled, 'Circle group actions on spaces with cohomology isomorphic to the product of three spheres' as PI. The grant has been provided by Faculty Research Programme Grant- loE, University of Delhi, and covers the duration from August 2024 to May 2025.
- Randheer Singh, Department of Mathematics, has been sanctioned an amount of ₹5,00,000/for a research project entitled, 'Delta shocks and similarity methods for quasilinear gas dynamics' as PI. The grant has been provided by Faculty Research Programme Grant- IoE, University of Delhi, and covers the duration from August 2024 to May 2025.

Seminars Organized:

- Dr. Akshat Das, Assistant Professor, United States Military Academy New York, U.S.A. delivered a talk on investigation of Gaps problems in Diophantine Approximation on Jun 12, 2024.
- Dr. Pratyoosh Kumar, Associate Professor, IIT Guwahati delivered a talk on The Hardy– Littlewood Maximal Theorem beyond Euclidean Spaces on Dec 2, 2024.
- Dr. Prem Prakash Pandey, Associate Professor delivered a talk on IISER Berhampur Prime Generating Functions on Jan 20, 2025.
- Prof. A. Leroy, Professor, University of Artois, Arras delivered a talk on France Evaluations of polynomials in noncommutative settings on Jan 21, 2025.
- Prof. S.K. Jain, Professor, Ohio University, Ohio, USA delivered a talk on Regular Rings and Separativity Problem for PI, PM, GPI, Self-Pseudo Injective, and C * Algebras on Jan 21, 2025.
- Dr. Abhay Jindal, Associate Professor, IISc Bengaluru delivered a talk on Approximation by inner functions on Jan 23, 2025.
- Prof. Eknath Ghate, Professor, TIFR, Mumbai delivered a talk on The Tau of Ramanujan on Feb 18, 2025, South Campus.
- Prof. Malay Banerjee, Professor, IIT Kanpur, delivered a talk on Structural Sensitivity and Global Bifurcations associated with Chaotic Dynamics on Feb 28, 2025.

Seminars / Conferences Presentations

- Ruchi Das delivered an invited talk on Expanding horizon with butterfly effect in semiflows in Departmental Seminar at Department of Mathematical Sciences, IISER Behrampur, Odisha on June 5, 2024.
- Tarun Das delivered a talk entitled Recurrence and beyond via Toral automorphisms on October 01, 2024 at Refresher Course in refresher course on Topology, Dynamical Systems and Applications, CPDHE, University of Delhi.
- Tarun Das delivered Professor T. Thrivikraman Memoria endowment Lecture entitled Expanding horizons of structural stability and Entropy of Dynamical systems on 12 th December 2024.
- Tarun Das delivered Key Note address entitled Evolution of Dynamical systems from Poincare era at DDU College, Delhi on March 18, 2025.
- Tarun Das delivered expository talk entitled Homoclinic Classes and Chaotic Dynamical System at a seminar sponsored by Haryana state council for science technology and innovation at MDU, Rohtak on March 22, 2025.
- Sachin Kumar delivered keynote lecture on "Symmetry reductions and dynamics of rogue waves for the specific higher-order nonlinear partial differential equations" at the Department of Mathematics, NIT Jamshedpur, Jharkhand, August 30, 2024.
- Sachin Kumar delivered an invited talk in the International Conference on "Mathematical Sciences and its Applications", "Symmetry reductions and Solitonic forms of various closed-form solutions of higher-order nonlinear evolutionary equations" at the Department of Mathematics, Sri Guru Tegh Bahadur Khalsa College, University of Delhi,

October 15-17, 2024.

