

Bio-Data

ARUNKUMAR R. PATIL



Full Name: Arunkumar Ravan Patil
Mailing Address: Department of Mathematics
Shri Guru Gobind Singhji Institute of
Engineering and Technology, Vishnupuri,
Nanded 431606, India.
Telephone: (+91-2462) 269126 (O), 9420667071 (Mobile),
Fax: +91 2462 269236
E-mail: arun.iitb@gmail.com

PERSONNEL INFORMATION

Date of Birth: June 10, 1970
Place of Birth: Choukimahakaya, Nanded, Maharashtra State
Citizenship: India

EDUCATION

Degree	Institute/University	Year of Passing	Marks(in Percentage)
B. Sc.	Science College, Nanded (M.U. Aurangabad)	1991	62.8
M. Sc.	Science College, Nanded (M.U. Aurangabad)	1993	71 (University rank 1)
Ph. D.	Indian Institute of Technology Bombay, Mumbai	2008	

Ph. D. Thesis: Weight Hierarchy and generalized Spectrum of Linear Codes
Associated to Grassmann Varieties

Ph. D. Thesis Advisor: Prof. Sudhir R. Ghorpade, Department of
Mathematics, IIT Bombay

Ph. D. Thesis Co Advisor: Prof. Harish K. Pillai, Department of Electrical Engineering, IIT Bombay

AREA OF RESEARCH

1. Coding Theory and Algebraic Geometry
2. Finite Fields
3. Linear Algebra (Matrix Factorization Algorithms)

Ph. D. Students

1. Sachin P. Basude (Ph. D. Awarded in 2017- Viva Voce was held on 13/06/2017, guide- Dr. J. N. Salunke)

Title of the Thesis: *Some results in Number Theory*

2. Nitin S. Darkunde (Ph. D. Awarded in 2018, viva Voce was held on 14/10/2018, guide-Dr. S. B. Nimse)

Title of the Thesis: *On Some Aspects of Coding Theory*

3. Shaikh Javed Shafee (Ph. D. Awarded in 2020- Viva Voce was held on 10/11/2020).

Title of the Thesis: *Linear Codes over quaternion rings and finite fields.*

4. Mahesh S. Wavare (Thesis submitted and in the review process as on Sept 11, 2020)

Title of the Thesis: *Linear sections of Schubert varieties and linear codes associated to Schubert varieties.*

M.Phil. Students

1. Syed Zarqua M. (M. Phil. awarded on January 30, 2019 with Garde B)

Title of the the Thesis: *Matrix product codes and squares of codes associated with Grassmannians.*

AWARDS AND GRANTS AND HONORS

1. NBHM Teachers Fellowship from National Board for Higher Mathematics (NBHM) under Department of Atomic Energy, Government of India for Ph. D. at the Indian Institute of Technology Bombay in the year 2006-2007 (December 01, 2006 to May 31, 2007).
2. University Medal for getting the First rank in the order of Merit Master of Science, July 1993.
3. Late Narharrao Marotrao Penurkar Memorable Award for getting university rank 1 in Mathematics in Marathwada University Aurangabad in March-April 1992-93.
4. Received a certificate of Appreciation from the Foundation For Excellence a non profit organization Sunnyvale, CA, United States of America for volunteering as Facilitator on September 24, 2020.

RESEARCH PROJECTS

1. Member of the Indo-Russian Project entitled **Algebraic varieties over Fields and Linear Error Correcting Codes** which was coordinated by Sudhir Ghorpade , Professor, Department of Mathematics, Indian Institute of Technology Bombay, Mumbai from India and Michael Tsfasman, Algebra and Number Theory Department , Institute of Information Transmission Problems (IITP), Moscow, Russia during 2012-2014 (Project Grant: INR 17, 40, 400).
2. Member of the Center **of Excellence on Signal and Image Processing** which is coordinated by Manesh B. Kokare, Associate Professor, Department of Electronics and Telecommunication Engineering at SGGGS Institute of Engineering and Technology, Vishnupuri, Nanded sanctioned by TEQIP-II a World Bank Project during 2013-2017 (Project Grant INR 50000000).

