Department of Mathematics
Annual Report (2009-2010)

A general overview of departmental activities

The year witnessed excellent contributions and achievements of faculty and students in research; interaction with industry and noted national and international institutes, universities and organizations; and extended educational activities beyond the departmental academic programs.

Some of the notable events are:
Prof. U. K. Anandavardhanan being awarded NASI young scientist platinum jubilee award (2009); Prof. Murali K. Srinivasan being awarded Excellence in teaching award (2008); Prof. Ravi S. Kulkarni and Prof. Vishnu D. Sharma being selected as Chair professors of the Institute (2009).

As a part of Golden Jubilee celebrations, many distinguished visitors like Manjul Bhargava, F. Coulouvrat, R. Jeltsch, M. Ram Murty, I. B. S. Passi, T. Ruggeri visited the department and delivered several lectures.

Faculty strength; Names of new faculty members

Current faculty strength is 35.

New faculty members are:

Prof. Jaydeep Chipalkatti (visitor)
Prof. Santanu Dey
Prof. Krishna V. Kaipa

Academic Programs:

Student Intake	
Ph.D	: 15
M.Sc. (MA)	: 22
M.Sc. (ASI)	: 22
Degree Awarded	
Ph.D.	: 04
M.Sc.(MA)	: 11
M.Sc. (ASI)	: 19

Besides the teaching of B. Tech. courses, the Department offers M.Sc. and Ph.D. programs. It has two distinct M.Sc. programs: M.Sc. in Mathematics and M.Sc. in Applied Statistics and

Informatics (ASI). In addition, the Department has a vibrant research programme leading to Ph.D. degree.

R & D Activities

Continuing with its tradition, the Department has further augmented its basic research, focusing in contemporary areas of fundamental, developmental and strategic importance, applied and interdisciplinary research and productive collaboration with industries and reputed R & D departments. The collaborating R & D institutions/organizations include: TIFR, IISc, ISI, ONGC, Institute of Mathematical Sciences and foreign universities like Brunei University (U.K), Florida Technical University (USA), Colorado School of Mines (US), Humboldt University (Germany), CNRS-IML, Marseille (France), INSA, Toulouse (France), Univ. St-Etienne (France), l'Université Pierre et Marie Curie, Paris (France), Vilnius University, Lithuania, Emory University, US, French Naval Academy, Universität Bielefeld, Germany, and nodal organizations such as CSIR, DAE, DBT, DST, for scientific exchange of ideas of national importance. In order to fulfill the broad objectives of research activities, steps are taken to ensure that, the theoretical bases in emerging areas are strengthened, interdisciplinary problems requiring mathematical solutions are identified, interaction between Indian and overseas scientists are facilitated, local talents are well nurtured through lecture series and instructional workshops by evolving a pool of trained manpower in thrust areas. During this year, the department organized two advanced instructional schools, a seminar meeting in Hyperbolic and Parabolic PDEs, a CEP course, a national conference. A weekly seminar in Number Theory was also organised which ran for almost full year. This year the Department has witnessed a steady increase in the number of quality publications.

Sponsored Research Projects

Sponsored Projects	
Ongoing	: 5
New	: 3
Completed	: 0
Faculty Involved	: 7
Consultancy	
Jobs	: 0
Faculty Involved	: 1

Project Title	Sponsoring Agency	Status (New/ Ongoing/ Complete
Robust parameter designs for quality and safety critical processes SR/FTP/MS-13/2009	DST	New
Identifying the Most Successful Combination Dose in a Phase I/II Clinical Trial	IRCC	Ongoing
Factorization of Period Integrals	IRCC, IIT Bombay	Ongoing
Extension and Web Implementation of PROPAINOR for ab-initio Prediction & Computational Function Elucidation of 3-D structure of Proteins	Department of Biotechnology (DBT)	Ongoing
Instrumentation assisted Decision Support System deploying Data Mining *Techniques for Pulse Examination & Diagnostics (Nadi Pariksha)*	Ministry of Information Technology (MoIT)	Ongoing
Numerical treatment of integral operators with non-smooth kernels	IFCPAR/CEFIPRA (Indo-French Centre for Promotion of Advanced Research)	New
The Oldroyd model of viscoelastic fluids- Theoretical and Computational Studies	DST	On going
Theoretical and Computational Studies of Kelvin - Voigt model of viscoelastic fluids	DST (Indo-Brazil)	New

Consultancy Projects

Mukhopadhyay, S.

