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## CURRICULUM VITAE

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### **Pramod Kumar Kewat**

Associate Professor

Department of Mathematics & Computing

IIT(ISM) Dhanbad, Dhanbad-826004

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### **Experience :**

- Associate Professor, IIT(ISM) Dhanbad, April 2021-Present.
- Assistant Professor, IIT(ISM) Dhanbad, January 2012 - April 2021.
- Post Doctoral Fellow, IMSc, Chennai, May 2011 - January 2012.

### **Educational Qualifications :**

#### **• Doctor of Philosophy**

Institute : IIT Bombay, Mumbai, Maharashtra, India.  
Thesis title : On the exterior square  $L$ -function of  $GL_n$ .  
Thesis Supervisor : Dr. Ravi Raghunathan.  
Year : 2011

#### **• Master of Science**

University : Banaras Hindu University, Varanasi, U.P., India.  
Subject : Mathematics.  
Division & Year : First (2nd Rank in the University), 2003.

#### **• Bachelor of Science**

University : V.B.S. Purvanchal University, Jaunpur, U.P., India.  
Subject : Mathematics, Physics & Chemistry.  
Division & Year : First, 2001.

### **Research Interests :**

- Area of Research: Algebraic Coding Theory & Number Theory.

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## Publications:

### International Journal

1. P. K. Kewat. The local exterior square  $L$ -function: Holomorphy, non-vanishing and Shalika functionals, *Journal of Algebra*, 347, 153-172, 2011.
2. P. K. Kewat and R. Raghunathan. On the local and global exterior square  $L$ -functions of  $GL_n$ , *Mathematical Research Letters*, 19(4), 785-804, 2012.
3. A. K. Singh and P. K. Kewat. On cyclic codes over ring  $\mathbb{Z}_p[u]/\langle u^k \rangle$ , *Design Codes Cryptography*, 74(1), 1-13, 2015.
4. P. K. Kewat, B. Ghosh and S. Pattanayak. Cyclic codes over the ring  $\mathbb{Z}_p[u, v]/\langle u^2, v^2, uv - vu \rangle$ , *Finite Fields and Their Applications*, 34, 161-175, 2015.
5. P. K. Kewat and P. Kumari. Cyclic codes from the second class two-prime Whiteman's generalized cyclotomic sequence with order 6, *Cryptography and Communications*, 9(4), 475-499, 2017.
6. P. K. Kewat and S. Kushwaha. Cyclic codes over the ring  $\mathbb{F}_p[u, v, w]/\langle u^2, v^2, w^2, uv - vu, vw - wv, uw - wu \rangle$ , *Bulletin of Korean Mathematical Society*, 55(1), 115-137, 2018.
7. P. K. Kewat and S. Kushwaha. Gray images of  $(1 - u)$ -Constacyclic codes over the ring  $\mathbb{F}_{p^k} + u\mathbb{F}_{p^k} + v\mathbb{F}_{p^k} + uv\mathbb{F}_{p^k}$ , *Asian-European Journal of Mathematics*, 11(2), 1850026, 2018.
8. P. K. Kewat and P. Kumari. Cyclic codes from the first class two-prime Whiteman's generalized cyclotomic sequence with order 6, *Bulletin of Korean Mathematical Society*, 56(2), 285-301, 2019.
9. P. K. Kewat and R. Kumar. Hypergeometric functions and algebraic curves  $y^e = x^d + ax + b$ , *Journal of the Ramanujan Mathematical Society*, 34(3), 325-342, 2019.
10. Ankur and P. K. Kewat. Type I and Type II codes over the ring  $\mathbb{F}_2 + u\mathbb{F}_2 + v\mathbb{F}_2 + uv\mathbb{F}_2$ , *Asian-European Journal of Mathematics*, 12(2), 1950025, 2019.
11. P. Kumari and P. K. Kewat. 2-adic and linear complexities of a class of Whiteman's generalized cyclotomic sequences of order four, *International Journal of Foundations of Computer Science*, 30(5), 759-779, 2019.
12. H. Q. Dinh, P. K. Kewat, S. Kushwaha and W. Yamaka. On constacyclic codes of length  $p^s$  over  $\mathbb{F}_{p^m}[u, v]/\langle u^2, v^2, uv - vu \rangle$ , *Discrete Mathematics*, 343(8), 111890, 2020.
13. Ankur and P. K. Kewat. Decomposition of self-dual codes over the ring  $\mathbb{F}_2 + u\mathbb{F}_2 + v\mathbb{F}_2 + uv\mathbb{F}_2$ , *Malaysian Journal of Mathematical Sciences*, 14(3), 15-27, 2020.

