
CURRICULUM VITAE

DEPARTMENT OF MATHEMATICS



DR. HRISHIKESH MAHATO

Associate Professor of Mathematics

Founder Faculty • NSS Coordinator
Central University of Jharkhand, Ranchi

Algebra | Number Theory | Discrete Mathematics | Cryptography

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I. PERSONAL INFORMATION

Father's Name: Mr. Sudhir Chandra Mahato	Date of Birth: 15th November 1973
Designation: Associate Professor (Founder Faculty)	Department: Mathematics

❖ **Affiliation**

Department of Mathematics, Central University of Jharkhand, Cheri-Manatu, Ranchi, 835222, Jharkhand, India.

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II. PROFILE SUMMARY

Dr. Hrishikesh Mahato is an Associate Professor and Founder Faculty of the Department of Mathematics, Central University of Jharkhand, Ranchi, with over sixteen years of teaching and research experience. His research interests span Algebra, Number Theory, Discrete Mathematics and Cryptography, with an extensive publication record of over forty peer-reviewed research articles, two book chapters, and two conference proceedings in journals of national and international repute. He has guided six doctoral scholars to successful completion, currently supervises three ongoing Ph.D. candidates, and has supervised seventy-two M.Sc. dissertation projects. Beyond academics, he has served the University in numerous administrative capacities since its inception in 2009, including as NSS Coordinator, member of the Academic Council, and Coordinator of the Department of Mathematics, and continues to lead the UNNAYAN social outreach initiative that provides free coaching to underprivileged children from villages surrounding the University campus.

III. EDUCATIONAL QUALIFICATION

- ❖ Doctor of Philosophy (Ph.D.) in Mathematics — Ranchi University, Ranchi, 2009. Thesis: “A Study of Finite Commutative Rings, Codes and Rational Approximations.”
- ❖ Master of Science (M.Sc.) in Mathematics — Ranchi University, Ranchi, 2000, First Class.

III. RESEARCH AREAS

Algebra • Number Theory • Discrete Mathematics • Cryptography

IV. TEACHING EXPERIENCE (16 YEARS)

- ❖ Associate Professor, Central University of Jharkhand, Cheri-Manatu, Ranchi — 13 Feb. 2024 to date.
- ❖ Assistant Professor, Central University of Jharkhand, Cheri-Manatu, Ranchi — 06 Aug. 2012 to 12 Feb. 2024.
- ❖ Guest Faculty, Central University of Jharkhand, Cheri-Manatu, Ranchi — 17 Jul. 2009 to 31 Jul. 2012.
- ❖ Senior Lecturer, RTC Institute of Technology, Cheri-Manatu, Ranchi — 02 Feb. 2009 to 16 Jul. 2009.

V. RESEARCH SUPERVISION

Ph.D. Guidance Awarded (Six)

1. Naseer Ahmad Malik
2. Shipra Kumari
3. Kalika Prasad
4. Munesh Kumari
5. Ritanjali Mohanty

6. Monal Bharti

Ph.D. Guidance Ongoing (Three)

1. Shamim Akhtar
2. Tanu Shree
3. Aman Kumar Singh

M.Sc. Projects Supervised

Seventy-two (72) M.Sc. dissertation projects supervised to date.