TEACHING EXPERIENCE

1. Lecturer, Vasantao Naik Mahavidyalaya, Arts Commerce, and Science, (New) Nanded from 1.8.93 to 15.4.94 on regular basis in the pay scale 8000-13500 (275)
2. Lecturer, Shri Guru Gobind Singhji Institute of Engineering and Technology, Vishnupuri, Nanded- An Autonomous Institute of Government of Maharashtra from 01/09/2009 to 31/08/2001 in continuing form on regular basis in the pay scale 8000-13500 (275).
3. Lecturer (senior Scale), Shri Guru Gobind Singhji Institute of Engineering and Technology, Vishnupuri, Nanded- An Autonomous Institute of Government of Maharashtra from 01/09/2001 to 31/08/2006 in continuing form on regular basis in the pay scale 10000-15200 (325).
4. Lecturer (Selection Grade), Shri Guru Gobind Singhji Institute of Engineering and Technology, Vishnupuri, Nanded - An Autonomous Institute of Government of Maharashtra from 01/09/2006 to 31/08/2009 in continuing form on regular basis in the pay scale 12000-18300 (420).
5. Associate Professor, Shri Guru Gobind Singhji Institute of Engineering and Technology, Vishnupuri, Nanded - An Autonomous Institute of Government of Maharashtra from 01/09/2009 to in continuing form on regular basis in the pay scale 37400-67000 (9000) with current basic 1, 61, 600 (as per 7th pay).
6. Teaching Assistant, Department of Mathematics, Indian Institute of Technology Bombay, Powai, Mumbai, India, July 2003- February 2005.

RESEARCH PUBLICATIONS

1. (With S. R. Ghorpade and H. K. Pillai), " ", *Finite Fields and their Applications*, Vol. 15, No. 1 (2009), pp. 54-68.

2. (With S. R. Ghorpade and H. K. Pillai), "Subclose families, threshold graphs, and the weight hierarchy of Grassmann and Schubert codes", in: Arithmetic, Geometry, Cryptography and Coding Theory (Luminy, France, Nov. 2007), pp. 87-99, G. Lachaud, C. Ritzenhaller, and M. Tsfasman Eds., *Contemporary Mathematics, Vol. 487*, American Mathematical Society, Providence, 2009.
3. (With N.S. Darkunde) "On some error correcting linear codes", *Asian Journal of Mathematics and Computer Research* 17(1): 56-62, 2017.
4. (With S. R. Ghorpade, T. Johnson, Harish K. Pillai), "Higher Weights of Grassmann Codes in Terms of Properties of Schubert Unions", **arXiv.org**, **1105.0087v1** [math.AG], April 30, 2011.
5. (with Shaikh Javed Shafee), "Codes over muffin ideals of quaternion integer ring $(-1, -1/\mathbb{Z}_p)$ ", *Journal of Computer and Mathematical Sciences*, pp. 20-32, 10(1), January 2019.
6. (with Shaikh Javed Shafee, E. E. Thadvipathan), "Self-Dual Codes On Muffin Ideals", *Journal of Emerging Technologies and Innovative Research*, 6(4): 321-324, 2019.
7. (with Shaikh Javed Shafee), "Cyclic codes associated to Muffin ideals over quaternion integer ring $(-1, -1/\mathbb{Z}_p)$ ", *Asian journal of mathematics and computer research*, pp.67-74, 24(2), 2018.
8. (With N.S. Darkunde), "Algorithmic approach for error-correcting capability and decoding of linear codes arising from algebraic geometry", *Information and communication technology for competitive strategies*, Springer, Singapore, pp 509-517, 40, LNNS, January 2019.
9. (with Shaikh Javed Shafee), "Self dual codes on muffin ideals over the ring of quaternion integers", *Journal of emerging technologies and innovative research*, pp.321-324, 6(4), 2019.
10. (with Mahesh S. Wavare, Dr. Suryakant M. Jogdand), "A note on extended binary Schubert code", *Our Heritage, special issue on Importance of Mathematics Education*, pp.72-77, 68(6), ISSN: 0474-9030, Impact Factor-6.8, 2020.
11. (with Pooja Rajani), "Product and sum of cyclic LCD codes of length n over F_q with $\gcd(n, q) = 1$ ",

