

Curriculum Vitae

Maheshanand

Associate Professor

Department of Mathematics

Indian Institute of Technology Roorkee

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EDUCATIONAL QUALIFICATIONS

Examination	Specialization	University	Year
B. Sc.	Mathematics, Physics & Chemistry	University of Delhi Delhi	1994
M. Sc.	Mathematics	CCS University Meerut	1996
Ph. D.	Mathematics	Jamia Millia Islamia, Delhi Meerut	2010

- **Area of Specialization**

Algebraic Coding Theory

- **Principal areas of research**

Codes over rings, Boolean functions in coding theory and cryptography.

PUBLICATIONS

Refereed Journals:

1. **Maheshanand Bhaintwal** and Siri Krishan Wasan, "On quasi-cyclic codes over \mathbb{Z}_q ", *Applicable Algebra in Engineering, Communication and Computing*, Vol 20, pp 459–480, (2009).
2. **Maheshanand Bhaintwal** and Siri Krishan Wasan, "Generalized Reed-Muller codes over \mathbb{Z}_q ", *Designs, Codes and Cryptography*, Vol 54, pp 149–166, (2010).
3. **Maheshanand Bhaintwal**, "Skew quasi-cyclic codes over Galois rings", *Designs, Codes and Cryptography*, Vol. 62, pp 85–101 (2012).
4. Deep Singh, **Maheshanand Bhaintwal** and Brajesh Kumar Singh, "Some results on q -ary bent functions", *International Journal of Computer Mathematics*, Vol. 90, pp 1761-1773 (2013).
5. Deep Singh, **Maheshanand Bhaintwal** and Brajesh Kumar Singh, "Constructions of q -ary functions with good global avalanche characteristics", *International Journal of Computer Mathematics*, Vol 92, pp 266 – 276 (2015).
6. Rama Krishna Bandi and **Maheshanand Bhaintwal**, Self-dual codes over $\mathbb{Z}_4 + w\mathbb{Z}_4$, *Discrete Math. Algorithm. Appl.*, Vol. 07, No. 02, 1550014 (2015).
7. Rama Krishna Bandi and **Maheshanand Bhaintwal** and N. Aydin, "A mass formula for negacyclic codes of length 2^k and some good negacyclic codes over $\mathbb{Z}_4 + u\mathbb{Z}_4$ ", *Cryptography and Communications*, (32 pages), DOI: 10.1007/s12095-015-0172-3 (2015).
8. Rama Krishna Bandi and **Maheshanand Bhaintwal**, "Negacyclic codes of length 2^k over $\mathbb{Z}_4 + u\mathbb{Z}_4$ ", *International Journal of Computer Mathematics*, (17 pages), DOI: 10.1080/00207160.2015.1112380 (2016).

9. Rama Krishna Bandi and **Maheshanand Bhaintwal**, "A note on cyclic codes over $\mathbb{Z}_4 + u\mathbb{Z}_4$ ", *Discrete Mathematics, Algorithms and Applications*, Vol 08, 1650017 (17 pages), DOI: 10.1142/S1793830916500178 (2016).
10. Amit Sharma and **Maheshanand Bhaintwal**, "F3R-skew cyclic codes", *International Journal of Information and Coding Theory*, Vol. 3, No. 3, pp 234 - 251 (2016).
11. Srinivasulu B and **Maheshanand Bhaintwal**, " $\mathbb{Z}_2(\mathbb{Z}_2 + u\mathbb{Z}_2)$ -Additive cyclic codes and their duals", *Discrete Mathematics, Algorithms and Applications*, Vol 08, 1650027 (19 pages), DOI: 10.1142/S1793830916500270 (2016).
12. Srinivasulu B and **Maheshanand Bhaintwal**, "The structure of duals of cyclic codes over $\mathbb{F}_2 + u\mathbb{F}_2 + v\mathbb{F}_2 + uv\mathbb{F}_2$ and some DNA codes", *International Journal of Information and Coding Theory*, Vol. 4, No. 1, pp 79 - 100 (2017).

