

# ANNUAL REPORT 2008-2009

## 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. 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 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. Queueing Theory
25. Statistical Quality Control
26. Stochastic Processes and their applications
27. Theoretical Computer Science
28. Wavelets and their applications
29. Introduction to Algebraic Geometry

### 2. ACADEMIC PROGRAMMES:

2.1. New Discipline branch Introduced: NIL

2.2. New Courses Introduced:

S.No.	Course No.	Title
1.	MA510	Even Semester
2.	MA589	Even Semester
3.	MA202	Odd Semester
4.	MA524	Odd Semester
5.	MA574	Odd Semester
6.	QIP	Short Term Training Prog. On Computational Fluid Dynamics during June 02-07, 2008 (Co-ordinators: Prof. B.V.S.S.S. Prasad and Dr. Y.V.S.S. Sanyasiraju)
7.		Introduction to Algebraic Topology
		Introduction to Differential Topology

2.3 New lab(s) established:

2.4. Students on Roll:

Programme	I Year	II Year	III Year	IV Year	V Year & Others	Total
M.Sc.						
M.Tech.						

Ph.D.					
Total					

**2.5. Endowment Prize Instituted: (Academic section will furnish)**

**2.6. 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	Date and Venue	Financial Assistance from
<b>Conference:</b>					
1.	Mr. Ritabrata Sengupta	MA05D010	Collaborative research	Feb.4 – April 11, 2008 IISER, Mohali	
2.	Mrs. R. Indhumathi	MA04D008	PNAI Group of Centrum Voor Wiskunde en Informatique (CWI)	May – August 2008 Amsterdam, Netherlands	
3.	Mr. D. Venku Naidu	MA04D007	23 <sup>rd</sup> Annual Conference of the Ramanujan Mathematical Society	May 19-23, 2008 IIT Kanpur	
4.	Mr. G. Sankara Raju Kosuru	MA07D004			
5.	Mr. G. Sankara Raju Kosuru	MA07D004	Advanced Training Programme in Functional Analysis	June 2-13, 2008 ISI, Bangalore	
6.	Mr. Debhashisha Mishra	MA07D003			
7.	Mr. G. Ramesh	MA03D003			
8.	Mr. T. Karthick	MA05D007	International Conference on Discrete Mathematics 2008	June 6-10, 2008 University of Mysore	
9.	Ms. S. Lavanya	MA03D008			
10.	Mr. Bappaditya Bhowmik	MA04D009	Advanced Instructional School in Complex Analysis	June 3- July 3, 2008	
11.	Mr. M. Panchatcharam	MA08D002	Advanced Instructional School on PDE and National Symposium on Hyperbolic PDE	June 19-July 19, 2008 IIT Bomay	
12.	Mr. V.B. Surya Prasath	MA04D011	Fist International Conference on Emerging Trends in Engineering and Technology	July 16-18, 2008 G.H. Rasoni College of Engineering, Nagpur	
13.	Mr. T. Karthick	MA05D007	Workshop on Algorithms	August 8-10, 2008 NIT Trichy	
14.	Ms. S. Lavanya	MA03D008			

15.	Mr. A. Chandrashekar, Mr. I Jeyaraman	MA05D003 MA06D005	Research Workshop in Optimization Theory and Applications	Sep. 3-6, 2008 IIT Kanpur	
16.	Mr. P. Rajkumar	MA04D014	2 <sup>nd</sup> National Conference on Mathematical Techniques: Emerging Paradigms for Electronics and IT Industries (MATEIT – 2008)	September 25-29, 2008 IIT Kanpur	
17.	Dr. Swadesh Kumar Sahoo		Research Work (Visits Abroad)	October 1 – December 31, 2008 University of Turku, Finland	
18.	Mr. Bappaditya Bhowmik	MA04D009	New Directions in the Theory of Universal Zeta and L-functions	October 6-10, 2008 Wurzburg University, Germany	
19.	Mr. V.B. Surya Prasath	MA04D011	New Trends in Statistics & Optimization (ICONTSO 2008)	October 20-23, 2008 University of Kashmir Srinagar, J & K.	
20.	Mr. Jajati Kesari Sahoo	MA05D001			
21.	Mr. G. Sankara Raju Kosuru	MA07D004	Advanced Training in Mathematics School	November 1-18, 2008 Bhaskaracharya Institute of Mathematics Vishnupant Dasmile Path, Pune – 411 004	
22.	Mr. Debashisha Mishra	MA07D003			
23.	Mr. A. Chandra Shekharan	MA05D003	National Meet of Research Scholars of Mathematical Sciences - 2008	December 3-13 2008 I.I.T. Kanpur	
24.	Mr. Jitendriya Swain		Workshop on Harmonic Analysis and Partial Differential Equations	December 5-13, 2008 I.I.Sc. Bangalore	
25.	Mr. R. Rajkumar	MA04D014	National Seminar on Algebra, Analysis and Discrete Mathematics	Dec. 15-18, 2008 University of Kerala, Kerala	

26.	Mr. R. Rajkumar	MA04D014	24 <sup>th</sup> Annual Conference of the Mathematical Society	Dec. 29, 2008 – Jan. 2, 2009 Banaras Hindu University, Varanasi	
27.	Mr. T. Karthick	MA05D007	Jubilee Conference on Discrete Mathematics and Pre Conference Workshop	January 4-15, 2009 Banasthali University, Jaipur	
28.	Mr. Nachiketa Mishra	MA05D009	Lecture series on Hyperbolic Conservation Laws	March 16-28, 2009 TIFR, Bangalore	
29.	Dr. Saroj Kumar Dash		Joined PDF of NBHM (DAE Mumbai) w.e.f. 1.1.2009 Under the supervision of Dr. A.K.B. Chand		
30.	Mr. Nachiketa Mishra	MS05D009	Lecture series on Hyperbolic Conservation Laws	March 16 – 28, 2009. TIFR, Bangalore	
<b>Workshop:</b>					
<b>Research Collaborative:</b>					
<b>International Conference</b>					
1.	Mr. T. Karthick		International Conference on Graph Theory and Applications	Amrita University Coimbatore	Dec. 11-13, 2008
2.	Mr. Vasudevarao Allu		PRE-ICM International Mathematical Sciences	University of Delhi Delhi	Dec. 16 – 22, 2008
3.	Mr. Jajati Kesari Sahoo		VI International Symposium on Optimization and Statistics	Aligarh University Aligarh	Dec. 26-Jan 2, 2009

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

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**2.8 Names of students / scholars who won Institute Convocation / Institute Day Prize:**

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### 3. FACULTY AND THEIR ACTIVITIES:

#### Faculty:

Name	Qualifications	Major area of specialization (only 3 areas)
<b>Professors:</b>		
P.V. Subrahmanyam[Head]	Ph.D. (IIT Madras)	Non-linear Analysis, Fuzzy sets, Functional Equations
S.A. Choudum	Ph.D. (IIT Madras)	Graph Theory
S. Kalpakam	Ph.D. (IIT Madras)	Applied Probability and Stochastic Processes, Operations Research
S. H. Kulkarni	Ph.D. (IIT Bombay)	Functional Analysis and Numerical Analysis
P. R. Parthasarathy	Ph.D. (Annamalai)	Applied Probability and Stochastic Models, Mathematical Ecology, Operations Research
M. Thamban Nair	Ph.D. (IIT Bombay) PDF (Univ. Grenoble)	Spectral Approximation, Operator Equations, Inverse and Ill-posed Equations
R. Usha	Ph.D. (IIT Madras)	Fluid Dynamics
P. Veeramani	Ph.D. (IIT Bombay)	Fixed Point Theorems and their Applications to Problems in Optimization and Best Approximation, Fuzzy Set Theory
Arindama Singh	Ph.D. (IIT Kanpur)	Logic, Numerical Analysis
S. G. Kamath	Ph.D. (IIT Delhi)	Mathematical Physics
S. Ponnusamy	Ph.D. (IIT Kanpur)	Complex Analysis, Function Spaces, Special functions and Conformal Geometry
R. Rama	Ph.D. ( Anna University)	Formal Language & Automata Theory / Molecular computing.
Satyajit Roy	Ph.D. (IISc. Bangalore)	Convective Heat and Mass Transfer, Computational Fluid Dynamics
S. Sundar	Ph.D. ( IIT Madras)	Computational Fluid Dynamics, Numerical Analysis for Partial Differential Equations, Mathematical Modeling
V. Vetrivel	Ph.D. (IIT Madras)	Non-Smooth Optimization, Fixed Point Theory
<b>Associate Professors:</b>		
Y.V.S.S. Sanyasiraju	Ph.D. (IIT Madras)	Computational Fluid Dynamics
<b>Asst. Professors:</b>		
A.K. B. Chand	Ph.D. (IIT Kanpur)	Fractals, Approximation Theory and Wave Lets
A.V. Jayanthan	Ph.D.(IIT Bombay)	Commutative Algebra and Algebraic Combinatorics
R. Radha	Ph.D. (IMSC. Chennai)	Harmonic Analysis, Wavelets, Sampling Theory
K.C. Sivakumar	Ph.D. (IIT Madras)	Functional Analysis and Mathematical Programming
Ch. Srinivasa Rao	Ph.D.(IISc. Bangalore)	Non-linear Differential Equations
W.B. Vasantha	Ph.D. (Ramanujan Institute for Advanced study in Mathematics, Chennai)	Group Theory, Application of Algebra, Fuzzy Algebra and Linear Algebra
Sounaka Mishra	I.S.I. Kolkota	Approximation Algorithm / Combinatorial optimization/ Comp laxity Theory

V. Uma	Ph. D. (IMSC Chennai)	Topology and Geometry of Toric Varieties and Related Spaces
T.E. Venkata Balaji	Ph. D (CMI, Chennai)	Algebraic, Geometry and Commutative Algebra
Manam Srinivasa Rao (On Contract)	Ph.D. (IISc. Bangalore)	Applied Mathematics
A.K.B. Chand	Ph.D	Fractals, Approximation Theory and Wave Lets
A.J. Shaiju	Ph.D	
Kalpana Mahalingam (On Contract)	Ph.D	
Balasubramaniam Jayaram (Visiting Professor)	Ph.D	Fuzzy logic connectives, Functional Equations, Approximate Reasoning
<b>Senior Scientific Officer (Gr.I) :</b>		
K. Swaminathan	Ph.D. (Agra University, Agra)	Fluid Dynamics, Ship Hydrodynamics, Mathematical Problems related to Naval Architecture and Ocean Engineering

**3.2. Short-term Courses / Workshops / Seminars / Symposia/ Conferences organised by faculty members:**

Sl. No.	Co-ordinator(s)	Title	Period
<b>Conference</b>			
1.	Local Organiser	Logic and its Applications	Jan 11-14, 2009
2.	T.E. Venkata Balaji	Indo-French Conference in Mathematics Ramanujan Mathematical Society, Societe Mathematique de France and Chennai Mathematical Institute at the Institute of Mathematical Sciences, Chennai Mathematical Institute	Dec. 15 <sup>th</sup> to 19 <sup>th</sup> 2008
<b>Workshop:</b>			
1.	Dr. A.V. Jayanthan Dr. V. Uma and Dr. T.E. Venkata Balaji	Golden Jubilee Workshop on Multiplicity Conjectures, Resolution of Singularities and Toric Geometry	Dec. 22, 2008 to Jan. 03, 2009
2.	T.E. Venkata Balaji	Internation Workshop on Principal Bundles in Geometry held in Chennai at the Institute of Mathematical Sciences and the Chennai Mathematical Institute.	23 <sup>rd</sup> February to 06 <sup>th</sup> March 2009

**3.3 Lectures delivered by the faculty at Short-term Courses / Workshops / Seminars / Symposia/ Conferences/Training attended by the faculty in Academic Institutions and Public Sector Undertakings:**

Sl. No.	Name of Faculty	Title of the talk	Name of the workshop	Institution	Period
<b>Symposium:</b>					
1.	S. Sundar	FEM for Moving boundary problems	One day Symposium on "Computational Mathematics"	Sona College of Engg. Salem	September 19, 2008
2.	A.K.B. Chand	Mathematical Methods and Applications GJNSMMA 2008	National Symposium	I.I.T. Madras	December 22,2008

<b>Conference:</b>					
1.	S.A. Choudum	"National Workshop on Some Recent Research Directions in Graph Theory"	National Workshop	IIT Kharagpur	May 29-30, 2008
		First-fit and on-line algorithms	Current Trends of Discrete Mathematics in Science and Social Systems	Govinda Dasa College Surathkal	Feb. 26, 2009
		Series of Lectures on Algorithmic Graph Theory		Karnataka University Dharwar	March 21-27, 2009
2.	S. Kalpakam	"Value of Information sharing in a serial supply chain"	International Conference	School of Mathematics, M.K. Univ., Mysore	Dec. 16-18, 2008
		Benefits of Information sharing in a serial supply chain	Probability Theory and Stochastic Processes	Cochin Univ. of Science and Tech. Cochin	Feb. 6-9, 2009
		Analysis of Perishable Inventory models under modified basestoch policy	Stochastic Modelling	Alagappa University, Karaikudi	Feb. 12-14, 2009
		Queueing Theory	Operations Research and its Applications	ISI, Chennai Centre	Feb. 16-17, 2009
3.	S.H. Kulkarni	Advanced Training in Mathematics in Functional Analysis	Banach Algebras	ISI, Bangalore	June 5-13, 2008
		AICTE Programme	Introduction to Fuzzy Metric Spaces	NIT Tiruchirapalli	June 18, 2008
4.	P.V. Subrahmanyam	Two Lectures on Indo-German Workshop on CMMDIP	Iterative methods	IIT Madras	Jan. 15-16, 2009
5.	P.R. Parthasarathy	Young Mathematicians Meet in Bonn	Applied Stochastic Models	DAAD and University of Bonn	July 3 – 5, 2008
		Transient State-dependent queue		University of Bonn	Jan. 8, 2009
6.	M. Thamban Nair	i) Ill-posedness and regularization of inverse problems. ii) Regularized approximations for integral equations of the first kind	Indo German Workshop	IIT Madras	Feb. 10-27, 2009