VI. RESEARCH PUBLICATIONS

1. Hrishikesh Mahato, Md. Akbar Ansari, An elementary proof of classification of commutative rings with identity of order p^2 , South East Asian J. Math. Math. Sci. 8(1) (2009) 9-15. ISSN: 0972-7752.
2. Hrishikesh Mahato, On existence of Williamson Symmetric Circulant Matrices, Bulletin of the Institute of Mathematics Academia Sinica (New Series), 6(1) (2011) 27-39. ISSN: 2304-7909.
3. K. C. Prasad, Hrishikesh Mahato, Sudhir Mishra, A New Point in Lagrange Spectrum, International Journal of Number Theory, 9(2) (2013) 393-403. ISSN: 1793-0421.
4. Naseer Ahmed Malik, Hrishikesh Mahato, Yates Quaternary Complex Hadamard Matrix, International Journal of Mathematics Trends and Technology, 50(5) (2017) 298-306. ISSN: 2231-5373.
5. Naseer Ahmed Malik, Hrishikesh Mahato, Generalization of Sylvester Quaternary Complex Hadamard Matrices with Full Spectrum, Gedrag & Organisatie Review, 34(01) (2021) 416-430. ISSN: 0921-5077.
6. Naseer Ahmed Malik, Hrishikesh Mahato, A New Approach to Good Matrices, The Mathematics Student, 90(1-2) (2021) 161-175. ISSN: 0025-5742.
7. Shipra Kumari, Hrishikesh Mahato, Extension of Paley Construction for Hadamard Matrix, Journal of Interdisciplinary Cycle Research, XIII(III) (2021) 1506-1525. ISSN: 0022-1945.
8. Shipra Kumari, Hrishikesh Mahato, Encryption based on Conference Matrix, Jnanabha, 52(1) (2022) 203-211.
9. Shipra Kumari, Hrishikesh Mahato, On construction of Hadamard Matrices, AIP Conference Proceedings 2699, 020009-1-9 (2023).
10. Shipra Kumari, Hrishikesh Mahato, Construction of Weighted Orthogonal Matrices over Finite Field and its Applications in Cryptography, International Journal of Information and Computer Security, 22(3/4) (2023) 263-276. DOI: 10.1504/IJICS.2023.10049669. ISSN: 1744-1765.
11. Kalika Prasad, Hrishikesh Mahato, Cryptography using Generalized Fibonacci Matrices with Affine-Hill Cipher, Journal of Discrete Mathematical Sciences and Cryptography (Taylor & Francis), 25(8) (2022) 2341-2352. DOI: 10.1080/09720529.2020.1838744.
12. Kalika Prasad, Hrishikesh Mahato, On Some New Identities of Lucas Numbers and Generalized Fibonacci Trace Sequences, Palestine Journal of Mathematics, 12(2) (2023) 329-340.
13. Kalika Prasad, Hrishikesh Mahato, Munesh Kumari, On the Norms of r -Circulant Matrices Involving Balancing and Lucas-Balancing Numbers, TWMS Journal of Applied and Engineering Mathematics, 14(2) (2024) 672-682.
14. Munesh Kumari, Kalika Prasad, Hrishikesh Mahato, On the k -Mersenne and k -Mersenne-Lucas Octonions, TWMS Journal of Applied and Engineering Mathematics, 14(3) (2024) 1218-1230.
15. Kalika Prasad, Ritanjali Mohanty, Munesh Kumari, Hrishikesh Mahato, Some New Families of Generalised K -Leonardo and Gaussian Leonardo Numbers, Communications in Combinatorics and Optimization, 9(3) (2024) 539-553. DOI: 10.22049/CCO.2023.28236.1485.
16. Kalika Prasad, Hrishikesh Mahato, Munesh Kumari, Ritanjali Mohanty, On the Generalized Leonardo Pisano Octonions, National Academy Science Letters, Springer Nature (2023). DOI: 10.1007/s40009-023-01291-2.
17. Kalika Prasad, Hrishikesh Mahato, On the Generalized Fibonacci-like Sequences and Matrices, Annales Mathematicae et Informaticae, 59 (2023) 102-116. DOI: 10.33039/ami.2023.05.001.