Project Title	**Sponsoring Agency**	**Status (New/ Ongoing/ Complete**
Validation of Application Credit Scoring Models	Tata Motors Finance Ltd.	Complete

Extension Activities:

Workshops and Conferences:

Advanced Instructional School in commutative algebra, IIT Bombay, sponsored by NBHM, 14 May-3 June 2009. (Convener – J.K. Verma)

Advanced Instructional School on Atiyah-Singer Index Theorem, IIT Bombay, 6 July – 1 August, 2009) (organizers – Akhil Ranjan, A.R. Shastri)

Advanced Training for Mathematics Lecturers on Differential Geometry and Measure Theory, IIT Bombay, 8-27 July, 2009. (Organizers: Inder K. Rana and Ravi S. Kulkarni)

Annual Foundation School-I at Bhaskaracharya Prathisthana June, 2009. (Joint Coordinator-A.R. Shastri)

National Symposium on Mathematics for Young Researchers, Indian Institute of Technology Gandhinagar, February 2010. (Co-organizers S.R. Ghorpade, J.K. Verma, V.D. Sharma)

Seminar meeting on Hyperbolic and Parabolic Partial Differential Equations, IIT Bombay, 20-23 November, 2009. (Organizers: S. Baskar, S. Sivaji Ganesh, V.D. Sharma)

TIME 2009, Third national Conference on Technology and Innovation in Math Education, 4-7 December, 2009, IIT Bombay. (Organizer: Inder K. Rana)

Seminars:

Number Theory Seminar (Dipendra Prasad)

CEP Courses:

Third PD & TO, Professional Development and Technology Orientation for school teachers, April 26-June 28, 2009. (Organizer: I.K. Rana)

Visitors to the Department:

1. R. B. Bapat, ISI, Delhi. He delivered lectures in the department Combinatorics seminar.
2. Manjul Bhargava, Princeton University, USA. He delivered a Colloquium talk.
3. F. Coulouvrat, University of Paris 6, Paris, France. He gave two seminar talks.
4. Kalyan Das, University of Calcutta, Kolkata. He gave lectures in the Statistics and Probability seminar.
5. S. Gadgil, IISc, Bangalore.
6. Arnaldo Garcia, IMPA, Rio de Janeiro, Brazil. He gave lectures in the Geometry and Topology seminar.
7. R. Jeltsch, Swiss Federal Institute of Technology, Zurich. He gave an institute colloquium on “Leonhard Euler- His life, personality, discoveries and their impact today”. He gave two lectures in the department.

8. Dany Leviatan, Tel Aviv University, Israel. He gave a lecture in the Analysis seminar.
9. M. Ram Murty, Queen's University, Canada. He delivered many lectures including an Institute Distinguished lecture.
10. I. B. S. Passi, IISER, Mohali.
11. Mainak Poddar, ISI, Kolkata. He gave a lecture in the Geometry and Topology seminar.
12. T. Ruggeri, University of Bologna. He delivered a series of 5 lectures on "Entropy Principle and Hyperbolic Dissipative Systems".

Conferences / Symposia / Workshops / Seminars

(Participated / Paper presented)

National:

Anandavardhanan, U. K.

"The sign of the Gauss sum", 24th Annual Conference of the Ramanujan Mathematical Society, Indian Statistical Institute, Bangalore, 11-13 May 2009.

Attended the 79th Annual Session of the National Academy of Sciences India, Kolkata, 14-16 December 2009.

Das, Ashish

"E(s^2)-optimal supersaturated designs", in the 12th Conference of the Society of Statistics, Computer and Applications held at Viswa Bharti University, Santiniketan, during February 24-26, 2010.

Garge, Shripad M.

"Invariants of GL_n", National Symposium on Mathematics for Young Researchers, Indian Institute of Technology Gandhinagar, February 2010.