CONFERENCE PUBLICATIONS

International Conferences:

1. (With H. K. Pillai), "On the Weight Hierarchy of certain Grassmann Codes", *Proceedings of the 19th International Symposium on Mathematical Theory of Networks and Systems (MTNS) - Budapest, Hungary 5-9 July, 2010.*
2. "Higher weights of some special Grassmann codes", *International Conference on Algebraic Geometry and Coding Theory*, IIT Bombay, Mumbai, India, page no 10, December 2-6, 2013.
3. "Generalized Spectrum of Grassmann codes", *Proceedings of AMC 2005, pp. 75-76, Asian Mathematical Conference 2005* held at NUS Singapore, 2005.
4. (With S.P. Basude), "On the generalized spectrum of linear codes associated to Grassmann varieties and Schubert varieties", *Proceedings of 2012 KIAS International Conference on Coding Theory and Applications*, Korea Institute of Advanced Studies, Seoul, South Korea during 15-17 November , 2012.
5. (with Nitin S. Darkunde), "Algorithmic approach for error-correcting capability and decoding of linear codes arising from Algebraic Geometry, Third International Conference on Information and Communication Technology For Competitive Strategies (ICTCS-2017) held at the Institution of Engineers, Udaipur, India during December 16-17, 2017.
6. (with Mahesh S. Wavare, Dr. Suryakant M. Jogdand), "A note on extended binary Schubert code", International conference on Advances in physical, chemical & mathematical sciences (ICA-PCM-2020) held at Rashtrasant Tukdoji Maharaj University, Nagpur during February 13-16,2020.

National Conferences:

7. "Higher Weights of Linear Codes Associated to Grassmanian Varieties ," *Proceedings of the Commutative Algebra and Algebraic Geometry Conference (CAAG)* held at Indian Statistical Institute Banglore during July 16-20, 2007.
8. (With N. S. Darkunde), "Grobner Bases of binomial ideals for linear codes from Grassmannian and its subvarieties", *Proceedings*

of NCPAM-17, National Conference on Pure and Applied Mathematics (NCPAM-17) at COEP, Pune during 17-19 May 2017.

9. (With Z.Syed), "Squares of Linear codes associated with projective Grassmann varieties", *Proceedings of NCPAM-17, National Conference on Pure and Applied Mathematics (NCPAM-17) at COEP, Pune during 17-19 May 2017.*
10. (Shaikh Javed Shafee, Ekrarkhan E. Tadvipathan), "Self-Dual Codes On Muffin Ideals Over the Ring of Quaternion Integers", National conference on recent developments in science, engineering and technology (RDSET 2019) organized by Sanmati engineering College in collaboration with P.G. Department of Computer Science of S.G.B. Amravati University and in association with I.E.T.E. on April 03, 2019.
11. (with A.B. Gonde, A.V. Nandedkar), "Effective implementation of TEQIP-II programme: a case study," National conference on TEQIP II: Best policies and Practices jointly organized by State Project Facilitation Unit (SPFU), TEQIP-II, Maharashtra State, and S.G.G.S. Institute of Engineering and Technology, Vishnupuri Nanded during January 10-11, 2014.

INVITED TALKS

1. Invited Speaker, in the International Conference on Coding Theory and Applications, held at Korea Institute of Advanced Study, Seoul, South Korea during November, 2012.

Title of the talk: Generalized spectrum of linear codes associated to Grassmann varieties and Schubert varieties.

2. Invited Speaker, in the International Conference on Algebraic Geometry and Coding Theory held at IIT Bombay (India) held during December 2-6, 2013.

Title of the talk: Higher weights of some special Grassmann codes.

3. Speaker in Commutative Algebra and Algebraic Geometry Conference (CAAG 07) held at Indian Statistical Institute (ISI), Bangalore, India in July 2007.

Title of the talk: Higher Weights of Linear Codes associated to Grassmann Varieties.