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14. P. K. Kewat and R. Kumar. Generalizations of Jacobsthal sums and hypergeometric series over finite fields, *Ramanujan Journal*, 56, 993-1006, 2021.
  15. H. Q. Dinh, T. Bag, P. K. Kewat, S. Pathak, A. K. Upadhyay and W. Chinakum. Constacyclic codes of length  $(p^r, p^s)$  over mixed alphabets, *J. Appl. Math. Comput.* 67, 807-832, 2021.
  16. Ankur and P. K. Kewat. Self-dual codes over  $\mathbb{F}_2[u]/\langle u^4 \rangle$  and Jacobi forms over a totally real subfield of  $\mathbb{Q}(\zeta_8)$ , *Design Codes Cryptography*, 89, 1091-1109, 2021.
  17. H. Q. Dinh, P. K. Kewat and N. K. Mondal. Lee Distance of  $(4z - 1)$ -Constacyclic Codes of Length  $2^s$  over the Galois Ring  $GR(2^a, m)$ , in *IEEE Communications Letters*, 25(7), 2114-2117, 2021.
  18. H. Q. Dinh, P. K. Kewat and N. K. Mondal. Lee distance of cyclic and  $(1+u\gamma)$ -constacyclic codes of length  $2^s$  over  $\mathbb{F}_{2^m} + u\mathbb{F}_{2^m}$ , *Discrete Mathematics*, 344 (11), 112551, 2021.
  19. H. Q. Dinh, P. K. Kewat, S. Kushwaha and W. Yamaka. Self-dual constacyclic codes of length  $2^s$  over the ring  $\mathbb{F}_{2^m}[u, v]/\langle u^2, v^2, uv - vu \rangle$ , *J. Appl. Math. Comput.* 68, 431-459, 2022.
  20. H. Q. Dinh, P. K. Kewat and N. K. Mondal. Lee distance distribution of repeated-root constacyclic codes over  $GR(2^e, m)$  and related MDS codes, *J. Appl. Math. Comput.*, 68(6), 3861-3872, 2022.
  21. P.K. Kewat and R. Kumar. Some supercongruences related to truncated hypergeometric series, *Ramanujan Journal*, 60, 157-173, 2023.
  22. Ankur and P. K. Kewat. Binary Self-dual codes and Jacobi forms over a totally real subfield of  $\mathbb{Q}(\zeta_8)$ , *Applicable Algebra in Engineering, Communication and Computing*, 34(3), 377-392, 2023.
  23. P. K. Kewat and N. K. Mondal. Two classes of few-Lee weight  $\mathbb{Z}_2[u]$ -linear codes using simplicial complexes and minimal codes via Gray map, *Discrete Mathematics*, 346(12), 113650, 2023.
  24. H. Q. Dinh, P. K. Kewat and N. K. Mondal. Symbol-pair distance of some repeated-root constacyclic codes of length  $p^s$  over the Galois ring  $GR(p^a, m)$ , *Applicable Algebra in Engineering, Communication and Computing*, 35(2), 195-205, 2024.
  25. H. Q. Dinh, P. K. Kewat and N. K. Mondal. Maximum distance separable repeated-root constacyclic codes over  $\mathbb{F}_{2^m} + u\mathbb{F}_{2^m}$  with respect to the Lee distance, *Applicable Algebra in Engineering, Communication and Computing*, 35(4), 557-571, 2024.

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### International Conference

1. V. Tiwari and P. K. Kewat. CSS codes and QSCs from Whitemans Generalized Cyclotomy of order four, IEEE International Symposium on Information Theory (ISIT), 619-624, 2023.

