

## DEPARTMENT OF MATHEMATICS

### Introduction

The Department of Mathematics was established in 1959 along with the Institute. It offers M.Sc. programme in Mathematics, M. Tech. program 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), Dual Degree in ED, M.Sc. and Ph.D students of the Institute. The department has also signed a MoU for an Exchange Programme with TU Kaiserslautern under the DAAD Exchange Programme Network for 5 years beginning from 2009.

The major areas of research of the department are :

1. Algebra and its applications
2. Applied Probability
3. Approximation Theory
4. Computational Fluid Dynamics
5. Continuum Mechanics
6. Coding Theory
7. Complex Analysis
8. Data Networks
9. Differential Equations
10. Inverse and Ill- Posed problems
11. Fluid Mechanics
12. Functional Analysis
13. Fuzzy Sets and Systems
14. Graph Theory and Combinatorics
15. Harmonic Analysis
16. Inventory and Reliability
17. Mathematical logic & Applications
18. Mathematical Modeling
19. Mathematical Physics
20. Nonlinear Analysis
21. Numerical Analysis
22. Operations Research
23. Operator Theory
24. Queuing Theory
25. Special Functions
26. Statistical Quality Control
27. Stochastic Processes and their applications
28. Theoretical Computer Science
29. Wavelets and their applications
30. Algebraic Geometry
31. Fractal Geometry and its applications
32. Commutative Algebra

### Academic Programmes:

New discipline / branch Introduced: NIL

New Courses Introduced:

S.No.	Course No.	Title
1.	MA5311	Linear Systems Theory
2.	MA5312	Stochastic Differential Equations
3.		Algebra
4.		Analysis
5.		Differential Equations
6.		Discrete Mathematics
7.		Introduction to Mathematical Statistics

New lab (s) established: NIL

Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year & Others	Total
M.Sc.	46	42	6	-	-	94
M.Tech.	12	8	-	-	-	20
Ph.D.	11	19	3	8	9	50
<b>Total</b>	69	69	9	8	9	164

**Endowment Prize Instituted:**

S.No.	Endowment Prize	Purpose	To be awarded from
1.	Smt. Lakshmikuttyamma and Shri A. Krishnakutty Nair prize – Instituted by Retd. Professor, Dr. P. Achuthan	For the Best Ph.D. Thesis in Mathematics	From Convocation 2013

**Names of Students/Scholars attended Conferences/Seminars and Symposia abroad/India:**

Sl. No.	Name of the Student/Scholar	Roll No.	Name of the Conference/ Seminar/ Symposia	Venue and Date
<b>Conference/Symposium:</b>				
1.	Mr. ReginThangaraj	MA11D005	National Programme on Differential equations, theory, computation & Applications	IIT Bombay, Mumbai June 9 – 30, 2012
2.	Ms. Ankita Sharma	MA10D002	National Programme on Differential equations, theory, computation & Applications	IIT Bombay, Mumbai June 9 – 30, 2012
3.	Mr. Suresh Badarla	MA11D024	International Conference on Mathematics and Mathematical Science ICMMS – 2012	India International Center, New Delhi July 5-11, 2012
4.	Mr. Abhishek Kumar Singh	MA09D004	ASME 2012 Summer Heat Transfer Conference	Puerto Rico, USA July 6- 12, 2012
5.	Mr. P.Viswanathan	MA10D001	International Conference on Mathematics – A Global Scenario	DD Govardhan Doss Vaishnav College, Chennai Dec.13-14, 2012
6.	Mr. VijenderNallapu	MA09D012	International Conference on Mathematics – A Global Scenario	DD Govardhan Doss Vaishnav College, Chennai Dec.13-14, 2012
7.	Mr. P. Viswanathan	MA10D001	National on Frontiers in Analysis and Differential equations	Bharathidasan Univ. Thiruchirapalli Dec. 19-20, 2012
8.	Mr. VijenderNallapu	MA09D012	International Conference on Mathematical Sciences	Nagpur Dec.26-Jan.1, 2013
9.	Mr. P. Viswanathan	MA10D001	International Conference on Mathematical Sciences	Nagpur Dec.26-Jan.1, 2013
10.	Mr. Sukla Adak	MA11D022	International Conference on Numerical Linear Algebra and Its Applications	IIT Guwahati Jan.14 – 18, 2013
11.	Mr. MashettiRavibabu	MA11D001	International Conference on Numerical Linear Algebra and Its Applications	IIT Guwahati Jan.14 – 18, 2013
<b>Workshop:</b>				
1.	Mr. A SairamKaliraj	MA09D011	International Workshop on Complex Analysis and its applications	Walchand College of Engg. Sangli. June 11-15, 2012
2.	Mr. S.V. Bharanedhar	MA08D009	International Workshop on Complex Analysis and its applications	Walchand College of Engg. Sangli. June 11-15, 2012
3.	Mr. SukhenduGhosh	MA11D020	Instructional Workshop on FEM	TIFR CAM, Bangalore July 1 – 14, 2012
4.	Mr. J. Mahipal	MA10D005	Instructional Workshop on FEM	TIFR CAM, Bangalore July 1 – 14, 2012
5.	Mr. J. BalaSuyambu	MA11D002	National Workhsop on Cayptology	VIT Vellore, Aug.6-8, 2012

6.	Mr. Surendra Kumar Sharma	MA11D023	Workshop on Elliptic and Parabolic Partial Differential Equations and Related Topics: Theory and Numerical Methods	IIT Gandhi Nagar Aug. 14-21, 2012
7.	Mr. Surendra Kumar Sharma	MA11D023	DAAD Network International Workshop on Modeling, Computing and Optimization	IIT Madras Sep. 3-12, 2012
8.	Mr. SusobhanMazumdar	MA10D010	Workshop on Almora Mathematical Surveys	Kumaun University, Oct.3-6, 2012
9.	Mr. TanmaySarkar	MA09D006	Advanced Workshop on Mathematical Theory of Control and Numerics – 2012	IIST, Thiruvananthapuram Nov.21-30, 2012
10.	Ms. Ankita Sharma	MA10D002	Advanced Workshop on Mathematical Theory of Control and Numerics – 2012	IIST, Thiruvananthapuram Nov.21-30, 2012
11.	Mr. SushobhanMazumdar	MA10D010	Workshop on Syzygies and Free Resolution	CMI, Chennai Dec.17-18, 2012
12.	Mr. R. Balakrishnan	MA10D010	Workshop on Syzygies and Free Resolution	CMI, Chennai Dec.17-18, 2012
13.	Mr. Suhas B.N.	MA11D020	Workshop on Syzygies and Free Resolution	CMI, Chennai Dec.17-18, 2012
14.	Mr. R. Rajesh Kannan	MA08D007	Bhatia Fest & Workshop on Operator Algebras	IISc. Bangalore Dec.27 – Jan. 13, 2013
15.	Ms. Arundhathi Krishnan	MA12D007	Conference-cum-Workshop on Recent Advances in Operator Theory and Operator Algebra	IISc. Bangalore Dec.27 – Jan. 13, 2013
16.	Mr. MashettiRavibabu	MA11D001	ATM Workshop on Numerical Linear Algebra 2013	IIT Guwahati Jan. 7-12, 2013
17.	Mr. SukhenduGhosh	MA11D021	ATM Workshop on Numerical Linear Algebra 2013	IIT Guwahati Jan. 7-12, 2013
18.	Mr. Sukla Adak	MA11D022	ATM Workshop on Numerical Linear Algebra 2013	IIT Guwahati Jan. 7-12, 2013
19.	Ms. SusmitaAgarwal	MA12D017	ATM Workshop on Numerical Linear Algebra 2013	IIT Guwahati Jan. 7-12, 2013
20.	Mr. Sumit Malik	MA11M011	Workshop on Recent Development on Numerical Methods for Evolution Equations	IIT Bombay Mar. 16-22, 2013
21.	Mr. Venkataramanarao.S	MA11M013	Workshop on Recent Development on Numerical Methods for Evolution Equations	IIT Bombay Mar. 18-22, 2013
22.	Ms. SusmitaAgarwal	MA12D017	Numerical Simulation of Free Surface Wave Problems	Mar. 18-19, 2013
<b>Instructional School:</b>				
1.	Mr. Sanjeev Singh	MA12D004	Annual Foundation School on Advanced Training in Mathematical Schools	Chennai Mathematical Institute, Taramani Dec. 3-29, 2012
<b>Summer/Winter School:</b>				
1.	Mr. J. Mahipal	MA10D005	ATM school of differential equations and computing	JUIT, WaknaghatSolani, June1 – 13, 2012
2.				
<b>Short Course: / Science Meet</b>				
1.	Mr. Rajesh Kannan	MA08D007	Advanced Training in Mathematics Schools	ISI, Bangalaoore Dec.31-Jan.11, 2013
<b>Research work/Lectures:</b>				

