Department of Mathematics
Annual Report (2008-09)

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 programmes.

Some of the notable events are:
Prof. Anandavardhanan, U.K. being awarded INSA medal for Young Scientist (2008); Prof. Keshari, M.K. being selected for BOYSCAST Fellowship (2008-09); Prof. Neela Nataraj being awarded Excellence in teaching award (2008); and Prof. Verma, J.K. being elected as a fellow of the National Academy of Sciences, India (2008).

As a part of Golden Jubilee celebrations, many distinguished visitors like Prof. Alexandre, Radjesvarane (French Naval Academy, France), Prof. Borovoi, Mikhail (Tel-Aviv University, Israel), Prof. Coates, John (Cambridge University, U.K.), Prof. Varadhan, S.R.S. (Abel Laureate, Courant Institute of Mathematical Sciences, New York) visited the department.

Faculty strength; Names of new faculty members

Current faculty strength is 40

New faculty members are:

Prof. Manjul Bhargava,
Prof. Amitava Bhattacharya,
Prof. Kishore Marathe,
Prof. Dipendra Prasad,
Prof. Ganesh Ramakrishnan,
Prof. Eric Wambach.

Infrastructural development

To accommodate more students due to the increase in OBC quota, all the furniture in class rooms has been changed.

A cluster is also created for parallel computing.

Academic Programmes

Student Intake
Ph.D   : 08
M.Sc. (MA)   : 17
M.Sc. (ASI) : 20

Besides the teaching of B. Tech. courses, the Department offers M.Sc. and Ph.D. programmes. It has two distinct M.Sc. programmes: M.Sc. in Mathematics and M.Sc. in Applied Statistics and Informatics (ASI). In addition, the Department has a 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 year-long programmes, few distinguished lecture series, one international conference, one national symposium, one mini workshop in Geometry and Topology, two international workshops, several study group meetings in Statistics, several CEP courses and one instructional school. This year the Department has witnessed a steady increase in the number of quality publications.

Sponsored Research Projects

Sponsored Projects
Ongoing   : 07
New   : 02
Completed   : 02
Faculty Involved : 11

Consultancy

Project Title	Sponsoring Agency	Status
Accelerated Refinement Schemes for Computation of Eigenelements of Integral Operators with Singular Kernels Using Wavelet Galerkin Methods	Dept. of Science and Technology (DST)	Completed (July 22, 2008)
Establishing the analytic properties of automorphic L-functions	IRCC	Completed (December 10, 2008)
Extension and Web Implementation of PROPAINOR for ab-initio Prediction & Computational Function Elucidation of 3-D Structure of Proteins.	Department of Biotechnology (DBT)	Ongoing
The oldroyd model of viscoelastic fluids : Theoretical and computational studies.	Department of Science and Technology (DST)	Ongoing
Theoretical and Computational Studies of the Kelvin Voigt Model of Visco-elastic Fluids	Dept. of Science and Technology – Indo Brazil	Ongoing
Factorization of Period Integrals	IRCC	Ongoing
Fast marching method for monotonically propagating fronts in an inhomogeneous moving fluid.	IRCC	Ongoing
Instrumentation assisted Decision Support System deploying Data Mining Techniques for Pulse Exami-nation & Diagnostics (Nadi Pariksha)	Ministry of Information Technology (MoIT)	Ongoing
Homogenization and defect structures	IRCC	Ongoing
Identifying the Most Successful Combination Dose in a Phase I/II Clinical Trial	IRCC	New
Reductive groups and related structures	DST	New

Consultancy Projects

S. Mukhopadhyay and P. Vellaisamy

Project Title	Sponsoring Agency	Status
Validation of Application Credit Scoring Models	Tata Motors Finance Ltd.	New

Extension Activities

Conferences:

Workshop and International Conferences on Computational PDEs – 2008 (organizers – Baskar S., Neela Nataraj and A.K. Pani)

Seminars:

Number Theory Seminar (Dipendra Prasad)

Workshops:

Instructional school on modern theory of Partial differential equations, June-July, 2008. (organizers- Baskar S., Sivaji Ganesh S., Pani A.K.)