7.	Y.V.S.S.S. Raju	Three lecturers of One and half duration on Compact Higher Order Schemes		Pondicherry Engg. College Pondicherry	March 31-April 1, 2008
		STTP on Scientific Computing & Modelling	National Workshop	NIT Warangal	May 5-6, 2008
		Two lectures of one and Half duration on Compact Higher Order Schemes		Pondicherry University Pondicherry Engg. College	May 5-10, 2008
		Mathematical Techniques and their Applications to Engineering and Physical problems (WOMTECH-08)		Maharaj Vijayaram Gajapathi Raj College of Engg., Vizianagaram	May 22-23, 2008
		"Mathematical behavior of fluid flow equations"	Computational fluid dynamics by STTP	IIT Madras	June 2-7, 2008
		Finite Volume method to fluid equations	AICTE sponsored STTP Computational Fluid Dynamics	IIT Madras	June 2-7, 2008
		Advanced in Fluid Dynamics with special emphasis on non-newtonian fluid flows	Pressure correction schemes	NIT Warangal	June 23-27, 2008
		Application of Partial Differential Equations to Engineering problems	Applications of Mathematics Related to Engineering	Aditya Institute of Technology and Management (AITAM) Tekkali	August 29-30, 2008
		Innovative Teaching and Learning Methods in Mathematics	Computational Methods for PDE Higher order computer Sciences	JNTU Ananthapur	Jan. 28, 2009
		Advanced Computational Techniques	Grid Generator Technologies	NIT Warangal	Jan. 29, 2009
8.	P. Veeramani	VII Iberoamerican Conference on Topology and its Applications	Dept. of Pure and applied Mathematics Polytechnical University	Vallencia Spain	June 23-July 22, 2008
		National Level Conference on Applications of Fuzzy Logic	Applications of Fuzzy Theory	Govt. Arts College, Coimbatore	Oct. 21 – 22, 2008
		Introduction to Fuzzy Dynamic Programming	Mathematics Modelling	Gandhigram Rural University, Gandhigram	Feb. 23, 2009

9.	Arindama Singh	Two lectures on Theorems of Goedel, Turing, and Chaitin	Mathematical Aspects of Computer Science	Sambalpur University	March 14-15, 2009
10.	S. Sundar	"Optimal Control of Film Casting Processes"	Nonlinear Evolution Equation	IISc., Banglore	April 19, 2008
		Domain Decomposition Using Particle Methods	National Seminar on Advances in Applied Mathematics	Bharathiar University Coimbatore	March 23, 2009
11.	R. Radha	Fourier Multipliers for Sobolev Spaces on the Heisenberg Group	Ramanujan Symposium on Furier Analysis and its applications	Ramanujan Institute for Advanced Studies in Mathematics	Feb. 27, 2009
		Holomorphic Hermit solow spaces and paley -----	23 <sup>rd</sup> Annual Conference	Ramanujan Mathematical Society, IIT Kanpur	May 19-21, 2008
12.	Manam Srinivasa Rao	Expansion formulae in wave-structure interaction problems ii) Complimentary mild-stope models in water waves	Indo German Workshop on CMMDIP	IIT Madras	Feb. 16-27, 2009
13.	A.K.B. Chand	Two lectures on Indo-German Workshop on CMMDIP	Fractal Interpolation functions	IIT Madras	Jan. 14, 2009
<b>Seminar:</b>					
1.	S.H. Kulkarni	National Seminar on Functional Analysis	Condition Spectrum	Devaswom Board Pampa College, Parumala, Mannar Kerala	September 26, 2008
2.	Prof. M. Thamban Nair		II-posedness of compact operator equations		

<b>Workshop:</b>					
1.	S. Sundar & Dr. A. Avudainayagam	“Computational Models and Methods Driven by Industrial Problems”	Indo-German Workshop – Cum – Lecture Series	IIT Madras	Jan. 5-16, 2009
2.	S. Sundar & A. Avudainayagam	“Computational Models and Methods Driven by Industrial Problems” – Phase III	Indo-German Workshop-cum-Lecture Series	IIT Madras	Feb. 16-27, 2009
3.	Arindama Singh	Mathematical Aspects of CS		Sambalpur Univ.	March 11-12, 2009
4.	R. Radha V Uma	23 <sup>rd</sup> Annual Conference of the Ramanujan Mathematical Society	I	IIT Kanpur	May 19-22, 2008
5.	A.K.B. Chand	“Computational Models and Methods Driven by Industrial Problems – Phase” – CUMMDIP0809 – Phase - I	Indo German Workshop	IIT Madras	Nov. 17-28, 2008
		“Computational Models and Methods Driven by Industrial Problems – Phase” – CUMMDIP0809 – Phase – II	Indo German Workshop	IIT Madras	Jan. 5-16, 2009
<b>Summer School:</b>					
1.	V. Uma	Summer School on Geometric Methods in Representation Theory	Mathematics	Institute Fourier Grenoble	June 16, 2008 – July 5, 2008
<b>Summer Training Programme:</b>					
<b>Refresher Course:</b>					
1.	P. Veeramani	Refresher Course	Applications of Fuzzy Theory	Bharthidasan University, Tiruchirapalli	Nov. 20-21, 2008
2.	R. Radha	Refresher Course	Real Analysis ---- -----	Ramanujan Institute	Nov. 7, 2008

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

Sl. No.	Name of Faculty	Name of the Conference	Title of the talk	Institution	Period
1	S.A. Choudum	Height Balanced Trees into Hypercubes	International Conference on Discrete Mathematics	Mysore University, Mysore	June 6-10, 2008
2	M.Thamban Nair	National Seminar on Analysis and Differential Equations	Regularization of ill-posed operator equations	University of Calicut	June 26-27, 2008
		National Seminar on Functional Analysis	Ill-posedness of compact operator equations	D.B. Panda College, Parumala Kerala	September 25, 2008
3	A. Singh	Linear Algebra		Univ. of Pondicherry (TPM)	June 2008
4	A. Singh	Godel, Theory and -----		Sambalpur Univ.	March 11-12, 2009
5	S. Sundar		Domain Decomposition of Euler and Boltzmann Equations using Particle Methods	AG Technomathematik, TU-Kaiserslautern, Germany	July 23, 2008
6	Balasubramaniam Jayaram		(S,N)- and R-implications: A state of the art survey	Dept. of Knowledge-Based Mathematical Systems, Johannes Kepler Univ., Linz, AUSTRIA	April 22, 2008
			On the law of importation in Fuzzy Logic	Inst. For Research and Applications in Fuzzy Modeling, Univ. of Ostrava, CZECH, REPUBLIC	June 11, 2008
			On Special Fuzzy Implications	Inst. for Research and Applications in Fuzzy Modeling, Univ. of Ostrava, CZECH, REPUBLIC	June 16, 2008
			Fuzzy Logic, Fuzzy Connectives and Approximate Reasoning	School of Technology and Computer Science, TIFR, Mumbai, INDIA	August 1, 2008