- Sachin Kumar delivered an invited as a Keynote Speaker and Chair the Session in the International Conference on "Symmetries and Integrability of Dynamical Systems", "Abundant closed-form invariant solutions with Lie symmetry analysis for the higher order nonlinear evolutionary equation", at the Department of Mathematics, Pondicherry University, Puducherry, Tamil Nadu, November 05 07, 2024.
- Sachin Kumar delivered invited talk in the 7th International Conference on "Frontiers in Industrial and Applied Mathematics (FIAM-2024), "Lie symmetry of the (3+1)-dimensional nonlinear partial equations with dynamics of exact solutions", at the Department of Mathematics and Statistics, Central University of Punjab, Bathinda, Punjab, November 13 14, 2024.
- Sachin Kumar delivered an invited talk in the International Conference on "Differential Equations: Theory, Computation, and Applications", "Analytical soliton solutions, Lie-symmetry analysis, bifurcation, and chaotic behavior of the highly nonlinear partial differential equations utilizing symbolic computation", at the Department of Mathematics, South Asian University, Delhi, November 29 December 01, 2024.
- Sachin Kumar delivered an invited lecturing series, "Dynamics and investigation of quasiperiodic behavior, bifurcation, and traveling wave solutions in the Double-Chain DNA Model", in the Department of Mathematics, Davangere University, Shivagangothri, Karnataka, February 03 - 05, 2025.
- Sachin Kumar delivered a keynote lecture in the "2nd International Conference on Recent Trends in Mathematics (ICRTM-25)", "Study and dynamic performance of the higherdimensional nonlinear generalized BKP equation using Lie symmetry analysis", at the Department of Mathematics", Hansraj College, University of Delhi, February 07 - 08, 2025.
- Surendra Kumar presented a paper entitled, 'Approximate controllability of non-autonomous measure driven systems with non-instantaneous impulses' during an International Conference on 'International Conference on Symmetries and Integrability of Dynamical Systems, Pondicherry University, Puducherry, India, November 5-7, 2024.
- C. S. Lalitha, Senior Professor, Department of Mathematics, University of Delhi South Campus, delivered an invited talk on Basics of Nonlinear Optimization, Department of Mathematics, Thapar Institute of Engineering and Technology, Patiala on December 17, 2024.
- C. S. Lalitha, Senior Professor, Department of Mathematics, University of Delhi South Campus, delivered an invited talk on Painlevé Kuratowski Convergence of Solution Sets in Set Optimization, International Conference on Computational Operations Research and Algorithmic Game Theory, Indian Statistical Institute Delhi Centre, January 21-23, 2025.
- Pratima Rai delivered a talk on "Higher-Order Schemes for 1D Parabolic Singularly Perturbed Delay Differential Equations with Turning Point" at the Annual Conference of Indian Society for Mathematical Modelling and Computer Simulation (ISMMACS) and International Conference on Differential Equations: Theory, Computation and Applications at South Asian University from 29 th November 2024-1 st December 2024.
- Pratima Rai delivered a talk on "Singularly perturbed problems: Numerical Challenges and their solution" at 6 th National conference on Recent Advances in Physical Sciences organised by DIT Dehradun from 14 th -15 th February.
- Pratima Rai delivered a talk on "Higher Education and Society" at online NEP Orientation Training programme organized by Malaviya Mission Teacher Training Centre (MMTTC), Ramanujan College, University of Delhi, sponsored by University Grant Commission -Malaviya Mission Teacher Training Programme (UGC-MMTTP) from 01-02-2025 to 10-02-2025.

Honours/ Distinctions

- Ruchi Das is a member of
 - committee constituted for formulation of re-employment of research oriented academicians for promoting and strengthening the research culture in the University &

for formulation of re-employment of research oriented academicians for promoting and strengthening the research culture in DU Colleges

- Subject Expert Committee on Physical and Mathematical Sciences under Women Scientists Scheme-A, a flagship program of DST
- Subject Expert Committee on Physical and Mathematical Sciences under WISE-PDF program of DST.
- Ruchi Das is
 - o a Subject Expert on Mathematical Sciences, Inspire Fellowship, DST, and
 - an External Member for the Academic Council of the University of Allahabad, Prayagraj, for a period of three years w.e.f. June 07, 2024.
 - Tarun Das has been the Head, Department of Mathematics, DU since April 13, 2024.
- Tarun Das is

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- o a Member of the Standing Committee for Academic Matters,
- o a Member of the Academic Council of DU and AU
- Honorary Treasurer, Indian Society for History of Mathematics, and
- an expert member for VC selection in the country for many Universities.
- Surendra Kumar received Research Publication Award Grant in 2024.
- C S Lalitha is
 - a Member of the FIST Expert Committee of DST, 2024, and
 - an External Member on the Special Committee, School of Physical Sciences, Jawaharlal Nehru University, 2024-2027.
- L. K Vashisht is a member of Editorial Board of International Journal of Wavelets Multiresolution and Information Processing.