18. Kalika Prasad, Hrishikesh Mahato, Munesh Kumari, Some Properties of r -Circulant Matrices with k -Balancing and k -Lucas Balancing Numbers, *Boletín de la Sociedad Matemática Mexicana*, Springer, 29(2), Article 44 (2023). DOI: 10.1007/s40590-023-00510-6.
19. Monal Bharty, A. K. Shrivastava, Hrishikesh Mahato, Maxwell Cattaneo Double Diffusive Convection (DDC) in a Viscoelastic Fluid Layer, *Journal of Computational Analysis and Applications*, 31(1) (2023) 21-37.
20. Monal Bharty, A. K. Shrivastava, Hrishikesh Mahato, Geetanjali Sahu, Stationary-Electro-Thermo Convection of Couple Stressed Fluid Saturated Porous Medium under Non-Equilibrium Temperature Conditions, *Journal of the Orissa Mathematical Society*, 41(01-02) (2022) 29-42.
21. A. K. Shrivastava, Monal Bharty, Hrishikesh Mahato, Onset of Double Diffusive Convection in Rotating Fluid Layers with Maxwell Cattaneo Law, *BRICS Journal of Education Research*, 13(1) (2023) 1-9.
22. Kalika Prasad, Munesh Kumari, Hrishikesh Mahato, A Modified Public Key Cryptography Based on Generalized Lucas Matrices, *Communications in Combinatorics and Optimization* (2024). DOI: 10.22049/CCO.2024.28022.1419.
23. Monal Bharty, A. K. Shrivastava, Hrishikesh Mahato, The Effect of Chemical Reaction on Thermo-Solutal Magneto-Convection under Non-Equilibrium Temperature Conditions, *International Journal of Advances in Engineering Sciences and Applied Mathematics* (2024). DOI: 10.1007/s12572-024-00368-5.
24. Monal Bharty, A. K. Shrivastava, Hrishikesh Mahato, Stability of Magneto Double Diffusive Convection in Couple Stress Liquid with Chemical Reaction, *Journal of Heat and Mass Transfer Research*, 10(2) (2023) 171-190.
25. Atul K. Shrivastava, Monal Bharty, Hrishikesh Mahato, Investigation of Magneto-Convection in Viscoelastic Fluid Saturated Anisotropic Porous Layer under Local Thermal Non-Equilibrium Condition, *International Journal of Applied Mathematics, Computational Science and System Engineering* (2024). DOI: 10.37394/232026.2024.6.13.
26. Kalika Prasad, Munesh Kumari, Ritanjali Mohanty, Hrishikesh Mahato, Spinor Algebra of k -Balancing and k -Lucas Balancing Numbers, *Journal of Algebra and its Applications*, World Scientific (2025) 2550367. DOI: 10.1142/S0219498825503670.
27. Atul K. Shrivastava, Monal Bharty, Hrishikesh Mahato, Magneto-Double-Diffusive Convection in a Hybrid Nanofluid, *Sigma Journal of Engineering and Natural Sciences*, 43(4) (2025) 1-13.
28. Ritanjali Mohanty, Hrishikesh Mahato, On Balancing and Lucas-Balancing Sedenions, *Palestine Journal of Mathematics*, 14(1) (2025) 596-605.
29. Ritanjali Mohanty, Hrishikesh Mahato, Hyperbolic k -Mersenne and k -Mersenne-Lucas Quaternions with its Associated Spinor Algebra, *Communications in Combinatorics and Optimization* (2024). DOI: 10.22049/CCO.2024.29372.1966.
30. Kalika Prasad, Munesh Kumari, Hrishikesh Mahato, Algebra of Generalized (k, n) -Fibonacci Toeplitz and Hankel Matrices: Generalized (k, n) -Fibonacci Matrices, *Boletim da Sociedade Paranaense de Matemática*, 43 (2025). DOI: 10.5269/bspm.68455.
31. Munesh Kumari, Kalika Prasad, Hrishikesh Mahato, P. M. C. Catarino, On the Generalized Leonardo Quaternions and Associated Spinors, *Kragujevac Journal of Mathematics*, 50(3) (2026) 425-438.
32. Atul K. Shrivastava, Monal Bharty, Hrishikesh Mahato, V. N. Lakshmi Durga, Maxwell Cattaneo Double Diffusive Convection of Kuvshinski Viscoelastic Nanofluid in a Brinkman-Darcy Porous Medium, *Zeitschrift für Naturforschung A* (2024). DOI: 10.1515/zna-2024-0145.
33. Munesh Kumari, Kalika Prasad, Ritanjali Mohanty, Hrishikesh Mahato, On New Sequences of p -Binomial and Catalan Transforms of the k -Mersenne Numbers and Associated Generating Functions, *Universal Journal of Mathematics and Applications*, 8(2) (2025) 71-80. DOI: 10.32323/ujma.1641001.
34. Atul Kumar Srivastava, Monal Bharty, Hrishikesh Mahato, Brinkman-Bénard Convection in Water-SWCNTs Nanoliquid with the Influence of Rotation Using Local Thermal Non-Equilibrium Model, *Journal of Porous Media*, 28(11) (2025) 85-122. DOI: 10.1615/JPorMedia.2024053408.
35. Ritanjali Mohanty, Hrishikesh Mahato, On Hypercomplex Numbers with Higher Order Balancing Numbers Components, *TWMS Journal of Applied and Engineering Mathematics* (2026).
36. Ritanjali Mohanty, Hrishikesh Mahato, Cryptography Using Generalized Pell (k, i) Numbers with Diffie-Hellman and Elliptic Curve, *Palestine Journal of Mathematics* (2025, accepted).
37. Monal Bharty, A. K. Shrivastava, Hrishikesh Mahato, et al., Influence of Chemical Reaction on Convective Flow in Porous Medium with Varying Viscosity Generated by Internal Heat Source in Thermal Non-Equilibrium Temperature Conditions, *International Journal of Thermofluids*, 30 (2025) 101412. DOI: 10.1016/j.ijft.2025.101412.