### 3.5 Visits Abroad by Faculty:

Sl. No.	Name of Faculty	Country Visited	Period of Visit	Purpose of Visit	Funding from
1.	R. Usha	USA	Sep. 2007 to August 2008	On Sabbatical Leave to collaborate with Prof. Richard Draw at Univ. of Dekware, Newart Dekware, USA	
2.	S. Sundar	University of Kaiserslautern, Germany	May 1 – July 3, 2008	Research	
3.	Satyajit Roy	Centre for Differential Equations, Continuum Mechanics University of Witwatersrand, Johannesburg, South Africa	June 16- August 15, 2008	Research Collaboration	
4.	V. Uma	France	16 June 2008-4 July 2008	Participate in Summer School on “Geometric Methods in Representation Theory	Organizers of the Summer School
5.	Balasubramaniam Jayaram	Austria	April 21-28, 2008	Academic Collaboration	
		Czech Republic	June 1-17, 2008	Academic Collaboration	
		Poland	June 18-30, 2008	Academic Collaboration	
		Slovakia	April 1-July 31, 2008, excluding the above periods	Academic Collaboration	

### 3.6. Honours and Awards obtained by faculty :

S.No	Name of faculty	Name of Award	Awarded by	Date of award
1.	Dr. T.E. Venkata Balaji	The Ramanujan Prize in Mathematics 2008	University of Madras	The carefully researched and well-written paper ‘Line-bundle-valued ternary quadratic forms over schemes’ Oct 21-22, 2008

#### Books/Monographs authored or co-authored:

S.No	Name of faculty	Title	Publisher	Author/Co-author
<b>Books</b>				
1.	Balasubramaniam Jayaram	Fuzzy Implications	Springer Verlag, Heidelberg	Dr. Michal Baczynski, University of Silesia, Poland.

2.	T.E. Venkata Balaji & V.B. Mehta	Book on Moduli Theory under the Golden Jubilee Book Writing Scheme of IIT Madras		
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### 1. Fellowships of Academies and Professional Societies:

Sl.No.	Name of Faculty	Year of Admission
1.	Dr. A.K.B. Chand	2009
Others	ARAGON(Spain) Govt. Research Fellowship May 2009- July 2009	
	P.V. Subrahmanyam – Vice President and Forum for Interdisciplinary Mathematics 2009	

### Journal Editorial Boards:

Sl.No.	Name of Faculty	Level	Journal
1.	Dr. P.V.Subrahmanyam	Vice President	Form for Interdisciplinary Mathematics 2009
1.	Dr. A.K.B. Chand	Member	Int. Jr. of Bio-Science and Tech.
2.	Dr. A.K.B. Chand	Member	Int. Jr. of Bio-Science and Tech.
3.	Dr. A.K.B. Chand	Member	Int. Jr. of Bio-Science and Tech.

### 8) DESIGN AND DEVELOPMENT ACTIVITIES: NIL

### 2. Brief and specific details of Process/ Instruments/ Equipment/ Software Designed and Developed: NIL

### New facilities added and Major equipment procured through procured funds:

Sl.No.	Name of Equipment	Value (Rs. In lakhs)
1.	Soni Laptop	1.3
2.	Dell XPS System	1.00

### 4.3 Patents: NIL

### 4.3.1 Patents filed: NIL

### 4.3.2 Patents awarded: NIL

### 5. RESEARCH AND CONSULTANCY:

#### 5.1. Sponsored Research Projects:

SL. No.	Title	Period	Funding Agency	Amount (Rs.in lacs)	Co-ordinators
1.	Modeling of microwave passive components for high power applications – Phase-I	23.08.2007 – 22.04.2011			
2.	National Fusion Program, Institute for Plasma Research, Ahmedabad			26.95	Prof. S. Sundar (Mathematics) and Prof. V. Subramanian (Physics)

3.	Exchange Program with Other Universities under MoU: DAAD Network Exchange Program with TU-Kaiserslautern, Germany	2009 for five years			
4.	Graph theoretical approach to fault tolerance issues in computer and communication system	08-11	DST	945360	Dr. Sounaka Mishra
5.	Combinatorics of Coxeter groups and its application to geometry and representation theory	3 years from 22.09.2006	ICSR Project	5.00	Dr. V. Uma
6.	Fractal spline inter pollution functions and applications	2008-2011	ICSR, IIM	5.00	Dr. A.K.B. Chand
<b>New Faculty Scheme:</b>					

**5.2. Industrial Consultancy Projects: (on-going only): NIL**

**5.3. RBIC (only ongoing) : NIL**

**5.4. Retainer Consultancy: (on-going only) : NIL**

**Exchange programme with other Universities:**

Sl. No.	Programme Name	Name of University	Student Name	Guide Name

**3. Faculty member participation with other institution under MoU: NIL**

**Research Publications:**

Total No. of papers published in Refereed National Journals ...  
 Total No. of papers published in Refereed International Journals ...  
 Total No. of papers published in Proceedings of National Conferences ...  
 Total No. of papers published in Proceedings of International Conferences ...

**Details:**

**(d) In Refereed National Journals:**

Sl. No.	Name(s) of the author(s)	Title of the paper	Name of the Journal
1.	S.H. Kulkarni and G. Ramesh	Some properties of unbounded operators with closed range	Proceeding of Indian Academy of Sciences, Vol. 118, No. 4 (2008) 613-625
2.	R. Usha & B. Uma	Weakly Nonlinear stability Analysis of counter-current + gas-liquid film down an inclined plane	Non-linear Dynamics, Vol. 52, 115 – 128 (2008)
3.	Y.V.S.S. Sanyasiraju and G. Chandhini,	Local Radial Basis Function Based Gridfree Scheme for Unsteady Incompressible Viscous Flows	Journal of Computational Physics, 227, 8922-8948, 2008

4.	Y.V.S.S. Sanyasiraju and Nachiketa Mishra	Spectral Resolved Exponential Compact Higher Order Scheme (SRECHOS) for Convection – Diffusion Equations	Computer methods in applied mechanics and Engineering, 197, 4737, 4744, 2008
5.	Y.V.S.S. Sanyasiraju and G. Chandhini	RBF based gridfree upwind schemes for steady convection diffusion equations.	Proceeding of National Conference on Engineering oriented Mathematics, conducted at SRM Univ. during January 2008, Page 51-66, 2008