1.	Mr. SukenduGhosh	MA11D021	Research discussion with Dr. KirtiaSahu	IIT Hyderabad, Mar. 11-18, 2013
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**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.	Mr. Anuj Kumar Tyagi	MA12M002	DAAD Sandwich System for Masters' students for 2012-13	DAAD, Germany
2.	Mr. Nitin Kumar Yadav	MA12M007	DAAD Sandwich System for Masters' students for 2012-13	DAAD, Germany
3.	Ms. Ayushi Singh	MA12C009	Prakash Narayanan Scholarship for the first year M.Sc. (Mathematics) student who has scored highest rank in JAM 2012 examination	Prakash Narayanan, IIT Alumni

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

**CONVOCATION PRIZE (To Be Furnished By Academic Section PI)**

**INSTITUTE DAY PRIZE**

Sl.No	Name of the Student/Scholar	Roll No.	Name of Prizes	Name of Donor
1.	VinayPrabhakarKatiyar	MA11M014	Best Academic Record	Institute Merit Prize
2.	Jayakrishnan M	MA11C017	Best Academic Record	Institute Merit Prize
3.	Jyothi	MA11C018	Best Academic Record	LVKV Sarma Prize
4.	VinayPrabhakarKatiyar	MA11M014	Best Academic Record	LVKV Sarma Prize
5.	Joythi	MA11C018	Girl Student – Best Academic Record	Swathi / Jayalakshmi Memorial Award

**Faculty and their Activities**

**Faculty:**

**Name & Qualifications**

**Major area of specialization (only 3 areas)**

**Professors:**

Arindama Singh, Ph.D. (IIT Kanpur)	Logic, Numerical Analysis
Kamath. S.G., Ph.D. (Delhi University)	Mathematical Physics
Kulkarni. S.H.[Head], Ph.D. (IIT Bombay)	Functional Analysis and Numerical Analysis
Parthasarathy P.R,Ph.D. (Annamalai)	Applied Probability and Stochastic Models, Mathematical Ecology, Operations Research
Ponnusamy. S, Ph.D. (IIT Kanpur)	Complex Analysis, Function Spaces, Special functions and Conformal Geometry
Rama. R, Ph.D. (Anna University)	Formal Language & Automata Theory / Molecular computing
SanyasirajuY.V.S.S., Ph.D. (IIT Madras)	Computational Fluid Dynamics
Satyajit Roy, Ph.D. (IISc. Bangalore)	Convective Heat and Mass Transfer, Computational Fluid Dynamics
Subrahmanyam. P.V., Ph.D. (IIT Madras)	Non-linear Analysis- Fixed point Theory & Functional Equations, Fuzzy sets, Summability Theory

Sundar. S, Ph.D. (IIT Madras)	Numerical Analysis for Partial Differential Equations, Mathematical Modeling
Thamban Nair M., Ph.D. (IIT Bombay)	Applicable Functional Analysis –Spectral Approximation, Operator Equations, Inverse and Ill-posed Equations
Usha R, Ph.D. (IIT Madras)	Fluid Dynamics
Veeramani. P, Ph.D. (IIT Bombay)	Fixed Point Theorems and their Applications to Problems in Optimization and Best Approximation, Fuzzy Set Theory
Vetrivel. V, Ph.D. (IIT Madras)	Non-Smooth Optimization, Fixed Point Theory, Complementarity problems
<b>Associate Professors:</b>	
Radha. R, Ph.D. (IMSC Chennai)	Harmonic Analysis, Wavelets, Time-Frequency Analysis
Sivakumar K.C, Ph.D. (IIT Madras)	Functional Analysis and Mathematical Programming
SrinivasaRao Ch., Ph.D. (IISc. Bangalore)	Non-linear Differential Equations
Swaminathan.K, Ph.D. (Agra University)	Fluid Dynamics, Ship Hydrodynamics, Mathematical Problems related to Naval Architecture and Ocean Engineering
<b>Assistant Professors:</b>	
Amitava Mukherjee, Ph.D. (Univ. of Calcutta) (Resigned on 17.12.2012)	Statistical Inference, Statistical Quality Control, Geostatistics, Nonparametric Methods , Sequential Analysis
ArijitDey, Ph.D. (CMI Chennai)	Algebraic Geometry
Balaji.R, Ph.D. (IIT Madras)	Linear Algebra and Optimization
ChandA.K. B., Ph.D. (IIT Kanpur)	Fractals, Approximation Theory and Wavelets
JayanthanA.V., Ph.D. (IIT Bombay)	Commutative Algebra and Algebraic Combinatorics
KalpanaMahalingam, Ph.D. (Univ. of South Florida, Tampa)	Theory of codes, DNA Computing, Combinatorics of words
Kunal Krishna Mukherjee, Ph.D. (Texas A&M) Joined on 20.12.2012	Operator Algebras
Manam. S R , Ph.D. (IISc Bangalore)	Applied Mathematics
N. Narayanan, Ph.D. (IMSc Chennai) Joined on 21.11.2012	Graph Theory: Graph Colouring, Structural and Extremal Graph Theory Probabilistic Combinatorics. Discrete Mathematics
Neelesh S. Upadhye, Ph.D. (IIT Bombay) Joined on 25.09.2012	Probability Theory and applications
ShaijuA.J., Ph.D. (IISc Bangalore)	Game Theory, Systems and Control Theory
ShrutiDubey, Ph.D. (IIT Kanpur)	Nonlinear Analysis of Functional differential equations, Mathematical Study of Ferromagnetic systems
Sounaka Mishra, Ph. D. (ISI Kolkota)	Discrete Mathematics, Approximation Algorithm , Combinatorial Optimization

Uma V, Ph.D. (IMSc Chennai)	Topology and Geometry of Toric Varieties and Related Spaces
Vasanthaw.B., Ph.D. (RIASM Chennai)	Group Theory, Application of Algebra, Fuzzy Algebra and Linear Algebra
Venkatabalaji T.E., Ph.D. (CMI, Chennai)	Algebraic Geometry and Commutative Algebra

### Visiting Faculty

Prof. Xiantao Wang, Ph.D.  
[Hunan Normal University]  
(13.03.2013 to 12.03.2014)                      Complex Analysis

Dr. Manzi Huang, Ph.D.  
[Hunan Normal University]  
(13.03.2013 to 12.03.2014)                      Complex Analysis

### PDF (IITM) :

Dr. Shravan Kumar                                      Harmonic Analysis  
(till Dec 2012)

Dr. Symphony Chakraborty                              Fluid Dynamics  
(from 01.04.2013 till date)

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

Sl. No.	Coordinator(s)	Title	Period
<b>Conference:</b>			
1.	V. Vetrivel	National Symposium on Mathematical Methods and Applications	Dec. 22, 2012
2.	T.E. Venkatabalaji Suresh Nayak (ISI Bangalore) Srikantahlyergar (Univ. of Nebraska-Lincoln, USA)	International Conference of the ATM Advanced Workshop on Singularity Categories in Algebraic Geometry and Commutative Algebra	Jan.11-12, 2013
<b>Seminar:</b>			
1.			
<b>Symposia:</b>			
1.			
<b>Workshop:</b>			
1.	A.V. Jayanthan & T.E. Venkatabalaji	ATM Workshop Advanced Instructional School on Commutative Algebra	May 07-26, 2012
2.	S. Sundar	NBHM ATM Workshop on Differential Equations, held at Jaypee University, HP	Jun.1-14, 2012
3.	S. Sundar	DAAD Network International Workshop on Modelling, Computing and Optimization	Sep. 3-12, 2012
4.	T.E. Venkatabalaji Suresh Nayak (ISI Bangalore) Srikantahlyergar (Univ. of Nebraska-Lincoln, USA)	ATM Advanced Workshop on Singularity Categories in Algebraic Geometry and Commutative Algebra	Jan. 1-10, 2013
<b>Short term Course:</b>			
1.	T. E. Venkatabalaji	Riemann Surfaces and Algebraic Curves -Video Course (10 Video Lectures under NPTEL support for PhD / M Sc / B Tech students)	April 2012

2.	T. E. VenkataBalaji	Introduction to Algebraic Geometry -Video Course (32 Video Lectures under NPTEL support for PhD / M Sc / B Tech students)	January 2013 semester
3.	T. E. VenkataBalaji	Advanced Complex Analysis -Video Course (32 Video Lectures under NPTEL support for PhD / M Sc / B Tech students)	January 2013 semester