Ghorpade, S. R.

"Primitive polynomials, Singer cycles, and recursive sequences", *National Conference on Commutative Algebra and Algebraic Geometry*, Indian Institute of Technology Madras and Chennai Mathematical Institute, Chennai, July 2009.

A series of five lectures on "Linear recurrence equations over finite fields", *Discussion Meeting on Finite Fields and Coding Theory*, Harish-Chandra Research Institute, Allahabad, November 2009.

"Generalized Reed-Muller codes", *Discussion Meeting on Finite Fields and Coding Theory*, Harish-Chandra Research Institute, Allahabad, November 2009.

A series of two lectures on "Fundamental theorem of calculus and its generalizations", *Refresher Course for College Teachers of Mathematics*, University of Pune, Pune, November 2009.

"Gaussian binomial coefficients in geometry and coding theory", *Symposium on Recent Trends in Discrete Mathematics, 97th Indian Science Congress*, University of Kerala, Thiruvananthapuram, January 2010.

"The world of finite fields", NBHM Workshop on *Perspectives in Mathematics* on the occasion of Ramanujan's birthday, Homi Bhabha Centre for Science Education, Mumbai, December 2009.

Joshi R.R.

Two invited talks on "Scientific Validation of Ancient Medical Sciences and New Paradigms for Gene Therapy" and on "Computational Pulse Diagnostics" at National Symposia on Ancient Medical Therapies; for Indian Medical Association, Surat and Vadodara Chapters on 5 & 6 Sept., 2009

"Regression Modeling & ANN: Some Advanced Applications in Quantitative Genetics" at DST Workshop on *Quantitative Analysis and Modeling in Animal Sciences*. IISER, Pune 9, Oct., 2009.

Two invited talks at National Workshop on "*Data Mining and Data Warehousing"* National Institute of Technology (SVNIT), Surat, 29, Dec. 2009

Ranjan, Akhil

A course of 7 lectures and 10 tutorials in the Advanced instructional school on Atiyah-Singer Index Theorem .

Raghunathan, Ravi

Five (one and a half hour) lectures on *"The spectral theory of automorphic forms"*, Workshop on analytic number theory, Advanced Tranining in Mathematics, Institute of Mathematical Sciences, Chennai, February 17 – March 02, 2010.

Shastri, A. R.

Attended the Ramanujan Math. Soc. Annual meeting at ISI Bangalore, 11th May to 13th May 2009.

Gave 10 lectures in AFS-1 Complex Analysis and five lectures in Algebraic topology. In Bhaskaracharya Pratishtan, Pune.

Gave lectures and conducted tutorials at Advanced Training in Mathematics for Lecturers in `Complex Analysis with Modern Perspective', organized at Department of Mathematics, Delhi University, 16th March to 4th April 2009.

Gave 7 lectures on Topological aspect of the Index Theorem. In Advanced Instructional School on Atiyah-Singer Index Theorem organized at Department of Mathematics, IITB during July 2009.

Gave 6 lectures on Topology of vector bundles and Characteristic classes in DST-SAP sponsored National Workshop on Algebra and Topology, organized by Department of Mathematics, NEHU Shillong during 14th March 20th March 2010.

Sharma, V. D.

Lecture ***on resonantly interacting waves*** delivered at the Seminar meeting of Hyperbolic Systems of PDEs held at IIT Bombay from 20-23 Nov. 2009.

Lecture ***on Nonlinear Wave Interactions*** delivered at the Indian Society of Theoretical and Applied Mechanics (ISTAM-2009) held at NSIT, New Delhi from 18-21 Dec. 2009, and chaired a Technical Session on Mechanics of Fluids.

Verma, J. K.

"Normal Hilbert polynomials", 97th Indian Science Congress, Thiruvanthapuaram, 3-7 Jan, 2010.

"Normal Hilbert polynomials", Colloquium on Recent Trends in Algebra and Algebraic Number Theory (in honour of Professor Passi) November 25th-27th, 2009.

"On the Chern number of an ideal", National Conference on Commutative Algebra and Algebraic Geometry, IIT Madras, July 2009.

