# V. P. Ramesh\*

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Lab: http://math-analytics.org
Pedagogy:https://nurture1729.in/

#### **OBJECTIVE**

To become an eminent researcher and teacher.

#### HIGHLIGHTS

- I am an assistant professor of Mathematics at the Central University of Tamil Nadu, and interested in Algorithms, Number theory, Complexity theory, Numerical Analysis, and Scientific Computing
- Established a research lab named "Mathematics, Analytics and Computing Entity (MA-CoE)," (http://math-analytics.org) where we conduct theoretical and experimental research towards making robust decision-making tools to make in India
- Institutionalized a community outreach initiative, namely, *nurture*, which aims to inculcate the habit of nurturing Mathematics at various levels. We conduct multiple workshops at the national level, demonstrating a unique pedagogical learning ecosystem. (https://nurture1729.in/)

#### **SKILLS**

- Have both industry and academia exposure to research, teaching, and product development
- About fifteen years of research experience and/or teaching experience (post Ph.D.)

#### POSITIONS HELD

- Assistant Professor, April 2012 till date, (11 years)
  Department of Mathematics,
  School of Mathematics & Computer Science,
  Central University of Tamil Nadu, Thiruvaur
- Research IP Analyst, Oct. 2007 April 2012 (4.5 years)
  Also on Six-Sigma Black Belt role,
  General Electric (GE) Global Research, JFWTC, Bangalore
- Tutor, 2 Semesters 2005 (during Ph.D.) Indian Institute of Technology Kanpur,

Worked as Tutor for 2 semesters and taught one course in each semester. Work involved tutoring a class of around 30 students and teaching, preparing lecture/question papers, and also evaluating & grading the students. Received, **Extraordinary, Exemplary & Superb Teaching Performance** from the Director and Chairman of Academic Senate, IIT Kanpur

# **EDUCATION**

- Doctor of Philosophy, (2007) Indian Institute of Technology, Kanpur Thesis: Adaptive Finite difference schemes for Singularly Perturbed Boundary Value Problem with shift terms (with Prof. M.K. Kadalbajoo)
- Master of Science, (2001) Anna University, Chennai Thesis: Matrix Geometric Solution for some Queuing Models (with Prof. B. Krishna Kumar)
- Bachelor of Science, (1999) St. Xavier's College, Tirunelveli

#### THESIS SUPERVISION - Ph.D. Students

- 7. **Gowtham R**, Some problems in cubic residues and primitive roots, (May 2023) (Guide: Prof. Arindama Singh, IIT Madras and Co-guide: V.P. Ramesh, CUTN);
- 6. **Makeshwari M**, On Generalized Sophie Germain primes, permutations, and primality of primitive roots (June 2023)
- 5. **Saswati Sinha**, On the least primitive root of extended Sophie Germain primes and Legendre primes (Nov. 2022)
- 4. Narayani G, Numerical study of a few special classes of generalized viscous problem (April 2022)
- 3. **Prithvi M**, Error estimates of numerical algorithms for singularly perturbed problems with discontinuous data (May 2019)
- 2. Priyanga B, Design and analysis of an a priori mesh for singularly perturbed problems (May 2019)
- 1. Thatchaayini R, A Note on Gauss's Theorem on primitive Roots (Dec. 2018)

# THESIS SUPERVISION - M.Phil. Students

1. Primitive roots in contrast to Semi-Primitive roots modulo n - Saswati Sinha - (June 2019)

# THESIS SUPERVISION - Integrated M.Sc. Students (1 year duration and equivalent to M.Phil.,)

- 53. Image Classification of a 100 Species of Butterflies and Moths Using CNN, Aleena Jacob 1180202, May 2023
- 52. Tumor detection and 3D modeling with GPU, Anusha B I180204, May 2023
- 51. A note on Carmichael Numbers, Sooraj Neelakandan I180222, May 2023
- 50. Natural Language Processing of Fake tweets using LSTM, Soumya Ranjan Biswal I170226, May 2022
- 49. Big data analytics of diaster tweets and dog breed identification, Kiruthika V I170212, May 2022
- 48. Guass's theorem on primitive roots and observations on the primitive roots of 64p+1, Parvathy R I170218, May 2022

- 47. Analysis of primitive roots of  $2^np + 1$  and permutations n!, Rosatta Joseph I170223, May 2022
- 46. Semi-primitive roots and Quadratic residues, Harini. C I160214, June 2021
- 45. A Study on Quadratic Residues P.S. Mary Cinderella I160223, June 2021
- 44. A note on Cubic Residues S. Devi I160210, June 2021
- 43. Multilabel Image Classification of Thoracic lung diseases using Convolutional Neural Network and pre-trained weight YAMITA KUMARI I160230, June 2021
- 42. Prediction of Saleprice through Linear Regression and other Models, Keerthana S I150012, May 2020
- 41. Comparison of Efficiency of Four Key Image Classification Algorithms on Identification of Cactus in Aerial Imagery, Lakshmi T I150015, May 2020
- 40. Sophie Germain primes and Permutation group, Sivakumar S I150025, May 2020
- 39. Convolutional Neural Network for Plant Seedlings Classification, Sreelakshmi P I120008, May 2020
- 38. A few computations in the multiplicative group modulo n,  $(\mathbb{Z}/n\mathbb{Z})^*$ , Aarthi T I140027, May 2019
- 37. Benchmarking Machine Learning Algorithms for Optical Characters Recognition: Which one does it better?, Ashish Sahoo I140006, May 2019
- 36. Computing the Upper Bound of Phi Function of RSA Cryptosystem, Anagha N V I140002, May 2019
- 35. Relation Between Orbits and Strongly unequal permutations in  $S_n$  and its Application in Solving sudoku, Anjali Sushil V I140003, May 2019
- 34. A Note on S. Sivasankaranarayana Pillai's Theorem, Bharathi K I140008, May 2019
- 33. Pneumonia Detection on Chest X-Rays with Machine Learning, Mathew Alex I140012, May 2019
- 32. Hand written digit Recognition: An Empirical Comparison of Machine Learning Algorithms, Rupika T I140017, May 2019
- 31. Credit rating of consumers with little financial history Risk Analysis, Sivaranjani N I140023, May 2019
- 30. Stirling Numbers and Transpositions, Anjali P V I130001, May 2018
- 29. Sales forecast using the method of Random forest, Athira S I130003, May 2018
- 28. Machine learning algorithm for image classification to distinguish dogs from cats, Eyamuna N I130006, May 2018
- 27. Deep learning and image categorization using supervised learning algorithms for human-Computer interaction, Geethanjali K I130007, May 2018
- 26. Machine learning algorithm to understand the deforestation of the amazon from space, Kalaivani M I130010, May 2018