Mini workshop in Geometry and Topology, 16 --31 Jan 2009 (A.R. Shastri)

Short-term courses:

Maxwell to Yang-Mills (Kishore Marathe)

A sequence of lectures on Foliation theory (A.R. Shastri)

CEP Courses:

Fourth CEP Workshop on Mathematics for Economics, Commerce and Management, April 14-27, 2008.

First CEP "professional Development and Technology Orientation" programme for Secondary math teachers, May 26-30, 2008.

Second CEP course on Professional Development & Technology Orientation, December 7-9, 2008.

Visitors to the Department:

Prof. R. Alexandre, E'cole Navale.
He delivered a lecture on "Boltzmann Equaton".

Mikhail Borovoi, Tel Aviv University, Israel.
He delivered a lecture on "Abelian Galois Cohomology of Reductive groups".

Prof. Aldric L. Brown, Universiy College London, UK.

He delivered a lecture on "Best uniform approximation by finite dimensional spaces of continuous functions from 1853 to 2009".

Prof. Amartya K. Dutta, ISI, Kolkata.
He delivered a lecture on "Structure of Algebras which are locally A' in co-dimension one".

K. Marathe, City University of New York, USA.
He delivered a lecture on "Maxwell to Yang-Mills".

Prof. Piotr Pragacz, Institute of Mathematics Polish Academy of Sciences Warsaw, Poland.
He delivered a lecture on "Bezoutians, Euclidean Algorithm and orthogonal polynomials".

Marek Ptak, University of Agriculture in Krakow.
He delivered a lecture on "the reflexivity and hyper reflexivity of Toeplitz operators".

Dr. Maria Zeltser, Faculty of Mathematics and Natural Sciences Tallin University, Estonia.
She delivered a lecture on "Hahn properties and Potent matrices".

Conferences / Symposia / Workshops / Seminars
(Participated / Paper presented)

National:

U. K. Anandavardhanan:

23rd Annual Conference of the Ramanujan Mathematical Society, Indian Institute of Technology Kanpur, Kanpur, 19-21 May 2008.

Workshop on Arithmetic Geometry, Indian Institute of Technology Guwahati, Guwahati, 22-30 September 2008.

Workshop on Harmonic Analysis and PDE, Indian Institute of Science, Bangalore, 5-13 December 2008.

74th Annual Meeting of the Indian National Science Academy, New Delhi, 10-11 January 2009.

S. R. Ghorpade:

Presented a keynote address "Development of calculus", *Orientation Programme in Mathematics for Kendriya Vidyalaya Teachers and Principals*, held during April 2008, at the Zonal Institute of Education and Training, Bhandup, Mumbai.

A series of four lectures "Hardy-Ramanujan-Rademacher Formula for the number of integer partitions", *NBHM Advanced Instructional School on Complex Analysis,* held during June-July 2008, at Bhaskaracharya Pratishthana, Pune.

Invited talk "Higher weights of linear codes associated to Grassmann varieties", *Symposium on Coding and Cryptography, Mathematical Sciences Section of the 96th Indian Science Congress*, held during January 2009, at North-Eastern Hill University, Shillong, Meghalaya.

Invited talk "Primitive polynomials, Singer cycles, and integer sequences", *HRI International Conference in Mathematics (HRI ICM),* held during March 2009, at Harish-Chandra Research Institute, Allahabad.

Shripad M. Garge:

ISI workshop on group theory, Bangalore (May 12-31, 2008)

Conference on "Quadratic forms, linear algebraic groups and Galois cohomology", Hyderabad (December 30, 2008 -January 4, 2009)

Classification of algebraic groups, IISER Pune (March 9-12, 2009)

M. K. Keshari:

RMS Meeting, IIT Kanpur, May 19-21. Presented a paper on "Cancellation of projective modules over affine algebras".

Neela Nataraj:

Lectured in Workshop on Computational PDE held in IIT Bombay in June 08

Ravi Raghunathan:

A lecture entitled "What is number theory" on May 27, 2008 at the first CEP workshop on Professional Development and Technology Orientation, IIT Bombay, May 26-30, 2008.