"Cohen-Macaulay rings", four lectures, Adavanced Instructional School in Commutative Algebra, IIT Bombay, May 2009.

International:

Das, Ashish

Optimal supersaturated designs, in the DAE2009 Conference held at
Department of Statistics, University of Missouri, Columbia, USA,
during October 14-17, 2009.

Garge, Shripad M.

Attended conference on arithmetic and algebraic geometry, Bielefeld, Germany, June 2009.

"Subfields of quaternion algebras" A colloquium in the honour of Prof. Passi, Chandigarh, November 2009.

Ghorpade, S. R.

"Grassmann codes and their relatives", Session on Finite Fields, Coding Theory and Cryptography, *XVIII Latin American Algebra Colloquium*, São Pedro, SP, Brazil, August 2009.

"Determinantal hyperplanes over finite fields", *II Indo-Brazilian Symposium in Mathematics*, Tata Institute of Fundamental Research-Centre for Applicable Mathematics, Bangalore, December 2009.

"Matrices, polynomials, and sequences over finite fields", *International Conference on Algebra and its Applications*, Aligarh Muslim University, Aligarh (UP), February 2010.

Joshi R.R.

One invited talk at 1st IFIP International Conference *on Bioinformatics*, SVNIT, Surat, March 25-28, 2100

Mukhopadhyay, S.

Co-authored a paper "Selecting a Stroke Risk Model using Parallel Genetic Algorithm", presented in 1st IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence**,** held at IIM Ahmedabad, June 2009.

Presented a poster "Robust Parameter Design for GLMs," 2009 Design and Analysis of Experiments during October 14 – 17, 2009 in University of Missouri, Columbia, USA.

Presented a paper "Quantile Dispersion Graphs to Compare the Efficiencies of Cluster Randomized Designs," Seventh International Triennial Calcutta Symposium on Probability & Statistics December 28-31, 2009.

Raghunathan, Ravi

"On the algebraic independence of cuspidal automorphic L- functions", International Conference on Analytic Number Theory, Tata Institute of Fundamental Research, Mumbai, October 5-9, 2010.

"Primitivity of cuspidal automorphic L-functions", 'Recent Trends in Algebra and Algebraic Number Theory', Panjab University, Chandigarh, November 25-27, 2010.

Sabnis, Sanjeev

Gave invited talk in an International Conference on Recent Developments in Probability and Statistics held at Department of Statistics at University of Pune during December 21-23, 2009.

Verma, J. K.

"On the Chern number of an ideal", plenary talk in the International Conference on Algebra and its Applications, Aligarh Muslim University, Aligarh, 20-22 Feb. 2010.

Invited Lectures

National:

Ghorpade, S. R.

"Evolution of the theory of equations: a journey through renaissance", *Popular Lecture Series*, Indian Institute of Technology Gandhinagar, Ahmedabad, September 2009.

"Stories from the theory of equations", *PRAGYAA-2010* (A National Intercollegiate Festival), Shri Guru Gobind Singhji Institute of Engineering and Technology, Nanded, March 2010.

"Glimpses of the development of number theory", Swami Ramanand Teerth Marathwada University, Nanded, March 2010.

Joshi R.R.

Invited Seminar on *Protein Data Mining using Classification Trees*. at
Maulana Azad National Institute of Technology, Bhopal. November 4, 2009.

Invited 8 Lecture-Series on *Advanced Applications of Neural Networks in Protein Structure Function Modeling*. Centre of Excellence in Bioinformacits, at Pune Univ. Campus , Pune. 4-5 March, 2010.

Invited talk on "*Classification & Regression Tress in Clinical Trials*" at
Bioinformatics Centre, MG Institute of Medical Sciences Sevagram, Wardha.
March 31, 2010.

Raghunathan, Ravi

"What is number theory?", TIME 2009, IIT Bombay, May 2009.

Sabnis, Sanjeev

Gave three lectures on Survival Analysis in a short-term course entitled "Statistics & Pattern Recognition for Automated Diagnostics held at School of Medical Science & Technology, IIT Kharagpur, during October 05-18, 2009.