### Ph.D. supervision:

- Mr. Bappaditya Ghosh (Degree awarded, 2016); On Codes over the Ring  $\mathbb{F}_q[u, v]/\langle u^k, v^2, uv - vu \rangle$ .
- Ms. Sarika Kushwaha (Degree awarded, 2018); On Constacyclic Codes over Certain Finite Commutative Local Non Chain Rings.
- Ms. Priti Kumari (Degree awarded, 2018); On 2-adic and Linear Complexities of Generalized Cyclotomic Sequences with Period Product of Two Distinct Odd Primes.
- Mr. Ankur (Degree awarded, 2020); Codes over Finite Commutative Local Rings and their Relation with Lattices, Theta Series and Jacobi Forms.
- Mr. Ram Kumar (Degree awarded, 2020); Hypergeometric Functions over Finite Fields and their Connection to Algebraic Curves.
- Mr. Nilay Kumar Mondal (Degree awarded, 2022); Lee distance of certain classes of linear codes over some finite chain rings with even characteristics.
- Mr. Sayandeep Dutta (Ongoing).
- Ms. Ekta Bindal (Thesis submitted, 2018-2024), Co-Supervisor.
- Ms. Varsha Tiwari (Ongoing, 2020-).
- Ms. Sujata Bansal (Ongoing, 2021-).
- Ms. Sanjana Singh (Ongoing, 2022-).
- Shovana Datta (Ongoing, 2023-).

### M. Phil supervision:

- Mr. Vikash Kumar Prasad (Degree Awarded, 2014); A study of cyclic codes over the ring  $\mathbb{F}_2 + u\mathbb{F}_2$ .
- Mr. Chandra Sekhar Sahu (Degree Awarded, 2015); Hypergeometric functions over finite fields.

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**PG project supervision:** Degree awarded - 30 and Ongoing - 02.

**Research Projects:**

- CRG entitled “Lee distance distributions of linear codes over finite chain rings and construction of good codes over finite fields” sponsored by Science and Engineering Research Board (SERB), India (Sanctioned Amount: Rs. 24.03 Lakh, Sanctioned date: 16/05/2024, Ongoing).
- MATRICS grant entitled “Linear complexity, 2-adic complexity and autocorrelation values of generalized cyclotomic sequences” sponsored by Science and Engineering Research Board (SERB), DST, India (Sanctioned Amount: Rs. 6.60 Lakh, Sanctioned date: 09/05/2018, Completed).
- Start-Up Research Grant (Young Scientists) entitled “Linear and cyclic codes over finite local rings” sponsored by Science and Engineering Research Board (SERB), DST, India (Sanctioned Amount: Rs. 15.02 Lakh, Sanctioned date: 20/09/2016, Completed).
- MHRD Project on Faculty Development Centre under the Scheme of Pandit Madan Mohan Malviya National Mission on Teachers and Teaching (PMMM-NMTT), Co-PI (Sanctioned Amount: Rs. 7.56 Crore, 2015-2021).
- FRS Research Project (2013) sponsored by IIT(ISM) Dhanbad (Completed).

**Teaching:**

- Mathematics-II (Winter 2012 to 2024)
- Methods of Applied Mathematics-I (Monsoon 2012 to 2018)
- Modern Algebra (Monsoon 2012 & 2018)
- Mathematical Logic (Monsoon 2012 & 2013)
- Algebra-II (Monsoon 2012)
- Numerical Methods (Winter 2012)
- Number Theory & Cryptography (Monsoon 2013 to 2024)
- Real Analysis (Monsoon 2013)
- Numerical Linear Algebra (Winter 2013)
- Advance Numerical Method Lab (Winter 2013)
- Numerical Linear Algebra Lab (Winter 2013))
- Combinatorics (Monsoon 2014 & 2015, Winter 2016 & 2017)

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- Linear Algebra (Winter 2014 to 2023)
  - Ordinary and Partial Differential Equations (Winter 2014)
  - Theory of Linear Systems (Winter 2014 & 2015)
  - Advanced Algebra (Monsoon 2016 & 2017)
  - Mathematics-I (Monsoon 2019)
  - Code Based Cryptography (Winter 2019)
  - Computer Organization Lab (Winter 2019 & 2020)
  - Computer Organization & Architecture Lab (Monsoon 2020, 21)
  - Coding Theory (Winter 2021, 2022)
  - Finite Field Theory (Monsoon 2023, 2024)

#### **Awards/Scholarships :**

- National Eligibility Test for Lectureship (NET), jointly conducted by Council of Scientific and Industrial Research and University Grant Commission, India, December-2003.
- Graduate Aptitude Test in Engineering (GATE)-2004 with All India Rank - 160.
- Council of Scientific and Industrial Research (CSIR)- Junior Research Fellowship, June-2004 (Among Top 20%).
- Department of Science and Technology and International Center for Theoretical Physics (DST-ICTP) fellowship 2007.
- National Board for Higher Mathematics (NBHM) Post Doctoral Fellowship, 2011.
- The Institute of Mathematical Sciences Post Doctoral Fellowship, 2011.