Akhil Ranjan:

2 lectures in Instructional Workshop on Differential Geometry
Department of Studies in Mathematics   University of Mysore (June 16-25, 2008)

2 lectures in Workshop on Topology and Geometry of Foliations
Indian Statistical Institute, Kolkata (Nov 24 to Dec 6, 2008)

S.V. Sabnis:

Two lectures on Basics of Probability and Statistics on May 26, 2008 at the first CEP workshop on Professional Development and Technology Orientation, IIT Bombay, May 26-30, 2008.

A. R. Shastri:

Advanced Traning in Mathematics, Annual Foundation School -I at Punjab University. Chandigarh, 3rd Dec. to 27th December 2009. (Sponsored by National Board for Higher Mathematics.

Coordinator in Topology, gave 9 lectures.

Advanced Training in Mathematics for Lecturers in Complex Analysis at Delhi University, 16th March to 4th April 2009. (Sponsred by national Board for Higher Mathematics). Gave 9 lectures.

Sivaji Ganesh Sista:

International conference on nonlinear dynamics, IISc. Bangalore, July 2008.

Workshop on Harmonic analysis and applications to Partial differential equations, IISc. Bangalore, December 2008.

J. K. Verma:

On the Chern number of an ideal, Annual Meeting of the Indian Mathematical Society, December 2008, University of Allahabad.

International:

UK Anandavardhanan:

Représentations p-adiques des groupes p-adiques, Institut de Mathématiques de Jussieu, Paris, 7-12 July 2008.

Ameer Athavale:

Attended the conference *SWOT08* (Small Workshop in Operator Theory 2008) in Krakow, Poland from June 28, 2008 to July 1, 2008 and delivered an invited talk based on the paper "Quasisimilarity-invariance of joint spectra for certain subnormal tuples".

S. R. Ghorpade:

Invited talk "Primitive polynomials, Singer cycles, and LFSRs", *12th International Conference on Arithmetic, Geometry, Cryptography, and Coding Theory (AGCT-12),* held during March-April 2009, at the Centre Internationale de Rencontres Mathématiques (CIRM), Luminy, Marseille, France.

R. P. Kulkarni:

Presented a paper in the Tenth International Conference on Integral Methods in Science and Engineering (IMSE 2008) held during July 7-10, 2008 in Santander, Spain.

S. Mukhopadhyay:

Presented a paper "Optimization in a Multivariate Generalized Linear Model Situation," *7th World Congress in Statistics and Probability,* held during July 2008 at Singapore.

S. Mukhopadhyay:

Presented a poster "Minmax Robust Parameter Design," *Recent Advances in Methods and Applications (DEMA2008),* held during August 2008 at Cambridge, UK.

A. R. Shastri:

International Workshop and Conference on Surface Mapping Class Groups and Related Topics, June 16-28, 2008, at NEHU Shillong. Gave one invited talk on `Irreducibility of Product of manifolds.'

Workshop Topology and Geometry of Foliations at the Indian Statistical Institute, Kolkata from 24 November to 6 December 2008. Served as Member of Academic Advisory Committee. (gave 4 lectures)

J. K. Verma:

Mixed volumes of polytopes and Bernstein's Theorem, Indo-Brazil Symposium in Mathematics, August 2008, Rio-de-Janeiro (Brazil).

Invited Lectures

National:

U. K. Anandavardhanan:

Distinguished representations and local root numbers, 23rd Annual Conference of the Ramanujan Mathematical Society, Indian Institute of Technology Kanpur, Kanpur, 19-21 May 2008.

Cuspidal families – I & II, Workshop on Arithmetic Geometry, Indian Institute of Technology Guwahati, Guwahati, 22-30 September 2008.

Symmetric spaces and multiplicity questions, Workshop in Harmonic Analysis and PDE, Indian Institute of Science, Bangalore, 5-13 December 2008.

Baskar S.:

Fast marching method for monotonically propagating fronts in an inhomogeneous moving fluid. Symposium on "Nonlinear Evolution Equation" from April 18 – 19, 2008, IISc Bangalore.

Kinematic Conservation Laws: application to sonic booms National seminar on Analysis, differential equations and applications, The Maharaja Sayajirao University of Baroda during January 30-31, 2009

Shripad M. Garge:

"Solvable algebraic groups over a general field", ISI workshop on group theory, Bangalore (May 12-31, 2008)

"On the Borel-Siebenthal theory", Classification of algebraic groups, IISER Pune (March 9-12, 2009)

S. R. Ghorpade:

"Linear algebra: geometric, topological and arithmetic aspects", The M. S. University of Baroda, Vadodara, Gujarat, October 2008.