Shastri, A. R.

Gave two 90 minutes talks on 16th December 2009 to School Children under the INSPIRE programme of DST organized at NEHU Shillong.

Visited ISI Kolkata on 18th December 2009 and gave a Colloquium talk on ` Mapping degree and Euler's proof of Fundamental Theorem of Algebra.

Visited IIT Guwahati on 25th March 2010 and gave a colloquium talk on Linear Algebra Proof of Fundamental Theorem of Algebra.

Gave an invited colloquium talk on `Linear Morse functions' at TIFR Bangalore centre, 19th May 2009.

Sharma, V. D.

Delivered Professor P.D. Verma Memorial Lecture on **Hyperbolic systems and Waves** at the Department of Mathematics, University of Rajasthan, Jaipur (August 8, 2009).

Verma, J. K.

Solving polynomial equations, S. P. College, Pune and Pune University, Jan 9, 2010.

Polynomial equations and volumes of polytopes, BITS Pilani, 7 March, 2010.

International

Garge, Shripad M.

"Orders of finite semisimple groups" Universitaet Muenster, Muenster, Germany. July 2009.

"Representations of finite Coxeter groups" California State University, Northridge, USA. September 2009.

Ghorpade, S. R.

"Good pseudorandom sequences", *Kolloquium*, Christian-Alberchts Universität Kiel, Kiel, Germany, April 2009.

"Newton's generalization of binomial theorem", *Seminarium i Algebraisk Geometri*, Chalmers University, Göteborg, Sweden, April 2009.

"Primitive recursive vector sequences", Technical University of Denmark, Lyngby, Denmark, April 2009.

"Generalized Hamming`weights of Grassmamnn codes", Università degli Studi di Perugia, Perugia, Italy, April 2009.

"Primitive polynomials and primitive sequences", Università degli Studi di Perugia, Perugia, Italy, April 2009.

"Good pseudorandom sequences and the probability that two polynomials are coprime", Christian-Alberchts Universität Kiel, Kiel, Germany, July 2009.

Mukhopadhyay, S.

"Minmax Robust Parameter Design," Southampton University, Southampton, UK, May 2009.

"Minmax Robust Parameter Design," Queen Mary University of London, London, UK, May 2009.

Verma, J. K.

"Chern Number of an ideal", Colloquium at University of Zurich, April 2009.

Significant Awards and Distinctions

Anandavardhanan, U. K.

NASI-Young Scientist Platinum Jubilee Award, National Academy of Sciences India, Allahabad, 2009.

Das, Ashish

5th M.R. Pai Memorial Award 2009.

Visiting Professor at Department of Statistics, The University of Akron, Akron, OH, U.S.A. During August-December 2009.

Keshari, Manoj Kumar

BOYSCAST Fellowship 2008-09.

Kulkarni, Ravi

Institute Chair Professor (2009).

Pani, Amiya K.

Vising fellow, OCCAM, Oxford University, Oxford (UK) (2009).

Sharma, V. D.

Institute Chair Professor (2009).

Shastri, A. R.

Visiting Professor at NEHU Shillong..

Honorary Work:

Anandavardhanan, U. K.

Reviewer for AMS MathSciNet

Reviewer for Zentralblatt MATH

Refereed Ph.D. Thesis for Université Paris VII

Refereed research papers for
(i) American Journal of Mathematics
(ii) International Journal of Number Theory

Garge, Shripad M.

Reviewer for Zentralblatt.

Ghorpade, S. R.

Member, Council of Editors, *Resonance.*

Member, Editorial Board, *International Journal of Information and Coding Theory.*

Expert Member, Board of Studies in Mathematics and the Faculty of Science, The M.S. University of Baroda, Vadodara, Gujarat, 2009-10.

Member, Selection Committee for Mathematics Faculty, SGGS Institute of Engineering & Technology, Nanded, May 2009.

Referee for the journals: *Finite Fields and Their Applications* (Elsevier) and *Mathematics Studen*t (Ind Math Soc), July-August 2009.

Member, Selection Committee for Mathematics Faculty, Sambalpur University, Orissa, October 2009.