4. Invited Speaker, in the National Conference on Industrial Statistics and Computational Mathematics held at North Maharashtra University, Jalgaon, India, January, 2010.

Title of the talk: Linear codes associated to higher dimensional varieties over finite fields.

5. Keynote Speaker in the National Conference on Recent Trends in Mathematics and Its Applications in Computer Science (RTMACS-2014) held at Rajarshi Shahu Mahavidyalaya Latur Maharashtra during January 17-18, 2014.

Title of the talk: Linear codes associated with some higher dimensional algebraic varieties

6. Invited Speaker in the State Level Conference on Recent Advances in Mathematics & Its Applications 2014, held at Karmveer Abasaheb alias N.M. Sonwane Arts, Commerce and Science College Satana, Dist. Nashik during February 5-6, 2014.

Title of the talk: On the generalized spectrum of linear codes associated to Grassmann varieties and Schubert varieties in the

7. Invited Talk on "Grobner Bases of binomial ideals for linear codes from Grassmannian and its subvarieties" in the *National Conference on Pure and Applied Mathematics (NCPAM-17)* at COEP, Pune during 17-19 May 2017.

VISITING POSITIONS

1. Invited to visit the Poncelet Laboratory (UMI 2615 du CNRS), Moscow Russia for the period September 28 -October 07, 2013 for joint research.

TALKS GIVEN IN TRAINING COURSES

1. Resource Person to conduct tutorial on Mathematical Modelling in International Conference on Emerging Trends and Innovations in ICT (ICEI 2017) sponsored by IEEE at Pune Institute of Computer Technology, Pune which was held during February 03-05, 2017.
2. Resource Person in Short Term Training Program on Computer Networking: Concepts to recent trends sponsored by ISTE at SGGS Institute of Engineering and Technology, Vishnupuri, Nanded which was held during May 2009.
3. Guest Speaker in a National level Short Term Training Programme on Teachers Empowerment Programme with Special Focus on Effective Teaching which was held at Shri Sant Gadge Baba College of Engineering & Technology, Department of engineering Science, Bhusawal during April 19-24, 2010.
4. Resource Person in Short Faculty Development Program on Optimization Techniques in Engineering Applications sponsored by ISTE at Mukesh Patel School of Technology Management and Engineering which was held during December 14-18, 2015.
5. Resource Person for coaching in NET-SET Coaching Center on Complex Analysis sponsored by University Grant Commission (UGC), Government of India at North Maharashtra University, Jalgaon which was held during December 05-14, 2011.
6. Expert Lecture on Coding Theory and Cryptography in TEQIP Sponsored Short Term Training Program on Mathematical and Statistical Approaches in Engineering Applications 2013 which was held at Government College of Engineering Jalgaon, during December 26-30, 2013.
7. Expert Lecture at MGM's College of Engineering, Nanded on "Mathematics: Language of Engineering", on February 09, 2013.
8. Expert Lecture in monthly lecture series by Marathwada Mathematical Society held at MMS office, Vidya Nagar, Nanded on "Algebraic Geometry and Coding Theory", on August 18, 2007.
9. Expert Lecture at the School of Mathematical Sciences, SRTM University, Nanded on "Coding Theory", during October 17-31, 2013.
10. Guest Lecture for undergraduate students at Mahatma Gandhi Mahavidyalaya, Ahmedpur on Mathematics on April 03, 2010.