- 25. Monitoring invasive species by convolutional neural network, Kanimozhi C I130011, May 2018
- 24. A note on retractable module, Mageshpriya D I130015, May 2018
- 23. Some techniques in image segmentation, Manna Elza Joseph I130017, May 2018
- 22. Market basket analysis using F1 score maximization, Rajeswari E I130022, May 2018
- 21. Big data analytics on customer behavior using light GBM model, Aswathi KV I130203, May 2018
- 20. Big Data Retail Analytics for Demand Planning (Using Artificial Neural Network), Aishwarya R - I120002, May 2017
- 19. Supervised Machine Learning Using Convolutional Neural Networks for Image Classification, Favas L I120007, May 2017
- 18. A Naive Bayes model for aspect-level sentiment analysis of text data, Jobin Idiculla I120009, May 2017
- 17. Zero-sum problems in finite groups, Makeshwari M I120013, May 2017
- 16. TalkingData Mobile .User Demographics Big Data Analytics, Preethi S I120016, May 2017
- 15. The Multinomial Logistic Regression for Big Data Analytics, Vijitha S I120025, May 2017
- 14. Computational number theory and visualization using open source software R, Aarthika 1103010501, May 2016
- 13. Some Identities based on Cantors idea of height of the polynomial (A new concept), Anitha L 1103010503, May 2016
- 12. Pedagogy of machine learning using artificial neural network (simulating the human brain), Divya D 1103010507, May 2016
- 11. Computability and Complexity Analysis of Decision Problems (Charles Babbage David Hilbert Alan Turing), Gowtham R 1103010508, May 2016
- 10. Artificial Neural Network based big data analytics for Winton Stock Market Challenge (Supervised learning system), Preethi S 1103010518, May 2016
- Computational Number Theory and Visualization using Python, Vengadesan N 1103010527, May 2016
- 8. Computation of American option by Crank-Nicholson Method, Aarthi D 103010501, May 2015
- 7. Computation of American Option, Manjula R 103010510, May 2015
- Sudoku and Directional Change of Lexicographic Permutations: A new theory, Prithvi M - 103010514, May 2015
- 5. Combinations & Point wise Unequal Permutations with Applications to Sudoku, Thatchaayini R 103010521, May 2015
- 4. Open Source Software for Big Data Analytics: R, Priyadharshini M 102020510, May 2015

- 3. Regression for Big Data Analytics using R and Python, Priyanga B 103010515, May 2015
- Health care Big Data Analytics Predicting Diabetes: A Case Study, Shiva Prakash YV 103010518, May 2015
- 1. Open Source Software for Big Data Analytics: Python, Sowmitha R 103010519, May 2015

# PROJECT MENTORING: INSA Summer Intership (2 months duration)

- 15. A note around Artin's primitive root conjecture Aniket Basak MATS199-I (2022)
- 14. COVID-19 Detection Using Chest X-Ray Images Kushank Maheshwari MATS139 (2021)
- 13. COVID-19 Detection Using Chest X-Ray Shivam Chaturvedi ENGS888 (2021)
- 12. Algebraic View of Linear Algebra and its Applications Sanjana Pradhan ENGS1625 (2020)
- 11. Primitive roots and Sophie Germain Primes M V Gauri MATS496 (2020)
- 10. Big data analytics using Deep Learning Algorithms Aayushi Kundalia FENGS300 (2019)
- 9. A few Predictive Machine Learning Algorithms Sooraj Gupta MATS117 (2019)
- 8. Deep Learning for Large Scale Image Classification Problem Sahil Unagar MATS52 (2019)
- 7. Davenport Constant and Wieferich Primes Hitha P R MATS702 (2018)
- 6. Normal Order of  $\omega(n)$  and  $\Omega(n)$  Maria Jose K MATS369 (2018)
- 5. Image Classification Using Convolutional Neural Networks Rohit Upadhya FENGS192 (2018)
- 4. Intellectual Asset Valuation Big Data Analytics Kutty Kumar MATT26 (2018)
- 3. Image classification Using Convolutional Neural Network Abrar Ahmad ENGS4877 (2017)
- 2. Comparison of different M estimators of Robust regression and Interactive visualization of data using R Anjana Rajagopal MATS478 (2017)
- 1. Deep Network Learning using (SnLU) Smooth non-linear unit and Medical Machine Learning with Tensorflow Febin John Sam MATS947 (2017)

#### INDUSTRY CONSULTANCY PROJECTS

2. Project Title: A neural network based scalable model for image classification (in Health Care) Funded by: Vazh Technologies private limited

Amount of Consultancy: Rs. 2,36,756

Duration: 3 Months

1. Project Title: Medical image classification for disease diagnosis using machine learning

Funded by: Bhaarath Medical College and Hospital

Amount of Consultancy: Rs. 2,00,930

Duration: 6 Months

# INDUSTRY PLACEMENTS OF MENTORED STUDENTS

# With Big Data Analytics

#	Student Name	Program of Study	Company
1.	Sreelakshmi P	IMSc / 2020	Tata Consultancy Services
2.	Ashish Sahoo	IMSc / 2019	PlaySimple Games Pvt. Ltd.
3.	Aswathi K V	$IMSc\ /\ 2018$	Accubits Technologies
4.	Athira S	$IMSc\ /\ 2018$	Gadgeon smart systems Pvt. Ltd.
5.	Geethanjali K	IMSc / 2018	Skyway Technologies
6.	Priyanga B	IMSc / 2015, PhD / 2018	Blue Power Partners
7.	Aishwarya R	$IMSc\ /\ 2017$	Temenos India Pvt. Ltd.
8.	Jobin Idiculla	$\mathrm{IMSc}$ / 2017	Retailsolutions AG, Saarbrücken
9.	Shiva Prakash Y V	${\rm IMSc}~/~2015$	PangeaTech Solutions Pvt. Ltd.
10.	Sowmitha R	$\mathrm{IMSc}$ / $2015$	WSH Experts, Singapore