Advisory Editor, Course material in algebra, Indira Gandhi National Open University, New Delhi, July-October 2009.

Member, Selection Committee for Mathematics Faculty, Indian Institute of Science Education and Research, Mohali, October 2009.

Member, Selection Committee for Mathematics Faculty, St. John College of Engineering and Technology, Palghar, November 2009.

Member, Undergraduate Curriculum Development Committee, Indian Institute of Technology Gandhinagar, January 2010.

Member, Selection Committee for Mathematics Faculty, Rajiv Gandhi University of Knowledge Technologies, Hyderabad, March 2010.

Joshi, R.R.

Reviewer for "Proteins: Structure, Function, Bioinformatics" and "Journal of Biological Systems". Statistics expert for review of projects submitted to DST and DBT.

Kulkarni, Rekha P.

Refereed papers for international journals

Limaye, B. V.

Reviewed papers for Applied Mathematics Letters, August 2009, January 2010

Mukhopadhyay, S.

Reviewed papers for Statistical Methodology.

Reviewed papers for Journal of Applied Statistics.

Pani, Amiya K.

Editorial board member of 3 international journals and one national journal.

Refereed 6 Ph.D. theses

Reviewer for the journals

(i) SIAM Journal of Numerical Analysis
(ii) IMA Journal of Numerical Analysis
(iii) Numerical methods in PDE

Reviewer for several National and International projects.

Raghunathan, Ravi

Reviewer for Mathscinet.

Sabnis, Sanjeev

Evaluated one Ph.D. thesis for Shivaji University.

Sharma, V. D.

Reviewed papers for Zentralblatt (Germany) and Maths Reviews (USA).

Served as a member of the Selection committee at IIT Bhubaneswar, IIT Roorkee, and UPSC, New Delhi

S. Sivaji Ganesh

Refereed a paper for an international journal.

Verma, J. K.

Convener, NBHM Committee, Advanced Training in Mathematics Schools, 2010-2013.

Reviewer for Mathematical Reviews.

Member, Editorial Board, Ramanujan Mathematical Society Lecture Notes Series.

Member, Board of Trustees, Bhakaracharya Pratishthana, Pune.

Faculty Members and their Specializations

1. **Anandavardhanan, U. K.**

Number Theory

2. **Athavale, Ameer**

Functional Analysis

3. **Baskar, S.**

Hyperbolic Conservation Laws: Theory, Numeric and Applications

4. **Das, Ashish**

Design of Experiments

5. **Dey, Santanu**
6. **Garge, Shripad M.**

Number Theory, Linear Algebraic Groups

7. **Ghorpade, Sudhir R.**

Algebraic Geometry, Combinatorics

8. **Joshi, Kapil D**.

Topology, Discrete Mathematics

9. **Joshi, Rajani R**.

Computational Biology, *Biostatistics* and *Bioinformatics*

10. **Kaipa, Krishna**
11. **Keshari, Manoj Kumar**

Commutative Algebra (Projective modules)

12. **Kulkarni, Ravi S.**

***D**ifferential Geometry*

13. **Kulkarni, Rekha P**.

Numerical Functional Analysis, Spline Theory

14. **Limaye, Balmohan V**.

Functional Analysis, Numerical Analysis, Spectral Approximation

15. Mahajan, Swapneel

Geometry and Topology

16. Mukhopadhyay, Siuli

Statistics

17. Nataraj, Neela

Finite Element Methods

18. **Pai, Devidas V**.

Functional Analysis, Approximation Theory, Set-valued Analysis

19. **Pani, Amiya K**.

Numerical Analysis, Partial Differential Equations, Industrial Mathematics

20. Puthenpurakal, Tony J.

Commutative Algebra

21. Raghunathan, Ravi

Automorphic forms, Number Theory

22. Raman, Preeti

Number Theory

23. **Rana, Inder K**.

Harmonic Analysis, Mathematics Education

24. Ranjan, Akhil

Differential Geometry

25. Sabnis, Sanjeev

Reliability Theory, Industrial Statistics

26. **Sharma, Vishnu D**.

