

ANNUAL REPORT 2021-22
4 DEPARTMENT OF MATHEMATICS

1. Introduction

The Department of Mathematics was established in 1959 along with the institute. It offers M.Sc. programme in Mathematics, M.Tech. programme in Industrial Mathematics and Scientific Computing (IMSC), and Ph.D. programme. In addition, the department has taken the responsibility of teaching mathematics courses to B.Tech., M.Tech. (other than IMSC), M.Sc. and Ph.D. students at the institute.

The major research areas of the department are the following:

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|-----------------------------------------|-------------------------------------------------------------|
| 1. Algebraic Combinatorics | 26. Graph Theory |
| 2. Algebraic Geometry | 27. Harmonic Analysis |
| 3. Algebraic Topology | 28. Inverse and Ill-Posed Problems |
| 4. Applied Probability | 29. Linear Algebra |
| 5. Approximation Theory | 30. Low dimensional Topology |
| 6. Category Theory | 31. Mathematical Modeling |
| 7. Combinatorial Optimization | 32. Mathematical Study of Ferromagnetic Networks |
| 8. Combinatorics | 33. Nonlinear Analysis |
| 9. Combinatorics of Words | 34. Nonlinear Analysis of Functional Differential Equations |
| 10. Commutative Algebra | 35. Nonlinear Differential Equations |
| 11. Complex Analysis | 36. Number Theory |
| 12. Conformal Geometry | 37. Operator Algebras |
| 13. Contact and Symplectic Topology | 38. Operator Equations |
| 14. Convective Heat & Mass Transfer | 39. Operator Theory |
| 15. Computational Fluid Dynamics | 40. Optimization |
| 16. Computational Number Theory | 41. Partial Differential Equations |
| 17. Cryptology | 42. PDE Numerics |
| 18. Differential and Integral Equations | 43. Solid Mechanics |
| 19. Differential Topology | 44. Special Functions |
| 20. Fixed Point Theory | 45. Systems and Control Theory |
| 21. Fluid Mechanics | 46. Theory of Codes |
| 22. Functional Analysis | 47. Theory of Computation |
| 23. Fractals | 48. Theory of Wavelets |
| 24. Game Theory | 49. Time Frequency Analysis |
| 25. Graph Algorithms | 50. Wave Structure Interactions |

2. Academic Programmes

2.1 New discipline/branch introduced: NIL

2.2 New Courses introduced:

Sl. No.	Course No.	Title
1.	MA5520	Bayesian Data Analysis

2.3 New lab(s) established: Centre of Excellence for Computational Mathematics & Data Science

2.4 Students on roll as of September 2021 +M.S. & Ph.D admission in Jan. 2022:

Programme	I year	II Year	III Year	IV Year	V Year & others	Total
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B.Tech.	-	-	-	-	-	-
Dual Degree	-	-	-	-	-	-
M.A.	-	-	-	-	-	-
M.Sc.	41	31	-	-	-	72
M.Tech.	24	17	-	-	-	41
M.B.A.	-	-	-	-	-	-
M.S.	-	-	-	-	-	-
Ph.D.	11	13	18	17	44	103
Total						

2.5 Endowment prize instituted:

2.6 Names of Student/Scholar who attended Conference/ /Seminar and Symposia Abroad/India:

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/ Seminar / Symposia / Workshop	Date and Venue	Financial Assistance from
Abroad					
1.	Koushik Brahma	MA18D002	Toric Topology 2022 in Osaka	March 23(Wed) - 25(Fri), 2022 Venue: Osaka City University	Online
2.	Subhankar Sau	MA17D022	Toric Topology 2022 in Osaka	March 23(Wed) - 25(Fri), 2022 Venue: Osaka City University	Online
3.	Sreethin Sreedharan K	MA16D033	74th Annual Meeting of the <u>APS</u> Division of Fluid Dynamics	Phoenix Convention Center, Phoenix, Arizona during November <u>21-23</u> , 2021	IITM
India					
1.	Supriya Karmakar	MA18D201	National Conference on Numerical Analysis and Applications	06-07 January, 2022, Virtual mode, Department of Mathematics National Institute of Technology Puducherry, Karaikal	Self
2.	Sreethin Sreedharan K	MA16D033	National Conference on Numerical Analysis and Applications	National Institute of Technology Puducherry, Karaikal during 06-07 January 2022	Self
3.	Sujit Sakharam Damase	MA21D007	17th Discussion Meeting in Harmonic Analysis	NISER Bhubaneswar 05-08 January 2022	Self