#### As information Specialist

#	Student Name	Program(s) of Study	Company
1.	Devi S	IMSc / 2021	Straive
2.	Harini C	IMSc / 2021	Straive
3.	Mary Cinderella	$IMSc\ /\ 2021$	Straive
4.	Yamita Kumari	$IMSc\ /\ 2021$	Straive

# **Academic Outputs**

#### **PUBLICATIONS - International Journals**

#### **Number Theory**

- (30) V.P. Ramesh, M. Makeshwari, **Is Sophie Germain Prime a Primitive Root of Safe Prime?**, Mathematics Magazine (to appear)
- (29) V.P. Ramesh, M. Makeshwari and Saswati Sinha, Connecting primitive roots and permutations, Indian Journal of Pure and Applied Mathematics (to appear)
- (28) V.P. Ramesh and R. Gowtham, **On the Inverse of a Bad Primitive Root**," The American Mathematical Monthly, (to appear)
- (27) V.P. Ramesh R. Gowtham and Saswati Sinha, **A note on the sum of cubic residues with even and odd index**, Indian Journal of Pure and Applied Mathematics, https://doi.org/10.1007/s13226-023-00370-w
- (26) V.P. Ramesh and M. Makeshwari, A note on generalized Sophie Germain primes: In the direction of Legendre's extended Sophie Germain primes, Resonance Indian Academy of Sciences (accepted and to appear)
- (25) V.P. Ramesh and M. Makeshwari, **A Prime Primitive Root p of 2p + 1 is a Sophie Germain Prime**, The American Mathematical Monthly, https://doi.org/10.1080/00029890.2022.2059961

- (24) V.P. Ramesh, R. Gowtham and Saswati Sinha, A Note on Cubic Residues Modulo n, Indian Journal of Pure and Applied Mathematics (INSA), (https://doi.org/10.1007/s13226-022-00230-z)
- (23) V.P. Ramesh and M. Makeshwari, **Least primitive root of any safe prime is prime**, The American Mathematical Monthly, https://doi.org/10.1080/00029890.2022.2115816
- (22) V.P. Ramesh, R. Thangadurai, M. Makeshwari, and Saswati Sinha, **A necessary and sufficient** condition for **2** to be a primitive root of 2p+1, The Mathematics Student, Indian Mathematical Society, Vol. 89, Nos. 3-4, pages: 1-5, July-December (2020)
- (21) V.P. Ramesh and Thatchaayini R,  $\lceil \frac{\phi(p-1)}{3} \rceil$  generators of  $(\mathbb{Z}/p\mathbb{Z})^*$  are generators of  $(\mathbb{Z}/p^{\ell}\mathbb{Z})^*$  for every  $l \geq 2$ , Allahabad Mathematical Society, Indian Journal of Mathematics, Vol. 16, No. 2, 295-301, 2019
- (20) V.P. Ramesh, Thangadurai R and Thatchaayini R, A Note on Gauss's Theorem on Primitive Roots, The American Mathematical Monthly, 126:3, 252-254, 2019. DOI: 10.1080/00029890.2019.1550340
- (19) V.P. Ramesh, Makeshwari M and Thatchaayini R, Non-Wieferich primes and generators of the multiplicative group  $(\mathbb{Z}/\mathbf{p}^{\ell}\mathbb{Z})^*$ , JP Journal of Algebra, Number Theory and Applications, ISSN: 0972-5555 (to appear)
- (18) V.P. Ramesh, Prithvi M and Thatchaayini R, Strongly Unequal Permutations of  $S_n$  and Sudoku, Neural, Parallel, and Scientific Computations, 24, 209-224, 2016

#### **Analysis**

(17) V.P. Ramesh and Gowtham R, **Asymptotic Notations and its Applications**, The Ramanujan Mathematical Society(RMS): Mathematics Newsletter, Vol. 28, #4, 10-16, June-September 2017.

# Numerical Linear Algebra

- (16) Gajendra Babu, M Prithvi, Kapil K. Sharma, V. P. Ramesh, A Robust Numerical Algorithm on Harmonic Mesh for Parabolic Singularly Perturbed Convection-Diffusion Problems with Time Delay, Numerical Algorithms, https://doi.org/10.1007/s11075-022-01275-1
- (15) V. P. Ramesh S. Janakiraman M. Prithvi G. Narayani, **A new a priori estimation for singularly perturbed problems with discontinuous data** Indian Journal of Pure and Applied Mathematics (INSA) https://doi.org/10.1007/s13226-021-00175-9
- (14) Gajendra Babu, M Prithvi, Kapil K Sharma, V. P. Ramesh, A Uniformly Convergent Numerical Algorithm on Harmonic  $(H(\ell))$  Mesh for Parabolic Singularly Perturbed Convection-Diffusion Problems with Boundary Layer, Differential Equations and Dynamical Systems (accepted)
- (13) V. P. Ramesh, Kapil K. Sharma, B. Priyanga, G. Narayani, A uniformly convergent upwind scheme on harmonic mesh for singularly perturbed turning point problems, International Journal for Computational Methods in Engineering Science and Mechanics, (2021) https://doi.org/10.1080/15502287.2021.1887404
- (12) V.P. Ramesh, Kadalbajoo M K, Prithvi M and Priyanga B, Exponentially refined mesh for singularly perturbed interior layer problem, International Journal of Applied and Computational Mathematics, 6, 82, 2020 https://doi.org/10.1007/s40819-020-00839-w
- (11) V.P. Ramesh and Prithvi M, **The Generalized S-Mesh Based Hybrid Algorithm for Singularly Perturbed Problems With Interior Layer**, Differential Equations and Dynamical Systems, Volume 28, Issue 3, 663–684 (2020)