"Primitive polynomials, Matrix groups, and Cryptography", Indian Institute of Technology, Guwahati, Assam, January 2009.

R R Joshi:

Two invited talks at *National Workshop on Impact of Statistical Techniques in Pharmaceutical Research*. Changa Institute, Anand, Jan. 2009.
 (i) Classification & Regression Tress in Clinical Trials.
(ii) A Novel Application of Nonparametric Statistics in Bioinformatics.

Invited 6 Lectures' Series on Advanced Applications of Neural Networks in Protein Structure Function
Modeling. DBT sponsored program on "Bioinformatics and Biotechnology", BIC, Univ. of Poona, Pune.
Feb. 2009.

Neela Nataraj:

Lectures in a ISTE (Indian Society for Technical Education) Teacher's training programme in Mumbai.

Ravi Raghunathan:

"How (we think) Google works", NISER Bhubaneswar, February 19, 2009
"The distribution of prime numbers", IMA Bhubaneswar, February 20, 2009
"How (we think) Google works", IMA Bhubaneswar, February 21, 2009

Akhil Ranjan:

2 lectures in Instructional Workshop on Differential Geometry, Department of Studies in Mathematics University of Mysore (June 1625, 2008)

2 lectures in Workshop on Topology and Geometry of Foliations, Indian Statistical Institute, Kolkata (Nov 24Dec 6, 2008)

S. V. Sabnis:

A lecture entitled "Statistical Modeling Based on Brand Preference Data" at Fractal Analytics, Mumbai, August 7, 2008.

V. D. Sharma:

Delivered a lecture on mathematical modelling in engineering sciences to the Mathematics Faculty and PG Students under the Distinguished Colloquium Series at the North Maharashtra University
(2008).

Delivered a lecture on Nonlinear hyperbolic system of PDEs at the National Seminar on Analysis, Differential Equations and Applications held at the Department of Mathematics, M.S. University,
Baroda (2009)

International

Ameer Athavale:

Attended the conference *SWOT08* (Small Workshop in Operator Theory 2008) in Krakow, Poland from June 28, 2008 to July 1, 2008 and delivered an invited talk based on the paper "Quasisimilarity-invariance of joint spectra for certain subnormal tuples".

S. R. Ghorpade:

"Schubert varieties, linear codes and enumerative combinatorics", *Seminari de Geometria Algebraica*, Universitat de Barcelona, Barcelona, Spain, April 2008.

"Recent progress on the weight hierarchy of Grassmann and Schubert codes", *Séminaire Arithmetique et Théorie de l'Information*, Institut de Mathématiques de Luminy, Marseille, France, May 2008.

"Geometry of subspaces of a vector space and applications to coding theory", *Sophus Lie Seminar*, held during May 2008, at Universitetet i Tromsø, Tromsø, Norway.

"Maximal linear sections of Grassmann varieties", *Seminar in Algebra and Algebraic Geometry*, Universitetet i Oslo, Oslo, Norway, June 2008.

"Graphs with maximum sum of squares of degrees and codes associated to Grassmann varieties", *Kolloquium*, Christian-Alberchts Universität Kiel, Kiel, Germany, June 2008.

"Some interactions between algebraic geometry and coding theory", *Seminariet i Algebraisk Geometri och Talteori*, Chalmers University, Gothenberg, Sweden, June 2008.

"Introduction to Grassmann varieties and associated codes", Technical University of Denmark, Lyngby, Denmark, June 2008.

J. K. Verma:

Mixed multiplicities and mixed volumes, Colloquium at University of Pernambuco, Recife (Brazil), August 2008.

Significant Awards and Distinctions

U. K. Anandavardhanan:
INSA Medal for Young Scientist, Indian National Science Academy, 2008.

S. R. Ghorpade:
Member, Council of Editors, *Resonance.*
Member, Editorial Board, *International Journal of Information and Coding Theory.*

M. K. Keshari:
BOYSCAST Fellowship 2008-09

Neela Nataraj:
Excellence in teaching award, 2008.

