

MATHNEWS

Special Issue, July 2022-June 2023

An e-Newsletter from the Department of Mathematics, CUTN

Editors: Dr. T. Kavaskar and Dr. S.V. Bharanedhar

Vision

To be an internationally acclaimed Department of Mathematics for its teaching and research that also caters to the educational and occupational needs of the local community.

Mission

To provide world class teaching and research infrastructure.

To promote professional working environment that supports innovative thinking and teamwork.

To inculcate the art of asking questions, formulating the problem, solving the problem and interpreting the solution for possible applications.

About the Department

This department was started in the year 2010 with five-year integrated M.Sc., Programme in Mathematics and of which, four batches have passed out. Department of Mathematics strives to be a premier educational and research facility in India focusing on innovative teaching, abstraction, application and interdisciplinary research in Mathematics. The department promotes professional working environment that supports risk taking, innovative ideas and team work. At present we have 9 regular faculty members against the 10 sanctioned positions. We offer five-year integrated Masters programme in Mathematics, M. Phil in Mathematics and PhD program in Mathematics. The curriculum for I. M.Sc. programme was designed in consultation with top Mathematicians of this country that includes essential abstract and applied topics of Mathematics. We prescribe project work for I. M.Sc. students for motivating them to do research in Mathematics. The first batch of PhD students joined the department in August 2015.

The thrust areas of research in our department include Functional Analysis, Numerical Analysis, Algebra, Linear Algebra, Optimization and Operations Research, Data Mining & Analytics, Computational/Numerical Algorithms, Partial Differential Equations, Integral Equations, Harmonic Analysis, Integral Transforms, Fluid Dynamics, Graph Theory, Complex Analysis and Topology.

Faculty Members and their areas of interest

	<p>DR. V. RENUKA DEVI Associate Professor and Head General Topology - Ideal topological space, Volterra space, statistical convergence; Generalized topological space, Soft sets.</p>		<p>PROF. T. SENGADIR Professor Functional Analysis, PDE and PDE with delays.</p>
	<p>DR. R. ROOPKUMAR Professor Integral Transforms and Generalized functions.</p>		<p>DR. A. CHANDRASHEKARAN Assistant Professor Linear Algebra, Game Theory and Linear Complimentarity problems.</p>
	<p>DR. RAMESH VENKADACHALAM PALANI Assistant Professor Algorithms & Complexity theory, Number Theory, Big Data Analytics and Pedagogy.</p>		<p>DR. N. BARANI BALAN Assistant Professor Inverse Problems, Optimal Control and Partial Differential Equations.</p>
	<p>DR. VIRENDRA KUMAR Assistant Professor Fluid Mechanics, Flow through Porous Media, Bio-convection and Perturbation Techniques.</p>		<p>DR. T. KAVASKAR Assistant Professor Graph Theory and Algebraic Combinatorics.</p>
	<p>DR. S. V. BHARANEDHAR Assistant Professor Harmonic mappings, Graph Theory and Complex Analysis.</p>		

Achievements and Invited talks/presentations by faculty members

The following are the talks/presentations delivered by Dr. R. Roopkumar

1. Delivered a special lecture on "Complex Differentiation", in the programme organized by the PG and Research Department of Mathematics, Mannar Thirumalai Naicker College, Madurai held on 25-07-2022.
2. Acted as Resource Person for "International Conference on Recent Trends in Science, Engineering and Technology" and delivered a lecture on the topic "Fourier Transform", on 18-11-2022 organized by PSG College of Arts and Science, Coimbatore.
3. Delivered a lecture entitled "Determinant of a Linear Operator" on 22-12-2022, for the National Mathematics Day 2022 at Ramanujan Institute for Advanced Study in Mathematics, University of Madras, Chepauk, Chennai.
4. Delivered an invited talk entitled "Riemann Mapping Theorem" as a resource person under the Mathematics Colloquium (MCCUK) conducted by the Department of Mathematics, Central University of Kerala on 27-01-2023.
5. Delivered a talk on Basics of Number Theory at AMTI Chennai on 03.05.2023.
6. Delivered a talk on Congruences at AMTI Chennai on 04.05.2023.

The following are the talks/presentations delivered by Dr. V Renuka Devi

1. Delivered a lecture on "Dynamical Properties in Dynamical Systems" at UGC sponsored National Conference on "Recent Advances in Pure and Applied Mathematics in Industrial Applications" held on 09-03-2023 organized by the Department of Mathematics, Arul Anandar College (Autonomous), Karumathur, Madurai.