- (10) V.P. Ramesh and Priyanga B, **Higher order uniformly convergent numerical algorithm for time-dependent singularly perturbed differential-difference equations**, Differential Equations and Dynamical Systems, 2019. https://doi.org/10.1007/s12591-019-00452-4
- (9) V.P. Ramesh, Kadalbajoo M K, Priyanga B and Prithvi M, An a Priori Harmonic Mesh for Singularly Perturbed Boundary Value Problems, International Journal of Applied and Computational Mathematics, 4: 139, 2018. https://doi.org/10.1007/s40819-018-0574-y
- (8) V.P. Ramesh and M.K. Kadalbajoo, Numerical Algorithm for singularly perturbed delay differential equations with layer and oscillatory behavior, Neural, Parallel, and Scientific Computations, 19, 2, 21-34, 2011
- (7) V.P. Ramesh and M.K. Kadalbajoo, Parameter uniform numerical schemes for second order singularly perturbed differential difference equations with layer behavior, Neural, Parallel & Scientific Computations, 17, 2, 101-122, 2009
- (6) V.P. Ramesh and M.K. Kadalbajoo, Upwind and midpoint upwind difference methods for time-dependent differential difference equations with layer behavior, Applied Mathematics and Computation, 202, 2, 453-471, 2008
- (5) M.K. Kadalbajoo and V.P. Ramesh, **Hybrid method for numerical solution of singularly** perturbed delay differential equations, Applied Mathematics and Computation, 187, 2, 797-814, 2007
- (4) M.K. Kadalbajoo and V.P. Ramesh, Numerical methods on Shishkin mesh for singularly perturbed delay differential equations with a grid adaptation strategy, Applied Mathematics and Computation, 188, 2, 1816-1831, 2007

### **Big Data Analytics**

(3) V.P. Ramesh, Priyanga B, Aarthika K, Divya D and Preethi S, **Back propagation neural network** based big data analytics for a stock market challenge, Journal of Communications in Statistics – Theory and Methods, 48:14, 3622-3642, DOI: 10.1080/03610926.2018.1478103, 2018

#### PUBLICATIONS - Conference proceedings

- (2) V.P. Ramesh, M. Makeshwari, M. Prithvi and R. Thatchaayini, Identities from Partition of the Symmetric group S<sub>n</sub>, Modular Forms and Related Topics in Number Theory, Springer Proc. Math. Stat., Book Chapter, ISSN 2194-1009, ISSN (electronic) 2194-1017
- (1) V.P. Ramesh, B Priyanga, M Priyadharshini, R Sowmitha and YV Shiva Prakash, **Health Care Big Data Analytics Predicting Diabetes**, Sugyaan, 8(1), 13-30, ISSN:0975-4032, 2016

#### INTERNATIONAL CONFERENCE PRESENTATIONS

- 21. A note on generalised Sophie Germain Primes and Legendre primes, International Conference on recent developments in pure and applied mathematics, St. Xaviers College (19th-21st July, 2022)
- 20. A generalization of Sophie Germain primes in the direction of primitive roots, "Modular forms: an online conference in honour of Prof. B. Ramakrishnan's 60th birthday, IMSc Chennai (September 17–19, 2021)
- 19. A priori mesh refinement strategy for singularly perturbed turning point problem, The International Conference on Numerical Analysis and Optimization (NAOV-2020), Sultan Qaboos University, Oman (6th-9th January, 2020)

- 18. Uniformly convergent scheme for delay parabolic differential equation on a rectangular domain, International Workshop and Conference on Mathematical Analysis and Computation, National Institute of Technology, Trichy (2nd-6th December, 2019)
- 17. Various a priori estimates for boundary layers: comparison study, Title of Minisymposia: Robust Numerical Methods for Singular Perturbation Problems, 9th International Congress on Industrial and Applied Mathematics (ICIAM), Valencia (Spain) (15th-19th July, 2019)
- 16. A new a priori estimation of layer region for singularly perturbed boundary value problems, 9th International Congress on Industrial and Applied Mathematics, Universitat de València · Campus Blasco Ibáñez, Valencia (Spain) (15th-19th July, 2019)
- 15. A note on arithmetic functions on estimating the boundary layer, 4th International Conference on Recent Developments in Theory, Computation and Application of Differential Equations, South Asian University, New Delhi (21st-23rd January, 2019)
- 14. Counting the Sudoku Problems through a new notation, International Conference on Algebra and Number Theory (CANT-2018), Central University of Tamil Nadu, Thiruvarur (16th-17th December, 2018)
- 13. A lower bound for the number of generators of  $(\mathbb{Z}|p^{\ell}\mathbb{Z})^*$  for all  $\ell \geq 1$ , Conference on Number Theory, Kerala School of Mathematics, Kozhikode (10th-14th December, 2018)
- 12. Harmonic function to estimate the boundary/interior layer, International Conference on Mathematical Modelling and Computation, South Asian University, New Delhi (1st-3rd Dec, 2018)
- 11. A new layer resolving mesh, 84th Annual Conference of Indian Mathematical Society An international meet, Shri Mata Vaishno Devi University, Jammu (27th-30th November, 2018)
- 10. A note on Normal Sequences in Finite Abelian Group, The 33rd Annual Conference of The Ramanujan Mathematical Society, University of Delhi (1st-3rd June, 2018)
  - 9. A recursive relation for the computation of generators of  $(\mathbb{Z}/p\mathbb{Z})$ , International Conference on Non-linear Differential Equations: Theory, Modelling and Computations, SRM University (8th-9th December, 2017)
- 8. Modified S(1) mesh: a non-uniform mesh for singularly perturbed convection-diffusion problem, International Conference on Current Trends in Theoretical and Computational Differential Equations with Applications, South Asian University, New Delhi (1st-5th December, 2017)
- 7. Mathematics to Analyse the limitations of Machines on Problem Solving: Sudoku and Complexity of Sudoku, Combinatorics and Number Theory Meet, Harish-chandra Research Institute, Allahabad (19th-23rd February, 2017)
- 6. Is P=NP? Permutations and its applications to Sudoku, International Conference on Advances in Scientific Computing, IIT Madras, India (28th-30th November, 2016)
- 5. **Permutation and its applications to Sudoku: A new theory**, International Conference on Mathematical Modelling, Differential Equations, Scientific Computing & Applications, IIT Kanpur (27th-29th March, 2016)
- Health Care Big Data Analytics Predicting Diabetes, Special Issue on Big Data Analytics, Vol - VIII, Issue -1, Jan-June 2016, International Conference on Big Data Analytics - SAMAROH 2016, Hyderabad, (11th-12th February, 2016), ISBN 978-93-85926-04-4
- 3. Numerical algorithm for a model of neuronal variability, 6th International Congress on Industrial and Applied Mathematics, Zurich, Switzerland (16th-20th July, 2007)

- 2. Higher order finite difference methods for second order singularly perturbed delay differential equations, SIAM (Society for Industrial and Applied Mathematics) conference on Computational Science and Engineering, at Costa Mesa, California, U.S.A (19th-23rd February, 2007)
- 1. Higher order methods with suitable mesh for numerical solution of singularly perturbed delay differential equations, 14th International Conference of the Forum for Interdisciplinary Mathematics, at IIT Madras (6th-8th January, 2007)