#### **Conferences/Seminars/Workshops Participation:**

##### **• International:**

- Asian-French Summer School in Algebraic Geometry and Number Theory 2006 : Motives and related topics held at Institut des Hautes Etudes Scientifiques, Bures-sur-Yvette, Paris, France, during July 17-29, 2006.
- Summer School and Conference on Automorphic Forms and Shimura Varieties held at The Abdus Salam International Center for Theoretical Physics, Miramare, Trieste, Italy, during July 9-27, 2007.

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- Satellite Conference on Galois Representations in Arithmetic and Geometry held at International Center, Goa, India, during August 10-13, 2010.
  - International Congress of Mathematicians, 2010 held at Hyderabad, India during August 19-27, 2010.
  - The 4<sup>th</sup> ILJU School of Mathematics-Theta Festival held at POSTECH, Pohang, South Korea, during August 13-19, 2011.
  - The International Colloquium on Automorphic Representations and L-Functions held at Tata Institute of Fundamental Research, Mumbai, India, during January 3-12, 2012.
  - Indo-French Symposium on Automorphic forms, Galois representations and L-functions held at IISER Pune during September 3-7, 2012.
  - Summer School on Gan Gross Prasad Conjectures held at Institute of Mathematics, Jussieu, Paris, France during June 18-27, 2014.
  - **National:**
    - 21<sup>st</sup> Ramanujan Mathematical Society Annual Conference/Workshop held at University of Hyderabad, Hyderabad, India, during July 3-8, 2006.
    - National Conference on Recent Advances in Mathematics and Its Applications (RAMA-2013) held at IIT(ISM) Dhanbad during February-16, 2013.
    - 80th Annual conference of IMS held at IIT(ISM) Dhanbad during December 27-30, 2014.
    - 7th National conference of Wave Mechanics and Vibrations held at IIT(ISM) Dhanbad during December 21-23, 2015.
    - National Conference on Recent Advances in Science and Engineering held at IIT(ISM) Dhanbad during March 28-29, 2016.

**Conferences/Seminars/Short term courses/Workshops organized:**

- Treasurer, 7th National conference of Wave Mechanics and Vibrations (7th WMVC) held at IIT(ISM) Dhanbad during December 21-23, 2015.
- Programme co-coordinator, 1st Orientation programme of Faculty Development Center held at IIT(ISM) Dhanbad during February 09-29, 2016.
- Organizing Secretary, National Conference on Recent Advances in Science and Engineering held at IIT(ISM) Dhanbad during March 28-29, 2016.
- FDC Co-coordinator, 1st Refresher course in recent trends in microwave devices and antennas of Faculty Development Center held at IIT(ISM) Dhanbad during December 26, 2016-January 15, 2017.

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- Programme Coordinator, Refresher Programme in Mathematical Sciences of Faculty Development Center held at IIT(ISM) Dhanbad during May 16, 2017-June 05, 2017.
  - FDC Co-coordinator, Refresher Programme in Physics of Faculty Development Center held at IIT(ISM) Dhanbad during May 25, 2017-June 14, 2017.
  - FDC Co-coordinator, Refresher Programme in Chemistry of Faculty Development Center held at IIT(ISM) Dhanbad during June 1-21, 2017.
  - FDC Co-coordinator, National Training Programme on Mineral Processing of Faculty Development Center held at IIT(ISM) Dhanbad during June 26-July 01, 2017.
  - Programme Coordinator, National Training Programme in Scientific Computing with Mathematica of Faculty Development Center held at IIT(ISM) Dhanbad during December 04-09, 2017.
  - Programme co-coordinator, National Training Programme on Research Methodology of Faculty Development Center held at IIT(ISM) Dhanbad during December 18-23, 2017.
  - FDC Co-coordinator, National Training Programme on Wireless Sensor Networks of Faculty Development Center held at IIT(ISM) Dhanbad during December 18-22, 2017.
  - Programme co-coordinator, Induction Training/Orientation Programme of Faculty Development Center held at IIT(ISM) Dhanbad during December 28, 2017-January 25, 2018.
  - FDC Co-coordinator, Refresher Programme in Physics of Faculty Development Center held at IIT(ISM) Dhanbad during May 29-June 18, 2018.
  - FDC Co-coordinator, Refresher Programme in Chemistry of Faculty Development Center held at IIT(ISM) Dhanbad during June 08-28, 2018.
  - Programme co-coordinator, Induction Training/Orientation Programme of Faculty Development Center held at IIT(ISM) Dhanbad during November 15, 2019-December 12, 2019.
  - Joint Secretary, National Conference on Modeling Analysis & Simulation (MAS-2019) held at IIT(ISM) Dhanbad during December 16-18, 2019.
  - Convener, International Conference on Recent Trends in Applied Sciences and Computing Engineering (RTASCE -2021) with collaboration of VIT University Bhopal held at VIT Bhopal during December 17-19, 2021.
  - Convener, A day workshop on the occasion of National Mathematics Day 2021 held at IIT(ISM) Dhanbad on December 22, 2021.