The following are the talks/presentations delivered by Dr A. Chandrashekar

- 1 Delivered an invited talk on the topic "Foundations of Mathematics" and acted as the Moderator in the Problem-Solving Sessions in the Three-Day Workshop on "Foundations of Abstract Mathematics and Applications" organized by Ayya Nadar Janaki Ammal College, Sivakasi from 28-12-2022 to 30-12-2022.
- 2 Delivered a talk in two-day workshop on Mathematical Analysis, organized by Vellalar College for Women, Erode from 28-02-2023 to 01-03-2023.
- 3 Delivered a talk entitled "Hands on Training on MOODLE platform, ICT-e-LRC " organized by Vellalar College for Women, Erode on 01-03-2023.
- 4 Delivered an invited lecture in the Pi day celebrations on 14-03-2023 at Department of mathematics, Indian Institute of Technology Tirupati.
- 5 Offered Swayam Prabha Course titled "A Foundation Course in Mathematics" in IIT Tirupati during 26.06.2023 to 30.06.2023.
- 6 Acted as a resource person in MTTTS Programme in IIT Madras during 22.05.2023 to 17.06.2023.

The following are the talks/presentations delivered by Dr V. P. Ramesh

- 1 Visited St. Xavier's College during 28-12-2022 to 30-12-2022 to conduct interactions with the research scholars on "Introduction to Algebraic Number Theory" and also finalized the proceedings of the conference, SXC-Centenary year International Conference on Recent Developments in Pure and Applied Mathematics.
- 2 Delivered a special lecture in Nehru memorial college, Trichy on 21-02-2023

The following are the talks/presentations delivered by Dr N. Barani Balan

- 1 Delivered a talk on "Basic Analysis" at the DBT- Star college six days National Level webinar cum workshop on Calculus, Algebra and Analysis, Rathnavel Subramaniam College of Arts and Science, Coimbatore from 07-07-2021 to 13-07-2021.
- 2 Delivered a talk on "Essence of Optimal Control and Inverse Problems in Biological Models" at the virtual conference conducted by the Department of Mathematics, School of Physical Science, Central University of Karnataka from 20-12-2021 to 24-12-2021.
- 3 Dr. N. Barani Balan, chaired a session in international conference on Fractional Calculus: theory, Applications & Numerics (ICFCTAN), organized by the Department of Mathematics of NIT, Karaikal on 28-01-2023.
- 4 Dr N. Barani Balan delivered a lecture on "Optimal Control and Inverse Problems," in "Two days workshop on Recent Advancements in Systems and Control Theory" sponsored by DST-SERB held at Department of Applied Mathematics, Bharathiar University, Coimbatore on 30-03-2023.

The following are the talks/presentations delivered by Dr T. Kavaskar

- 1 Delivered Prof. R. Balakrishnan and Prof. P. Paulraja endowment lecture on "Beck's Coloring of Rings" in the Department of Mathematics, Periyae University, Salem on 14-10-2022.
- 2 Delivered a symposium talk on "Coloring of a Graph Associated to a Commutative Ring with Unity" at the 37th Annual Conference of Ramanujan Mathematical Society organized by the Department of Mathematics, Sri Sivasubramaniya Nadar College of Engineering during 06-12-2022 to 08-12-2022.
- 3 Presented a paper entitled on "Perfectness of G-generalized join of Graphs" in CALDAM 2023 on 10-02-2023.
- 4 delivered a talk on "An innovative approach in Graph Coloring ", in the Department of Mathematics Thiagarajar College, Madurai on 22-02-2023
- 5
- 6 Delivered an invited lecture "Interpolation theorems in vertex coloring in graphs" in the National Conference on Algebraic Graph Theory, Graph Theory and Analysis (MSUMEC) conducted by the Department of Mathematics, Manonmaniam Sundaranar University, Tirunelveli on 23-02-2023.