J. K. Verma:
Elected Fellow of National Academy of Sciences, India (2008)

Honorary Work:

U.K. Anandavardhanan:

Reviewer for MathSciNet.

Reviewer for Zentralblatt MATH.

Ameer Athavale:

Reviewed 2 research papers for *Mathematical Reviews* and refereed 1 research paper for the *Journal of the London Mathematical Society*.

S. Baskar:

Resource person in the Study group meeting on industrial problems, 2009.

S. R. Ghorpade:

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

Member, Selection Committee, Shyama Prasad Mukherjee Fellowship of UGC-CSIR, National Chemical Laboratory, Pune, July 2008.

Referee for a NBHM Postdoctoral Fellowship, National Board for Higher Mathematics, August 2008.

External Examiner for the Ph.D. thesis and viva, Panjab University, Chandigarh, September 2008.

Member, Selection Committee for Mathematics Faculty, College of Engineering, Pune, December 2008.

R. R. Joshi:

Reviewer for "Proteins: Structure, Function, Bioinformatics" and "Chemical Biology & Drug Designing".

Statistics expert for review of projects submitted to DST and DBT.

Statistics/Bioinformatics (Data Mining) expert in selection committees for appoints of Professors in two Indian Universities.

R. P. Kulkarni:

Refereed papers for international journals, Refereed Doctoral Thesis.

S. Mukhopadhyay:

Reviewed papers for Journal of Statistical Theory and Practice, August 2008

Reviewed papers for Special Volume of Statistics and Applications in honor of Professor Aloke Dey, September 2008

Reviewed papers for Journal of Statistical Planning and Inference, February 2009

Reviewed papers for Journal of Applied Statistics, March 2009

Reviewed papers for 1st IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence, February 2009

Neela Nataraj:

Reviewed papers for the journals listed below:

Journal of Computational and Applied Mathematics

Int. Journal of Comp. Math.

Australian & New Zealand Industrial and Applied Mathematics Journal (ANZIAM)

D. V. Pai:

Examiner, Ph.D. thesis, IIT Kharagpur.

Examiner, Ph.D. thesis, IIT Kanpur.

Member, P.M.M.C., D.S.T., for *C.M.C.(Centre of Mathematical Sciences)*, at Pala, Kerala .

Member, P.M.M.C., D.S.T. for *Core Group Support extended to Mathematical Sciences* of Banaras Hindu University (BHU).

Member, Advisory Committee, U.G.C., SAP, Phase 1, Department of Mathematics, Sardar Patel University, Anand, Gujarat.

Member (one of the ten Visitor's nominees),*Court* of NEHU,Shillong.

Associate Editor, *Asian European Journal of Mathematics*, World Scientific Publishers, London and Singapore.

Ravi Raghunathan:

Reviewer for Mathematical Reviews (Mathscinet)

Akhil Ranjan:

Examined an M.Phil thesis for Univ. of Mumbai.

S. V. Sabnis:

Reviewed one article for Calcutta Statistical Association Bulletin.

V. D. Sharma:

Examined Ph.D. Theses from Calcutta Univ and Bharthiar Univ (TN).

Reviewed papers for Zentralblatt (Germany) and Math Rev (USA).

Served as a member of the selection committee for Faculty recruitment at IIT Kgp, IIT Patna and NIT Warangal.

J.K. Verma:

Member, Board of trustees of Bhaskaracharya Institute of Mathematics, Pune.

Member, Editorial Board, Ramanujan Mathematical Society Lecture Notes Series

Secretary, Advanced Training in Mathematics Schools, NBHM.