**(b) In Refereed International Journals:**

Sl.No.	Name(s) of the author(s)	Title of the paper	Name of the Journal
1.	S.A. Choudum and V. Sunitha:	Automorphisms of augmented cubes, International Journal of Computer Mathematics,	Vol. 85, Issue II (Nov. 2008) 1621-1627
2.	S.A. Choudum, T.Karthick and M.A. Shalu	Linear Chromatic bounds for 3k1-free graphs, Graphs and Combinatorics	Vol. 24, No.5 (Oct. '08) 413-428
3.	S.A. Choudum and S. Lavanya:	Embedding Complete ternary trees into Hypercubes Discussions Mathematics Graph theory.	Vol. 28, No.3 (2008) 463 – 476
4.	M.Thamban Nair	A modified Newton-Lavrentiev regularization for nonlinear ill-posed Hammertein-type operator equations (with Santosh George)	Journal of Complexity, Vol. 24, Issue 2 (2008) 228-240
		Regularized versions of continuous Newton's method and continuous modified Newton's method for under general source conditions (with Ravishankar)	Numerical Functional Analysis and Optimization Vol. 29, Nos. 9-10 (2008) 1140-1165
		Convergence rates for Lavrentiev-type regularization in Hilbert scales(with U. Tautenhahn)	Computational Methods in Applied Mathematics Vol. 8 (2008) No. 3, Pages 279-293
		Simplified generated Gauss Newton method for nonlinear ill-possed problems (With Pallavi Mahale)	Mathematics of Computation Vol. 78 (2009) 171-184
5.	R. Usha, S. Mukhopadhyey and E.G. Tulapurkara	Numerical Study of concentrated fluid – particle suspension flow in away channel	International Journal for Numerical Methods in Fluids Vol. 59, 1125-1155 (2009)
6.	B. Bhowmik and S.Ponnusamy	Region of variability of concave univalent functions	Analysis (Munich) 28 (2008), 333-344
7.	B. Bhowmik and S. Ponnusamy	Coefficient inequalities for concave and meromorphically starlike univalent functions	Ann. Polon. Math. 93 (2008), 177-186
8.	B. Bhowmik and S. Ponnusamy and K.J. Wirths	Unbounded convex polygons, Blaschke products and concave schlicht functions	Indian Journal of Mathematics 50(2) (2008), 339-349
9.	M. Huang, S. Ponnusamy, and X. Wang	Decomposition and removable properties of John domains	Proc. Indian Acad. Sci. (Math. Sci), 118(3)(2008), 357-370

10.	M. Huang, X-Wang, and S. Ponnusamy, S.K. Sahoo	Uniform domains and quasi-isotropic domains	J. Math. Anal. And Appl. 343(1)(2008), 110-126
11.	R. Parvatham, S. Ponnusamy and S.K. Sahoo	Norm estimates for Bernardi integral transforms of functions defined by subordination	Hiroshima Math. J. 38(1)(2008), 19-29
12.	S. Ponnusamy and F. Ronning	Integral Transforms of a Class of Analytic functions	Complex Var. Elliptic Equ. 53(5)(2008), 423-434
13.	S. Ponnusamy and T. Sugawa	Norm estimates and univalence criteria for meromorphic functions	J.Korean Math. Soc. 45(6)(2008), 1661-1676
14.	S. Ponnusamy and S.K. Sahoo	Norm estimates for convolution transforms of certain classes of analytic functions.	J. Math. Anal. And Appl. 342(2008), 171-180
15.	S. Ponnusamy, A. Vasudevarao, and H.Yanagihara	Region of variability of univalent functions $f(z)$ for which $zf'(z)$ is spirallike	Houston J. Math. 34(4)(2008), 1037-1048
16.	S. Ponnusamy, A. Vasudevarao, and H. Yanagihara	Region of variability for close-to-convex functions	Complex Var. Elliptic Equ. 53(8) (2008), 709-716
17.	Tanmay Basak, S. Roy, I. Pop	Heat flow analysis for natural convection within trapezoidal enclosures based on heatline concept	International Journal of Heat and Mass Transfer, Volume 52, Issues 11-12, May 2009, Pages 2471-2483
18.	Tanmay Basak, G. Aravind, S. Roy	Visualization of heat flow due to natural convection within triangular cavities using Bejan's heatline concept	International Journal of Heat and Mass Transfer, Volume 52, Issues 11-12, May 2009, Pages 2824-2833
19.	Tanmay Basak, S. Roy, G. Aravind	Analysis of heat recovery and thermal transport within entrapped fluid based on heatline approach	Chemical Engineering Science, Volume 64, Issue 8, 15 April 2009, Pages 1673-1686
20.	Tanmay Basak, S. Roy, Pawan Kumar Sharma, I. Pop	Analysis of mixed convection flows within a square cavity with linearly heated side wall(s)	International Journal of Heat and Mass Transfer, Volume 52, Issues 9-10, April 2009, Pages 2224-2242
21.	P. Saikrishnan, S. Roy, I. Mohammed Rizwan Sadiq, Bishun D. Pandey	Non-uniform double slot suction (injection) into water boundary layer flows over cylinder	International Journal of Heat and Mass Transfer, Volume 52, Issues 3-4, 31 January 2009, Pages 894-898
22.	Tanmay Basak, S. Roy, Amit Singh, I. Pop	Finite Element simulation of natural convection flow in a trapezoidal enclosure filled with porous medium due to uniform and non-uniform heating	International Journal of Heat and Mass Transfer, Volume 52, Issues 1-2, 15 January 2009, Pages 70-78
23.	Param Jeet Singh, S. Roy, R. Ravindran	Unsteady mixed convection flow over a vertical wedge	International Journal of Heat and Mass Transfer, Volume 52, Issues 1-2, 15 January 2009, Pages 415-421
24.	Tanmay Basak, S. Roy, S. Krishna Babu, A.R. Balaakrishnan	Finite element analysis of natural convection flow in a isosceles triangular enclosure due to uniform and non-uniform heating at the side walls	International Journal of Heat and Mass Transfer, Volume 51, Issues 17-18, August 2008, Pages 4496-4505
25.	Tanmay Basak, S. Roy, S. Krishna Babu	Natural convection and flow simulation in differentially heated isosceles triangular	Chemical Engineering Science, Volume 63, Issue 13, July 2008, Pages 3328-3340