Conferences:

1. **Maheshanand** and Siri Krishan Wasan, "On quasi-cyclic codes over integer residue rings", *In Proc. Applied Algebra Algebraic Algorithms and Error Correcting Codes – 17 (AAECC-17), Lecture Notes in Computer Science – 4851, S. Boztas and H. F. Lu (eds.), Springer-Verlag, pp. 330–336 (2007).*
2. **Maheshanand** and Siri Krishan Wasan, "A tutorial and survey on codes over rings", *In Proc. 5th SEAMS - International Conference on Mathematics and Its Applications, Gadjah Mada University, Yogyakarta, Indonesia, pp. 177–194 (2007).*
3. Deep Singh and **Maheshanand Bhaintwal**, "On second-order nonlinearities of two classes of cubic Boolean functions", *In proc. QSHINE 2013, Greater Noida, LNICST (Springer), Vol. 115, pp 560–567 (2013).*
4. Rama Krishna Bandi and **Maheshanand Bhaintwal**, "Codes over $\mathbb{Z}_4 + v\mathbb{Z}_4$ with respect to Rosenbloom Tsfasman metric", *In Proc. International Conference on Advances in Computing, Communications and Informatics (ICACCI-2013), Mysore, India, August 22–25, pp 37–42 (2013).*
5. Deep Singh and **Maheshanand Bhaintwal**, "On the sum-of-squares modulus indicator of q -ary functions", *In Proc. International Conference on Advances in Computing, Communications and Informatics (ICACCI-2013), Mysore, India, August 22–25, pp 599–603 (2013).*
6. Rama Krishna Bandi and **Maheshanand Bhaintwal**, "Codes over $\mathbb{Z}_4 + v\mathbb{Z}_4$ ", *In Proc. International Conference on Advances in Computing, Communications and Informatics (ICACCI-2014), Greater Noida, India, Sept. 24–27, pp 422–427 (2014).*
7. Srinivasulu B. and **Maheshanand Bhaintwal**, "On linear codes over a non-chain extension of $\mathbb{F}_2 + v\mathbb{F}_2$ ", *In Proc. Third International Conference on Computer, Communication, Control and Information Technology (C3IT), Hooghly, India, Feb. 7–8, pp 1–5, (2015).*
8. Rama Krishna Bandi and **Maheshanand Bhaintwal**, "Cyclic codes over $\mathbb{Z}_4 + u\mathbb{Z}_4$ ", *In Proc. Seventh International Workshop on Signals, Designs and their Applications in Communication (IWSDA-2015), Indian Institute of Science Bangalore, Bengaluru, Sept. 3–7, 2015, (Available on IEEE Explore).*
9. Amit Sharma and **Maheshanand Bhaintwal**, "Skew codes over $GR(2, 1) + uGR(2, 1)$ ", *In Proc. The seventh International Workshop on Signal Design and its Applications in Communications (IWSDA'15), Indian Institute of Science Bangalore, Bengaluru, Sept. 13–18, 2015, (Available on IEEE Explore).*
10. Srinivasulu B. and **Maheshanand Bhaintwal**, "Reversible cyclic codes $\mathbb{F}_4 + v\mathbb{F}_4$ and their applications to DNA codes", *In Proc. Seventh International Conference on Information Technology and Electrical Engineering, Ladkrabang, Thailand, Oct. 29–30, (2015).*

EXPERIENCE

S. No	Position held	Institute	From	To
1	Lecturer	Centre for Development of Advanced Computing, Noida	2001	2006
2	Sr. Lecturer	Centre for Development of Advanced Computing, Noida	2006	2010
3	Assistant Professor	IIT Roorkee	2010	2015
4	Associate Professor	IIT Roorkee	2015	Ongoing

Ph. D. SUPERVISED

S. No	Thesis Title	Scholar	Year
1	A Study of Some Cryptographically Significant Boolean Functions and Their Generalizations	Deep Singh	2014
2	On Codes over Some Non-chain Extensions of \mathbb{Z}_4	Ramakrishna Bandi	2016