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. **Bhargava, Manjul**
Number Theory
5. **Bhattacharya, Amitava**
Combinatorics
6. **Das, Ashish**
Design of Experiments
7. **Garge, Shripad M.**
Number Theory, Linear Algebraic Groups
8. **Ghorpade, Sudhir R.**
Algebraic Geometry, Combinatorics
9. **Joshi, Kapil D**.
Topology, Discrete Mathematics
10. **Joshi, Rajani R**.
Computational Biology, *Biostatistics* and *Bioinformatics*
11. **Keshari, Manoj Kumar**
Commutative Algebra (Projective modules)
12. **Kulkarni, Ravi S.**
Differential 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. **Marathe, Kishor**
Mathematical Physics
17. **Mukhopadhyay, Siuli**
Statistics
18. **Nataraj, Neela**
Finite Element Methods
19. **Pai, Devidas V**.
Functional Analysis, Approximation Theory, Set-valued Analysis
20. **Pani, Amiya K**.
Numerical Analysis, Partial Differential Equations, Industrial Mathematics
21. **Prasad, Dipendra**
Number Theory
22. **Puthenpurakal, Tony J.**
Commutative Algebra
23. **Raghunathan, Ravi**
Automorphic forms, Number Theory
24. **Ramakrishnan, Ganesh**
Computer Science
25. **Raman, Preeti**
Number Theory
26. **Rana, Inder K**.
Harmonic Analysis, Mathematics Education

27. **Ranjan, Akhil**
    Differential Geometry
28. **Sabnis, Sanjeev V**.
    Reliability Theory, Industrial Statistics
29. **Sharma, Vishnu D**.
    Quasilinear Hyperbolic Systems of PDEs/ Nonlinear Waves
30. **Shastri, Anant R**.
    Algebraic Geometry, Algebraic Topology
31. **Singh, Balwant**
    Commutative Algebra
32. **Sista, Sivaji Ganesh**
    Partial Differential Equations
33. **Sivasubramanian, S.**
    Combinatorics
34. **Srinivasan, Gopal K**.
    Partial Differential Equations
35. **Srinivasan, Murali K**.
    Combinatorics
36. **Subramanyam, A.**
    Statistical Inference, Geostatistics
37. **Sureshkumar, K**.
    Stochastic Differential Game Theory, Mathematical Finance.
38. **Vellaisamy, P**.
    Applied Probability, Statistical Inference, Industrial Statistics
39. **Verma, Jugal K.**
    Commutative Algebra
40. **Wambach, Eric**
    Number Theory

Publications:

Chapter (Book):

Rajani R. Joshi

Chapter titled "Statistical Mining of Gene Protein Databanks" in the Book titled "*Bioinformatics Applications in Life and Environmental Sciences*" (Ed. M. Fulekar) Publ: Springer, 1st edition Feb. 2009.

D.V. Pai

Contributed Chapter 10: "Wavelet Analysis" in the book entitled " *Special Functions for Applied Scientists"* by A.M. Mathai and Hans J. Haubold, Springer Sciences & Business Media LLC, 2008, Springer Verlag, New York.

Articles in Journals:

National:

S. R. Ghorpade and **B. V. Limaye:**

"Sylvester's minorant criterion, Lagrange-Beltrami identity, and nonnegative definiteness", *The Mathematics Student,* Special Centenary Volume (2007), pp. 123—130.

S. Mukhopadhyay:

"A New Graphical Approach for Comparing Response Surface Designs on the basis of the Mean Squared Error of Prediction Criterion," *Special Volume of Statistics and Applications in honor of Professor Aloke Dey* 2008 (accepted for publication).

S. V. Sabnis and Nair, H.**:**

"Reliability Test Plans for Series Systems with Discrete Data," *Journal of Indian Statistical Association,* Vol. 46, June 2008, pp.

International

Ameer Athavale
On the intertwining of ∂D-isometries, *Complex Analysis and Operator Theory*, Vol. 2 (2008), pp. 417-428.

Ameer Athavale
Quasisimilarity-invariance of joint spectra for certain subnormal tuples, *Bulletin of the London Mathematical Society*, Vol. 5 (2008), pp. 759-769.

Ashish Das
A Matrix Approach to Construct Magic Rectangles of Even Order. (with J. P. De Los Reyes and C. K. Midha) Australasian Jour. Of Comb. (2008), 40, 293-300.

Ashish Das
On E(s^2)-Optimal Supersaturated Designs. (with A. Dey, L. Y. Chan and K. Chatterjee) {\bf Jour. Statist. Planning Infer.}(2008), 138, 3749-3757.

Ashish Das
On a Method to Construct Magic Rectangles of Odd Order. (with C. K. Midha, J. P. De Los Reyes and L. Y. Chan) Statist. And Applications New Series (2008), 6, 11-18.