		enclosures filled with porous medium	
26.	Tanmay Basak, S. Roy	Role of 'Bejan's heatlines' in heat flow visualization and optimal thermal mixing for differentially heated square enclosures	International Journal of Heat and Mass Transfer, Volume 51, Issues 13-14, 1 July 2008, Pages 3486-3503
27.	Tanmay Basak, S. Roy, S. Krishna Babu, I Pop	Finite Element simulation of natural convection flow in an isosceles triangular enclosure filled with a porous medium: Effects of various thermal boundary conditions	International Journal of Heat and Mass Transfer. Volume 51, Issues 11-12, June 2008, Pages 2733-2741
28.	Param Jeet Singh, S. Roy, I. Pop	Unsteady mixed convection from a rotating vertical slender cylinder in an axial flow	International Journal of Heat and Mass Transfer, Volume 51, Issues 5-6, March 2008, Pages 1423-1430
29.	S. Roy, P. Saikrishnan	Multiple slot suction/injection into an exponentially decreasing free stream flow	International Communications in Heat and Mass Transfer, Volume 35, Issue 2, February 2008, Pages 163-168
30.	Param Jeet Singh, S. Roy	Mixed convection along a rotating vertical slender cylinder in an axial flow	International Journal of Heat and Mass Transfer, Volume 51, Issues 3-4, February 2008, Pages 717-723
31.	E. Natarajan, Tanmay Basak, S. Roy	Natural convection flows in a trapezoidal enclosures with uniform and non-uniform heating of bottom wall	International Journal of Heat and Mass Transfer, Volume 51, Issues 3-4, February 2008, Pages 747-756
32.	K. Selvanayagam, Thomas Goetz, S. Sundar & V.Vetrivel	Optimal Control of Film Casting Processes	International Journal for Numerical Methods in Fluids Vol. 59, pp. 1111-1124, 2009
33.	Maddu Shankar & S. Sundar	Asymptotic Analysis of Extrapolation Boundary Conditions for LBM	International journal of Computers and Mathematics with Applications, Vol. 57, pp. 1313-1323, 2009
34.	<b>S. Sundar, K. Venkataraman and Jaya Krishna</b>	<b>Numerical simulation of free convection in isotropic porous medium</b>	<b>Proceedings of the ISHMT-ASME, 2008</b>
35.	<b>R. Radha and D. Venku Naidu</b>	<b>Image of <math>L_p(R^n)</math> under Hermite semigroup, Int. Journ. Math and Mathematical Science 2008</b>	<b>ID 287218, 13 pages</b>
36.	<b>R. Radha and S. Sivananthan</b>	<b>Local reconstruction from a non-uniform sampled data Appl. Num. Math.</b>	<b>59 (2009), 393-403</b>
37.	<b>S.H. Kulkarni, R. Radha and S. Sivananthan</b>	<b>Non uniform sampling problem J. applied Funct. Anaysis</b>	<b>4, (n.1), (2009) 58-74</b>
38.	<b>R. Radha and S. Thangavelu</b>	<b>Holomorphic Sobolev spaces, Hermite and special Hermite semigroups and a Paley-Wiener theorem for the windowed Fourier transform</b>	<b>J. Math. Analysis Application 354 (2009) 564-574</b>
39.	Ch. Srinivasa Rao and E. Satyanarayana	A Symphonic N-wave solution of the non plan as burger equation, studies in Applied mathematics,	121, 191-221, 2008

40.	T.E. Venkata Balaji & V.B. Mehta	Singularities of Moduli Spaces of Vector Bundles over Curves in Characteristic 0 and p	Michigan Math. Journal, Volume 57 in Honour of Melvin Hochster, August 2008
41.	Balasubramaniam Jayaram and Radko Mesiar	I-Fuzzy equivalence relations and I-fuzzy partitions	Information Sciences, 179 pp. 1278-1297, 2009
42.	A.K.B. Chand	Non-linear Analysis: Theory, Methods Applications	Vol. 69 (11), 1/12/2008, 3679-3691, Vol. 68 (12), 15/08/2008, 3757-3770
43.	Balasubramaniam Jayaram	Rule Reduction for Efficient Inferencing in Similarity Based Reasoning	Intl. Journal of Approximate Reasoning, 48 pp. 156-173, 2008
44.	B. Jayaram	On the law of Importation ( $a \rightarrow (b \rightarrow c) = (a^b) \rightarrow c$ in Fuzzy Logic"	IEEE Transaction on Fuzzy Systems, 16 pp. 130-144, 2008
45.	M. Baczynski and B. Jayaram	(S.N) and R-implications: A State-of-the-art Survey	Fuzzy Sets and Systems, 159 pp. 1836 – 1859, 2008
46.	B. Jayaram and M. Baczynski	Some new results on T-norms, their natural negations and their residuum"	9 <sup>th</sup> Intl. Conference on Fuzzy Set Theory and Applications, FSTA 2008, Liptovsky Jan, Slovak Republic, February 4-8, 2008
47.	B. Jayaram and M Baczynski	Algebra of (S.N) – Implications 9 <sup>th</sup> Intl. Conf. on Fuzzy Set Theory and Applications.	FSTA 2008, Liptovsky Jan, Slovak Republic Feb. 4-8, 2008
48.	M. Baczynski and B. Jayaram	On the distributivity of fuzzy implications over representable uninorms, 11 <sup>th</sup> International Conference of Information Processing and Management of Uncertainty in Knowledge-Based Systems,	IPMU 2008, Malaga, Spain, June 22-27, 2008

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(d) In Proceedings of International Conferences:

Sl.No.	Name(s) of the author(s)	Title of the paper	Name of the Journal
1.	VBS Surya Prasath & A. Singh	Edge detectors based diffusion for enhancement of digital images, in computer vision, Graphics and Image processing	2008, ICVGIP'08, Pages 33-38
2.	S.Mishra, V. Raman, S. Saurabh, S.Sikdar	Konig deletion sets and vertex corers above the matching size.	1SAAC-2008, LNCS 5369 Springer 2008 Page 836-847

4. Distinguished Visitors to the Department:

Sl. No.	Name of the visitor and Designation	Date	Purpose of visit
1.	Prof. Francois Rousset, France	March 7-10, 2009	Gave a seminar talk on Non-Newtonian Film Flow Down an Inclined Plane and interacted with faculty members
2.	Prof. Dr. Martin R. Weber, Germany	March 3-19, 2009	For research collaboration with faculty members. Gave two seminar talks entitled. 1. On Positive Invertibility of Operators in Ordered Vector Lattices

3.	Mr. Sudhakar Matle, Ph.D Student	January-December, 2008	Degli Studi di Cassino, Italy under student exchange, worked on the research problem” numerical heat transfer processes on Isotech Saturn”
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**5. Other Activities:**  
**SEMINAR TALKS:**