4.	Jyoti	MA15D206	“Symposium on Differential Equations: Analysis, Computation and Applications” Presented Paper “A Meshfree Approach to Two Dimensional Fluid Structure Interaction of Radiofrequency Ablation Treatment for Liver Tumors”	Online Symposium, Department of Mathematics, IIT Roorkee 2-3 December 2021	Free
5.	Anand O R	MA20D006	International Conference on Semigroups, Algebras and Operator Theory	Online event conducted by Cochin University of Science and Technology 28-31 March 2022	Free
6.	Vinayak Gupta	MA20D016	International workshop on algorithms for cooperative TU games using matrices and graphs	Manipal, Karnataka 20-31 December 2021	Self
7.	Shubhangi Sikaria	MA16D203	“63rd ISI World Statistics Congress” Presented paper” Granger Causality Analysis for Functional Time Series Data”	Virtual. Organized by International Statistical Institute 11-16 July 2021	Online
8.	Vinay Kumar	MA17D025	Joint Indo-Japanese Smart City Conference 2022	IIT Madras 24-25 March 2022	Online
9.	Mohit Kumar	MA15D203	8th International Conference on Mathematics and Computing (ICMC 2022)	Dept. of Mathematics, School of Advanced Sciences, VIT Vellore 6-8 January 2022	Self
10.	Kamla Kant Mishra	MA16D037	International Conference on Fractional Calculus - 2022	School of Mathematics and Statistics, University of Hyderabad 18-19 January 2022	Self
11.	V A Kandappan	MA16D300	Invited Talk : “Hands on session on Low-rank approximations and Hierarchical matrices” in the workshop on “Numerical Linear Algebra in applications to Data Science”	IIITDM, Kancheepuram 11 March 2022	Online

12.	Bidhan Paul	MA19D003	NCMW -Intersection Theory 2022	IIT Bombay 21 Feb – 15 March 2022	
13.	Koushik Brahma	MA18D002	NCMW -Intersection Theory 2022	IIT Bombay 21 Feb – 15 March 2022	
14.	Md Hasan Ali Biswas	MA17D011	17 th Chapter of the Biennial conference : “Discussion Meeting in Harmonic Analysis”	NISER Bhubaneswar 5 – 8 January 2022	

2.7 Names of students/scholars who won outside prizes and awards:

Sl.No.	Name of the Student/Scholar	Roll No.	Name of Prize	Prize awarded by
1.	Ashok Kumar K	MA15D027	Institute Research Award	IITM
2.	Md Mansur Alam	MA14D201	Institute Research Award	IITM

2.8 Name of Students/Scholars who won Institute Convocation/Institute Day Prize:

Sl.No.	Name of the Student/Scholar	Roll No.	Name of Prizes	Name of Donor
1.	SOWMIA M	MA19M020	Prof Helmut Neunzert Endowment Prize	
2.	MOHIT RAM SHARMA	MA19C020	Mira Paul Memorial Prize	
3.	SHIVANI GOEL	MA16D023	Smt. Lakshmikutty amma and Shri A Krishnankutty Nair Prize	

3. Faculty and their activities:

3.1. Faculty:

Name and Qualifications	Major Areas of Specialisation
Professors	
Dr A.K.B. Chand, Ph.D. (IIT Kanpur)	Fractals, approximation theory and wavelets
Prof. Arindama Singh, Ph.D. (IIT Kanpur)	Logic, numerical analysis
Prof. S. Ponnusamy, Ph.D. (IIT Kanpur)	Complex analysis, function spaces, special functions and conformal geometry
Prof. R. Radha, Ph.D. (IMSc Chennai)	Harmonic analysis, wavelets, time-frequency analysis
Prof. R. Rama, Ph.D. (Anna University)	Formal language and automata theory/molecular computing
Prof. Y.V.S.S. Sanyasiraju, Ph.D. (IIT Madras)	Computational fluid dynamics
Prof. Satyajit Roy, Ph.D. (IISc Bangalore)	Convective heat and mass transfer, computational fluid dynamics
Prof. K.C. Sivakumar, Ph.D. (IIT Madras)	Functional analysis, mathematical programming

