

Astha Agrawal

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Homepage

RESEARCH INTERESTS

Algebraic Coding Theory: Linear Codes, Additive codes, Quantum Error-Correcting Codes.

PUBLICATIONS /PREPRINTS

1. Astha Agrawal, Gyanendra Kumar Verma, and Rajendra Kumar Sharma. *Galois LCD codes over $\mathbb{F}_q + u\mathbb{F}_q + v\mathbb{F}_q + uv\mathbb{F}_q$* . **Bulletin of the Australian Mathematical Society**, 107, 2023. doi: 10.1017/S0004972722001344
2. Gyanendra Kumar Verma, Astha Agrawal, and Rajendra Kumar Sharma. *Construction Methods for Galois LCD codes over Finite Fields*. **Journal of Applied Mathematics and Computing**, 69:4023–4043, 2023. doi: 10.1007/s12190-023-01914-3
3. Astha Agrawal and Rajendra Kumar Sharma. *ACD Codes over Skew-symmetric Dualities*. **Cryptography and Communications**, 2024. doi: 10.1007/s12095-024-00709-y
4. Astha Agrawal and Rajendra Kumar Sharma. *Additive One-rank Hull codes over Finite Fields*. **Finite Fields and Their Applications**, 96, 2024. doi.org/10.1016/j.ffa.2024.102426
5. Astha Agrawal and Rajendra Kumar Sharma. Matrix product additive codes: symplectic duality and quantum code construction 2025 (revision submitted)

RESEARCH EXPERIENCES

Indian Institute of Science, Bangalore, India
Postdoctoral Fellow
Mentor: Prof. Navin Kashyap
Professor,
Department of Electrical Communication Engineering,
Indian Institute of Science, Bangalore

September 2024-Till date

Indian Institute of Technology Delhi, India
Early Doc Fellow
Mentor: Prof. R.K.Sharma
Professor,
Department of Mathematics,
Indian Institute of Technology Delhi

July 2024-August 2024

EDUCATION

Indian Institute of Technology Delhi, Hauz khas, Delhi, India
Ph.D., Mathematics,
Under the Supervision of Prof. R.K. Sharma, July 2024.

Completed

Banasthali Vidyapith, Tonk, Rajasthan, India
Master of Science, Mathematics, June 2018.

CGPA: 9.25

Banasthali Vidyapith, Tonk, Rajasthan, India
Bachelor of Science, Mathematics, June 2016.

Percentage: 87.67

RBSC, Tonk, Rajasthan, India
Senior Secondary, PCM, June 2013
 District Rank Holder(2nd rank). Percentage: 88.8

RBSC, Tonk, Rajasthan, India
Secondary, June 2011.
 District Rank Holder(8th rank). Percentage: 91.5

AWARDS **CSIR Research Associate** Award

Gold-Medal in Master of Science.

Gold-Medal in Bachelor of Science.

NATIONAL EXAMINATION Qualified ‘Joint CSIR-UGC NET December 2018’ organised by the Council of Scientific and Industrial Research for Lectureship/Assistant Professor (Rank 54 with JRF).

Qualified ‘GATE (Graduate Aptitude Test in Engineering) 2021’ exam organised by IIT Bombay.

Qualified ‘JAM (Joint Admission Test for Masters)’ 2016.

SCHOLASTIC-ACHIEVEMENTS Post-graduate Merit Scholarship for University Rank Holder by University Grants Commission (UGC), India from July 2016 to June 2018

Awarded Junior Research Fellowship (JRF) to pursue Ph.D. at Indian Institute of Technology Delhi, India from July 2019 to June 2021.

Awarded Senior Research Fellowship (SRF) to pursue Ph.D. at Indian Institute of Technology Delhi, India from July 2021 to Till date.

Research Scholar Travel Award, IIT Delhi to attend ‘International Conference on Finite Fields and Their Applications Fq 15 (2023), Paris, France .

Travel and local support: 100 euros in 2023 from CIMPA for attending the NCM-CIMPA school 2023, IIT Hyderabad, India, November 20-December 01, 2023

Research Excellence Travel Award from Promotional Fund of Industrial Research and Development (IRD) Unit, IIT Delhi.

Council of Scientific and Industrial Research (CSIR) Research Associate Award by Human resource development group (HRDG), India

CONFERENCES **06-08 December, 2022** Presented a research paper entitled “Galois LCD codes over $F_q+uF_q+vF_q+uvF_q$ ” in the 37th Annual conference of Ramanujan Mathematical Society organized by SSN college of Engg., Chennai, India.

10-12 January, 2023 Participated and presented a research paper entitled “Galois LCD codes over $F_q+uF_q+vF_q+uvF_q$ ” in the International Conference on Graphs, Networks and Combinatorics (ICGNC 2023) organized by the Department of Mathematics, Ramanujan College, Delhi, India.

19-23 June, 2023 Participated and presented a research paper entitled “Some results on Galois LCD codes over finite non-chain rings” in the International Conference on Finite Fields and Their Applications Fq15(2023) held at Paris, France.

04-08 December, 2023 Presented a poster entitled “ACD codes over skew-symmetric

duaities” in International Conference on Algebraic Geometry, Coding Theory and Combinatorics-2023, held at IIT Hyderabad.

03-07 June, 2024 Participated and presented a research paper entitled “ACD codes over skew-symmetric duaities” in International Conference on Combinatorics 2024, held at Riva Marina Resort, Carovigno, Italy.

WORKSHOPS/ SCHOOLS

18-24 Feburary, 2021 Participated in “Summer Workshop of Quantum Computing” organised online by IIT Delhi.

20 August, 2021 International webinar on “Introduction and applications of Cryptography and Graph Theory” organized by BJB Autonomous College, Bhubaneswar, Odisha, India (2021).

08-12 March, 2021 International Workshop on “Cryptography and Coding Theory” organized by Center of Excellence in Signal and Image Processing SGGS Institute of Engineering and Technology, Nanded, India (2021).

28 April-1 June, 2020 Participated in “Annual Foundation School AFS-1” organised online by National Centre for Mathematics at Harish Chandra Research Institute, Allahabad, India.

10-29 July, 2023 Participated in ‘Advanced Topics in Finite Fields’ organised by National Centre for Mathematics at The Institute of Mathematical Sciences, Chennai, India.

20 November- 1 December, 2023 Participated in “CIMPA School on Finite Geometry and Coding Theory” held at Sangareddy (India).

TEACHING EXPERIENCE

Teaching Assistant in Department of Mathematics, Indian Institute of Technology Delhi, New Delhi.

MTL 100: Calculus

MTL 750: Cryptography

MTL 101: Linear Algebra and Ordinary Differential Equations

MTL 860: Linear Algebra

MTL 105: Algebra.

KNOWLEDGE AND SKILLS

Language: Hindi(Mother tongue), English.

Software Package: MATLAB, MAGMA $\text{\LaTeX}$, Corel Draw, SageMath.

REFERENCE

Prof. Rajendra Kumar Sharma, (Ph.D. Supervisor)

Professor

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Prof. Ritumoni Sarma,

Professor

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Prof. Sartaj Ul Hasan,

Associate Professor
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