**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
<b>Workshop:</b>				
1.	P. Veeramani	One day Workshop for faculty Members	Sai Ram Institute of Technology, Chennai	April 20, 2012
2.	S.H.Kulkarni	Workshop on Linear Algebra and its Applications	S.G.G.S. Institute of Engineering and Technology, Vishnupuri, Nanded	May 21- June 02, 2012
3.	S. Sundar	NBHM-ATM Workshop on DES and Computing	Jaypee Institute of Information Technology, Wagnaghat, Himachal Pradesh	June 5-9, 2012
4.	Y.V.S.S. Sanyasiraju	National Workshop cum Training Programme on Computational Technology	BHU, Varanasi	July 1-7, 2012
5.	Sounaka Mishra	Resource person in a Workshop on Advanced School of Graph Theory	BITS Pilani, KK Birla Gao Campus	July 23-27, 2012
6.	S.H. Kulkarni	Resource person on International Workshop	Sacred Heart College, Vellore	Aug. 28, 2012
7.	A.J. Shaiju	International Workshop on Modelling Computation and Optimization	IIT Madras	Sep. 3-12, 2012
8.	P. Veeramani	International Workshop on Fixed Point Theory and Applications	Galatasaray University, Istanbul, Turkey	Oct. 11-13, 2012
9.	ArijitDey	ICMAT School of Conformal Blocks	Madrid, Spain	Oct.15-19, 2012
10.	R. Usha	DAAD Network International Workshop in Modelling, Computing and Optimization	IIT Madras	Sep. 5-6, 2012
11.	A.V. Jayanthan	Pedagogical Training for Mathematical Teachers	St. Berchmans College Changanassery, Kerala	Nov. 19-24, 2012
12.	M. Thamban Nair	Advanced Workshop on Mathematical Theory of Control and Numerics 2012	Indian Institute of Space Science and Technology	Nov. 28-29, 2012
13.	A.J. Shaiju	Winter School on Stochastic Analysis and Control and Fluid Flows	IISER, TVM	Dec.3-20, 2012
14.	P.R. Parthasarathy	Workshop in Probability, Statistics and Stochastic Processes in Engineering Education	PSG College of Technology, Coimbatore	Dec.12, 2012
15.	S. Sundar	Research Scholars Workshop	IISc Trivandrum	Dec.18, 2012

16.	Satyajit Roy	The 10 <sup>th</sup> Mathematics in Industry Study Group Workshop	The University of Witwatersand, Johannesburg, South Africa	Jan. 14-18, 2013
17.	N. Narayanan	National Workshop on graph colourings	ISI Chennai	Jan.26, 2013
18.	Y.V.S.S. Sanyasiraju	Workshop on the Recent Development on Numerical Methods for Evolution Equations	IIT Bombay	Mar. 20-21, 2013
<b>Seminar:</b>				
1.	A.K.B. Chand	Natural Cubic Spline Coalescence Fractal Interpolation Surfaces	IIT Bhubaneswar	May 29, 2012
2.	S. Ponnusamy	Harmonic Mappings with Integer and Half Integer Co-efficients	Tokyo University, Sendai, Japan	Oct.23, 2012
3.	S. Ponnusamy	Harmonic Mappings and Landau-Bloch Constants	Yamaguchi University, Ube Japan	Oct.31, 2012
4.	S. Sundar	National Seminar on Mathematical Modelling, Approximate Analytical and Numerical Methods	K.L.N. College of Engg. Madurai	Dec.27, 2012
<b>Symposia:</b>				
1.	K.C. Sivakumar	International Symposium on Applied Optimization and Game Theoretic Models	ISI Delhi Centre	Jan. 8-10, 2013
<b>Conference:</b>				
1.	Amitava Mukherjee	6 <sup>th</sup> International Workshop on Applied Probability (IWAP 2012)	Jerusalem, Israel	June 5-9, 2012
2.	S.G. Kamath	36 <sup>th</sup> International Conference on High Energy physics	Melbourne, Australia	July 4-11, 2012
3.	A.V. Jayanthan	National Conference on Algebra and Number Theory	Cochin University of S & T	Aug. 16-19, 2012
4.	Amitava Mukherjee	International Conference on Statistics and Information Analytics	Loyola College, Chennai	Aug. 23, 2012
5.	Y.V.S.S.Sanyasiraju	Indo-German Conference on Modelling, Simulation and Optimization in Applications	Darmstadt, Germany	Sep. 5-7, 2012
6.	P. Veeramani	International Conference on Differential Geometry, Functional Analysis and Applications	JamiaMillia, Islamia, New Delhi	Sep.8-10, 2012
7.	A.K.B. Chand	10 <sup>th</sup> International Conference on Numerical Analysis and Applied Mathematics	University of Athens, Greece	Sep.19-25, 2012
8.	M. Thamban Nair	INSPIRE Programme	SV University, Thirupathi	Oct.16, 2012
9.	K. Swaminathan	8 <sup>th</sup> International Conference on Marine Technology	Universiti Malaysia Terengganu, Malaysia	Oct.20-22, 2012



10.	S. Ponnusamy	International Conference on Conformal Mappings and Value Distribution Theory	Tokyo University, Sendai, Japan	Oct. 22-27, 2012
11.	M. Thamban Nair	17 <sup>th</sup> Ramanujam Symposium on Mathematical Analysis and Applications	Ramanujam Institute for Advanced Study in Mathematics, University of Madras	Oct. 30, 2012
12.	R. Usha	International Mechanical Engineering Congress Exposition	Houston, Texas, USA	Nov. 9-15, 2012
13.	R. Usha	American Physical Society, 65 <sup>th</sup> Annual DFD meeting	San Diego, California, USA	Nov.18-20, 2012
14.	S. Ponnusamy	National Conference on Conformal Mappings	NIT Srinagar, Kashmir	Nov.18, 2012
15.	T. E. VenkataBalaji	International Conference in Algebraic Geometry in Honour of Prof. M. S. Narasimhan's 80th Birthday	Indian Institute of Science, Bangalore	December 1 – 3, 2012
16.	P. Veeramani	National Conference on Evolution Equations – Theory Methods and Applications	IIT Kanpur	Dec.2-8, 2012
17.	S.H. Kulkarni	National Conference on Evolution Equations-Theory Methods and Applications	IIT Kanpur	Dec.7-8, 2012
18.	ShrutiDubey	National Conference on Evolution Equations-Theory Methods and Applications	IIT Kanpur	Dec.7-8, 2012
19.	A.K.B. Chand	International Conference on Frontiers of Mathematical Sciences with Applications	Calcutta Mathematical Society, Kolkata	Dec.7-9, 2012
20.	P.V. Subrahmanyam	21 <sup>st</sup> International Conference of the Forum for Interdisciplinary Mathematics, Statistics and Computational Techniques	Punjab University, Chandigarh	Dec.15-17, 2012
21.	R. Balaji	National Conference on Analysis and Differential Equations	Dept. of Maths Bharathidasan University	Dec.19-20, 2012
22.	Satyajit Roy	6 <sup>th</sup> International Conference MSAST 2012	Institute for Maths Kolkata	Dec.21-23, 2012
23.	K.C. Sivakumar	International Conference on Optimization Modelling and its Applications	_____ New Delhi	Dec. 28-29, 2012
24.	P. Veeramani	National Conference on Mathematics year 2012	NallamuthuGounder Mahalingam College, Pollachi	Jan.8, 2013
25.	K.C. Sivakumar	International Conference on Numerical Linear Algebra and its Applications	IIT Guwahati	Jan. 16- 18, 2013

26.	P. Veeramani	78 <sup>th</sup> Annual Conference of Indian Mathematical Society	Banaras Hindu University, Varanasi	Jan. 22-25, 2013
27.	Arinidama Singh	78 <sup>th</sup> Annual Conference of Indian Mathematical Society	Banaras Hindu University, Varanasi	Jan. 22-25, 2013
28.	N. Narayanan	Indo-Slovenia Conference on Graph Theory and Applications	Thiruvananthapuram, Kerala	Feb.23, 2013
29.	Satyajit Roy	First International Conference on Dynamics of Differential Equations	Georgia Institute of Technology Atlanta, USA	Mar. 16-20, 2013
30.	V. Vetrivel	National Conference on Emerging Trends in Communication	Bishop, Catholic Diocese of Marthandam	Mar.20, 2013
31.	Y.V.S.S.Sanyasiraju	National Conference on Recent Trends in Mathematics	JNTU, College of Engg. Anantapur, AP	Mar. 21-22, 2013
32.	ArijitDey	Conference of Bundles 2013	KSOM, Kozhikode	Mar.25-29, 2013
<b>Training/School:</b>				
1.	A.J. Shaiju	Winter School, for the newly setup of International Centre for Theoretical Studies of TIFR	School of Mathematics, IISER Trivandrum	Dec.5-8, 2012
2.	N. Narayanan	Faculty Development Programme on Applications of Mathematics	Rajagiri College of Engg. And Tech. Cochin	Dec.10-12, 2012
3.	N. Narayanan	Nature and Significance of Eigen Value Problems	Govt. Engg. College, Sreekrishnapuram Kerala	Mar. 11, 2013
4.	Y.V.S.S. Sanyasiraju	Short Term Training Programme on Numerical Methods for Fluid Dynamics	Indian Institute of Space Science and Technology, Thiruvananthapuram	Dec.19-20, 2012
5.	K.C. Sivakumar	Training Programme on Optimization & Its Applications	_____ New Delhi	Dec. 28, 2012
6.	S.H. Kulkarni	Instructional School for Lecturers in Functional Analysis	ISI, Bangalore	Mar. 11, 2013
<b>Short term Course:</b>				
1.	S.H. Kulkarni	Role of Compactness in Analysis at Refresher course in Mathematics	Ramanujam Institute for Advanced Study in Mathematics, Univ. of Madras	Oct.3, 2012
2.	N. Narayanan	How to love and lean mathematics through puzzles	Reading Library, Sreekrishnapuram Kerala	Feb.17, 2013