The following are the talks/presentations delivered by Dr S.V. Bharanedhar

- 1 Delivered the inaugural address on the topic “Proof Strategies in Mathematics” on the occasion of the inauguration of Mathematics Association on 29-07-2022.
- 2 Acted as Resource Person in One Day Seminar Programme on “Excellence in Mathematics” on 25-08-2022 in the PG and Research Department of Mathematics, A.D.M College for Women (Autonomous), Nagapatinam.
- 3 Attended as Resource Person for the Special Lecture titled “New Results on Convergent Series” held on 29-09-2022 in the Department of Mathematics in Thiagarajar College, Teppakulam, Madurai.
- 4 Served as a Resource Person and delivered a talk on “A Theorem in Number Theory” in the Mathematics Association Inaugural Function organized by Department of Mathematics, Government Arts and Science College, Srivilliputtur on 14-10-2022.
- 5 Acted as Resource Person in a one-day State Level Seminar on “Current Trends in Pure and Applied Mathematics” held on 31-10-2022 at Syed Hameedha Arts and Science College, Kilakaral, Ramanathapuram.
- 6 Acted as a Resource Person in Guest Lecture organized by the P.G and Research Department of Mathematics, Aditanadar College of Arts and Science, Tiruchendur, on 07-11-2022 and gave a lecture on the topic “Analytic Functions and Complex Integration.”
- 7 Served as a Resource Person in the One Day International Seminar on “Enriching Skills in Pure and Applied Mathematics” organized by the Department of Mathematics of Sri Parasakthi College for Women, Courtallam on 06-01-2023.
- 8 Served as Resource Person in the National Seminar on “Recent Trends in Algebra and Analysis” organized by the Department of Mathematics and Research Centre, Aditanar College of Arts and Science, Tiruchendur on 18-01-2023.
- 9 Delivered a talk on Complex Analysis in the Faculty development Programme on Algebra and Analysis organized by the Department of Mathematics, Rajagiri School of Engineering and Technology, Kochi on 23-03-2023.
- 10 Delivered a talk on Complex Analysis in the National Workshop on UGC-CSIR NET (Mathematical Sciences) organized by the Department of Mathematics, Idhaya college of Arts and Science for Women, Pondicherry on 19-04-2023.

Publications

Title of paper	Name of the author/s	Name of journal	Year of publication
Furstenberg family and multi-transitivity in non-autonomous systems	V. Renuka Devi	Journal of Difference Equations and Applications	2022

Vertically oscillated gyrotactic bio-thermal convection in a porous media	Virendra Kumar, and K. Srikanth	Forces in Mechanics	2022
Transitivity and sensitivity of semigroup actions on uniform spaces	V. Renukadevi and S. Tamilselvi	Asian-European Journal of Mathematics.	2022
On the products of group vertex magic graphs	S. Balamoorthy, S.V. Bharanedhar and N. Kamatchi	AKCE International Journal of Graphs and Combinatorics.	2022
Least Primitive Root of any Safe Prime is Prime	V. P. Ramesh, and M. Makeshwari	The American Mathematical Monthly	2022
A Characterization for the self-duality of proper cones	S. Gokulraj and A. Chandrashekar	Positivity	2023
An Optimal Control Problem for Acid-mediated Cancer Invasion Model	M. Navaneetha Krishnan, N. Barani Balan, L. Shangerganesh, and J. Manimaran	Journal of Applied Nonlinear Dynamics	2023
A note on the sum of cubic residues with even and odd index	V. P. Ramesh, Gowtham R, and Saswati Sinha	Indian Journal of Pure and Applied Mathematics	2023
Connecting primitive roots and permutations	V. P. Ramesh, M. Makeshwari, Saswati Sinha	Indian Journal of Pure and Applied Mathematics	2023
Induced subgraphs of zero-divisor graphs	G. Arunkumar, Peter J. Cameron, T. Kavaskar, and T. Tamizh Chelvam	Discrete Mathematics	2023
Zeros of self-inversive polynomials with an application to sampling theory	S.V. Bharanedhar , A. Antony Selvan, and Riya Ghosh	Applied Mathematics and Computation	2023
On the dual of the tensor product of semidefinite cones	A. Shanmugapriya and A. Chandrashekar	The Journal of Analysis	2023
Blow-Up Phenomena for a Sixth-Order Partial Differential Equation with a General Nonlinearity	A. Arivazhagan, N. Barani Balan, L. ShangerGanesh, and K. Dravidraj	Journal of Dynamics and Control Systems	2023
On Stieltjes type transforms over Boehmian spaces	Emilio Negrin and Roopkumar Rajakumar	Asian-European Journal of Mathematics	2023
A Note on Generalized Sophie Germain Primes	V. P. Ramesh, M. Makeshwari	Resonance	2023

Book Chapter

Sl. No.	Name of the teacher	Title of the book/chapters published	Title of the paper	Name of the conference	National / International	Year of publication
1	Virendra Kumar	Applied Analysis, Computation and Mathematical Modelling in Engineering	Non-darcian Gravitatic Bioconvection with a Porous saturated Vertical Vibration	AACMME: International Conference on Applied Analysis, Computation and Mathematical Modelling in Engineering	International	2022
2	Virendra Kumar	Advanced Information Networking and Applications	Multi-agent Q-learning Based Navigation in an Unknown Environment	Proceedings of 36th International Conference on Advanced Information Networking and Applications (AINA-2022), Volume 1	International	2022
3	Virendra Kumar	Advanced Information Networking and Applications.	Multi-agent Deep Q-Learning Based Navigation.	AINA 2023. Lecture Notes in Networks and Systems, vol 654.	International	2023