# AWARDS / RECOGNITION

- 24. Workshop Grant (2023): **Received Rs. 3,60,000** grant from NBHM to organize a National level workshop in Mathematics named, **Summer School in Mathematics to the memory of Srinivasa Ramanujan** (5th-24th June, 2023)
- 23. Workshop Grant (2023): **Received Rs. 97,000** grant from TIFR to organize a Visitor Programme Lecture Series by Prof. Prof. Ariane Mézard(Paris, France) (3rd-7th March, 2023)
- 22. Award of Associateship: Invited to join the associateship program in Mathematics for three years in the Institute of Mathematical Sciences (IMSc) (A national institute for research in the theoretical sciences), Chennai (1st February, 2023 31st January, 2026)
- 21. Travel Grant: Received travel grant from DST-SERB and CCSTDS to participate in the 9th International Congress on Industrial and Applied Mathematics (ICIAM), Valencia (Spain) (15th-19th July, 2019)
- 20. Workshop Grant (2019): **Received Rs. 5,00,000** grant from NBHM to organize a National level workshop in Mathematics named, **Summer School in Mathematics to the memory of Raj** Chandra Bose June 1-21, 2019 (25th July-14th August, 2019)
- 19. Workshop Grant (2018): **Received Rs. 5,00,000** grant from NBHM to organize a National level workshop in Mathematics named, **Summer School in Mathematics to the memory of Prasanta Chandra Mahalanobis** (22nd July-10th August, 2018)
- 18. Workshop Grant (2017): **Received Rs. 3,70,000** grant from crowd funding to organized a national level workshop, **Winter School in Mathematics to the memory of Homi Jehangir Bhabha** (10th-22nd December, 2017)
- 17. Workshop Grant (2017): **Received Rs. 4,50,000** Grant from NBHM to organize a national level workshop in Mathematics named, **Summer School in Mathematics to the memory of Sarvadaman Chowla** (11th-30th June, 2017)
- 16. Workshop Grant (2016): Received Rs. 4,90,000 Grant from NBHM to organize a national level workshop in Mathematics named, Winter School in Mathematics to the memory of Dr. Subramiah Minakshi Sundaram (SMS) (4th-24th December, 2016)
- 15. Workshop Grant (2016): **Received Rs. 4,30,000** Grant from NBHM to organize a national level workshop in Mathematics named, **Summer School in Mathematics to the memory of S S Pillai** (10th-21st August, 2016). The event was jointly organized by Thiruvalluvar government arts college, Rasipuram and Central University of Tamil Nadu, Thiruvarur
- 14. Workshop Grant (2015): **Received Rs. 2,00,000** Grant from NBHM to organize a national level workshop in Mathematics named, "Winter School in Mathematics to the memory of Srinivasa Ramanujan" (16th-27th December, 2015)
- 13. Travel Grants: **Received Rs. 2,00,000** as travel grant from NBHM to attend the International Congress of Mathematicians (ICM), Seoul Korea (13th-21st August, 2014)

- 12. Workshop Grant (2014): **Received Rs. 3,25,000** Grant from NBHM to organize a national level workshop in Mathematics named, "Mathematics Training and Talent Search programme" (23rd June-5th July, 2014)
- 11. Workshop Grant (2013): **Received Rs. 3,00,000** Grant from NBHM to organize a national level workshop in Mathematics named, "Mathematics Training and Talent Search programme" (26th-31st December, 2013)
- 10. Resident faculty (2012-till date), In various Mathematics camp namely, Mathematics Training & Talent Search Programme, Pedagogical Training to Mathematics Teacher, Training Program in Mathematics
- 9. Received GE Management Award: New product development investigation Ramesh Effort and Tenacity are both Exemplary (2010)
- 8. Received GE Management Award: To Ramesh for his Quality and Productivity Initiative and also for mobilizing the bigger team's energy in a productive manner (2010)
- 7. Travel Grant from GE Global Research: Conduct workshop for a new product development. Also Visited Research facilities in Niskayuna, New York (2010)
- 6. GE Global Reward & Recognition Program Thanks to You: Received award for **Excellence and Outstanding contribution to the project**(2009)
- 5. GE Global Reward & Recognition Program Thanks to You: Received award for showing outstanding Teamwork, Dedication & Innovation (2008)
- 4. Travel Grant from GE Global Research Visited Research facilities in Niskayuna, New York and also NBCU studio at Los Angeles to understand the media business of GE (2008)
- 3. Travel Grants: Received travel grant from SIAM & IIT Kanpur to present the research work in SIAM Conference on Computational Science & Engineering, California (2007)
- 2. Travel Grants: Received travel grant from DST (India) CSIR (India), & INSA (India) to present the research work in 6th International Congress on Industrial and Applied Mathematics, Zurich, Switzerland (2007)
- Received, "Extraordinary, Exemplary & Superb Teaching performance" Director and Chairman of Academic Senate, IIT Kanpur (2005)

# AS RESIDENT RESOURCE PERSON IN WORKSHOPS (longer duration: 1 to 4 weeks)

- 22. Resource person, nurture-2023, Summer School in Mathematics to the memory of Srinivasa Ramanujan (5th-24th June, 2023), Central University of Tamil Nadu
- 21. Resource person, Winter School in Mathematics for Post Graduate students, Indian Statistical Institute, North-East Centre, Tezpur, Assam (17th 22nd January, 2022)
- 20. Resource person, Online Teachers Enrichment Workshop (TEW) on ANALYSIS AND ALGEBRA National Centre for Mathematics, Advanced Training in Mathematics Schools (5th to 28th February, 2021)
- 19. Resource person, Summer School in Mathematics to the memory of Prasanta Chandra Mahalanobis, Central University of Tamil Nadu (22nd July-10th August, 2018)
- 18. Resource person, Foundation of Mathematics Level 1, **Training Programme in Mathematics 2018**, NISER, Bhubaneshwar (21st May- 16th June, 2018)