Sl. No.	Name of the Faculty	Title	Date
1.	Prof. Dr. Sergei Pereverzyev Johann Padon- Institute for Computational and Applied Mathematics Austrian Academy of Science	Adaptive learning via the balancing principle	April 23,2008
2.	Prof. S. Somasundaram Dept. of Mathematics, Manonmanian Sundaranar University, Tirunelveli	Application of a Fixed Point Theorem to Second Order Differential Equations	April 25,2008
3.	Prof. D.P. Patil Dept. of Mathematics, I.I.Sc., Bangalore	Arf rings and type sequences	May 1, 2008
4.	Prof. Rekha Kulkarni Indian Institute of Technology Bomay, Powai, Mumbai	Improvement by Iteration of approximate solution of second kind Integral Equations	May 29, 2008
5.	Dr. Ananthnarayan Hariharan University of Kansas, U.S.A.	The Garsenstein Colength of an Artirian Local Ring	June 16, 2008
6.	Prof. Sambhavi Lakshminarayanan, School of Business, CUNY, USA	Creating Maximally Diverse Groups; An Application of Quadratic Programming	August 8, 2008
7.	Dr. S. Pushpavanam Head, SAIF Dept. of Chemical Engg. IIT. Madras	Applications of Mathematics in Chemical Engineering	August 22, 2008
8.	Dr. Balasubramaniam Jayaram	Fuzzy Implications and Approximate Reasoning.	September 5, 2008.
9.	Dr. Norbert Henze Prorekton University of Karlsruhe	Some Paradoxes in Probability	September 9, 2008
10.	Dr. R. Parthsarathy Retd. Professor Dept. of Electrical Engg.	My World of Mathematics	September 19, 2008
11.	Dr. Yogesh Mani Tripathi Univ. of Sherbrooke Canada	Estimating Normal Quantities when the mean is bounded	September 26, 2008
12.	Dr. Yogesh Mani Tripathi University of Sherbrooke, Canada	Estimating Normal Quantities when the mean is bounded	October 10, 2008
13.	Dr. Sampangi Raman Indian Statistical Institute Chennai Centre	Six Sigma	October 17, 2008
14.	Dr. S. Kalpakam Dept. of Mathematics IIT Madras	Introductory Applied Probability	October 23, 2008

15.	Dr. Kalpana Mahalingam Dept. of Mathematics IIT Madras	Palindromic – free words	October 24, 2008
16.	Prof. A. Avudainayagam Dept. of Mathematics IIT Madras	Sparse solutions of under determined system	November 7, 2008
17.	Prof. S.A. Choudum Dept. of Mathematics IIT Madras	Journey from job Assignment Problem to Axiom of Choice	November 14, 2008
18.	Dr. B.S. Panda I.I.T., Delhi, New Delhi	Tree 3 – spanners in Directed Path Graphs	December 2, 2008
19.	Dr. Prabhu Manyem Centre for Informatics and Applied Optimization School of IT and Mathematical Sciences University of Ballarat, Australia	Polynomial-Time Maximization Classes: Syntactic Hierarchy	December 23, 2008
20.	Dr. V.B. Johri Professor (Retired) Dept. of Mathematics I.I.T. Madras	Gravitational Lensing	January 2, 2008
21.	Prof. P.R. Parthasarathy Professor (On sabbatical leave) Dept. of Mathematics I.I.T. Madras	Transient state-dependent queue University of Bonn	January 8, 2009
22.	Dr. Rajesh Ganesan Systems Engineering and operations Research George Mason University U.S.A.	Approximate Dynamic Programming: Mitigating the Curse of Dimensionality to Increase ADP's Practical Viability	January 9, 2008
23.	Prof. S.P. Singh Memorial University (Retired) Newfoundland, Canada	On Ky Fan Best Approximation Theorems January 30, 2009	January 30, 2009
24.	Prof. Trilochan Sahoo Dept. of Ocean Engg. & Naval Architecture IIT Kharagpur	Contemporary Approaches in Wave Structure Interaction Problems	February 4, 2009
25.	Dr (Ms.) Lakshmi Bai Northeastern University USA	Singularities of some Toric varieties	February 6, 2009
26.	Dr. Srisairam Achuthan Researcher, Neuro Science Centre of Excellence and Dept. of Ophthalmology, LSU Health Science Centre, New Orleans, USA	Phase Resetting Curves Determine Synchronization.	February 9, 2009
27.	Prof. P.K. Jain University of Delhi Delhi	Properties of some generalized Orlicz spaces	February 13, 2009
28.	Prof. M.Vanninathan TIFR, Bangalore	Homogenization in PDE via Bioch Waves	Marh 6, 2009
29.	Prof. U.B. Tewari Department of Mathematics I.I.T. Kanpur	Amenability of Fourier Algebras	March 13, 2009
30.	Prof. Swadhin Pattanayak Director, Institute of Mathematics and its Applications, Bhubaneswar	Toeplitz Operators	March 19, 2009

31.	Prof. G.S.R. Murthy ISI Hyderabad	Decision Support Systems for Industrial Problems: Some Case Studies	March 20, 2009
32.	Prof. V. Raghavendra Dept. of Mathematics & Statistics I.I.T. Kanpur	On nonlinear Elliptic equations	March 23, 2009
33.	Dr. Parag Ravindran Dept. of Mechanical Engg. I.I.T. Madras	Experiments and Theory: Development of a Constitutive Model for Asphalt Bound Mixtures	March 27, 2009

#### Ph.D. Viva – Voce Examination:

Sl. No.	Name of the Ph.D. scholar	Title of the thesis & Viva date
1.	Mr. E. Natarajan	Study of Natural Convection Flows within Trapezoidal Enclosures  May 21, 2008
2.	Mr. Sachindranath Jayaraman	Weak Monotonicity and Nonnegative Generalized Inverses  May 23, 2008
3.	Mr. Param Jeet	Numerical Studies of Mixed Convection Boundary Layer Flows  May 26, 2008
4.	Mr. K. Vasudevan	Queueing Models with a Varying Gate Mechanism  May 28, 2008
5.	Mr. S. Sivananthan	Sampling Theorems and Reconstruction Methods  May 28, 2008
6.	Mr. H. Ramesh	Some Variants of Computationally Complete P Systems  June 20, 2008
7.	Mr. Swadesh Kumar Sahoo	Inequalities and Geometry of Hyperbolic-Type Metrics, Radius Problems and Norm Estimates  June 20, 2008
8.	Mr. T. Kurmayya	Nonnegative Moore-penrose Inverses of Operations between Hilbert Spaces.  July 14, 2008
9.	Mr. K. Selvanayagam	Optimal Control of Film Casting Process September 15, 2008
10.	Ms. S. Lavanya	Optimal Embedding of Trees in Interconnection Networks December 2, 2008
11.	Ms. Pallavi Mahale	Regularization of non-linear ill-posed problems under general source conditions. December 18, 2008
12.	Mr. G. Ramesh	Approximation Methods for Solving Operator Equations Involving Unbounded Operators December 19, 2008
13.	Mr. K. Paramasivam	Optimal Embedding of Trees in Interconnection Networks January 1, 2009

14.	Mr. Jitendriya Swain	Characterization of Fourier multipliers on the Heisenberg group February 13, 2009
15.	Mr. V. Sankar Raj	On Existence of Fixed Points and Best Proximity Points March 23, 2009