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- Co-Coordinator, Workshop on Post Quantum Cryptography-I (Design and Analysis of Quantum Safe Public Key Cryptosystems) held at IIT(ISM) Dhanbad during April 13-17, 2024.

**Talks :**

- Seminar talk at Indian Institute of Technology Bombay, Mumbai, India, January 2009.
- Colloquium talk at Institute of Mathematical Sciences, Chennai, India, June 2011.
- Delivered 4 lectures on Analysis in Undergraduate Training Programme in Linear Algebra and Analysis at IIT(ISM) Dhanbad, during May 28-June 6, 2012.
- Seminar talk at Indian Institute of Technology Bombay, Mumbai, India, January 2013.
- Two lectures on Linear Algebra in the Refresher Programme in Mathematical Sciences held at IIT(ISM) Dhanbad, during May 16, 2017-June 05, 2017.
- Seminar talk on “Some supercongruences related to truncated hypergeometric series” at DIT University, Dehradun, Uttarakhand, on the occasion of National Mathematics Day 2020.
- A talk on “Primality Testing” in the Refresher Course on Mathematical tools for Physical and Computational Sciences held at Dr. Harisingh Gour Vishwavidyalaya Sagar, M.P., during September 24-October 08, 2021.
- Two lectures on “Public Key Cryptosystems” in the Training program on Mathematical Methods with Applications held at IIT(ISM) Dhanbad during March 14-20, 2023.
- A talk on “Public Key Cryptosystems” in the 2nd International Conference on “Recent Trends in Mathematical, Physical And Computational Sciences (ICRTMPCS-2023)” held at Dr. Harisingh Gour Vishwavidyalaya Sagar, M.P., during March 17-19, 2023.
- A talk on “Bounds and Construction of Linear Codes” in the Workshop on Algebraic Codes and MAGMA Computation held at IIT Patna, during November 10-11, 2023.
- Two Lectures on Basics of Coding Theory in the Workshop on Post Quantum Cryptography-I (Design and Analysis of Quantum Safe Public Key Cryptosystems) held at IIT(ISM) Dhanbad, during April 13-17, 2024.

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**Administrative/Extra-curricular activities:**

- Chairman, JEE (Advanced)-2023.
- Course coordinator, II B.Tech (common) (for the course Mathematics-II), Winter Semester, 2022-23 and 2023-24.
- Vice-Chairman, JEE (Advanced)-2021 and 2022.
- Chief Warden, Diamond Hostel, 2021-2022.
- Member, DPGC, 2020-2022.
- Warden, Diamond Hostel, 2019-2021.
- Member, GATE-JAM Committee, 2019-2021.
- Member, M. Tech admission Committee, 2017-19.
- Time-Table in-charge, Department of Mathematics & Computing, IIT(ISM) Dhanbad, 2018-2022.
- Deputy coordinator, Faculty Development Centre (FDC) (under the scheme of Pandit Madan Mohan Malaviya National Mission on Teachers and Teaching funded by Department of Higher Education, Ministry of Human Recourse and Development, Government of India), IIT(ISM) Dhanbad (2015-2021).
- Faculty Advisor, Integrated M.Tech (M&C), July 2012-May 2016 and July 2016-2021.
- Faculty Mentor, I B. Tech (common), 2017-18 and 2018-19.
- Third position holder in Hindi essay writing for faculty and officers category organized during Hindi Pakhwara, 2016 at IIT(ISM) Dhanbad.
- Course coordinator, III B.Tech (common) (for the course Methods of Applied Mathematics-I), Monsoon Semester, 2014-15.
- Second position holder in Hindi essay writing for faculty and officers category organized during Hindi Pakhwara, 2014 at IIT(ISM) Dhanbad.
- Course coordinator, III B.Tech (common) (for the course Methods of Applied Mathematics-I), Monsoon Semester, 2012-13.
- Reviewer for Mathematical Reviews and several international journals.