Prof. Ch. Srinivasa Rao, Ph.D. (IISc Bangalore)	Non-linear differential equations
Dr S.R. Manam, Ph.D. (IISc Bangalore)	Applied mathematics
Prof. S. Sundar, Ph.D. (IIT Madras)	Computational fluid dynamics, numerical analysis for partial differential equations, mathematical modeling
Prof. M. Thamban Nair, Ph.D. (IIT Bombay)	Applicable functional analysis: spectral approximation, operator equations, inverse and ill-posed problems
Prof. V. Vetrivel, Ph.D. (IIT Madras)	Non-smooth optimization, fixed point theory, complementarity problems
Dr A.V. Jayanthan, Ph.D. (IIT Bombay)	Commutative algebra and algebraic combinatorics
Dr A.J. Shaiju, Ph.D. (IISc, Bangalore)	Game theory, systems and control theory
Dr Kalpana Mahalingam, Ph.D. (University of South Florida, Tampa)	Theory of codes, DNA computing, combinatorics of words
Dr Shruti Dubey, Ph.D. (IIT Kanpur)	Nonlinear analysis of functional differential equations, mathematical study of ferromagnetic systems
Associate Professors	
Dr Kunal Krishna Mukherjee, Ph.D. (Texas, A&M)	Operator algebras
Dr Neelesh S Upadhye, Ph.D. (IIT Bombay)	Probability theory and applications
Dr Sounaka Mishra, Ph.D. (ISI, Kolkata)	Discrete mathematics, approximation algorithm, combinatorial optimization
Dr R. Balaji, Ph.D. (IIT Madras)	Linear algebra and optimization
Dr V. Uma, Ph.D. (IMSC Chennai)	Topology and geometry of toric varieties and related spaces
Dr Arijit Dey, Ph.D.	Algebraic geometry
Dr Santanu Sarkar, Ph.D. (ISI, Kolkata)	Cryptology and computational number theory
Assistant Professors	
Dr P. Aprameyan, Ph.D.	Analysis on symmetric spaces, representations of real Lie groups, geometric quantization
Dr T.V. Anoop, Ph.D. (IMSc Chennai)	Linear and nonlinear partial differential equations, nonlinear functional analysis
Dr Dipramit Majumdar, Ph.D. (Brandeis University)	Algebraic number theory, p-adic aspects of modular forms and Galois representations
Dr N. Narayanan, Ph.D. (IMSC, Chennai)	Graph Theory: graph colouring, structural and extremal graph theory probabilistic combinatorics, discrete mathematics
Dr Priyanka Shukla, Ph.D. (JNCASR, Bangalore)	Fluid Mechanics: hydrodynamic instability; nonlinear dynamics; numerical PDE; granular flows; pattern formation
Dr Ramesh Kasilingam, Ph.D. (IIT Bombay)	Differential and algebraic topology and their interactions with differential geometry
Dr Sarang S. Sane, Ph.D. (TIFR, Bombay)	Commutative algebra, homological algebra, algebraic k-theory, algebraic geometry

Dr Sivaraman Ambikasaran, Ph.D. (Stanford University)	Numerical linear algebra, fast algorithms, and scientific computing
Dr Soumen Sarkar, Ph.D. (ISI, Kolkata)	Algebraic topology, geometric topology, differential geometry, convex geometry, K-theory, topological complexity, persistent homology, ring of continuous functions
Dr Sriram Balasubramanian, Ph.D. (University of Florida)	Functional analysis
Dr Suhas Jaykumar Pandit, Ph.D. (ISI, Bangalore)	Geometric group theory and low-dimensional topology
Dr Sumesh K., Ph.D (ISI, Bangalore)	Operator algebra
Dr T.E. Venkata Balaji, Ph.D. (CMI, Chennai)	Algebraic geometry and commutative algebra
Dr. Barun Sarkar	Stochastic PDEs & Probability Theory
Dr. Surjit Kumar	Operator Theory
Dr. Jayanth Jha	Directional Statistics, Bayesian Inference, Biostatistics, Applied Statistics
Emeritus Faculty	
Prof. R. Usha, Ph.D. (IIT Madras)	Fluid dynamics

3.2. Short-term Courses/ Workshops/ Seminars/ Symposia /Conferences organized by the faculty members:

Sl. No.	Coordinator(s)	Title	Period
Conference:			
Seminar:			
	Soumen Sarkar	Geometry and Topology Seminar	Occurring twice a month during the semester
Symposia:			
	Ramesh Kasilingam	NATIONAL SYMPOSIUM ON MATHEMATICS AND ITS APPLICATIONS (NSMA 2021)	22 December 2021
Workshop:			
Short term Course:			
	Jayant Jha and Neelesh S. Upadhye	Data analysis using statistical learning techniques	21-26 March, 2022

3.3. Short-term Courses/ Workshops/ Seminars/ Symposia/ Conferences/ Training attended by the faculty members in Academic institutions and Public Sector Undertakings:

Sl. No.	Name of faculty	Title	Institution	Period
Workshop:				
1.	Soumen Sarkar	Toric Topology 2022 in Osaka	Osaka City University	March 23(Wed) - 25(Fri), 2022 (Online)
Seminar:				
1.	Soumen Sarkar	Algebraic Topology Seminar	Princeton University	On Thursdays during the semester
2.	Soumen Sarkar	The International Polyhedral Products Seminar	Princeton University	On the first and third Thursdays of each month during the semester
3.	T E Venkata Balaji	International Seminar on Geometry 2021	Department of Mathematics, St Berchmans College, Changanachery, Kerala	9th December 2021
4.	T E Venkata Balaji	Prof. Vaidyanathaswamy Colloquium RIASM 2022	Ramanujan Institute for Advanced Studies in Mathematics RIASM, University of Madras	23rd March, 2022
5.	A.J.Shaiju	NSMA	IIT Madras	22 December 2021
Symposia:				
1.	Soumen Sarkar	"Generalized equivariant cohomologies of weighted Grassmann orbifolds" Annual Math symposium	IISER Bhopal	March 25-26, 2022
Conference:				
1.	Dipramit Majumdar	Talk on "Ribet's Conjecture for non-rational Eisenstein Ideal" Cefipra 2020 conference L-functions and Iwasawa Theory	Roscoff, France (Online)	19 November 2021
2.	Ponnusamy S	Talk on "Coefficient Conjectures on univalent Harmonic Mappings" National Conference on "Mathematical Analysis and Applications- 2022 (NCMAA-2022)",	Shivaji University Kolhapur	21-22 March 2022
3.	Ponnusamy S	Talk on "Planar Harmonic Mappings" Conference on Mathematical Sciences and Applications in Engineering (CMSAE2021-Virtual Conference)	Hindustan Institute of Technology & Science, Chennai,	9-10 December 2021
4.	Ponnusamy S	"Bohr's power series inequality and planar harmonic mappings" Third International Conference on Mathematical Techniques and Applications (e-ICMTA 2022)	SRM Institute of Science and Technology, Chennai, India	23-25 March 2022

5.	Ponnusamy S	“Some aspects of Power Series and Univalent Functions” International Conference on Mathematical Modelling, Applied Analysis and Computational Intelligence (ICMMAACI - 2022)	Gandhigram Rural Institute, Dindigul-624302, India	2-4 March 2022
6.	Vijay, A. K. B. Chand	Positivity Preserving Rational Quartic Spline Zipper Fractal Interpolation Functions	The 4th International Conference on Frontiers in Industrial and Applied Mathematics (FIAM-2021 : Online) SLIET Longowal Punjab, India.	21-22 December 2022
7.	R. Pasupathi, M. A. Navascues, A. K. B. Chand	Fractal Convolution Bessel Sequences on Rectangle	The 4th International Conference on Frontiers in Industrial and Applied Mathematics (FIAM-2021 : Online) SLIET Longowal Punjab, India.	21-22 December 2022
8.	Mohit Kumar, N. S. Upadhye, A. K. B. Chand	Distribution of Noise in Linear Recurrent Fractal Interpolation Functions for Data Sets with α -Stable Noise	The 4th International Conference on Frontiers in Industrial and Applied Mathematics (FIAM-2021 : Online) SLIET Longowal Punjab, India.	21-22 December 2022
9.	Vijay, A. K. B. Chand	C^1 -Rational Quadratic Trigonometric Spline Fractal Interpolation Functions	8 th International Conference on Mathematics and Computing (ICMC-2022 Online), Vellore Institute of Technology	6-8 January 2022
10.	R. Pasupathi, A. K. B. Chand, M. A. Navascues	Cyclic Multivalued Iterated Function Systems,	Vellore Institute of Technology, Vellore	6-8 January 2022
11.	Mohit Kumar, N. S. Upadhye, A. K. B. Chand	Linear Recurrent Fractal Interpolation Function for Data Set with Gaussian Noise	Vellore Institute of Technology, Vellore	6-8 January 2022
12.	K. Sumesh	The 41st International Conference on Quantum Probability & Related Topics (QP41-2021)	UAEU (online)	28 March - 1 April 2021
13.	K. Sumesh	Non-commutative algebra, probability and analysis in action	Alfried Krupp Kolleg, Greifswald, Germany (Online)	20-25 September 2021
14.	K. Sumesh	42nd International Conference on Quantum Probability, and Infinite Dimensional Analysis (QP-42)	ISI Bangalore (Online)	7-20 January 2022
Training:				
Short term Course:				