#### Ph.D. Seminar Talks:

SI.No	Name of the scholar	Title	Date
1.	Ms. Pallavi Mahale	On Iterative Regularization of Nonlinear ill posed Operator Equations	April 24, 2008
2.	Mr. K. Pramasivam	A Study on k-Strongly Edgemagic Graphs.	May 7, 2008
3.	Mr. G. Ramesh	Projection Methods and Operator Equations	May 14, 2008
4.	Mr. K. Selvanayagam	Optimal Control of Film Casting Process.	May 21, 2008
5.	Ms. S. Lavanya	Embedding trees into hypercubes and its variations.	May 30, 2008
6.	Mr. V. Sankar Raj	On Existence of Fixed points and Best Proximity points	May 30, 2008
7.	Mr. P. Ravi Shankar	Regularized versions of continuous Newton type methods	August 28, 2008
8.	Mrs. J. Anuradha	On Proximal Point-wise Contraction	September 24, 2008
9.	Mr. Bappaditya Bhowmik	"Extreme points of the class of concave univalent functions"	December 30, 2008
10.	Mr. V.B. Surya Prasath	"Regularization and PDE based methods for Image Processing Part-I"	January 20, 2009
11.	Mr. T. Karthick	Linear Chromatic Bounds	January 27, 2009
12.	Mr. Maddushankar	Analysis of Extrapolation Boundary conditions for Lattice Boltzmann Method	January 29, 2009
13.	Mr. L. Jegannathan	Controlled crossover of words and languages  Self-assembly of graphs	February 10, 2009  February 11, 2009
14.	Mr. Nachiketa Mishra	Development and Analysis of Higher Order Exponential Compact Schemes for Convection-Diffusion Equations	March 2, 2009
15.	Mr. Vasudevarao Allu	Region of variability problems for certain classes of univalent functions.	March 20, 2009

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

SI.No	Name of the Faculty	Activity
1.	S.A. Choudum	Selection Committee Expert; NIT Surathkal Oct 24-26, 2008
		Faculty recruitment at Madurai – Kamaraj University, Madurai on Feb. 3 & 24, 2009
2.	S. Kalpakam	Inaugural address in the "Conference on Recent Trends in Applied Stochastic Methods" Dec. 16-18, 2008

3.	S.H. Kulkarni	Ph.D Viva-voce Examiner;I.I.T. Gawahati June 30-July 3, 2008
4.	P.R. Parthasarathy	An Area Editor in the field of Stochastic Modeling for the journal "OPSEARCH" published by the Operations Research Society of India
5.	P.V. Subrahmanyam	Member, Selection Committee meeting NIT, Calicut Dec. 6-7, 2008 Co-ordinated KVPY interviews in I.I.T. Madras on Jan. 22-23, 2009
6.	M. Thamban Nair	Board of studies meeting in Mathematics IIST Trivandrum September 22, 2008 Selection Committee Expert University of Calicut Nov. 11, 2008 Expert Committee member in connection with starting of new Mathematics Dept. University of Kannur Nov. 15-16, 2008 Participated as Expert in Board of Studies in mathematics at VNIT, Nagpur on Jan. 30, 2009
7.	R. Usha	Ph.D Viva-voce Examiner at I.I.T. Kanpur on Feb. 5-6, 2009
8.	P. Veeramani	Staff Selection Committee Meeting Anna University, Tiruchirapalli August 1, 2008 UGC-SAP Advisory Committee meeting MS University. August 11, 2008 Gave an inaugural address to the "Conference on Recent Trends in Applied Stochastic Methods" in IIT Kanpur on Jan 5, 2009. Ph.D Viva-voce Examiner at School of Studies in Mathematics, Ravishankar Shukla Univ. Raipur on Feb. 6-7, 2009
9.	S. Ponnusamy	Appointed as a Senior Associate of the Abdul Salem International Centre for Theoretical Physics (ICTP, Trieste, Italy) 1 <sup>st</sup> January 2008 until 31 <sup>st</sup> December 2013. Discussion with Mathematics Faculty for Collaborative Research Sastra University, Tanjore September 11, 2008 Selection Committee Expert NIT, Trichy Oct 22-23, 2008 Attended the Selection Committee meeting in Bharathiar University, Coimbatore on January 20, 2009 Ph.D Viva-voce Examiner at NIT, Trichy, Gandhigram Rural University, Gandhigram and also gave lectures from Feb. 16-20, 2009
10.	Satyajit Roy	Ph.D Viva-voce Examiner,Viswabharathi University May 7-9, 2008
11.	S. Sundar	Ph.D Viva-voce Examiner,Aligarh Muslim University August 30-31, 2008 Ph.D Viva – voce Examiner Mysore sUniversity, Karnataka Dec. 18-19, 2008 Ph.D Viva-voce Examiner;IIT Mumbai September 17, 2008

		Co-ordinated KVPY interviews in I.I.T. Madras on Jan. 22-23, 2009
12.	R. Radha	Held discussions with Prof. H.G. Feicher, Head, Numerical Harmonic Analysis Group (Worldwide) and attend his lectures in I.I.Sc. Bangalore on Jan. 19, 2009
13.	Ch. Srinivasa Rao	Research Collaboration I.I.Sc. Bangalore July 30-31, 2008
14.	A.K.B. Chand	Joined the Dept. on 4 <sup>th</sup> July 2008 as Asst. Professor
15.	Balasubramanian Jayaram	Joined the Dept. of Mathematics as Visiting Asst. Professor on December 15, 2008

### 6.3. Socially relevant activities carried out by the Department:

Golden Jubilee National Symposium on Mathematical Methods and Applications (GJNSMMA 2008 ) was held on 22<sup>nd</sup> December 2008 to commemorate the birthday of Srinivasa Ramanujan (1887-1920) .

The symposium was inaugurated by Prof. V.G. Idichandy, Dean, Students. There were 80 participants.

The program consisted of 3 invited lectures and 15 paper presentations on various branches of Mathematics.

The invited lectures were given by

- **Prof. Hema Srinivasan, Univ. of Missouri, Columbia, USA: Free Resolutions and Graph Theory**
  - **Prof. G.D. Veerappa Gowda, TIFR Centre, Bangalore: A finite difference scheme for a hyperbolic system of conservation laws modelling polymer flooding**
  - **Prof. S.A. Choudum, Dept. of Mathematics, IIT Madras” Recent Trends in Graph Theory**
- The valedictory address was delivered by Prof. S. Santhakumar, Dean, Academic Courses.

The Department organized a half-a-day programme on 28.2.09 under Nostalgia. The Head of the Department gave a presentation of the progress of the department since 2005. The following retired faculty members participated in the programme and were honoured: Professors K.R. Parthasarathy, H.S. Paul, P. Bhattacharyya, S.N. Venkatarangan, S.N. Majhi, C.V. Raghava Rao, P. Achuthan, U.N. Srinivastava and A. Avudainayagam and R. Y. Nagendra.

Among the Alumini Prof. K.N. Ranganathan (RKM Vivekananda College, Chennai) and Prof. Sundaresan, (SRM University) also participated.

### 6.5 Major infrastructure development made in the Department

1. Proposed for two new courses 1) Fractals, 2) Wavelets
2. Supervising a Post Doctoral Fellow through NBHM
3. Reviewing a manuscript for the International journal of “Computers and Mathematics with Applications”