**Special Lectures delivered by the faculty in other Institutions:**

<b>Sl. No.</b>	<b>Name of faculty</b>	<b>Topic of Lecture</b>	<b>Institution</b>	<b>Date</b>
1.	Arindama Singh	Godel's Incompleteness Theorem	Anna University	May 5, 2012
2.	T. E. VenkataBalaji	Research Science Initiative Chennai Lectures: Abstract Axiomatic Treatment of Vectors	RSIC Chennai, IIT- Madras	May 15, 2012
3.	M.Thamban Nair	Mearsure, Integration and L2 – Theory for a Post Graduate Training Programme under NPDE	IIT Delhi	May 17-19, 2012
4.	M.Thamban Nair	Linear Equations, Matrices and Determinants for Post graduate Teachers	KVV, CLRI, Chennai	May, 24, 2012
5.	Y.V.S.S.Sanyasiraju	Higher order compact schemes to fluid flow problems” in the Faculty development program	Karpagam University, Coimbatore	Jun.11, 2012
6.	M. Thamban Nair	Advanced Functional Analysis for a Advanced Training Programme	IIT Bombay	June 18-19, 2012
7.	P. Veeramani	Compact Metric Spaces	UGC-Acad. Staf College, Univ. of Kerala	Sep.9, 2012
8.	Y.V.S.S.Sanyasiraju	DAAD Network International Workshop On Modeling, Computing & Optimization	IIT Madras	Sep.10, 2012
9.	Arindama Singh		INSPIRE Camp, KIIT University, Bhuvaneswar	Sep.15, 2012
10.	M.Thamban Nair	Least Square solution for matrix equations	St. Paul College Kalmassery, Kochi	Sep.25, 2012
11.	M.Thamban Nair	Prof. WazirHasanAbdi Memorial Lecture	Cochin University of S&T	Sep. 25, 2012
12.	A.K.B. Chand	Natural Cubic Spline Coalescence Fractal Surfaces and Associated Convergence Results	University of Athens, Greece	Sep. 28, 2012
13.	P.V. Subrahmanyam	Fuzzy Differential equations and functional equations	Pondicherry University	Oct.4-5, 2012
14.	M. Thamban Nair	Bare's Theorem & Arzela-Ascoli's Theorem for post graduate teachers	Ramanujam Institute for Advanced study in Mathematics, Univ. of Madras	Oct.9-10, 2012
15.	K.C. Sivakumar	One-point compactification, Tietze's Extension Theorem & Urysohn's Metrization Theorem	Ramanujam Institute for Advanced study in Mathematics, Univ. of Madras	Oct.12-13, 2012
16.	Arindama Singh	What is Pi?	KIIT University	Oct. 20, 2012
17.	M. Thamban Nair	A talk-cum-discussion on Infinity and Related Problems for Class XI & XII students	Association of Mathematics Teachers of India, Triplicane	Oct.26, 2012
18.	M. Thamban Nair	Backward Heat Conduction Problem	Ramanujam Institute for Advanced study in Mathematics, Univ. of Madras	Oct.30, 2012
19.	S.H. Kulkarni	Carrier Graph Topology	Ramanujam Institute for Advanced study in Mathematics, Univ. of Madras	Oct.30, 2012

20.	R. Radha	Shift Invariant Spaces on the real line and Compact Group	IISc. Bangalore	Oct.30, 2012
21.	Y.V.S.S. Sanyasiraju	Invited talk on \$RBF based Grid free schemes	South Asian University, New Delhi	Nov.6, 2012
22.	M. Thamban Nair	Prof. Abraham Endowment Lecture on Use of Functional Analysis in Numerical Integration	SB College, Changanassery, Kerala	Apr.5, 2013
23.	N. Narayanan	Lecture on Graph Theory	Rajagiri School of Engg. & Tech., Cochin, Kerala	Dec.10-11, 2012
24.	Y.V.S.S. Sanyasiraju	Finite volume computations for incompressible flows on	Indian Institute of Space Science and Technology, Thiruvananthapuram	Dec. 20, 2012
25.	Arindama Singh	The Grammer of Mathematics	IIT Hyderabad	Dec.22, 2012
26.	S. Sundar		K.L.N. College of Engg., Madurai	Dec.27, 2012
27.	Y.V.S.S. Sanyasiraju	Differential equations in the faculty development programme been conducted at the Department of Mathematics	College of engineering, Guindy, Anna University Chennai	Jan.9- 2013
28.	Y.V.S.S. Sanyasiraju	Incompressible flow computations using infinitely smooth RBFs with optimum shape parameter, 1st International Conference on Recent \& Emerging trends in Computer and computational sciences"-RETCOMP 2013	PESIT, South Campus, Bangalore,	Jan.11- 2013
29.	Arindama Singh	Elongated Diagonalization	BHU	Jan.25, 2013
30.	P.V. Subrahmanyam	Introduction to Spectral Theorem	NIT Surathkal	Feb.14-16, 2013
31.	P. Veeramani	Nonlinear Functional Analysis and Application	DST-Center for IMS, BHU	Mar.7, 2013
32.	V. Vetrivel	Non-smooth Optimizaton	Sona College of Technology, Salem	Mar.8, 2013
33.	S. Sundar	Scientific Computing-State of the Art	Sona College of Technology, Salem	Mar.8, 2013
34.	Y.V.S.S. Sanyasiraju	Higher order computations with finite differences	College of Engg. Anna University	Mar.14, 2013
35.	Y.V.S.S. Sanyasiraju	RBF based computations for the incompressible flows at the Advanced Level Workshop on recent developments in Numerical Methods for evolution equations	IIT Bombay	Mar. 17-21, 2013
36.	P.R. Parthasarathy	Applied Birth and Death Models	Indian Statistical Institute, Chennai	Mar.19, 2013
37.	S. Sundar	Numerical Solutions of Non-linear Diffusion related to Image Compression	IIT Bombay	Mar.19, 2013
38.	T. E. VenkataBalaji	Forays 2013 Lecture: The mysteries surrounding the Riemann Zeta Function	Forays 2013, IIT-Madras	March 30, 2013

**Visits abroad by faculty:**

<b>Sl. No.</b>	<b>Name of faculty</b>	<b>Country Visited</b>	<b>Date</b>	<b>Purpose of visit</b>	<b>Funding from</b>
1.	Amitava Mukherjee	Hong Kong	Jun 4 – Jul. 27, 2012	Research	CPDA, IITM
2.	Amitava Mukherjee	Israel	June5 -9, 2012	Presentation of paper at IWAP 2012	CPDA, IITM
3.	Amitava Mukherjee	USA	July28- Aug 2, 2012	Research	CPDA, IITM
4.	S.G. Kamath	Melbourne, Australia	July 2-15, 2012	Presentation of paper 36 <sup>th</sup> International Conference on High Energy Physics	CPDA, IITM
5.	S. Sundar	Germany	June16- Aug.15, 2012	Visiting Professor	TUKL, Germany
6.	Y.V.S.S.Sanyasiraju	Germany	Sep. 5-7, 2012	Presentation of paper at Indo-German Conference	CPDA, IITM
7.	A.K.B. Chand	Greece	Sep.19-25, 2012	Presentation of paper at 10 <sup>th</sup> International Conference	CPDA, IITM
8.	A.K.B.Chand	Greece	Sept.26 – Oct. 2, 2012	Collaborative research work	CPDA, IITM
9.	P. Veeramani	Turkey	Oct.11-13,2012	Invited talk at the International Workshop	CPDA, IITM
10.	ArijitDey	Spain	Oct.15-19, 2012	Participated in the ICMAT school	CPDA, IITM
11.	K. Swaminathan	Malaysia	Oct.20-22, 2012	Presented paper at the 8 <sup>th</sup> Int. conference on Marine Technology	CPDA, IITM
12.	S. Ponnusamy	Japan	Oct. 22-27, 2012	Attended and delivered a lecture at Tokyo University	CPDA, IITM
13.	S. Ponnusamy	Japan	Oct.31, 2012	Delivered Seminar talk at Yamaguchi University, Ube, Japan	CPDA, IITM
14.	R. Usha	USA	Nov.9-15, 2012	Presentation of paper in ASME 2012	CPDA, IITM
15.	R. Usha	USA	Nov.18- 20, 2012	Presentation of paper in American Physical Society	CPDA, IITM
16.	Amitava Mukherjee	Finland	Nov.19-Dec.17, 2012	Delivered a series of lecture	CPDA, IITM
17.	Satyajit Roy	South Africa	Jan.13 – 18, 2013	International Workshop	Wits Univ. South Africa
18.	Satyajit Roy	USA	Mar. 15-23, 2013	Int. Conference	CPDA, IITM