Quasilinear Hyperbolic Systems of PDEs/ Nonlinear Waves

27. **Shastri, Anant R**.

Algebraic Geometry, Algebraic Topology

28. Sista, Sivaji Ganesh

Partial Differential Equations

29. Sivasubramanian, S.

Combinatorics

30. Srinivasan, Gopal K.

Partial Differential Equations

31. **Srinivasan, Murali K**.

Combinatorics

32. Subramanyam, A.

Statistical Inference, Geostatistics

33. **Sureshkumar, K**.

Stochastic Differential Game Theory, Mathematical Finance.

34. **Vellaisamy, P**.

Applied Probability, Statistical Inference, Industrial Statistics

35. Verma, Jugal K.

Commutative Algebra

Adjunct Faculty

1. **Balwant Singh**
   Commutative Algebra

2. **Dipendra Prasad**
   Number Theory

Distinguished Guest Prefessor

3. **Manjul Bargava**
   Number Theory

4. **M. Ram Murthy**
   Number Theory

Publications

Books

Ghorpade S. R. and Limaye B.V. A Course in Multivariable Calculus and Analysis, New York, Springer (UTM series), 2010.

Rana, Inder K. From Geometry to Algebra "An Introduction to Linear Algebra", Ane Books, Delhi, 2010.

Articles in Journals

National :

International :

Das, Ashish (with Dale Borowiak) Sensitivity Analysis of T-Distribution Under Truncated Normal Populations, Jour. Statist. Comp. Simul. (2009), 79, 723-729.

Das, Ashish (with J. P. De Los Reyes, C. K. Midha and P. Vellaisamy) On a Method to Construct Magic Rectangles of Even Order.. Utilitas Mathematica (2009), 80, 277-284.

Das, Ashish T. (with F. S. Chai, A. Dey and C. K. Midha).Trend Free Block Designs for Diallel Cross Experiments Jour. Statist. and Applications (2009), 4, 75-82.

Das, Ashish (with C. Suen) E(s^2)-Optimal Supersaturated Designs With Odd Number of Runs. Jour. Statist. Planning Infer. (2010), 140, 1398-1409.

Dey, Santanu Hardy algebras and liftings of covariant representations, Infinite dimensional analysis, Quantum probability and related topics. (accepted)

Dhorajia, Alpesh Kumar; Keshari, Manoj Kumar Projective modules over overrings of polynomial rings. J. Algebra 323 (2010), 551-559.

Ghorpade S.R. and Limaye B.V. "A geometric approach to saddle points," Australian Math. Soc. Gaz. , Vol. 36, 2009, pp. 127-136.

Ghorpade, S. R. and Lachaud G."Corrigenda and addenda: Étale cohomology, Lefschetz theorems and number of points of singular varieties over finite fields", *Moscow Mathematical Journal*, Vol. 9, No. 2 (2009), pp. 431—438

Helwade, D. R. and Subramanyam, A. Spatial prediction using bivariate exponential distribution, Stoch. Environ Res Risk Assess, 24, 2010, 271- 281.

Joshi R.R. (with Jyothish NT) , "*e-PROPAINOR*: A Web-Server for Fast Prediction of C_α Structure & Likely Functional Sites of a Protein Sequence", *The Open Bioinformatics J.* Vol. 4 pp. 11-16, 2010.

Joshi, R. R. (with G. Nawsupe) Modified Wavelet-based Technique for Baseline Drift Removal and Diagnostic Scope of Spectral Energy of Radial Pulse Signal. *IJ Biomed. Engg. & Biotech.* (*In Press*)

Kulkarni, Rekha P. (with Laurence Grammont) Extrapolation using a Modified Projection Method, Numerical Functional Analysis and Optimization, 30 (11-12), 1339-1359, 2009.

Limaye B.V. and Zeltser, M**.,** "On the Pringsheim convergence of double series," Proc. Estonian Acad. Sci., Vol. 58, 2009, pp. 108-121.

Mandal, Mousumi; Verma , J. K , "On the Chern number of an ideal, Proc. Amer. Math. Soc. 138, 2010, 1995-1999.