4	R. Roopkumar	Sampling, Approximation, and Signal Analysis Harmonic Analysis in the Spirit of J. Rowland Higgins	Quaternionic coupled fractional Fourier transform on Boehmians,	Applied and Numerical Harmonic Analysis.	International	2023
5	T. Kavaskar,	Algorithms and Discrete Applied Mathematics	Perfectness of G-generalized Join of Graphs	LNSC, Conference on Algorithms and Discrete Applied Mathematics	International	2023

Research projects

Name of the Scheme/Project/ Endowments/ Chairs	Name of the Principal Investigator/ Co Investigator (if applicable)	Name of the Funding agency	Year of Award	Funds provided (INR in lakhs)	Duration of the project
A Study on proper Cones with applications to Mathematical Programming	Dr.A. Chandrashekar	SERB	2020	6.6	2020-2023

Research Collaborations

Sl. No.	Name and address of the collaborators	Name of the faculty	Duration
1	Prof. A. Zayed, DePaul University, Chicago, USA	Dr.R. Roopkumar	Sep 01,2019 - till date
2	Prof. E.R. Negrin, Universidad de La Laguna, Canary Islands, Spain.	Dr.R. Roopkumar	Apr 26, 2020- till date
3	Prof. Thangadurai, Harish-Chandra research Institute, Allahabad	Dr.V P Ramesh	Dec. 17, 2012 - till now
4	Prof. Kapil Sharma, South Asian University New Delhi.	Dr.V P Ramesh	Oct. 25, 2018 - till now
5	Dr K. Sakthivel, Indian Institute of Space, Science and Technology (IIST), Thiruvananthapuram, India	Dr.N. Barani Balan	2017-till Now
6	Dr L. Shangerganesh, NIT Goa	Dr.N. Barani Balan	2014 - till Now
7	Dr. Amar Nath, SLIET Sangrur, Punjab	Dr. Virendra Kumar	Dec. 2021 - till now
8	Prof. Rajdeep Niyogi, IIT Roorkee	Dr. Virendra Kumar	Dec. 2021 - till now
9	Dr. Tajinder Singh, SLIET Sangrur, Punjab	Dr. Virendra Kumar	Dec. 2021 - till now
10	Dr. N. Kamatchi, Kamaraj College of Engineering and Technology, Virudhunagar	Dr. S. V. Bharanedhar	Oct. 2022- till now
11	Dr. A. Antony Selvan, IIT (ISM), Dhanbad	Dr. S. V. Bharanedhar	May 2015 – till now
12	Dr. Peter J. Cameron, School of Mathematics and Statistics, University of St Andrews, UK	Dr. T. Kavaskar,	Oct. 2023- till now
13	Dr. T. Tamizh Chelvam Manonmaniam Sundaranar University, Tamilnadu, India	Dr. T. Kavaskar	Oct. 2023- till now
14	Dr. G. Arunkumar, IIT Chennai	Dr. T. Kavaskar	Oct. 2023- till now

Refresher/ Workshop Course details

Name of teacher who attended	Title of the program	Duration
Dr. V. P. Ramesh	Online Refresher Course on Mathematics/Operational Research/ Statistics and Computer Science (IDC), UGC-HRDc, University of Delhi	September 2-15, 2022
Dr. T. Kavaskar	Online Teachers Enrichment Workshop on Algebra, Number Theory and Graph Theory, hosted by Amity University, Haryana	July 04-16, 2022

Placement details

Year	Name of student placed	Program graduated from	Name of the employer
2022	Dr. G. Narayani	Ph.D. Mathematics	Dayananda Sagar University, Bangalore
2022	Dr. R. Kamalakkannan	Ph.D. Mathematics	SRM University, Chennai
2022	Dr. K. Srikanth	Ph.D. Mathematics	Rajiv Gandhi National Institute of Youth Development, Chennai

Ph.D. awarded

- 1 K. Srikanth was awarded Ph.D. in Mathematics under the supervision of Dr. Virendra Kumar.
- 2 Saswati Sinha was awarded Ph.D. in Mathematics under the supervision of Dr. V. P. Ramesh.
- 3 G. Makeshwari was awarded Ph.D. in Mathematics under the supervision of Dr. V. P. Ramesh.