**Honours and Awards obtained by faculty:**

Sl. No.	Name of faculty	Name of Award	Awarded by	Awarded for	Date of award
<b>i. Honours: NIL</b>					
<b>ii. Awards:</b>					
1.	S. Sundar	Alumni Ambassador of City Kaiserslautern, Germany	TU Kaiserslautern Gemany		7 <sup>th</sup> Dec. 2012
2.					

**Books, Monographs authored/co-authored:**

Sl. No.	Name of faculty	Title	Publisher	Author/Co-author
<b>Books:</b>				
1.	S. Ponnusamy	Foundations of Mathematical Analysis, 2011	Birkhäuser, Boston	S. Ponnusamy
<b>Monographs:</b>				

**Fellowships of Academies and Professional Societies: NIL**

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

**Journal Editorial Boards:**

Sl. No.	Name of faculty	Position (Editor/Member)	Journal Name
1.	P.R. Parthasarathy	Advisory Editor	Journal of Information and Optimization Sciences
2.	P.R. Parthasarathy	Associate Editor	International Journal of Computer Mathematics
3.	P.R. Parthasarathy	Associate Editor	American Journal of Mathematics and Management Sciences
4.	P.R. Parthasarathy	Associate Editor	Journal of Decision and Mathematika Sciences, India
5.	P.R. Parthasarathy	Associate Editor	Journal of Applied Statistical Sciences, USA

6.	P.R. Parthasarathy	Associate Editor	Stochastic Modelling and Applications, India
7.	P.R. Parthasarathy	Advisory Editor	Journal of Statistics and Management Systems, India
8.	P.R. Parthasarathy	Member, Editorial Board	International Journal of Modern Mathematics, USA
9.	P.R. Parthasarathy	Member, Editorial Board	Far Eastern Journal of Mathematics, S.Korea
10.	P.R. Parthasarathy	Member, Reviewer Advisory Board	ACM Computing Reviews, USA
11.	P.R. Parthasarathy	Member, Editorial Board	Advances in Operations Research
12.	P.R. Parthasarathy	Member, Reviewer Advisory Board	ACM Computing Reviews
13.	S. Ponnusamy	Editor	Journal of Classical Analysis ( <a href="http://jca.ele-math.com/submission">http://jca.ele-math.com/submission</a> )
14.	S. Ponnusamy	Editorial Member	Conference Papers in Mathematics from Hindawi Publishing Corporation
15.	Satyajit Roy	Membership of Editorial Board/ Advisory Committee of the Academy	Journal of the Indian Academy of Mathematics
16.	K.C. Sivakumar	Editor	Journal of Applied Mathematics
17.	S. Sundar	Advisory Committee Member / Editorial Board Member	Journal of Indian Academy of Mathematics
18.	M. Thamban Nair	Associate Editor	Journal of Inverse Problems in Sciences and Engineering (IPSE)
19.	R. Usha	Member	Physics of Fluids
20.	R. Usha	Member	Fluid Dynamics Research
21.	ManamSrinivasaRao	Member	Board of Academic Council, JNTU, Hyderabad

**Design and Development Activities: NIL**

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

**New facilities added or major equipment procured:**

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

**Patents:**

**Patents filed:**

Sl. No.	Name of faculty	Topic of patent

**Patents awarded:**

Sl. No.	Name of faculty	Topic of patent

**Research and Consultancy:**

**Sponsored Research Projects: (on going & new)**

Sl. No.	Title	Period	Funding Agency	Amount (Rs. In lakhs)	Co-ordinators

1.	Distribution-free adaptive control charts for robust monitoring of statistical processes	3 years from 2.4.12	NFSC	12.00	Dr. Amitava Mukherjee (Resigned on 17.12.12)
2.	A Network of Ferromagnetic particles	3 years from 18.7.11	IC & SR	5.00	Dr. ShrutiDubey
3.	Development of theory of fractal rational splines and applications in CAGD	3 years	DST	15.07	Dr. A.K.B. Chand Dr. G. Saravana Kumar (ED)
4.	Modeling of microwave passive components for high power applications	2007-2012	National Fusion Program, Institute for Plasma Research	27.00	Dr. S. Sundar
5.	Involution codes : Application to DNA strand design	3 years from 7.2.12	NFSC	5.00	Dr. KalpanaMahalingam
6.	Compound Negative Binomial Approximations and its Applications	3 years from 4.12.12	NFSC	5.00	Dr. Neelesh S. Upadhye
7.	Analysis and computation of optimal strategies in N-person differential games	3 years	DST	To be finalized by DST (around 4.00)	Dr. A.J. Shaiji (PI) Dr. Ch.SrinivasaRao (Co-Pi)

**Industrial Consultancy projects: (on going & new) NIL**

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

**RBIC projects: (on going & new) NIL**

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

**Retainer Consultancy: (on going & new) NIL**

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

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

Sl.No.	Programme Name	Name of University	Guide Name
1.	DAAD Sandwich Ph.D.	AG Technomathematik T U Kaiserslautern Germany M. Panchataram, TU Kaiserslautern, Germany upto October 2012	Prof. S. Sundar
2	DAAD Network Exchange Programme	TU-Kaiserslautern, Germany Other participating Universities are University of Witwatersrand, South Africa and ITB Bandung, Indonesia	Prof. S. Sundar

**Faculty members participation with other institution under MoU:**

Sl. No.	Name of faculty	Participation details	Name of University/Institution which has MoU
1.	Prof. S. Sundar	DAAD Network	TU Kaiserslautern, Germany



		Exchange Programme	(along with University of Witwatersrand, South Africa and ITB Bandung, Indonesia)
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**Research Publications of the faculty members & research scholars:**

1. Total No. of papers published in Refereed National Journals : 5
2. Total No. of papers published in Refereed International Journals : 45
3. Total No. of papers presented in National Conferences : 3
4. Total No. of papers presented in International conferences : 8

**Details:**

**In Refereed National Journals:**

Sl.No.	Name of the faculty	Title of the paper	Name of the Journal
1.	N.S. Upadhye and P. Vellaisamy	Improved bounds for approximations to compound distributions	Statistics & Probability Letters, Vol.83, Issue 2, pp.467-473, Feb. 2013
2.	Usha R and ShaileshNaire	A thin films on a porous substrate: A two-sided model, dynamics and stability	Chemical Engineering Science
3.	K.C. Sivakumar, Agarwal N Sushama K. Premakumari	Weak Nonotonicity of Interval Matrices	Electronic Journal of Linear Algebra, Vol.25, pp. 92-101, 2012
4.	Arindama Singh B.V. Surya Prasath	An adaptive anisotropic diffusion scheme for image restoration and selective smoothing	International Journal of Image and Graphics, 12 (2012), 18 pages