11. Guest Speaker in one day state level workshop at Cummins College of Engineering, Pune on "Application of Mathematics in Engineering stream" held on November 26, 2016.
title: Algebraic Geometry and Coding Theory
12. Expert Lecture on "Applications of Mathematics and Its implementation in technical field", in the programme held on "Developing Fundamentals in technical science at Government Polytechnic, Nanded on October 11, 2013.
13. Expert Lecture at MGM'S College of Engineering on Engineering Mathematics for the SE electronics and telecommunication engineering on April 07, 2015.
14. Guest Lecture on Introduction to Algebraic geometry and its connection to real world problems to M.Sc. Students at N.E.S. Science College Nanded on August 06, 2016.
15. Expert Speaker on Mathematics in the FDP on "Security Challenges in Computer Science " held in the department of computer Science and engineering at SGG'S IE&T, Nanded during June 24-28, 2013.
16. Resource Person in the Two weeks AICTE sponsored Staff Development program on " Recent advances in speech, image and video processing" held at the Department of Electronics and Telecommunication Engineering, SGG'S Instt of Engg and Tech. Vishnupuri, Nanded during December 12-23, 2011.
17. Resource person in the two week Faculty Development Program on 'Advances in Applied Mathematics to Engineering' from 11th Dec. 2017 to 22nd Dec. 2017 at the Department of Mathematics, Government College of Engineering Karad.
18. Guest Lecture in Mathematics on the topic "curves over finite fields" at Post graduate department of Mathematics, N.E.S. Science College Nanded in association with Marathwada Mathematical Society, Aurangabad to celebrating Golden Jubilee Year 2019-2020 on August 24, 2019.
19. Invited talk on "Singular Value Decomposition" at Ramdeobaba College of Engineering, Nagpur on November 26, 2020.

CONFERENCES/WORKSHOPS PARTICIPATION

1. International Conference on Algebra and Algebraic Geometry (in honor of S. Abhyankar's 80th birthday) held at Department of Mathematics, University of Pune (India) during December 17-22, 2010.
2. International Congress of Mathematicians (ICM) 2010 held at Hyderabad, India during August 19-27, 2010.
3. Fourth Asian Mathematical Conference (AMC-2005) held at National University of Singapore, Singapore during July 23-26, 2005.
4. American Mathematical Society (AMS)-India Meeting held at Indian Institute of Science, Bangalore, India during December 2003-January, 2004.
5. International Workshop on Computational Algebraic Geometry, held at Harish-Chandra Research Institute, Allahabad, India during December 08-13, 2003.
6. Annual Foundation School-II on Commutative Algebra, Complex Analysis and Algebraic Topology held at Bhaskaracharya Pratisthana, Pune during June 01, 2006-June 28, 2006.
7. Participated Winter School on Coding Theory, held at Indian Statistical Institute, Kolkata, India during December 29, 2003-January, 02, 2004.
8. Workshop on Curves over Finite Fields, held at University of Mumbai, Mumbai, India during July 21 - 25, 2003.
9. Workshop on Commutative Algebra and Combinatorics, held at University of Pune, Pune, India during July 07 -12, 2003.
10. Workshop on LATEX and Free Mathematical Software, held at Bhaskaracharya Pratisthana, Pune, India during July 09 -14, 2003.
11. Special Session on Commutative Algebra and Algebraic Geometry in Joint American Mathematical Society (AMS)-India Meeting held at Indian Institute of Science, Bangalore, India during December 17-20, 2003.

12. Instructional workshop in Algebra and Analysis, held at Indian Statistical Institute, Bangalore (ISI Bangalore), India during December 11-16, 2003.
13. Orientation workshop on Student Learning Assessment (SLA) organized by Stanford University in association with NPIU of TEQIP -II a world bank project at AICTE New Delhi on March 05, 2019 for one day.
14. One week AICTE sponsored QIP short term interdisciplinary course on “waste to Energy-A Green Approach” organized by Department of chemical engineering, SGGIS Instt of engineering and Technology, Vishnupuri, Nanded held during July 03-07, 2019.
15. One Week QIP Short term Interdisciplinary Course on “Waste to Energy-A green Approach” held during July 03-07, 2019 sponsored by AICTE and jointly organized by the Department of Chemical Engineering at SGGIS Institute of Engineering and Technology, Vishnupuri, Nanded.