Achievements by students

- 1 S. Balamoorthy, Research Scholar was awarded Best Paper Award for the entitled “On Group Vertex Magic of Generalized Friendship Graph” in the International Conference on Recent Advancements in Graph Theory organized by Gujarat University.
- 2 S. Devi, Research Scholar got Inspire fellowship.
- 3 M. Karuppasamy, Research Scholar cleared CSIR-UGC JRF -2022.
- 4 S. Lakshmanan, Research Scholar cleared CSIR-UGC JRF -2022.
- 5 S. Mohamed Asraff, Research Scholar cleared CSIR-UGC JRF -2022.

Paper presentation by Research Scholars

- 1 K. Srikanth presented a paper entitled “Vertically Oscillated Gravitatic Biothermal-Convection in a porous Layer” at the 1st International Conference in Fluid Thermal and Energy Systems (ICFTES 22) organized by NIT Calicut from 09-06-2022 to 11-06-2022.
- 2 L. Anitha presented a paper entitled “An efficient Algorithm to capture the Shock Region using Gauss’s tricks in SXC Centenary Year”, International Conference on Recent Developments in Pure and Applied Mathematics organized by St. Xavier’s College, Palayamkottai from 19-07-2022 to 21-07-2022.
- 3 L. Anitha presented a paper entitled “A Uniformly convergent numerical algorithm for a class of singularly perturbed parabolic differential equations with an interior layer” in 2nd international conference on Modern Computing Trends and Technology (ICMCTT – II) – (Online) organized by Kristu Jyoti College of Management and Technology, Kerala from 30-07-2022 to 31-07-2022.
- 4 K. Vinoth Kumar presented a paper entitled “Wiener index of Zero-Divisor Graph of Finite Commutative Ring with Unity” in the 24th Japan Conference on Discrete and Computational Geometry, Graphs, and Games, organized by Tokyo University of Science from 09-09-2022 to 11-09-2022 (Online).
- 5 S. Balamoorthy presented a paper entitled “Group Vertex Magic of Generalized Friendship Graph” in the International Conference on Recent Advancements in Graph Theory organized by Gujarat University from 10-09-2022 to 11-09-2022.
- 6 K. Vinoth Kumar presented a paper entitled “Wiener index of Zero-Divisor Graph of Non-Zero Ideal “in the International Conference on Wavelet Analysis and Graph Theory (ICWAGT 2022) organized by SASTRA deemed to be University, Thanjavur from 15-09-2022 to 16-09-2022.
- 7 S. Balamoorthy presented a paper entitled “On the product of group magic graphs” in International Conference on Wavelet Analysis and Graph Theory (ICWAGT 2022) organized by SASTRA deemed to be University, Thanjavur from 15-09-2022 to 16-09-2022.
- 8 S.B. Ramkumar presented a paper entitled “Topology making an ideal closed and discrete” in International Conference on Wavelet Analysis and Graph Theory (ICWAGT 2022) organized by SASTRA deemed to be University, Thanjavur from 15-09-2022 to 16-09-2022.

- 9 M. Makeshwari presented a paper entitled "On the primality of primitive root of safe prime " in the 37th Annual Conference of Ramanujan Mathematical Society, Sri Sivasubramaniya Nadar College of Engineering, Chennai from 06-12-2022 to 08-12-2022.
- 10 A. Shanmugapriya presented a paper entitled "Characterizing the dual of the tensor product of positive semidefinite cones" 2nd International Conference on "Nonlinear Applied Analysis and Optimization and NMD from 19-12-2022 to 22-12-2022.
- 11 S.B. Ramkumar presented a paper entitled "Topologies via ideal" in the National Seminar on Recent Trends in Algebra and Analysis (RTAA '23) organized by Aditanar College of Arts and Science, Tiruchendur on 18th January, 2023.

National Mathematics Day Celebrations

The Department of Mathematics, CUTN celebrated the National Mathematics Day from 19-12-2022 to 22-12-2022. On 19th December 2022, the Department organized a National Seminar on Number Theory and Combinatorics. Dr. R. Balakrishnan, Adjunct Professor, Department of Mathematics, Bharathidasan University delivered a talk on Combinatorial Nullstellensatz, Dr. S. Arumugam, Adjunct Professor, Department of Computer Science and Engineering, Ramco Institute of Technology delivered a talk on Computing eigen vectors from eigen values and Dr. S. Francis Raj, Associate Professor, Pondicherry University delivered a talk on Combinatorial proof for Brouwer's fixed point theorem.