38. Hrishikesh Mahato, Algebraic Structures of Fibonacci Matrices over Ring, Communications in Combinatorics and Optimization (2025). DOI: 10.22049/ccco.2025.30256.2387.
39. Kalika Prasad, Munesh Kumari, Rabiranjana Mohanta, Hrishikesh Mahato, New Sequences of Higher Order Mersenne Numbers and Associated Binomial Transforms, The Journal of Analysis (communicated).
40. Monal Bharty, A. K. Shrivastava, Hrishikesh Mahato, Magneto-Convection in a Viscoelastic Fluid Saturated Developing Soluble Anisotropic Porous Medium, Jnanabha, 55(2) (2025) 96-113. DOI: 10.58250/jnanabha.2025.55212.

VII. BOOK CHAPTERS

1. Kalika Prasad, Hrishikesh Mahato, Munesh Kumari, On the Generalized k-Horadam-like Sequences, Algebra, Analysis and Associated Topics, Trends in Mathematics, Springer (2022) 11-26. DOI: 10.1007/978-3-031-19082-7_2.
2. Munesh Kumari, Kalika Prasad, Hrishikesh Mahato, On the Norms of Toeplitz and Hankel Matrices with Balancing and Lucas-Balancing Numbers, Advanced Mathematical Techniques in Computational and Intelligent Systems, CRC Press, Chapter 12 (2023).

VIII. CONFERENCE PROCEEDINGS

1. Monal Bharty, A. K. Shrivastava, Hrishikesh Mahato, Onset of Maxwell-Cattaneo Double Diffusive Convection in Rotating Fluid Saturated Anisotropic Porous Layer, Proceedings of International Conference on Advances in Transport Phenomena (2022) 66-67.
2. Munesh Kumari, Rabiranjana Mohanta, Kalika Prasad, Hrishikesh Mahato, On the Gaussian Higher Order Mersenne Numbers, DeGruyter Proceedings of 2nd ICRTMPCS 2023, "Advances in Mathematical and Computational Sciences," Ch. 26 (2025) 355-366.

XI. CONFERENCES, SEMINARS & WORKSHOPS ATTENDED

- ❖ International Conference on Discrete Mathematics and Its Application to Network Science, Department of Mathematics, BITS Pilani, K. K. Birla Goa Campus, Goa, 07-10 July 2018 (paper presented).
- ❖ 1st Bi-Annual Conference of Jharkhand Mathematical Society, 22-23 November 2012 (paper presented).
- ❖ Advanced Training School in Mathematics — Workshop on Operator Theory, NBHM, Institute of Mathematics and Applications, Bhubaneswar, 1-12 December 2009.
- ❖ Instructional School on Existence and Global Attractivity of Periodic Solutions of Functional Differential Equations with Application to Population Dynamics, Birla Institute of Technology, Mesra, Ranchi, 9-23 June 2008.
- ❖ DST-Sponsored National Workshop on Some Recent Research Directions in Graph Theory, Department of Mathematics, IIT Kharagpur, 26-30 May 2008.
- ❖ National Conference on Mathematical Foundation of Coding, Complexity, Computation and Cryptography, 20-22 July 2006.
- ❖ National Seminar on Mathematics, St. Xavier's College, Ranchi, 22-24 April 2005.
- ❖ Winter School on Coding Theory, Indian Statistical Institute, Kolkata, 29 December 2003 – 2 January 2004.
- ❖ All India Refresher Course in Coding Theory, Cryptography and Discrete Mathematics, Indian Academy of Science, Department of Mathematics, Punjab University, Chandigarh, 2-14 December 2002.
- ❖ National Seminar on Mathematics and Its Applications, Department of Mathematics, The University of Burdwan, 26-28 December 2001 (paper presented).