Courses Organized:

1. NCM Instructional School for Lecturers (ISL) on Galois Theory at SGGIS Institute of Engineering and technology, Vishnupuri, Nanded during December 01-13, 2014 sponsored by National Center for Mathematics (NCM)-a joint center of TIFR and IIT Bombay.
2. NCM Instructional School for Teachers (IST) on Linear Algebra at SGGIS Institute of Engineering and technology, Vishnupuri, Nanded during 23 November - 05 December, 2015 sponsored by National Center for Mathematics (NCM)-a joint center of TIFR and IIT Bombay.
3. Two Weeks Workshop on Linear Algebra and Its Applications under TEQIP-III at SGGIS Institute of Engineering and Technology, Vishnupuri, Nanded during May 21-June 02, 2012.
4. One week workshop on Coding Theory and Cryptography under TEQIP -II at SGGISIE and T, Vishnupuri, Nanded during December 26-31, 2016.
5. Virtual Annual Foundation School-(vAFS-I)-2020 was organized online during April 23 and April 28-May 31, 2020 (32 days) which was sponsored by National Center for Mathematics (NCM)-a joint center of TIFR and IIT Bombay.

Conferences Organized:

1. Organized a Tutorial Session on Mathematical Modelling in the International Conference on Emerging Trends and Innovation in ICT (ICEI-2017) at PICTE, Pune on February 03, 2017.

Administrative Responsibilities at Institute:

1. Chairman, Board of Study (BoS) of Basic Sciences and Interdisciplinary Subjects of SGGGS Institute of Engineering and Technology, Vishnupuri, Nanded.
2. Member, Board of Study (BoS) of Rajrshi Shahu College, Latur.
3. Member, Board of Study, Cummins Womens College, Pune, Savitribai Phule Pune University Pune.
4. Expert Syllabus Revision committee, Department of Biotechnology, Savitribai Phule Pune University Pune.
5. Worked as a Coordinator of SGGGS Institute for Madhava Mathematics Competition (MMC) which was held on January 12, 2020.
6. Member, Program Evaluation Committee of AICTE PRERNA Scheme at SGGGS Institute of Engineering and Technology, Vishnupuri, Nanded.
7. Dean (Students Affairs) of SGGGS Institute of Engineering and Technology, Vishnupuri, Nanded for the period of two years from August 03, 2020-August 29, 2022.

Honorary Positions:

1. Chairperson, for paper presentation session in the National Conference on Recent Trends in Mathematics and Its Applications in Computer Science (RTMACS-2014) held at Rajarshi Shahu Mahavidyalaya Latur Maharashtra during January 17-18, 2014.
2. Chairperson for one session in the national Conference on pure and applied mathematics (NCPAM-2017) held during May 17-19, 2017 at COEP Pune.

3. Chairperson for a session in the State level conference on Recent Advances in Mathematics & Its Applications 2014, held at Karmveer Abasaheb alias N.M. Sonwane Arts, Commerce and Science College Satana, Dist. Nashik during February 5-6, 2014.
4. Member of Ad-hoc Board of Studies in General Engineering under the Faculty of Science & Technology, SRTMU Nanded.
5. Syllabus framing of the subject Bio-Mathematics and Bio-Statistics of B.Sc. Biotechnology course of Savitribai Phule Pune University Pune for the year 2018-19.
6. Nominated by Hon. Vice-Chancellor of SRTMU Nanded as a member of Interface Meeting (faculty of Science and Technology) for the final selection of Minor Research Projects Proposals Funding scheme (December 14, 2019 first meeting).
7. Invited to participate in panel discussion for identifying local experts LIGO_India establishment by Director and Convener of International Workshop on LIGO_India during December 15-16, 2019 at SRTM University, Nanded.

Co-Curricular Activities

1. Organized Expert Lecture on "Glimpse of Irreducible Polynomials" by Professor Sudesh Kaur Khanduja, INSA Senior Scientist, IISER Mohali, Punjab during July 7-8, 2017 under TEQIP III.
2. Organized Expert Lecture on the topic "Linear Algebra and Its Applications" by Prof. Raju A. Muneshwar for UG students on December 03, 2020 in association with Bhaskaracharya Club of SGGGS Students.
3. Organized a series of Lectures by Prof Nitin S. Darkunde, Assistant Professor, School of Mathematical Sciences, SRTMU Nanded on The Ideals, Varieties, and Algorithms.
4. Organized a series of Lectures by Prof Uday Divyaveer, Assistant Professor, School of Mathematical Sciences, SRTMU Nanded on the topic Grobner Bases.

Dr. Arunkumar R. Patil