Quiz Programme

As a part of National Mathematics Day Celebrations, the Department of Mathematics, CUTN organized an intercollegiate quiz programme on 20-12-2022. More than 10 teams from various colleges participated and made the event as a grand success.



Visit to Ramanujan's house at Kumbakonam

As a part of National Mathematics Day Celebrations the Department of Mathematics, CUTN organized a visit to Srinivasa Ramanujan's house at Kumbakonam on 21-12-2022.



National Mathematics Day Prize Distribution

On the occasion of National Mathematics Day Celebrations, the Department of Mathematics, CUTN organized various competitions for our university students such as Dumb Charades, Slogan Writing, Mathematical Modeling and Treasure Hunt on 22-12-2022. Our Registrar delivered the Valedictory Address and distributed the prizes to the winners.



Science Day Celebrations

The Department of Mathematics, Central University of Tamil Nadu, has organized the National Science Day Celebration on 28-02-2023 to mark the discovery of the Raman Effect by Indian physicist Sir C. V. Raman on 28 February 1928. For his discovery, Sir C.V. Raman was awarded the Nobel Prize in Physics in 1930. On this occasion, the department has invited Dr. R. Vembu, Associate Professor (Rtd.), SBK College, Aruppukottai, as a special guest to deliver a talk on "Cryptography", followed by Paper Presentation Competition for our Int. M.Sc. students on the topic of "Application of Mathematics in sciences". There were 10 students participated in the competition and the winners got the prize.



International Mathematics Day Celebrations

The Department of Mathematics, CUTN celebrated the International Mathematics Day on 14-03-2023. On this occasion, the Department has organized symposium on Multivariable Calculus and Linear Algebra. Prof. M. Marudai, Honorary Professor, Department of Mathematics, Bharathidasan University delivered a talk on Multivariable Calculus, Dr. I. Jeyaraman, Assistant Professor, NIT, Trichy delivered a talk on Applications of eigen values and eigen vectors and Dr. S. V. Bharanedhar, Assistant Professor, Department of Mathematics, Central University of Tamil Nadu delivered a talk on Problems in Linear Algebra. There were 61 students from various institutions and 48 students from CUTN participated in the symposium.



Indian Women and Mathematics Visitor Programme Lecture Series

The Department of Mathematics, CUTN organized the Indian Women and Mathematics Visitor Programme Lecture Series on 6th March, 2023. In this event Prof. Ariane Mezard, Sorbonne University, Paris, France delivered a lecture on the topic “An introduction to the Oort Conjecture.”



Summer School in Mathematics

The Department of Mathematics, CUTN conducted a workshop, “Summer School in Mathematics in Memory of Srinivasa Ramanujan” from 5th to 24th June 2023. This 21 Day workshop aims to foster mathematical excellence among second and third-year undergraduate students from across the country and seeks to commemorate the extraordinary contributions of the renowned mathematician, Srinivasa Ramanujan. The Summer School in Mathematics was inaugurated by the esteemed Vice Chancellor of CUTN Prof M Krishnan. Renowned mathematicians and experts in the field have been invited to deliver insightful sessions and engage in interactive discussions. The workshop offers an extensive program covering various areas of mathematics, including lectures on logic, algebra, and analysis, providing participants with valuable knowledge and practical skills. 40 Participants from states like Assam, Delhi, Haryana, Kerala, Maharashtra, Puducherry, Punjab, Rajasthan, Tamil Nadu and Uttar Pradesh are part of this workshop, who were chosen based on their merit.