3.4. Special Lectures delivered by the faculty in other Institutions:

Sl. No.	Name of faculty	Topic of Lecture	Institution	Date
1.	Dr. Y. V.S. S. Sanyasiraju	Arnoldi based Krylov solvers for unsymmetric systems In the Short Term Course(STC)on Numerical Linear Algebra in Applications to Data Sciences	IIITDM Kancheepuram	9 March 2022
2.	Dr. Y. V.S. S. Sanyasiraju	Some Upwind options for the meshless RBF schemes with pde points International Conference on Nonlinear Analysis and Optimization	Department of Mathematics, IIT BHU	21-23 December 2021
3.	Dr. R. Balaji	Invited talk on "Generalised Euclidean distance matrices" in the International Conference on Linear Algebra and its applications (ICLAA 2021)	Online	16 December 2021
4.	Dr. S. Sundar	Invited talk at an International Conference	SRM University,	March 2022.
5.	Dr. S. Sundar	Invited talk at an International Conference	VIT University	February 2022.
6.	Dr. S. Sundar	Invited talk at International Conference	NIT Utharakand	February 2022.
7.	Dr. S. Sundar	Invited talk at One Day Symposium	Lakshmikantham Institute for Mathematical Sciences, Vizag	March 2022.
8.	Dr. S. Sundar	Invited talk	IIT Tirupathi	January 2022
9.	Arindama Singh	Least squares in Krylov subspace methods for approximating eigenpairs	Ramanujan Institute, Univ of Madras	5 January 2022
10.	Arindama Singh	Subspace iteration Techniques for Approximating eigenpairs of Large matrices	NIT Puducherry	6 January 2022
11.	Arindama Singh	A new variant of Arnoldi method for Approximating eigenpairs of large matrices	IIIT-DM, Kancheepuram	9 March 2022
12.	Arindama Singh	Is it possible to write a Shortest program?	Odisha Mathematical Society	26 March 2022
13.	Barun Sarkar	Connection between SDEs and a class of SPDEs, on the occasion of Prof. V.K. Balachandran Endowment lecture 2021-22	Ramanujan institute for advanced study in mathematics, University of Madras	05 January 2022
14.	Ramesh Kasilingam	Webinar On "Fundamental Problem In Mathematics"	Justice Basheer Ahmed Sayeed College For Women, Chennai.	23 October 2021

15.	Ramesh Kasilingam	One-day webinar in “Poincare Conjecture “	KPR Institute of Engineering and Technology, Coimbatore, Tamil Nadu	19 June, 2021
16.	Ramesh Kasilingam	<i>Workshop on “SPACE , NUMBER AND SYMMETRY “</i>	<i>GURU NANAK COLLEGE, Chennai, Tamil Nadu</i>	19 August 2021
17.	Ramesh Kasilingam	ICTE-ISTE Sponsored Refresher Programme on Applied Mathematics (RPAM – 2021)”	M.Kumarasamy College of Engineering,Karur, Tamil Nadu	19-24 April, 2021
18.	Ramesh Kasilingam	Contractual Panel Interview 2021	KV IIT CHENNAI	20 October 2021
19.	A.J.Shaiju	Games: Equilibria and beyond	S.B.College, Changanassery	12 February 2022
20.	Soumen Sarkar	Equivariant cohomology of weighted Grassmann orbifolds	IIT Guwahati	23 December 2021
21.	M Thamban Nair	Ph.D. Thesis examiner	TIFR-CAM, Bangalore	February 2021
22.	M Thamban Nair	Subject expert in faculty selection committee meeting	IIT(ISM) Dhanbad	2 April 2021
23.	M Thamban Nair	Member, Steering committee to formulate the new program of MSc Mathematics and to prepare syllabi (along with Prof. Sameer Chavan, IIT Kanpur) for courses on (i) Real Analysis, (ii) Complex Analysis, (iii) Measure and Integration, (iv) Functional Analysis, (v) Operator Theory, and (vi) Advanced Complex Analysis	Central University of Andhra Pradesh	January-May 2021
24.	M Thamban Nair	Subject expert in faculty selection committee meeting	IIT Delhi	26 April 2021
25.	M Thamban Nair	Subject expert in faculty selection committee related meetings (Stage1,2,3)	IIT-Jammu	June 2021
26.	M Thamban Nair	Subject expert to the Selection Committee for promotion as Senior Professor (Academic Level 15)	CUSAT	30 June 2021
27.	M Thamban Nair	Visitor’s nominee for HAG scale Selection Committee	IEST Shibpur	July 2021
28.	M Thamban Nair	Subject expert for HAG scale Selection Committee	IIT Guwahati	August 2021
29.	M Thamban Nair	Seminar talk (online)	Krea University, Sricity, AP	25 August 2021
30.	M Thamban Nair	Webinar talk.	Department of Mathematics and Statistics, Aquinas College, Edakochi	5 September 2021
31.	M Thamban Nair	Talk at a refresher course for mathematics teachers	University of Calicut, Kerala	20 October 2021