X. RESOURCE PERSON / SESSION CHAIR

- ❖ Chaired the Technical Session on Natural Sciences (Mathematics), International Conference on Emerging Technologies, System & Application, Rai University, Ranchi, 21-22 April 2018.

- ❖ Resource Person, Refresher Course, UGC-Human Resource Development Centre, Ranchi, 02-22 February 2015.
- ❖ Resource Person, Instructional School 2013, Centre for Applied Mathematics, Central University of Jharkhand, 17 December 2013 – 06 January 2014.

XI. ORGANIZING COMMITTEE MEMBERSHIP

- ❖ Instructional School 2013, Centre for Applied Mathematics, Central University of Jharkhand, 17 December 2013 – 06 January 2014.
- ❖ National Seminar on Challenges in Mathematical Science, Centre for Applied Mathematics, Central University of Jharkhand, 8-9 February 2014.
- ❖ National Seminar on Water and Sustainable Development (WASD-2015), Centre for Water Engineering and Management, Central University of Jharkhand.

XII. ADMINISTRATIVE ACTIVITIES

As a founder faculty member of the University, Dr. Mahato has had the opportunity to serve in a wide range of administrative and institutional capacities, including:

- ❖ Coordinator, Department of Mathematics (2009-2011 and 2018-2021).
- ❖ Member, Academic Council, Central University of Jharkhand (2018-2021).
- ❖ Member, Board of Studies — Department of Mathematics.
- ❖ Member, Board of Studies — Department of Physics.
- ❖ Member, Board of Studies — Department of Chemistry.
- ❖ Member, Board of Studies — Department of Computer Science and Technology.
- ❖ Member, Board of Studies — Department of Mathematics, Sarla Birla University.
- ❖ Member, Board of Studies — Department of Mathematics, Marwari College, Ranchi University.
- ❖ Member, Board of Studies — Department of Mathematics, Amity University, Ranchi.
- ❖ Member, Departmental Research Council — Department of Mathematics.
- ❖ Member, Departmental Research Council — Department of Computer Science and Technology.
- ❖ Member, Proctorial Board, since establishment of the University (2009).
- ❖ Member, Central Admission Committee.
- ❖ Member, Anti-Ragging Committee.
- ❖ Member, Equal Opportunity Cell.
- ❖ Prepared Time Table for all University End-Semester Examinations.
- ❖ Member, Central Examination Control Room.
- ❖ Prepared the List of Gold Medallists for all University Convocations.
- ❖ Security Officer (2015-2018).
- ❖ NSS Coordinator, Central University of Jharkhand.
- ❖ Nodal Officer, Internships, Central University of Jharkhand.
- ❖ Nodal Officer, Industry-Academia Collaboration.
- ❖ Member, Admission Committee, Central University of Jharkhand.
- ❖ PG Coordinator, Admission, Central University of Jharkhand.

XIII. SOCIAL OUTREACH PROGRAMME

Coordinator, UNNAYAN — Social & Educational Responsibility Initiative

Dr. Mahato coordinates UNNAYAN, a social and educational responsibility programme of the Central University of Jharkhand, through which free coaching classes are organised for students from pre-nursery to Class XII drawn from villages surrounding the University campus. The initiative provides members of the CUJ family an opportunity to serve the local community and has fostered a cordial relationship between the University and neighbouring villages. Additional activities are organised under the UNNAYAN banner to promote social awareness. It is among the most recognised outreach initiatives of the University and has also contributed positively to institutional rankings, with scope for further expansion in the future.

XIV. DECLARATION

I hereby declare that the information furnished above is true and correct to the best of my knowledge and belief.

Dr. Hrishikesh Mahato

*Associate Professor, Department of Mathematics
Central University of Jharkhand*