- 17. Resource person, Winter School in Mathematics to the memory of Homi Jehangir Bhabha, Central University of Tamil Nadu (10th-22nd December, 2017)
- 16. Resource person, Learning Strategies for Postgraduates to the memory of Subrahmanyan Chandrashekar, Central University of Tamil Nadu (10th-22nd December, 2017)
- 15. Resource person, **Pedagogical Knowledge of Mathematics: The teaching of Linear Algebra**, Central University of Tamil Nadu (18th-22nd December, 2017)
- 14. Resource person Analysis, Summer School in Mathematics to the memory of Dr. Harish Chandra, Nandha arts and science college, Erode (6th-12th August, 2017)
- 13. Resource person Foundation and Algebra, Summer School in Mathematics to the memory of Sarvadaman D S Chowla, Central University of Tamil Nadu (11th-30th June, 2017)
- 12. Resource person Foundation and Linear Algebra, Winter School in Mathematics to the memory of Dr. Subramiah Minakshi Sundaram (SMS), Central University of Tamil Nadu (4th-24th December, 2016)
- 11. Pedagogical strategies in teaching Algebra, Pedagogical Knowledge in Mathematics The teaching of Abstract Algebra, Central University of Tamil Nadu (11th-15th December, 2016)
- 10. Resource person Foundation and Analysis, Summer School in Mathematics to the memory of S S Pillai, Thiruvalluvar Govt. Arts College, Rasipuram (10th-21st August, 2016)
- 9. Resource person Number theory and Linear Algebra, **Training Programme in Mathematics - 2016**, NISER, Bhubaneshwar (23rd May-18th June, 2016)
- 8. Resource person Foundation of Mathematics, **Training Programme in Mathematics 2015**, Winter School in Mathematics to the memory of Srinivasa Ramanujan, Central University of Tamil Nadu (16th-27th December, 2015)
- 7. Resource person, **Training Programme in Mathematics 2015**, NISER, Bhubaneshwar, Taught at Level 1 and level 2 (25th May-20th June, 2015)
- 6. Resource person, **Mini-MTTS programme 2014**, Periyar University Salem (23rd June 5th July, 2014)
- 5. Resource person, Mathematics Training & Talent Search Programme- 2014, Regional Institute of Education (RIE), Mysore (19th 31st May, 2014)
- 4. Resource Person, **Mini-MTTS programme 2013**, St. Xaviers College, Tirunelveli (26th-31st December, 2013)
- 3. Resource Person, **Pedagogical Training for Mathematics Teachers 2013**, (20th November 4th December, 2013)
- 2. Resource person, Mathematics Training & Talent Search Programme- 2013, Sardar Vallabhbai National Institute of Technology (SVNIT), Surat (20th May 15th June, 2013)
- 1. Resource person, Mathematics Training & Talent Search Programme 2012, Bharathidasan University, Tiruchirappalli (14th May 9th June, 2012)

# **INVITED SEMINARS** / **TALKS** (shorter duration: less than 1 week)

42. **Abstract algebra and its applications**, International FDP on Advances in Mathematics and its applications, PSG College of Arts and Science, Coimbatore (5th-6th July, 2022)

- 41. **Module Theory**, ONLINE Refresher Course in Mathematics, UGC-HRDC, Pondicherry University (13th July 2022)
- 40. On designing Scalable Numerical Algorithms, Department of Mathematics, NIT Puducherry, Karaikal (7th January 2022)
- 39. A few discoveries in Number Theory for Scientific Computing, Five days National level online facutly development Programme MIRACLE 2022, Bon Secours College for women, Tiruchirapalli (22nd January 2022)
- 38. Linear Algebra methods in Machine Learning Case Study, ATAL Academy sponsored 5-Days Online FDP on Mathematics for Data Sciences, Kumaraguru College of Technology (26th July 2021)
- 37. **Predicting COVID 19 from X-ray images**, FDP Predictive Analytics:Transforming data into future insights, Thiagaraja College of Engineering, Madurai (Feb 13, 2021)
- 36. Introduction to Module Theory, Ten days webinar Marathon-2020 for Mathematics teachers, organized by Internal Quality Assurance Cell (IQAC) and Department of Mathematics, Government Arts College (Autonomous), Salem-7 (June 21, 2020)
- 35. Resource person, National Workshop on Linear Algebra and Applications for Mathematics Teachers, Department of Mathematics, Periyar University, Salem, (Feb 10-14, 2020)
- 34. The Art of Scientific Computing: A tool in Mathematics, Department of Mathematics, Faculty of Science, German University of Technology, Muscat, Sultanate of Oman, (January 8, 2020)
- 33. Linear Algebra using Python for the College teachers in Physics, Mathematics and Computer Science in Goa, Department of Mathematics in Dhempe College of Arts and Science, Miramar, Panaji Goa, 9th-11th Dec 2019.
- 32. R A tool to solve Mathematical, Physical and Statistical problems, Loyola College, Chennai (20th-21st December 2018)
- 31. **Big Data Analytics**, TEQIP Sponsored two days workshop on Big data analtyics for cyber security solutions, Thiagarajar College of Engineering, Madurai (18th September, 2018)
- 30. Some Algebraic Structures in Linear Algebra and Module Theory, Lecture Workshop on Algebra, Bharathiar University, Coimbatore (19th-21st July, 2018)
- 29. A Short Course on Module Theory, Summer workshop for M.Sc student, Kerala School of Mathematics, Kozhikode (27th-28th April, 2018)
- 28. Ring and Module Theory, Pedagogical knowledge of Mathematics for college teachers, Kerala School of Mathematics, Kozhikode (24th-26th March, 2018)
- 27. Mathematics and Machine Learning, Advances of Mathematics, Nethaji Subash Chandra Bose College, Thiruvarur (22nd March, 2018)
- 26. From Concrete Mathematics to Abstract Mathematics, INSPIRE Programme, Nandha Arts & Science College, Erode (31st January, 2018)
- 25. Key note address: Trends and Challenges in Mathematical Modelling and Talk: Emerging Trends in Mathematical Modeling, DBT Scheme One Day National Seminar, Nirmala College For Women, Coimbatore (5th January, 2018)