Current Ph. D. scholars

S. No.	Scholar	Registration year
1	Srinivasulu B.	2012
2	Amit Sharma	2013
3	Raj Kumar	2015
4	Charul Rajput	2016
5	Soumak Biswas	2016

Dissertations**M.Sc**

1. Galois Rings and Their Applications to Coding Theory (Aashita Kesarwani) [2012]
2. Linearized Polynomials over Finite Fields (Ravikant) [2012]
3. A Study of Linear Recurring Sequences over Finite Fields (Raja Ram Mahto) [2012]
4. A Study of Character Theory of Finite Groups (Abhishek Juyal) [2013]
5. A Study of Polya's Enumeration Theory (Bhupendra Kumar) [2013]
6. A Study of Secrete Sharing Schemes and Their Applications (Kumar Shivam Singh) [2014]
7. A Study of Grobner Bases (Raj Kumar) [2014]
8. Cryptanalysis of Different Ciphers (Pankaj Raheja) [2015]
9. Some Source Coding Techniques (Prateek Mehta) [2015]
10. A Study of the Cryptographic Properties of Boolean Functions (Priya Soundararajan) [2015]
11. Lattice-based Cryptography- The NTRU Cryptosystem (Anirban Sengupta) [2016]
12. A Study on Guruswami-Sudan List Decoding Algorithm (Ashish Kumar Gosh) [2016]

MCA

1. Knowledge Oriented Replaying and Communicating Logical Encyclopedia (KORACLE) (Kundan Kumar) [2012]
2. Points Earn Capability for OMS Retail Client (Anoop Kumar) [2013]
3. Test Automation of Best Customer Application Web-Service using Ex-Test Tool (Niranan Bara) [2013]
4. SBIMobi Cash: an iPhone Application (Yashvant Sikarvar) [2013]
5. Service Metrics Dashboard for Carrier Information Management Service (Sunil Kumar) [2014]
6. Push Notification Proxy Server for Real Mobile Devices (Rakshit Chauhan) [2015]
7. EzHire: A Hiring Portal for Accolite (Shardul Singh) [2015]
8. A Web-based Notebook That Enables Interactive Data Analytics (Ravi Ranjan) [2016]
9. Personalization with Big-data (Kamlesh Maurya) [2016]

Sponsored Research Projects

Project title	Funding Agency	Year
An Investigation of Codes over Finite Rings	SERB, DST (Govt. of India)	2015

Talks Presented

- "A tutorial and survey on codes over rings", *In the 5th SEAMS - International Conference on Mathematics and Its Applications*, Gadjah Mada University, Yogyakarta, Indonesia, July 24–27, 2007.
- "On quasi-cyclic codes over integer residue rings" at *In Applied Algebra Algebraic Algorithms and Error Correcting Codes – 17 (AAECC-17)*, Indian Institute of Science Bangalore, Bengaluru, December 16–18, 2007.
- "Cyclic codes over $\mathbb{Z}_4 + u\mathbb{Z}_4$ " at *The Algerian-Turkish International Days on Mathematics (ATIM 2013)*, Fatih University Istanbul, Turkey, September 12–14, 2013.
- "Cyclic codes over $\mathbb{Z}_q + u\mathbb{Z}_q$ " at *The Second International Conference on Mathematics and Statistic (AUS-ICMS 15)*, American University of Sharjah, Sharjah, UAE, April 2–5, 2015.
- "Skew-cyclic and quasi-cyclic codes over finite rings" at *International Conference on Algebra and Its Applications (ICAA 2016)*, Aligarh Muslim University, India, Nov. 12–14, 2016.

Courses Taught

- Abstract Algebra
- Number Theory
- Discrete Mathematics
- Probability & Statistics
- Introduction to Computer Programming
- Theory of Computation
- Mathematics - I
- Mathematics - II
- Mathematical Methods

(Maheshanand)