**In Refereed International Journals:**

Sl.No.	Name of the faculty	Title of the paper	Name of the Journal
1.	Amitava Mukherjee and Mrs. M.A. Grahma	Distribution-free exponentially weighted moving average control charts for monitoring unknown location	Computational Statistics & Data Analysis, Vol. 56, Issue:8, pp. 2539-2561 (5 year Impact Factor: 1.373) Copyright © 2012 Elsevier
2.	Arindama Singh	A Simple Proof of Godel's Incompleteness Theorems	Mathematics News Letter, Vol.22, Issue No.3 pp. 1-3, 2012
3.	R. Usha and ShaileshNaire	A Thin Film on a porous substrate: A two-sided model, dynamics and stability	Chemical Engineering Science 10.1016/j.ces.2012.12.008
4.	R. Usha Anjalaiah and Severine Millet	Thin film flow down a porous substrate in the presence of an insoluble surfactant: Stability Analysis	Physics of Fluids, Volume: 25, 022101 (1-26), 2013
5.	Y.V.S.S. Sanyasiraju and ChiralaSatyanarayana	On optimization of the RBF shape parameter in a grid-free local scheme for convection dominated problems over non-uniform centers	Applied Mathematical Modelling DOI/10.1016/j.apm.2013.01.054, 2013
6.	Nachiketa Mishra and Y.V.S.S. Sanyasiraju	Exponential compact higher order schemes and their stability analysis for unsteady convection-diffusion equations	International Journal of Computational Methods, Vol.11 (1), pp. 1-18, 2013
7.	Kunal Krishna Mukherjee and Ken Dykema	Measure--Multiplicity invariant of the Laplacian masa	Glasgow Math. J., Vol.55: pp.285--292, 2013
8.	Kunal Krishna Mukherjee	Weak Asymptotic Homomorphism property for	Oper. Matrices, Vol.7(2): pp.309--321, 2013

		masas in semifinite factors	
9.	A.V. Jayanthan	Casteinuovo-Mumford Regularity and Gorensteinness of fibre cone	Communications in Algebra
10.	G. Krishna Kumar and S. H. Kulkarni	Linear maps preserving pseudospectrum and condition spectrum	Banach J. Math. Anal. 6 (2012), no. 1, 45–60
11.	K. P. Deepesh, S. H. Kulkarni and M. T. Nair.	Generalized inverses and approximation numbers	Combinatorial Matrix Theory and Generalized Inverses of Matrices, 143-158. Springer, 2012
12.	Rosihan M. Ali and S. Ponnusamy,	Linear functional and the duality principle for harmonic functions	Mathematische Nachrichten (2012), 1--7
13.	Sh. Chen, S. Ponnusamy and X. Wang	Integral means and coefficient estimates on planar harmonic mappings	Ann. Acad. Sci. Fenn. Ser. A I Math. <b>37</b> (2012), 69-79
14.	Sh. Chen, S. Ponnusamy and X. Wang	Landau-Bloch constants for functions in alpha-Bloch spaces and Hardy spaces	Complex Anal. Oper. Theory 6(2012), 1025-1036
15.	Sh. Chen, S. Ponnusamy and X. Wang	Laudau's theorem for p-harmonic mappings in several complex variables	Ann. Polon. Math. <b>103</b> (2012), 67--87
16.	Sh. Chen, S. Ponnusamy and X. Wang	Equivalent moduli of continuity, Bloch's theorem for pluriharmonic mappings in $B^n$	Proc. Indian Acad. Sci. (Math. Sci.) <b>122</b> (4)(2012), 583-595
17.	Jay M. Jahangiri, and S. Ponnusamy	Applications of subordination to functions with bounded boundary rotation	Archiv der Mathematik <b>98</b> (2)(2012), 173--182
18.	M. Obradovic, S. Ponnusamy and N. Tuneski	Radius of univalence of certain combination of univalent and analytic functions	Bull. Malays. Math. Sci. Soc. (2) <b>35</b> (2012), 325--334
19.	M. Obradovic, and S. Ponnusamy	On a class of univalent functions	Appl. Math. Letters 25(2012), 1373--1378
20.	M. Obradovic and S. Ponnusamy	On harmonic combination of univalent functions	Bull. Belg. Math. Soc. (Simon Stevin) 19(3)(2012), 461--472
21.	S. Ponnusamy and A. SairamKaliraj	On harmonic close-to-convex functions	Comput. Methods Funct. Theory 12(2)(2012), 669-685
22.	K. Rauf, S. Ponnusamy, and J. O. Omolehin	On generalization of Hardy-type inequalities	The Australian Journal of Mathematical Analysis and Applications 9(1), Art.14(2012), 1--21
23.	Y.V.S.S. Sanyasiraju	Exponential compact higher order schemes and their stability analysis for unsteady convection-diffusion equations	International Journal of Computational Methods, 11 (1), 1 - 18, 2013
24.	Y.V.S.S. Sanyasiraju	RBF based grid-free local scheme with spatially variable optimal shape parameter for steady convection-diffusion equations	CFD letters 4 (4), 172 - 192, 2012
25.	Y.V.S.S. Sanyasiraju	Exponential Compact Higher Order Scheme for Steady Incompressible Navier-Stokes Equations	Engineering applications of computational fluid mechanics 6 (4), 541 - 555, 2012
26.	Y.V.S.S. Sanyasiraju	A combined fourth-order compact scheme with an accelerated multigrid method for the energy equation in	Electronic Transactions of Numerical Analysis, 39, 32--45, 2012

		spherical polar coordinates	
27.	Y.V.S.S. Sanyasiraju	Higher-Order Compact Scheme for the Incompressible Navier-Stokes Equations in Spherical Geometry	Communications in Computational Physics, 11 (1), 99 - 113, 2012
28.	Patil P.M., Roy S., Pop I.	Chemical reaction effects on unsteady mixed convection boundary layer flow past a permeable slender vertical cylinder due to a nonlinearly stretching velocity	Chemical Engineering Communications 200 (3), pp. 398-417 , January 2013
29.	Ramakrishna D., Basak T., Roy S.	Heatlines for visualization of heat transport for natural convection within porous trapezoidal enclosures with various wall heating	Numerical Heat Transfer; Part A: Applications 63 (5), pp. 347-372, March 2013
30.	Singh A. K., Roy S., Basak T.	Analysis of entropy generation due to natural convection in tilted square cavities	Industrial and Engineering Chemistry Research 51 (40) , pp. 13300-13318 , October 2012
31.	Ramakrishna D., Basak T., Roy S., Pop I.	Numerical study of mixed convection within porous square cavities using Bejan's heatlines: Effects of thermal aspect ratio and thermal boundary conditions	International Journal of Heat and Mass Transfer 55 (21-22), pp. 5436-5448, October 2012
32.	Ramakrishna D., Basak T., Roy S., Pop I.	A complete heatline analysis on mixed convection within a square cavity: Effects of thermal boundary conditions via thermal aspect ratio	International Journal of Thermal Sciences 57, pp.98-111, July 2012
33.	Singh A.K., Roy S., Basak T.	Analysis of Bejan's heatlines on visualization of heat flow and thermal mixing in tilted square cavities	International Journal of Heat and Mass Transfer 55 (11-12), pp. 2965-2983, May 2012
34.	Basak T., Roy S., Chamkha A.J.	A Peclet number based analysis of mixed convection for lid-driven porous square cavities with various heating of bottom wall	International Communications in Heat and Mass Transfer 39 (5), pp.657-664, May 2012
35.	Patil P.M., Roy S., Pop I.	Unsteady heat and mass transfer over a vertical stretching sheet in a parallel free stream with variable wall temperature and concentration	Numerical Methods for Partial Differential Equations 28(3), pp.926 - 941, May 2012
36.	A.J. Shaiju	Evolutionary stability against multiple mutations	Dynamic Games and Applications
37.	A.J. Shaiju	Discrete-time robust H-infinity control of a class of nonlinear uncertain systems	International Journal of Robust and Nonlinear Control
38.	S.Sundar and M.Panchatcharam	Finite pointset method for 2D dam-break problem with GPU acceleration	International Journal of Applied Mathematics, Vol.25, pp.547-557, 2012
39.	S.Sundar and S.Matle	A 2D finite element study on the flow pattern and temperature distribution for an isothermal spherical furnace with the aperture	Open Journal of Applied Sciences, Vol.2, pp.319-325, 2012
40.	S.Sundar and	A numerical study of	International Journal of Applied

	G.Satyanarayana	hierarchical matrix (H-Matrix) for finite pointsetmethod (fpm) on solving a Poisson Problem	Mathematics, Vol.26, pp.103-122, 2013
41.	M.Thamban Nair	Regularization of Fredholm Integral equations of the first kind using Nystrom approximation	Computational Methods for Applied Inverse Problems, De Gruyter, pp.65-82, Chap. 3, 2012
42.	K.P. Deepesh S.H. Kulkarani M.Thamban Nair	Generalized inverses and approximation numbers	Combinatorial Matrix Theory and Generalized Inverses of Matrices, Springer, pp143-158, 2012
43.	R.Usha and ShaileshNaire	A thin film on a porous substrate: a two-sided model, dynamics and stability	10.1016/j.ces.2012.12.008(available on line now), Chemical Engineering Science, 2013
44.	Anjalaiah, R.Usha, Severine Millet	Thin film flow down a porous substrate in the presence of an insoluble surfactant: Stability analysis	Physics of Fluids, Volume 25, 022101 (1 -26) (2013)
45.	P.Chebotarev, R.B.Bagat and R.Balaji,	Simple expressions for long walk distances	Linear Algebra & its Applications Vol.439, pp.893-898, 2013.