Math Club Activity

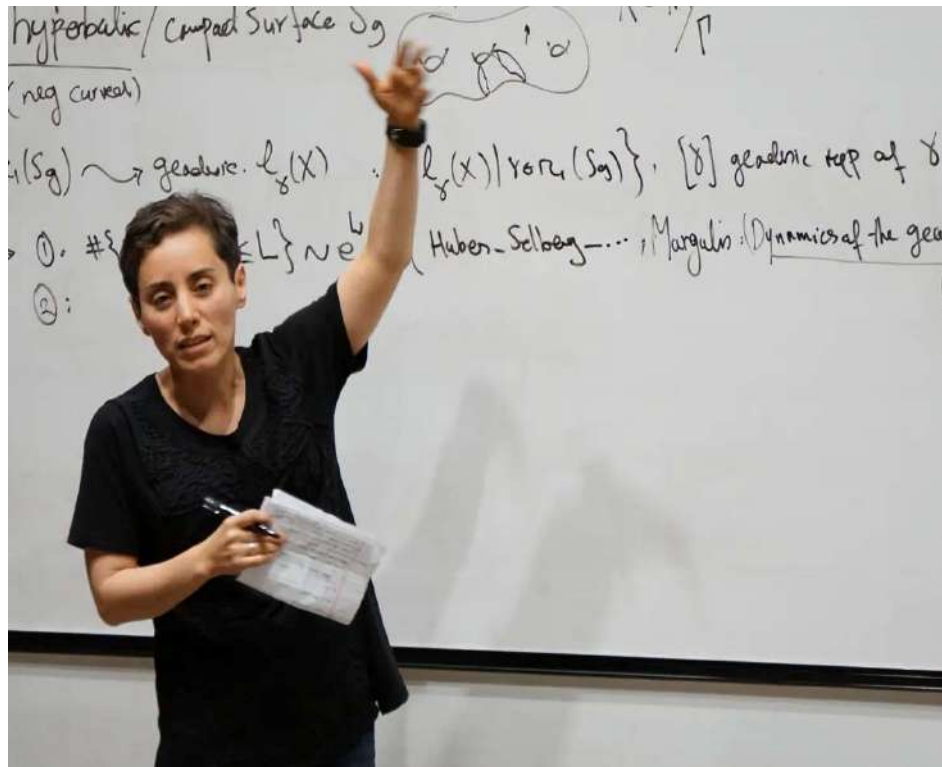
As part of Math Club Activity, weekly seminars were conducted by our faculty members and research Scholars. The following are the details of the weekly seminar.

1. Prof. T. Sengadir delivered a talk on "Partial Differential Equations - an overview" on 27-07-2022
2. Dr. A. Chandrashekar delivered a talk on "Semipositivity of Linear Maps" on 03-08-2022.
3. Prof. R. Roopkumar delivered a talk on "Polynomial version of the Fermat's last Theorem" on 10-08-2022
4. Dr. V. Renuka Devi delivered a talk on "Set Ideals" on 17-08-2022
5. Ms. A. Shanmuga Priya delivered a talk on "Kronecker Product" on 24-08-2022
6. Dr. Virendra Kumar delivered a talk on "Curvilinear Coordinates" on 07-09-2022
7. Dr. S. V. Bharanedhar delivered a talk on "Different Proofs of Euclid's Theorem" on 21-09-2022
8. Mr. S. B. Ramkumar delivered a talk on "Some facts about the group of rationals" on 28-09-2022
9. Mr. Manu Mathew delivered a talk on "Equations of degree five" on 12-10-2022
10. Mr. K. Vinoth Kumar delivered a talk on "Clubs of odd town" on 19-10-2022
11. Ms. M. Makeswari delivered a talk on "Chinese Remainder Theorem and its applications" on 26-10-2022
12. Ms. L. Anitha delivered a talk on "Relation between Beta and Gamma functions" on 09-11-2022
13. Mr. S. Balamoorthy delivered a talk on "Taste of Linear Algebra without determinant" on 16-11-2022
14. Ms. R. Karthika delivered a talk on "Infinite number of primes - Analytic proof" on 23-11-2022
15. Mr. S. Mohamed Asraff delivered a talk on "Relatively prime uniform partitions" on 30-11-2022
16. Mr. M. Navaneetha Krishnan delivered a talk on "Ideals in $C[0,1]$ " on 07-12-2022
17. Ms. Sreelakshmi Sukumaran delivered a talk on "Special Properties of Graphs" on 14-12-2022
18. Mr. S. Lakshmanan delivered a talk on "Pfister's Theorem on Sums of Squares" on 01-02-2023
19. Mr. M. Karuppasamy delivered the talk on "Differential Equations via Linear Algebra" on 08-02-2023.
20. Ms. S. Devi delivered the talk on "Bertrand's Postulate" on 16-02-2023.
21. One special lecture was delivered by Dr. A. Chandrashekar on Linear Complementarity Problems on 12-04-2023.

As part of Math Club Activity, the Int. M.Sc. students of our department conducted the following events

- 1 Data Science cure for Viral Genome, by Ms. B. Anusha, 5th year Int. M.Sc. Mathematics on 15-11-2022.
- 2 Weak Derivation by Ms. V. Vaishnavi, 4th year Int. M.Sc. Mathematics on 15-11-2022.
- 3 Geometrical Puzzels by Ms. Aleena Jacob, 5th year Int. M.Sc. Mathematics on 22-11-2022.
- 4 Mathematical Reasoning by Ms. SVSSR. Jagadiswari, 5th year Int. M.Sc. Mathematics on 22-11-2022.
- 5 Connection Game, R. Abirami, R. Vasuki, Magalakshmi, Suvathi, and E. Hemapriya, 4th year Int. M.Sc. Mathematics, on 29-11-2022
- 6 Prestigious awards in the field of Mathematics, C. Vaishnavi and Rathla Santhosh Kumar, 4th year Int. M.Sc. Mathematics on 29-11-2022.
- 7 Mathematical Quiz by Aleena Jacob and Vismaya K, 5th year Int. M.Sc. Mathematics on 06-12-2022.