S. R. Ghorpade, A. R. Patil, and H. K. Pillai
"Decomposable subspaces, linear sections of Grassmann varieties, and higher weights of Grassmann codes", *Finite Fields and Their Applications*, Vol. 15, No. 1, January 2009, pp. 54-68.

Manoj Kumar Keshari
Euler class group of a Laurent polynomial ring : local case. J. Algebra. **308** vol 2, 666-685 (2007)

Manoj Kumar Keshari
Cancellation of projective modules over affine algebras, To appear in Journal of K-Theory.

S. Mukhopadhyay and A. I. Khuri
"Optimization in a Multivariate Generalized Linear Model Situation," *Computational Statistics and Data Analysis,* Vol. 52(10), 2008, pp. 4625-4634.

A. Abreu, M. A. Loza, A. Elias, **S. Mukhopadhyay**, S. Looney and F. Rueggeberg
"Tensile Bond Strength of an adhesive resin cement to different alloys having various surface treatments," *The Journal of Prosthetic Dentistry*, Vol. 101 (2), 2009, 107-118

S. Mukhopadhyay and S. W. Looney
 "Quantile dispersion graphs to compare the efficiencies of cluster randomized designs," *Journal of Applied Statistics*, 2009 (accepted for publication).

Thirupathi Gudi, **Neela Nataraj** and **Amiya K. Pani.**
Mixed discontinuous Galerkin method for the biharmonic equation, J. Scientific Computing 37, 139-161 (2008)

Ajit Patel, **Amiya K. Pani, Neela Nataraj**
Mortar element methods for parabolic problems, Numerical Methods for PDE 24 (6), 1460-1484 (2008)

Debasish Pradhan, **Neela Nataraj, Amiya K. Pani**,
An explicit/implicit Galerkin domain decomposition procedure for parabolic integro-differential equations, Journal of Applied Mathematics and Computation 28 , 295-311 (2008)

Thirupathi Gudi, **Neela Nataraj and Amiya K. Pani**.
On L2 error estimate for non symmetric interior penalty Galerkin approximation to linear elliptic problems with non-homogeneous Dirichlet data, J. Comp. & Appl. Math. 228 (1), 30-40 (2008)

D.V. Pai
"Strong Unicity of Restricted p-Centers", *Numer. Funct. Anal. And Optimiz., **29:5***(2008), 638-659.

D.V. Pai
"On Lower Semi-continuity of the Restricted Center Multifunction", *Revue D'Analyse Numerique et de Theorie de L'Approximation, (ANTA), Academy of Sciences, Roumania*, Tome 38, No.1, 2009, 1-17.(in print)

V. D. Sharma and R. Radha
"Exact solutions of Euler equations of ideal gasdynamics via Lie group analysis" ZAMP (Birkhauser, Switz.) vol. 59 (2008), p. 1029—1038.

T. R. Sekhar and **V. D. Sharma**
"Interaction of shallow water waves ", Studies in Applied Maths (MIT, USA) Vol. 121 (2008), pp. 1-25.

M. Pandey, R. Radha and **V. D. Sharma**
"Symmetry analysis and exact solutions of magnetogasdynamic equations", Quart. J. Mech. Appl. Math. (UK), Vol 61 (2008), pp. 291-310.

Articles in proceedings of conferences/symposia:

RP Kulkarni
Article in Proceedings of International conference:
Title: A Two-Grid Method for a Second Kind Integral Equation with Green's Kernel
Proceedings of IMSE-2008 published by Logman, Chapman and Hall / CRC

Rajani R. Joshi
Gibbs Sampling Shows Possibilities of B-cell e*pitope* Signatures. **Protein & Peptide Letters.** (*In Press*). (with U. Hira and D. Suri)

Rajani R. Joshi
In-vitro Testing of An Ethnobotanical Inhalation Therapy Against Pulmonary Tuberculosis. Phytothérapie**.** (*In Press*) (with M. Raghuvanshi and P. Pandya)

P. Vellaisamy and M. Kumar (2008). Optimal componenet test plans for a parallel system based on Type-II censoring. Statistical Methodology,   5, 454-461.

P. Vellaisamy and Sushmita Jain (2008). Estmating the parameter of the population selected from discrete exponential family. Statistics and Probability Letters, 1076-1087.