#### In Proceedings of National Conferences:

SI.No.	Name of the faculty	Title of the paper	Institution	Period
1.	A.K.B. Chand and P.Viswanathan	Shape Preserving Fractal Interpolation Functions	National Conference on Fourier Analysis and Differential equations, Sambalpur University	Dec.29-30, 2012
2.	A.K.B. Chand and P. Viswanathan	C1 Cubic Spline Fractal Interpolation Functions	National Conference on Industrial Mathematics & Soft Computing, KIIT University, Bhubaneswar	May 26-27, 2012
3.	P. Viswanathan and A.K.B. Chand	A new kind of Rational Cubic Spline Fractal Interpolation Function Based on Functional Values	National Conference on Frontiers in Analysis and Differential equations, Bharathidasan University, Trichirappalli	Dec. 19-20, 2012

#### In Proceedings of International Conferences:

SI.No.	Name of the faculty	Title of the paper	Institution	Period
1.	A. K. B. Chand and P. Viswanathan	Cubic Hermite and Cubic Spline Fractal Interpolation Functions	10th international Conference on Numerical Analysis and Applied Mathematics Kos Greece	Sep. 19-25, 2012 AIP Conf. Proc. 1479 pp. 1467-1470 ISSN: 0094-243X
2.	A. K. B. Chand and P. Viswanathan	On Rational Cubic Fractal Splines with Two Families of Shape Parameters	International Conference on Frontiers of	December 7-9, 2013

			Mathematical Sciences with Applications	
3.	P. Viswanathan and A. K. B. Chand	A Rational Cubic Fractal Spline Model for a Positive Data	International Conference on Mathematics - A Global Scenario	December 13-14, 2012 D. G. Vaishnav College, Arumbakkam, Chennai., pp. 141-147, ISSN: 978-81-925376-0-8
4.	N. Vijender and A. K. B. Chand	Positive Blending Cubic Spline Fractal Interpolation Surfaces	International Conference on Mathematics - A Global Scenario	December 13-14, 2012 D. G. Vaishnav College, Arumbakkam, Chennai, pp. 148-156, ISSN: 978-81-925376-0-8
5.	P. Viswanathan and A. K. B. Chand	Coalescence Hidden Variable Cubic Hermite Fractal Interpolation Functions	International Conference on Mathematical Sciences	December 28-31, 2012, ShriShivaji Education Society, Amaravati's Science College, Nagpur
6.	N. Vijender and A. K. B. Chand	Blending C1-Cubic Spline Fractal Interpolation Surfaces	International Conference on Mathematical Sciences	December 28-31, 2012, ShriShivaji Education Society, Amaravati's Science College, Nagpur
7.	A.K. B. Chand	Natural Bicubic Spline Coalescence Fractal Interpolation Function	Global Science and Technology Fourm	Jan 30-31, 2012
8.	A. V. Jayanthan	Depths and Hilbert coefficients of fiber cones of stretched m-primary ideals	Japan-Vietnam Joint international conference, held at Hanoi, Vietnam.	Dec. 12 – 16, 2011

**Distinguished Visitors to the Department:**

Sl.No.	Name of the visitor and Designation	Date of visit	Purpose of visit / Title of talk
1.	Prof. M. Ganesh Colorado School of Mines	Aug.2, 2012	A Model reduction algorithm for computational electromagnetism
2.	Prof. M. Ganesh Colorado School of Mines	Aug 9, 2012	Navier-Stokes equations on rotating surfaces; regularity, algorithms, analysis, simulation
3.	Prof. Mapundi Banda Stellenbosch University South Africa	Sep. 3, 2012	Relaxation Systems and High-Order Accurate Flow Computations
4.	Prof. MythilyRamaswamy TIFR, Centre for Applicable Mathematics, Bangalore	Sep. 3, 2012	Introduction to Optimal Control Problems
5.	Prof. A.K. Nandakumaran IISc. Bangalore	Sep. 4, 2012	Various Imaging Techniques in Tomography: Inverse Problems,

			Analysis & Computations
6.	Prof. EdySoewono ITB Bandung Indonesia	Sep. 4, 2012	PDE Modeling in Infections Disease Transmission
7.	Dr. Liulan Li, Associate Professor, Hengyang Normal University, China	Aug. 20 <sup>th</sup> to Nov. 17, 2012	Collaborative research work
8.	Dr. Jiyuan Tao, Associate Professor, Dept. of Mathematics and Statistics Loyola College of Maryland, USA	Jan. 3 – 8, 2013	Collaborative research work
9.	Prof. M.R. Adhikari President, Mathematical Sciences Section, 95th Indian Science Congress Honorary President, IMBIC, India and Vice President, Institute for Polymath, Nagoya Japan	Jan. 25, 2013	Collaborative research work

#### Other Activities of the Department/Centre:

#### Other activities of the Faculty

SI. No.	Name of faculty	Title/Member/programme	Institution	Period
1.	Amitava Mukherjee	Attended Faculty Development Programme	SreeSastha Institute of Engineering and Technology	April 25, 2012.
2.	S. Ponnusamy	Nominated as a Member, Fact Finding Committee.	University of Manonmanim Sundaranar	April 24, 2012
3.	P.V. Subrahmanyam	UGC Nominated Member, SAP Advisory Committee meeting	Pondicherry University	April 30, 2012
4.	S. Sundar	KUPY Summer Programme	IISER, Trivandrum	June 1, 2012
5.	S. Sundar	Nominated as Member of Board of Studies in Faculty & Science and Humanities	Anna University	3 years upto 2.3.2015
6.	S Ponnusamy	External Expert for evaluation of research proposals of two Ph.D. Scholars	NIT Srinagar	July 5-7, 2012
7.	S. Sundar	Nominated as a Member, Programme Advisor Committee in Mathematical Sciences under Science & Engineering Research Board	DST	3 years from Sep.2012
8.	A.V. Jayanthan	Invited as an Eminent Member of the Mathematics Training and Talent Search Programme	Sr. Berchmans College, Kerala	Nov. 19-24, 2012
9.	S. Ponnusamy	Accepted the assignment as Head,	ISI, Chennai Centre	2 years from Oct. 2012
10.	R. Rama	Accepted the temporary assignment as Professor in the Dept. of CS	IIT Bombay	Six months from 4.1.2013
11.	M. Thamban Nair	Member, Post Graduate Board of Studies	Cochin University of Science and Technology	

SI. No.	Name of faculty	Details
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1.	S.H.Kulkarni	NPTEL video course "Real Analysis" has been uploaded in Feb.-12 and has been receiving very good response(more than 5000 visits). url: <a href="http://npTEL.iitm.ac.in/courses/111106053/">http://npTEL.iitm.ac.in/courses/111106053/</a>
3.	M. Thamban Nair	NPTEL – Web course: Functional Analysis, Aug. 2012
4.	P.V. Subrahmanyam	Nominated as a President of Fourm for Interdisciplinary Mathematics for a Second Consecutive term.  Nominated to the Nomination Committee for Infoys Science Prize

### Results obtained in research work

Sl. No.	Name of faculty	Details
1.	N. Narayanan	Together with collaborators from France, Japan and Hungary, we obtained several results on k-intersection edge colouring, a generalised version of strong edge colouring.  In another work, with collaborators from Japan and France, we proved a result on decomposition of graphs to highly connected components and settled a general version of a conjecture.

### Seminar Talk

Sl. No.	Name of the Faculty	Title	Date
1.	Dr. Neelesh S. Upadhye Quantitative Researcher Dolat Investments Ltd. Andherei (West), Mumbai	Compound Negative Binominal Approximation to Sums of Random Variables	April 2, 2012
2.	Dr. Ravi Srinivasan Visiting Fellow IMSC, Chennai	Liovillian Extensions and the Galois Theory of Linear Differential equations	April 12, 2012
3.	Dr. T.S.S. R.K. Rao Indian Statistical Institute Bangalore	Intersection properties of balls and projections of norm one	May 18, 2012
4.	Prof. K. Parthasarathy Ramanujam Institute of Mathematics University of Madras	Groups with no small sub-groups	Aug. 16, 2012
5.	Prof. P.V. Subrahmanyam Dept. of Mathematics	Some remarks on a theorem in differential calculus	Aug. 23, 2012
6.	Professor HemaSrinivasan, University of Missouri, Columbia	Gorensteindeterminantal ideals	Sep. 13, 2012
7.	Prof. R. Sahadevan Ramanujam Institute of Applied Mechanics, University of Madras	Discrete Integrable Systems – An Introduction	Sep. 27, 2012
8.	Prof. Rene Pinnau TU Kaiserslautern, Germany	Optimization of Free Boundary Value Problems in Industry	Sep.5, 2012
9.	Prof. Thomas Goetz Universitaet Koblenz, Germany	Optimization with PDEs	Sep.5, 2012
10.	Dr. Jean Medard T. Ngnotchouye University of KwaZulu-Natal South Africa	Macroscopic Models for Crowd Dynamics Modeling and Numerics	Sep. 7, 2012
11.	Prof. H. P. SeptoratoSireger ITB Bandung, Indonesia	Field Problems in Oil and Gas Industries and the Role of Mathematical Modeling	Sep. 7, 2012
12.	Prof. KuntjoroAdjiSidarto ITB Bandung, Indonesia	On Locating all roots of Systems of Non-Linear Equations inside bounded domain using Spiral	Sep. 7, 2012