- 8 Mathematical Quiz by Gunasri and Athikan, 3th year Int. M.Sc. Mathematics on 13-12-2022.
- 9 Logic and Puzzles Game by Karishma A, Yokesh D, and Namitha K, 4th year Int. M.Sc. Mathematics on 14-02-2023.
- 10 Presentation about ODE first order by Suraj Rai and Divyadharshini, 2nd year Integrated M.Sc. students on 07-03-2023.



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Maryam Mirzakhani

Maryam Mirzakhani (1977-2017) was an Iranian Mathematician and a professor of mathematics at Stanford University. Her research topics included Teichmüller theory, hyperbolic geometry, ergodic theory and symplectic geometry. On 13 August 2014, Mirzakhani was honoured with the Fields Medal, the most prestigious award in mathematics, becoming the first Iranian to be honoured with the award and the first of only two women to date. The award committee cited her work in "the dynamics and geometry of Riemann surfaces and their moduli spaces".

In 1999, she obtained a Bachelor of Science in mathematics from the Sharif University of Technology. During her time there, she received recognition from the American Mathematical Society for her work in developing a simple proof of the theorem of Schur. She then went to the United States for graduate work, earning a Ph.D. in 2004 from Harvard University, where she worked under the supervision of the Fields Medallist, Curtis T. McMullen. At Harvard, she is said to have been "distinguished by determination and relentless questioning". She used to take her class notes in her native language Persian.

Mirzakhani was a 2004 research fellow of the Clay Mathematics Institute and a professor at Princeton University. In 2009, she became a professor at Stanford University. She made several contributions to the theory

of moduli spaces of Riemann surfaces. Mirzakhani's early work solved the problem of counting simple closed geodesics on hyperbolic Riemann surfaces by finding a relationship to volume calculations on moduli space. Mirzakhani was able to prove the long-standing conjecture that William Thurston's earthquake flow on Teichmüller space is ergodic.

In 2014, with Alex Eskin and with input from Amir Mohammadi, Mirzakhani proved that complex geodesics and their closures in moduli space are surprisingly regular, rather than irregular or fractal. The closures of complex geodesics are algebraic objects defined in terms of polynomials and therefore, they have certain rigidity properties, which is analogous to a celebrated result that Marina Ratner arrived at during the 1990s. The International Mathematical Union said in its press release that "It is astounding to find that the rigidity in homogeneous spaces has an echo in the inhomogeneous world of moduli space."

Mirzakhani was awarded the Fields Medal in 2014 for "her outstanding contributions to the dynamics and geometry of Riemann surface and their moduli spaces". The award was given in Seoul at the International Congress of Mathematicians on 13 August.

On 14 July 2017, Mirzakhani died of breast cancer at the age of 40.

Numerous obituaries and tributes were published in the days following Maryam Mirzakhani's death. As a result of advocacy carried out by the Women's Committee within the Iranian Mathematical Society, the International Council for Science agreed to declare Maryam Mirzakhani's birthday, 12 May, as International Women in Mathematics Day in respect of her memory. Various establishments have also taken after Mirzakhani's namesake in honour of her life and achievements. In 2022, following a £2.48m donation from XTX Markets, the University of Oxford, launched the Maryam Mirzakhani Scholarships which provide support for female graduate mathematicians with the aim of encouraging the female Fields Medallists of the future.

In February 2020, on International Day of Women and Girls in STEM, Mirzakhani was honoured by UN Women as one of seven female scientists dead or alive who have shaped the world.

In 2020, George Csicsery featured her in the documentary film *Secrets of the Surface: The Mathematical Vision of Maryam Mirzakhani*.

The May 12 Initiative was created in Mirzakhani's honour to celebrate women in mathematics.

Mirzakhani described herself as a "slow" mathematician, saying that "you have to spend some energy and effort to see the beauty of math." To solve problems, Mirzakhani would draw doodles on sheets of paper and write mathematical formulas around the drawings. Her daughter described her mother's work as "painting".