32.	M Thamban Nair	Plenary talk at the International Conference of International Academy of Physical Sciences (CONIAPS XXVII) on Mathematical Analysis and its Applications	Central University of Kerala.	26-28 October 2021
33.	M Thamban Nair	Seminar talk (online)	Department of Mathematics, BITS-Pilani, Goa Campus	19 November 2021
34.	M Thamban Nair	Invited talk at the International Conference on "Recent Advances in Mathematical Sciences and its Applications (RAMSA-2021)"	Jaypee Institute of Information Technology, Noida	02-04 December 2021
35.	M Thamban Nair	Participated and Chaired session at BRICS Mathematics Conference at	IISER Thiruvananthapuram	06-09 December 2021
36.	M Thamban Nair	Talk at a refresher course for mathematics teachers	Kannur University, Kerala	14 December 2021
37.	M Thamban Nair	The first "Yuktibhasha Seminar" talk (online)	IIT Palakkad	16 February 2022
38.	M Thamban Nair	Invited at the National Conference on Control and Inverse Problems (CIP 2022)	Central University of Tamil Nadu.	25 -26 February 2022
39.	M Thamban Nair	"Vaidyanathaswamy endowment lecture	Ramanujan Institute, University of Madras	23 March 2022
40.	T. E. Venkata Balaji	What makes a good definition and why does it matter? --- Invited Online Talk --- MathClinic --- Youtube	Mathclinic Lecture Series, Organized by Prof. Inder K. Rana, IIT-Bombay	11 Septmeber 2021
41.	T. E. Venkata Balaji	What is Geometry? --- Invited Talk --- St. Berchmans International Seminar on Geometry 2021	Department of Mathematics, St Berchmans College, Changanachery, Kerala	9 December 2021
42.	T. E. Venkata Balaji	Mathematics Lectures in Higher Algebra and Complex Numbers, Tamil Nadu Government Model Schools Teachers Training Programme	Initiative of the Chief Minister of Tamil Nadu and State Education Department of Government of Tamil Nadu	Weekends --- October 2021 to January 2022
43.	T. E. Venkata Balaji	Geometries of the Line and the Plane, International Mathematics Day Celebrations, Chief Guest Talk	Navi Mumbai Science Foundation and Karmaveer Bhaurao Patil College, Vashi & Navi Mumbai Science Foundation (NMSF)	14 March 2022
44.	T. E. Venkata Balaji	Arrow-Power in Mathematics, Prof. Vaidyanathaswamy Colloquium RIASM 2022	Ramanujan Institute for Advanced Studies in Mathematics RIASM, University of Madras	23 March 2022
45.	Aprameyan P	Talk on "Eigenfunctions, quantum resonances, and scattering poles"	In-House Symposium IISER Bhopal	25 March 2022

46.	A. K. B. Chand	Talk on “Fractals and Fractal Dimensions in Deep Learning”, AICTE-ISTE, Induction Program on Deep Learning - 3	BIT Mesra,	29 May 2021
47.	A. K. B. Chand	Talk on “Non-linearity and Fractals in Deep Learning”, AICTE-ISTE, Induction Program on Deep Learning - 2	BIT Mesra	5 May 2021
48.	A. K. B. Chand	Talk on “Non-linearity and Fractals” National Workshop on Data Science and Advanced Computing	VIT-AP	20 March 2022
49.	A. K. B. Chand	Talk on “Zipper Fractal Approximation” International Conference on Analysis and Discrete Mathematics	49th Annual conference of Odisha Mathematical Society	26 March 2022
50.	Shruti Dubey	Solution of Time Fractional Differential Equation with delay term, International Conference on Technology, Research, and Innovation for Betterment of Society	IIIT Naya Raipur	17-19 December 2021
51.	Shruti Dubey	Study on Navier-Stokes Equations with time fractional derivative, International Conference on Recent Trends in Applied Sciences Technology and Health (RASTH)	SRM Institute of Science and Technology	3-5 March 2021
52.	Arindama Singh	Lecture on Meta theorems of Logic	SRMIST – Ramapuram, Tamil Nadu	16 September 2021
53.	Arindama Singh	Lecture on Linear Algebra proof of Fundamental theorem of Algebra	IIT Pallakad	23 September 2021
54.	Arindama Singh	V.K.Balachandran endowment Lecture on Krylov Subspace methods for approximating eigenpairs	Ramanujan Institute, Chennai	5 January 2022
55.	Arindama Singh	NIT Puducherry	Lecture on Subspace iteration techniques for approximating eigenpairs of large matrices	6 January 2022
56.	Arindama Singh	Invited Lecture on Computationally Efficient Krylov Solvers for Eigenvalues in AICTE workshop on Data Sciences	IIIT-DM, Kancheepuram	9 March 2022
57.	Ponnusamy S	“Recent developments around Bohr's Inequality” Plenary Speaker at the American Mathematical Society' session on “Complex Analysis and Potential Theory” (AMS Western Sectional Meeting)	Texas Tech University, Lubbock, USA	October 23-24, 2021
58.	Santanu Sarkar	Subset Sum Problem	SETS, Chennai	29 March 2022

3.5. Visits abroad by faculty:

Sl. No.	Name of faculty	Country Visited	Date	Purpose of visit	Funding from
1.					