		Dynamics inspired Optimization	
13.	Prof. Mohan K. Kadalbajoo IIT Kanpur	Hyperbolic PDEs – An Introduction Higher Order Schemes for Hyperbolic Conservation Laws	Sep. 10, 2012
14.	Prof. NeelaNataraj IIT Bombay	A priori & a posteriori Error Estimation in Finite Element Analysis	Sep. 11, 2012
15.	Prof. Rama Bhargava IIT Roorkee	Meshfree Methods – Implementations and Limitations	Sep. 11, 2012
16.	Prof. Narayanan Namboodiri Cochin University	Korovkin Test Sets in Problems in Preconditioners	Dec. 20, 2012
17.	Dr. Janos Flesch Dept. Of Quantitative Economics Maastricht University, The Netherlands	Optimal Strategies in Matrix Games and Nash Equilibria in Bimatrix Games	Dec. 28, 2012
18.	Dr. Janos Flesch Dept. Of Quantitative Economics Maastricht University, The Netherlands	Absorbing Games	Jan. 2, 2013
19.	Prof. Jiyuan Tao Department of Mathematics and Statistics The Loyola University of Maryland, USA	On the Jordon Quadratic Strict Semi- monotonicity and Related Properties on Symmetric Cones	Jan. 3, 2013
20.	Dr. Surya Prasath University of Missouri Columbia	Adaptive Total Variation Regularization in Image Processing	Jan. 10, 2013
21.	Dr. Mani Lakshiminarayanan Merck Research Laboratories, Pennsylvania, USA	Mere Coincidence or a Meaningful Discovery	Jan. 17, 2013
22.	Prof. SuhasPandit Abdus Salam, ICTP, Trieste, Italy	The Complex of HNN-Extensions for Free Groups of Rank N	Jan. 24, 2013
23.	Prof. D. Yogeshwaran Technion-Israel Institute of Technology	On the Topology of some random complexes built over stationery point processes	Jan. 31, 2013
24.	Prof R. Usha Dept of Mathematics, IITM	An Inverse Problem in Free-Surface Flows-Substrate Reconstructon	Feb.14, 2013
25.	Prof. S. SenthamaraiKannan Chennai Mathematical Institute, Siruseri	Ring of Invariants under a finite group action	Mar.7, 2013
26.	Prof. SukhenduMehrotra Chennai Mathematical Institute, Siruseri	Rationality of Varieties	Mar.14, 2013
27.	Dr. Neelesh S. Upadhye Dept. of Mathematics, IITM	Introduction to R	Mar.21, 2013
28.	Dr. M. Sundari Chennai Mathematical Institute, Siruseri	Tangential Convergence of Bounded Harmonic Functions on Generalized Siegel Domains	Mar.28, 2013

#### Ph.D. Viva – Voce Examination

Sl. No.	Name of the Scholar	Title of the thesis	Date of Viva
1.	Mr. Debashish Mishra	Least Elements, Matrix Splittings and Nonnegative Generalized Inverses	May 18, 2012
2.	Mr. G. Krishna Kumar	A study of Pseudospectrum and Condition Spectrum of an Element in a Banach Algebra	Dec. 21, 2012
3.	Mr. G. SankaraRajuKosuru	Existence of Best Proximity Points for certain classes of cyclic mappings	Oct. 8, 2012
4.	Mr. M. Panchatcharam	GPU accelerated finite point set method for	Feb. 22, 2013



	fluid flows	
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### Ph.D. Seminar Talk

Sl.No	Name of the scholar/ Roll No.	Title	Date
1.	Mr.RamanababuKaligatla MA08D012	A mild-slope model for membrane-coupled gravity waves	April 11, 2012
2.	Mr. G. Krishnakumar MA07D005	Banch Algebra Techniques to Compute Spectra, Pseudo spectra and condition spectra of some block operators with continuous symbols	July 9, 2012
3.	Mr. D. Ramakrishna MA10D004	Heatline Analysis of Natural and Mixed Convection Flows with Square Cavities	Sep. 26, 2012
4.	Mr. ChiralaSatyanarayana MA08D013	Local RBF Grid-Free Scheme with Spatially Variable Optimal Shape Parameter	Jan.28, 2013
5.	Ms.Shani Jose MA08D004	Moore-Penrose Inverse of Perturbed Operators on Hilbert Spaces and their Nonnegativity	Mar.18, 2013
6.	Mr. ChiralaSatyanarayana MA08D013	RBF based grid-free local schemes with variable (optimal) shape parameter for convection diffusion type equations	Mar.25, 2013
7.	Mr. K.Ramanababu MA08D012	Effect of a Submerged Vertical Barrier on Flexural Gravity Waves	Mar.26, 2013
8.	Mr. D. Ramakrishna MA10D004	Heat flow and entropy generation analysis for natural convection within trapezoidal enclosures	Mar.27, 2013
9.	Mr. M. Rajesh Kannan MA08D007	P+Matrices and Intervals of Certain Classes of Z-matrices	Mar.27, 2013

### Socially relevant activities carried out by the Department

The Department of Mathematics and AG Technomathematik, TechnischeUniversitaet Kaiserslautern, Germany have mutually agreed to set up a network in the scientific area of Applied Mathematics and Mathematical Modelling. This will enable intensive collaboration between IIT Madras and TU-Kaiserslatern in terms of Annual Workshops, Faculty / Student Exchange and Joint Modelling Seminars.

### National Symposium on Mathematical Methods and Applications

The department Organized a "National Symposium on Mathematical Methods and Applications on 22nd December, 2012 the day of the birth Anniversary of SrinivasaRamanujan, the great Indian Mathematician. The day's events were inaugurated by Prof. BhaskarRamamurthi, Director, IIT Madras.

There were four invited lectures delivered by the following faculty:

Prof. B.V. Limaye, IIT Bombay  
 Prof. Janos Flesh, Maastrich University, The Netherlands  
 Prof. S. Sundar, IIT Madas  
 Prof. K. SrinivasaRao (Retd.) IMSc. Chennai

In the afternoon, four parallel paper presentation sessions were held on:

Analysis and Topology  
 Algebra  
 Discrete Mathematics  
 Applied Mathematics I (Differential Equations and related topics)

There were about 60 participants and out of them 35 have presented some of their work in four parallel sessions.

### FORAYS - 2013

The Department organized its annual festival FORAYS on 29<sup>th</sup> and 30<sup>th</sup> March, 2013. The programme was inaugurated by Prof. Sarit Kumar Das, Dean, Academic Research, IIT Madras.

There were three lectures delivered by the following faculty:

1. Prof. TiruArthanari, University of Auckland, New Zealand
2. Prof. T.E.VenkataBalaji, IIT Madras
3. Prof. K.N. Ranganathan (Retd), Ramakrishna Mission Vivekananda College, Chennai

The following events were also conducted:

1. Three Olympiads (School, UG, PG levels)
2. Two Quiz competitions
  - Math Quiz : conducted by Mr.K.N.Viswesaran, Hexaware Technologies Ltd.
  - Q|maths : conducted by FathimaSafikaa S N and AnupamMondal (MSc. Students)

The valedictory function was inaugurated by Prof.R. Nagarajan, Dean International and Alumni Relations, IIT Madras.

FORAYS 2013 was attended by 150 participants from reputed schools, colleges and universities in Chennai. This was for the first time school students were invited to FORAYS.

### **QS world university Ranking**

#### **Highlighting a few points about this ranking**

1. In the Rankings by Subject, Mathematics, the Department of Mathematics of IIT Madras ranks in the range 101-150.
2. Among the other Mathematics Departments in India, only one Department appears in this range.
3. Three other Mathematics Departments are in the range 151 -200.
4. These are the only five Mathematics Department in India that appear in this list.
5. The Mathematics Department is the only non engineering Department in IIT Madras that appears in this list.
6. Source from :<http://www.topuniversities.com/subject-rankings>
7. Also recently there was a report in Times of India (May 14, 2013) mentioning some of above Statistics.