- 24. Refresher Course for Higher Secondary School Teachers in Kerala State, Kerala School of Mathematics (16th-17th September, 2017)
- 23. Basic Concepts of Algebra and Linear Algebra, Dr. N.G.P. Arts and Science College, Coimbatore (31st August, 2017)
- 22. **PhD Selection Committee Member**, Kerala School of Mathematics, Kozhikode, Kerala (31st September, 2017)
- 21. A short course on Six Sigma ( $6\sigma$ ), Institute of Chemical Technology Mumbai (14th-15th March, 2017)
- 20. A Geometric and Algebraic view of Asymptotic notations: Its applications to analyse the complexity of Sudoku Problems, National Conference on Current Scenario in the applications of Mathematical Sciences, Vellalar College for Women, Erode (9th February, 2017)
- 19. Workshop on **Key Challenges in the Learning Process of Algebra & Analysis**, Nandha Arts and Science College, Bharathiar University, Coimbatore (31st October, 2016)
- 18. Complexity of Gram-Schmidt Orthonormalization Process, Thiruvalluvar Govt. Arts College, Rasipuram (25th July, 2016)
- 17. **Algebra and Analysis to undergraduates**, Rabiammal Ahamed Maideen College for women, Thiruvarur (13th January, 2016)
- 16. Quiz Master, State Level Quiz Contest in Mathematics for M.Sc. students, Department of Mathematics, Alagappa University, Karaikudi (15th February, 2016)
- 15. **Pedagogical Strategies in teaching Algebra**, Pedagogical Training Programme 2016, Rashtriya Avishkar Abhiya, Central University of Tamil Nadu (19th January, 2016)
- 14. Open Source Software R for Big Data Analytics, Workshop on Open Source Software, BJM Government college, Chavara, Kerala (8th January, 2016)
- 13. Intellectual Property Skills to Technologist/Scientist, Workshop on IP Awareness and Research Methodologies, Central University of Tamil Nadu (16th October, 2015)
- 12. Resource person, Workshop on Open source software for academics, Workshop organized by St.Xaviers College for students and teachers. (23rd-25th July, 2015)
- 11. Guest lectures, Enrich M.Phil and M.Sc., on Linear Algebra, Department of Mathematics, Manonmaniam Sundaranar University, Tirunelveli (17th-18th October, 2014)
- 10. **Advanced Algebra**, Invited lecture for M.Phil., and Ph.D., students of St. Xaviers college, Tirunelveli
- 9. **Applications of Linear Algebra**, PG Research Department of Mathematics, Thiruvalluvar Government Arts College, Rasipuram (Feb 2015)
- 8. Strategies for women growth in Academics, Special talk, Womens day, Central University of Tamil Nadu (2014)
- 7. Improving Interactions between Mathematics and Industry, Panel member, Conference on Educational Interfaces Between Mathematics and Industry (EIMI), ICT Mumbai (23rd-24th Jan., 2014)
- 6. Quiz Master, State Level Quiz Competition in Mathematics for P.G students, St. Xaviers College (21st February, 2014)

- 5. Six Sigma  $(6\sigma)$  A better way of Life, ICT, Mumbai (30th November, 2013)
- 4. Resource person, Faculty refresher course, ICT Mumbai (28th-30th November, 2013)
- 3. One Day Seminar on Applications of Linear Algebra, Ken Mathemagic Centre, Khadir Mohideen College, Adirampattinam (26th March, 2014)
- 2. What is a good research problem?, Research Methodology in Sciences and Engineering, SSN engineering college, Chennai (19th-20th April, 2013)
- 1. Resource Person in Advance training programme in Mathematics for undergraduate students of eastern U.P. region, Christ Church College, U.P. (2005)

# **Administrative Outputs**

# ORGANISATION OF WORKSHOPS/SEMINAR

- 15. Coordinator, National level workshop in Mathematics named, nurture-23, Summer School in Mathematics to the memory of Srinivasa Ramanujan (5th-24th June, 2023)
- 14. Coordinator, Summer School in Mathematics to the memory of Prasanta Chandra Mahalanobis, Central University of Tamil Nadu (22nd July-10th August, 2018) (funded by NBHM)
- 13. Coordinator, Winter School in Mathematics to the memory of Homi Jehangir Bhabha, Central University of Tamil Nadu (10th-22nd December, 2017) (Crowd funded)
- 12. Coordinator, Learning Strategies for Postgraduates to the memory of Shubrahmanyan Chandrashekar, Central University of Tamil Nadu (10th-22nd December, 2017) (Crowd funded)
- 11. Coordinator, Pedagogical Knowledge of Mathematics: The teaching of Linear Algebra, Central University of Tamil Nadu (18th-22nd December, 2017) (Self-financed)
- 10. Coordinator, Summer School in Mathematics to the memory of Sarvadaman D S Chowla, Central University of Tamil Nadu (11th-30th June, 2017) (funded by NBHM)
- 9. Coordinator, Science Camp to +2 students, Rastriya Avishkar Abhiyan, Central University of Tamil Nadu (5th-12th April, 2017) (funded by CUTN)
- 8. Coordinator, Winter School in Mathematics to the memory of Dr. Subramiah Minakshi Sundaram (SMS), December 4th-24th, 2016, Central University of Tamil Nadu (funded by NBHM & CUTN)
- 7. Coordinator, Pedagogical Knowledge in Mathematics The teaching in Abstract Algebra, Central University of Tamil Nadu (11th-15th December, 2016) (Self-financed)
- 6. Coordinator, Summer School in Mathematics to the memory of S S Pillai, Jointly organized by Thiruvalluvar government arts college, Rasipuram and Central University of Tamil Nadu (10th-21st August, 2016) (funded by NBHM)
- 5. Coordinator, **Pedagogical Training Programme 2016**, Workshop for Primary School Mathematics and Science Teachers, An initiative towards preparing the teachers for Mathematics, Science and Technology, Rashtriya Avishkar Abhiya, Central University of Tamil Nadu (19th January, 2016)
- 4. Coordinator, Training Programme in mathematics 2015, Winter School in Mathematics to the memory of Srinivasa Ramanujan, Central University of Tamil Nadu (16th-27th December 2015) (funded by NBHM)

- 3. Coordinator, Workshop on IP Awareness and Research Methodologies, Central University of Tamil Nadu (16th October 2015)
- 2. Coordinator, **Mini-MTTS programme 2014**, **Periyar University**, **Salem** (23rd June-5th July, 2014) (funded by NBHM)
- 1. Coordinator, Mini-MTTS programme 2013, St. Xaviers College, Tirunelveli (26th-31st December, 2013) (Funded by NBHM)