3.6 Honours and Awards obtained by faculty:

Sl. No.	Name of faculty	Name of Award	Awarded by	Awarded for	Date of award
i. Honours:					
1.	Dr. S. Sundar	Taken over charge as Director, NIT Mizoram			14 March 2022
2.	Dr. S. Ponnusamy	Appointed as the Director of the "Center for Functions Theory Problem"	Petrozavodsk State University at, Russia		1 March 2022
3.	Dr. S. Ponnusamy	President of Ramanujan Mathematical Society (elected second term)			
4.	Dr. V. Vetrivel	EC Member	DST-SERB	ECT/SRG/Matrices/NPDF	2022-23
5.	Dr. S. Sundar	Member of SIRE selection Committee	DST-SERB		2022-23
6.	Dr. S. Ponnusamy	Member of FIST Mathematical Sciences Subject Expert Committee			
ii. Awards:					
1.	Soumen Sarkar	Young Scientist Awards	The academy of Sciences, Chennai	Research in Mathematics	24-March-2022

3.7 Fellowships of Academies and Professional Societies:

Sl. No.	Name of faculty	Year of admission
Humboldt Fellowship:		
INAE:		
INSA:		
FRA:		
ISTE/CSI:		
Others:		

3.8 Journal Editorial Boards:

Sl. No.	Name of faculty	Position (Editor/Member)	Journal Name

1.	S. Sundar	Guest Editor for the January 2022 Special Issue	International Journal of Advances in Engineering Sciences and Applied Mathematics
2.	V. Vetrivel	Editorial Member	The Journal of Indian Mathematical Society

4. Design and Development Activities:

4.1. Brief and specific details of Process/Instruments/Equipment/ Software designed and developed:

4.2. New facilities added or major equipment procured:

Sl. No.	Name of Equipment	Value (Rs. in lakhs)

4.3. Patents:

4.3.1 Patents filed:

Sl. No.	Name of faculty	Topic of patent

4.3.2 Patents awarded:

Sl. No.	Name of faculty	Topic of patent

5. Research and Consultancy:

5.1 Sponsored Research Projects: (on going & new)

Sl. No.	Title	Period	Funding Agency	Amount (Rs. in lakhs)	Co-ordinators
1.	Evolutionary Stability in Asymmetric Games with Continuous Strategy Space	Ended in May 2021	DST	6	A.J.Shaiju
2.	Robot motion planning and Topological Data Analysis, 2. Algebraic and Geometric properties of smooth manifolds and orbifolds	April 2021 to March 2024	SEED Grant, IIT Madras	10 Lakhs	Soumen Sarkar
3.	Supported by DST with Grant No. MTR/2019/000561				S R Manam
4.	CFD of Thin Film Flow on Substrates Featurng Topography MAT1819065DSTXYVSS	Sept 2018 to April 2022	SERB, DST	19, 98, 069	Dr. Y. V. S. S. Sanyasiraju
5.	Mathematical Study of Anomalous Diffusion Processes via Partial Differential Equations	2020-2023	Science and Engineering Research Board (SERB)	6.6	Dr. Shruti Dubey
6.	Exploratory Research Project from IITMadras titled "Relating p-Selmer group of elliptic curves and p-class group of number Fields",	Finished in December 2021			Dr. Dipramit Majumdar
7.	CP-maps, entanglement breaking quantum channels, CP-H-extendable maps and their multiplicative domains	2021-2024	SERB	6 lakhs	Dr. Sumesh K

5.2 Industrial Consultancy projects: (on going & new)

Sl. No.	Name of faculty	Title	Industry	Amount (Rs. in lakhs)

5.3 RBIC projects: (on going & new)

Sl. No.	Name of faculty	Title	Industry	Amount (Rs. in lakhs)

5.4 Retainer Consultancy: (on going & new)

Sl.No.	Name of faculty	Title	Industry	Amount (Rs. in lakhs)

5.5 Exchange programme with other Universities including Institutions/Universities under MOU;

5.6 Faculty members participation with other institution under MoU:

Sl. No.	Name of faculty	Participation details	Name of University/Institution which has MoU

Research Publications of the faculty members & research scholars:

As per the attachment

Note: Only NON Scopus and Web of Science Publications which are published between 1.1.2021 and 31.12.2021 are to be given. Complete details to be furnished in file accompanying excel sheet.

6 Distinguished Visitors to the Department:

Sl.No.	Name of the visitor and Designation	Date of visit	Purpose of visit
1.	<i>Prof. T.E.S. Raghavan, University of Illinois, Chicago, USA</i>	03.03.2022	<i>Delivered talk on "LCP, Lemke's algorithm and Matrix games"</i>

7. Other Activities of the Department/Centre:

Results obtained in research work (from M.S. & Ph.D thesis) of the scholar/faculty (last year sample enclosed from Director's Speech)

Inter disciplinary group achievements of the Departments.