Khuri, A.I., **Mukhopadhyay, S.** (2010): Response Surface Methodology. Wiley Interdisciplinary Reviews: Computational Statistics (in press)

Mukhopadhyay, S., George, V. and Xu, H. (2010): Variable Selection Method for Quantitative Trait Analysis based on Parallel Genetic Algorithm. Annals of Human Genetics 74(1) pp. 88-96(9)

Mukhopadhyay, S. and Looney, S.W. (2009): Quantile Dispersion Graphs to Compare the Efficiencies of Cluster Randomized Designs. Journal of Applied Statistics 36(11) pp. 1293-130

Sarvesh Kumar, **Neela Nataraj and Amiya K. Pani**. Discontinuous Galerkin finite volume element methods for second order problems, Numerical Methods for Partial Differential Equations 25(6), 1402-1424 (2009)

Neela Nataraj. A mixed finite element method for fourth order eigenvalue problems, Applied Mathematics and Computation, 21 (1), 60-72 (2009)

Thirupathi Gudi**, Neela Nataraj and Amiya K. Pani**. On L^2error estimate for non-symmetric interior penalty Galerkin approximation to linear elliptic problems with nonhomogeneous Dirichlet data, Journal of Computational and Applied Mathematics, 228 (1) 30-40, (2009)

Amiya K. Pani , G. Fairweather and R. I. Fernandes . ADI orthogonal spline collocation methods for parabolic integro-differential equations, IMA J. Numer. Anal., 30 248-276, (2010)

Tony J. Puthenpurakal, "An elementary proof of Grothendieck's nonvanishing theorem." in Communications in Algebra, Vol 37, 2009 , pages 2994—2996.

Tony J. Puthenpurakal and Clare D'Cruz',"The Hilbert coefficients of the fiber cone and the a-invariant of the associated graded ring." In Candian Journal of Mathematics, Vol 61, 2009, pages 762—778.

Singh, Surinderpal. and Rana, **Inder K.** "Some alternatives of McShane integral", Real analysis Exchange 35(2010)..

Pandey, M. and **Sharma**, **V. D.** "Kinematics of a shock of arbitrary strength in a non-ideal gas", **Quarterly of Applied Mathematics** (USA) 67(2009), pp. 401-418.

Pandey, M., Pandey, B. D. and **Sharma**, **V. D**. " Symmetry groups and similarity solutions for the system of equations for a viscous compressible fluid", **Appl. Math. Comput.** (Elsevier), 215(2009), pp. 681-685.

Abhilash S. Nair, Abhijit Sarkar, Ramanathan, A. and **Subramanyam, A.** Anomalies in CAPM: a panel data analysis under Indian conditions, International Research Journal of Finance and Economics, 33 pp.192-206, 2009.

Suresh Kumar, K. (with M. Goel) . Risk-sensitive portfolio optimization problems with fixed income securities. J. Optim. Theory Appl. 142 (2009), no.1, 67--84.

Suresh Kumar, K. (with Ghosh, M.K. and Goswami, A.) Portfolio optimization in a semi-Markov modulated market, Appl. Math. Optim. 60 (2009), no.2, 275--296.

Suresh Kumar, K. (with Bagchi, A.) Dynamic asset management with risk-sensitive criterion and non-negative factor constraints: a differential game approach, Stochastics 81(2009) no.5, 503--530.

Bhattacharya, A.., Peled, V.N. and **Srinivasan**, M**. K**. " The case of balanced subgraphs", **Linear Algebra and Applications**, 431(2009), pp. 266-273.

Articles in proceedings of conferences/symposia:

Gupta, R., **Mukhopadhyay, S.** (2009): Selecting a Stroke Risk Model using Parallel Genetic Algorithm. 1st IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence**,** held at IIM Ahmedabad, June 2009.

Ghorpade, S. R., Patil, A. R. and Pillai, H. K. "Subclose families, threshold graphs, and the weight hierarchy of Grassmann and Schubert codes", in: *Arithmetic, Geometry, Cryptography and Coding Theory* (Luminy, France, Nov. 2007), pp. 87--99, *Contemporary Mathematics*, Vol. 487, American Mathematical Society, Providence, 2009.