Extension And Outreach Activities

- Department organized
 - Quiz, Poster and Slogan Writing Competition on the theme "Viksit Bharat" on August 14, 2024, and
 - Quiz and Poster making Competition on the theme "Atulya Bharat" on January 24, 2025.
- Tarun Das delivered a talk on the topic "Recurrence and beyond via Toral automorphisms" in a Refresher Course in Mathematica at CPDHE, University of Delhi during September 18, 2024 October 1, 2024.
- Ranjana Jain delivered a talk on
 - "Research Methodology in Mathematics for Undergraduates" at Keshav Mahavidyalaya College, University of Delhi on March 20, 2025, and
 - "Some Applications of Linear Algebra" at the Annual Mathematics Fest 'Tangentia-25' of Atma Ram Sanatan Dharam College, University of Delhi on March 26, 2025.
- Ratikanta Panda delivered a talk on "Browder's Fixed-Point Theorem" in a Refresher Course in Mathematica at CPDHE, University of Delhi during September 18, 2024 October 1, 2024.
- Arvind Patel delivered a talk on
 - "Conservation Laws, Characteristics and Shocks," at Sri Venkateswara College, University of Delhi on March 26, 2025,
 - "Well-posed Problem in Differential Equations" at Daulat Ram College, University of Delhi on March 5, 2025, and
 - "Existence, uniqueness and stability of solution of IVP" at Rajdhani College, University of Delhi on May 2, 2024.
- Hemant Kumar Singh delivered a talk on the topic "Algebraic Topology: A Bridge between Topology and Algebra" in a Refresher Course in Mathematica at CPDHE, University of Delhi during September 18, 2024 October 1, 2024.

Faculty Strength

Senior Professor/Professor/Director: 7 Associate Professor: 4 Assistant Professor: 9

Degree Awarded

Number of Ph.D. Degree Awarded: 21 Number of M.Phil. Degree Awarded: 7

Social Outreach

The Department celebrated following events during April 1, 2024 – March 31, 2025:

- Farewell Party was organized by the students of the department on April 19, 2024. The Head of the Department extended his warm wishes for their bright future.
- Independence Day was celebrated on August 14, 2024 with the theme "Viksit Bharat." The event featured activities such as a quiz competition, slogan writing, and poster making.
- Fresher's Party was celebrated on September 9, 2024 to warmly welcome the newly admitted students. The Head of the Department provided information about the institution's facilities and support systems. To further integrate the freshers, representatives from key committees of the Department such as Anti-Ragging Committee, Student Grievance Redressal Committee, Placement cell, SC/ST/OBC Students Grievance Redressal Committee were introduced.
- Diwali celebration was held on October 28, 2024 with great enthusiasm and festive spirit. Beautiful diyas and decorative lighting adorned the venue, creating a warm and joyful atmosphere.
- Republic Day was celebrated on the theme "Atulya Bharat" on January 24, 2025. To celebrate Republic Day, a quiz competition and a poster-making competition were conducted.
- Basant Panchami was celebrated on February 3, 2025 with devotion and enthusiasm.

ECA/ Sports

The Department of mathematics celebrated Sports Day on November 28, 2024 with great zeal and enthusiasm. A wide range of athletic and team events were organized to encourage sportsmanship and physical fitness among students and faculty members. The event featured competitive matches in badminton, volleyball, and Kho-Kho (girls only). Track and field events included the 100m race, 800m race, 4x100m relay, and the partner race, which were met with energetic participation. Fun races such as the lemon spoon race added excitement and enjoyment to the day. Shotput and tug of war were also conducted, drawing enthusiastic cheers from the audience. The day successfully promoted teamwork, discipline, and a spirit of healthy competition among all participants. A cricket match was also organized for faculties and students on March 3, 2025.

₹ FUNDS UTILIZED (Crores): 0.1257786

₹ FUNDS ALLOCATED (Crores): 0.1362

Other Significant Information

- Tarun Das organised a two week online Refresher Course in Mathematical Sciences (Mathematics/ Statistics / Operational Research/ Computer Sciences) as course Coordinator from 18th September 2024 1st October 2024.
- Ruchi Das evaluated presentation given by the participants in a two week online Refresher Course in Mathematical Sciences (Mathematics/ Statistics / Operational Research/ Computer Sciences) held during 18th September 2024 1st October 2024.

- Lalit Kumar evaluated presentation given by the participants in a two week online Refresher Course in Mathematical Sciences (Mathematics/ Statistics / Operational Research/ Computer Sciences) held during 18th September 2024 1st October 2024.
- Arvind Patel evaluated presentation given by the participants in a two week online Refresher Course in Mathematical Sciences (Mathematics/ Statistics / Operational Research/ Computer Sciences) held during 18th September 2024 1st October 2024.
- Ratikanta Panda evaluated presentation given by the participants in a two week online Refresher Course in Mathematical Sciences (Mathematics/ Statistics / Operational Research/ Computer Sciences) held during 18th September 2024 – 1st October 2024.
- Hemant Kumar Singh organised a two-week online Refresher Course in Mathematical Sciences (Mathematics/ Statistics / Operational Research/ Computer Sciences) as Co-Coordinator from 18th September 2024 1st October 2024.