# ORGANISATION OF INTERNATIONAL CONFERENCE/SYMPOSIA

- 2. Minisymposia: Robust Numerical Methods for Singular Perturbation Problems, 9th International Congress on Industrial and Applied Mathematics (ICIAM), Valencia (Spain) (15th-19th July, 2019)
- 1. International Conference on Algebra and Number Theory (CANT-2018), Central University of Tamil Nadu, Thiruvarur (16th 17th December 2018)

# ADMINISTRATIVE SERVICES

- Member, Consultancy Cell, Central University of Tamil Nadu, (2021-till date)
- CHairman, Rastriya Avishkar Abhiyan, Central University of Tamil Nadu, (2015-till date)
- Member, 3rd Academic Council of Central University of Tamil Nadu (2016-2019)
- Cheif Coordinator, Spoken Tutorial, IIT Bombay, Central University of Tamil Nadu, (2016)
- Coordinator, Intellectual Property Rights Cell, Central University of Tamil Nadu, (2016-2019)
- Member, Committee to draw the report of theft, Central University of Tamil Nadu (2016)
- Member, **Board of Studies** of Department of Mathematics, Central University of Tamil Nadu (2016-'19)
- Member, Board of Studies of Department of Music, Central University of Tamil Nadu (2016-'19)
- Member, **Board of Studies** of Department of Material Science, Central University of Tamil Nadu (2016-'19)
- Observer, CUCET 2019, Worked as observed for Chennai centre (2019)
- Coordinator, Placement Cell, Council of Industry-Higher Education Collaboration (CIHEC), Central University of Tamil Nadu, (July '14 Dec '17)
- Member, Internal Quality Assurance Cell (IQAC), Central University of Tamil Nadu, (2014-'17)
- Selection Committee Member, Training Program in Mathematics -2016, Centre For Fundamental Studies, National Institute of Science Education and Research, Bhubaneshwar
- Member, Board of Studies in Mathematics, St. Xaviers college, Tirunelveli (2013 '15)
- Subject expert, **Postgraduate project evaluation**, Central University of Kerala, Kasargod
- Member, Academic planning committee, MTTS Programme 2014
- Member, Selection Committee for Walk-in interview, Central University of Tamil Nadu (May 2015)
- Scientific Reviewer for DST-SERB and a few international journals

- Member of Ramanujan Mathematical society, ICIAM, SIAM
- Selection Committee Member, Engum Ariviyal Magazine, Science City, Department of Higher Education, Government of Tamilnadu.
- Adoption of Kattur H S School (2013), I adopted a government school in 2013 and we a team of students and a few faculties visited the school regularly for one year. We also conducted a 3 weeks summer camp to the students motivating them for a career in science.
- NKN representative of CUTN attended both the meetings in Mumbai and Bangalore. Worked with NKN team and got the NKN internet facility for CUTN
- **Departmental Library Grant**, Proposed and received a continuing Grant of Rs. 4,00,000/= per year in 2013 from NBHM to develop a departmental library
- Coordinator, Subject Experts Review committee meeting, CUTN. Introduced and executed the idea of health check of our own system. Many key areas to focus were identified and work on. (2012, 2014)
- Parents and Teachers Meeting, Organized a one day programme with parents of 2010 and 2011 batch of mathematics students. Created a platform to address the key challenges.
- Computing Infrastructure for CUTN, A computer lab with 40 machines was established in 2012 to run the lab courses of CUTN.
- Summer camp 2013 for +1 students of Kattur higher secondary school, Thiruvarur.
- Coordinator, National Mathematics day 2012, Organized a one day event with two lectures by eminent mathematicians, Town Higher Secondary School, Kumbakonam
- President, STAMATICS, Mathematics group, IIT Kanpur (2004-'05)
- Chairman, Games Committee, SMASH-'05, IIT Kanpur (2004-'05)
- Secretary, Colloquium, School of Mathematics, Anna University, Chennai (1999-2000)

# Trainings: ORIENTATION / REFRESHER COURSES

- Refresher Course on Mathematics/ Operational Research/ Statistics and Computer Science, UGC-HRDC, University of Delhi(2nd 15th September 2022)
- Refresher Course on Mathematics/ Operational Research/ Statistics and Computer Science (IMD), UGC-HRDC, University of Delhi(4th 18th October 2021)
- UGC-Sponsored online Refresher Course in Mathematics and Statistics, UGC-HRDC, Bharathid-hasan University, Trichy (25th November 8th December, 2020)
- UGC-Sponsored Refresher Course in Applied Mathematics and Statistics, UGC-HRDC, Bharathiar University, Coimbatore (5th July, 2017 to 25th July, 2017)
- UGC Sponsored 110th Orientation Programme, UGC-HRDC, Bharathiar University, Comimbatore, (18th November 15th December, 2015)

# OTHER PROFESSIONAL TRAININGS

- 5th Indo-European Conference on Creating a Robust IP Ecosystem for ICT in the 21st Century, Ministry of Electronics and Information Technology (MeitY) and European Patent Office (EPO) (4th December, 2017)
- Demystifying IP Valuation, Audit, Licensing & Technology Transfer for Business Excellence, CII, Confederation of Indian Industry (30th October, 2015)
- Enhancement of Research Collaborations through National Knowledge Network 2nd National Knowledge Network Annual Workshop IISc Bangalore (17th-19th October, 2013)
- The e-Infrastructure of India 1st National Knowledge Network Annual Workshop IIT Mumbai (31st October-2nd November, 2012)
- Six Sigma (2008)
- The SIAM Workshop on Combinatorial Scientific Computing, at Costa Mesa, California, U.S.A (17th-19th February, 2007)
- Interactive Meet on Motivation of Youth in Science, Indian-European Union Ministerial Science Conference, at New Delhi, India (8th February, 2007)
- Workshop on High Performance Computing, at IIT Kanpur (5th-6th September, 2006)
- International Conference of Scientific computation, Numerical Analysis and Application, at Indian Institute of Science (IISc.), Bangalore (18th-21st July, 2005)
- Joint Indo-French workshop on Partial Differential Equations and Application, at IISc., Bangalore (7th-12th February, 2005)
- Workshop on Scientific Computation, Numerical Analysis and Applications, at IISc., Bangalore, (24th January-4th February, 2005)
- 31st Annual Conference of Orissa Mathematical Society, at Institute of Physics, Bhubaneswar (7th-8th February, 2004)

#### PERSONAL PROFILE

**DOB**: 6th August 1978

Sex: Male

Marital Status: Married