Socially relevant activities carried out by the Department

International collaboration achievements by the Department

1. Faculty visit

S.No.	Name of the Faculty Member	Purpose of Visit	Date & Venue
1.	Soumen Sarkar	Collaborative works	18-27 Dec-2021, IIT Guwahati
2.	Dr. Y. V. S. S. Sanyasiraju	Expert Member in Faculty recruitment, Department of Mathematics,	Feb 27, 2022 VIT University, Vellore
3.	Dr. Y. V. S. S. Sanyasiraju	Expert Member in Faculty recruitment, Department of Mathematics	4 March 2022 GITAM University, Hyderabad
4.	Dr. Y. V. S. S. Sanyasiraju	Expert member BoS of Mathematics	14 March 2022 NIT Nagpur
5.	Dr. Y. V. S. S. Sanyasiraju	Expert Member in Faculty recruitment for Assistant Professors, Department of Mathematics	October 22, 2021 GITAM Deemed to be University (Hyderabad Campus)
6.	Dr. Y. V. S. S. Sanyasiraju	Expert Member in Faculty recruitment, Department of Mathematics	June 8, 2021 Rajiv Gandhi University of Knowledge Technologies-AP (RK VALLEY, NUZVID, ONGOLE, SRIKAKULAM campuses)
7.	Dr. Y. V. S. S. Sanyasiraju	Expert Member in Faculty recruitment for Professors, Department of Mathematics, GITAM Deemed to be University (for three campuses at Visakhapatnam, Hyderabad & Bangalore)	June 2, 2021
8.	Dr. Y. V. S. S. Sanyasiraju	Expert Member in Faculty recruitment for Associate and Assistant professors, Department of Mathematics, GITAM Deemed to be University (for three campuses at Visakhapatnam, Hyderabad & Bangalore)	May 31, 2021
9.	S. Sundar	Faculty Selection Committee Member	IISc Bangalore March 2022.
10.	S. Sundar	Governor's nominee for Faculty Promotion	University of Madras February 2022.
11.	S. Sundar	Selection Committee Member	IIT Dhanbad February 2022.
12.	S. Sundar	Selection Committee Member	IIT Bhilai March 2022.

13.	V. Vetrivel	EC Meeting, SRG	DST, New Delhi 28-30 September 2021
14.	V. Vetrivel	Third EC-Physical and Mathematical Sciences, DST-SERB meeting on 29-31 March 2022	DST, New Delhi 29-31 March 2022
15.	V. Vetrivel	Mathematics Faculty Selection Committee Meeting	VIT Vellore 27 February 2022
16.	Shruti Dubey	Faculty Selection Committee Meeting.	20 February 2022 VIT, Chennai
17.	A.K. B. Chand	Member of faculty selection committee	20 February 2022 VIT-AP, Vijaywada
18.	A.K. B. Chand	Member of faculty selection committee	21 November 2021 VIT-AP, Vijaywada
19.	Dr. A. K. B. Chand	Member of External Expert in Board of Studies	Bennet University, Noida 2021-2022
20.	Dr. A. K. B. Chand	Member of Research & Recognition Committee	Mukesh Patel School of Technology Management & Engineering, NMIMS University Mumbai 2021-2022
21.	Ponnusamy S	Delivered an invited talk at the `` Online Refresher Course in Mathematics"; Title: On Schwarz Lemma	10-22 January 2022 Human Resource Development Centre (HRDC), Pandit Ravishankar Shukla University (PRSU), Raipur
22.	Ponnusamy S	Inaugural talk on ``National Mathematics Day-2021"; Title: Ramanujan on Hypergeometric Series	December 22, 2021 Department of Mathematics, IIT Bhilai,
23.	Ponnusamy S	Resource person at the Refresher Course in Mathematics /Operational Research / Statistics and Computer Science; Title of the talk: Branches of Multivalued Functions	Centre for Professional Development in Higher Education (CPDHE), UGC- HRDC, University of Delhi October 4-18, 2021
24.	Ponnusamy S	Delivered an invited talk at the National Webinar on ``Real and Complex Analysis"; Title: Analytic Functions and Power Series	PG & Research Department of Mathematics, K. M. G. College of Arts and Science, Gudiyattam 25 August 2021
25.	Ponnusamy S	Academic Advisor and Resource Person (Summer Training Programme in Mathematics (STPM-2021)	St Berchmans College Changanacherry, Kottayam, Kerala 05 - 17 April 2021, 24 May - 05 June 2021
26.	Arindama Singh	Syllabus committee meeting	MNIT, Jaipur 23-24 August 2021
27.	Arindama Singh	Faculty Recruitment meeting	VSSUT, Burla 15 January 2022
28.	Arindama Singh	Faculty Recruitment meeting	IIT Delhi

			21 March 2022
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2. Student visit

Sl.No	Name of the students	Purpose of Visit	Date & Venue

3. Activities initiated

Major infrastructure development made in the Department