Department of Mathematics.

Report for the period April 2001 March 2002.

Content:

Introduction:

The Department of Mathematics comprises of 26 faculty members with expertise in various areas of Mathematics, Statistics and Theoretical Computer Science. The faculty members strive to maintain quality teaching and research standards. One of our faculty member helped to continue with the tradition of the department of winning the award of excellence in teaching. Another member brought two honours to the department: the M.N.SAHA award for Research in Theoretical Sciences for the year 2001, and the Distinguished service award from VIJNANA PARISHAD OF INDIA and the INDIAN SOCIETY OF INFORMATION THEORY AND APPLICATIONS for outstanding contribution to promote application of mathematics in India 2002.

There is active involvement of the Department in developing partnership with industry in terms of providing solution strategies for industrial problems. Pfizer Ltd. has sponsored four Scholarships for M.Sc. students to promote this partnership.

There is a very fruitful collaboration between the Department and various leading Institutes in India and abroad. Seminars in various areas have been held throughout the year. In addition, the faculty members were involved in organizing International workshops, CEP programs, participation in national/International conferences, and writing books. They also carried out honorary work like referee jobs for

journals, reviewing projects, examining Ph. D. theses and serving on selection committees of other universities. Throughout the year, a steady stream of visitors from other institutes in India and from abroad has contributed to the seminar
and colloquia activities.

Academic Programs

Besides the teaching of B.Tech. courses, the department offers M.Sc. and Ph.D. programmes along with its research activity. It has two distinct M.Sc. programmes. M.Sc. in Mathematics (intended for those who wish to pursue research and/or teaching as their career) and M.Sc. in Applied Statistics and Informatics (ASI) (job oriented).

In addition, the department has a research programme leading to Ph.D. degree. This programme has a broad based course work and specialization in Pure Mathematics, Applied Mathematics, Scientific Computing and Statistics.

Students Intake: Ph. D. (5); M. Sc.(Math) (18); M.Sc.(ASI) 25.
Degrees Awarded: Ph. D. (2);M. Sc.(Math)(5) ; M. Sc.(ASI) 21.

R & D Activities

The current research interest in the Department covers a wide range of fields: Algebra, Combinatorics, Topology, Geometry, and Discrete Mathematics, Real Analysis, Functional Analysis, Non-linear Analysis, Ordinary and Partial Differential Equations and Control Theory, Numerical Analysis and Scientific Computing. Fluid Mechanics, Biomechanics, Magnetohydrodynamics, Tribology, Nonlinear Gasdynamics, Statistical Inference, Reliability Theory, Biomolecular Statistics and Bioinformatics. Mathematical Programming, Combinatorial Optimization, High Performance Computing, Parallel Algorithms, Computer Aided Geometric Designs.

More specifically, the faculty members are currently pursuing research in the following areas:

* Approximate solutions of Integral and Differential operators and of the associated eigenvalue problems

* Approximate analytical and numerical solution of hyperbolic and parabolic system of PDEs

* Development of sampling plans for monitoring dependent process

* Effect of Yoga on fluid dynamic parameter of blood.

* Estimation of the parameters of the selected population.

* Finite Element Methods for Partial Integro-Differential Equations (PIDE), Mathematical Model of Particle Size Distribution in Emulsion Polymerization.

* Group Actions on Posets, Polytopes in Combinatorial Optimization; Symmetric Functions

* Heteroskedastic time series models, robust estimation of the

parameters

* Hilbert coefficients and depths of various form rings.

* Hilbert functions and multiplicities of special algebraic varieties

* Homotopy Extension Theorems

* Harmonic Manifolds

* Mixed multiplicities of ideals

* Mathematical study of Finance aspects of Stochastistic calculus used in Option Pricing.

* Nonlinear Geometrical Optics. Formation and Interaction of Shock Waves.

* Construction of optimal reliability test plans.

* Properties of Generalized Riemann integral

* Parameter Estimation Problem in Neural Networks and Online Optimization, Optimization of Transportation Networks.

* Portfolio management problems from the perspective of differential Games. Non-zero sum game in the orthant.

* Stability and well-posedness in Optimization and Approximation.

* Varieties with seminormal hyperplane sections.

Besides, there are two major activities in the department - the first one is meant to celebrate the golden jubilee of Pierre Samuel's landmark papers on Hilbert functions. The department has declared year (June 2001 - May 2002) as a special year for Hilbert Functions. The second one is being carried out by the industrial mathematics group. The department has declared Jan 2002 to Dec. 2002 as the special year of Industrial Mathematics. The details of these activities appear below.

Special Year For Hilbert Functions:
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To celebrate the golden jubilee of Pierre Samuel's landmark papers on Hilbert functions, Mathematics Department is organizing a special year devoted to recent and classical results and conjectures on Hilbert functions, with emphasize on all the major themes in this theory : algebraic, combinatorial, computational and geometric.

The following activities have taken place during the period September-2001, March 2002.

1. Minicourses of a month long duration by faculty and students of the department.

   In this category we have had the following minicourses in the autumn semester :

(a) J. K. Verma — Hilbert series of Gorenstein graded algebras

(b) A. V. Jayanthan — Cohomological methods for Hilbert coefficients

(c) B. Singh — Sally's conjecture

(d) S. R. Ghorpade — Hilbert functions of determinantal varieties

2. Colloquium series for general audience once a month.

In this category we have had the following colloquia so far:

(a) B. Singh, IIT Bombay
Hilbert functions and singularities

(b) D. P. Patil, IISc, Bangalore
Hilbert functions and intersection multiplicities

(c) D. Bayer, University of Columbia
Combinatorial applications of computational commutative algebra

(d) D. Eisenbud, University of California, Berkeley & MSRI
Algebraic invariants of geometric objects

(e) S. R. Ghorpade, IIT Bombay
Combinatorics of lattice paths and computations of Hilbert functions

(f) O. Pasarescu, Institute of Mathematics, Buchrest, Romania
The Halphen-Castelnuovo Theory for smooth curves in projective spaces

3. Shorter Seminar series for experts

(a) Prof. N. Mohan Kumar, Washington University in St Louis
Set-theoretic Complete intersection curves

(b) Prof. D. P. Patil, IISc, Bangalore
Intersection multiplicities

(c) Prof. D. Bayer, University of Columbia
Algorithms for combinatorial commutative algebra

(d) Prof. A. Conca, University of Genova
Vasconcelos' conjecture on reduction numbers of ideals

Activities of Industrial Mathematics Group (IMG).

During May, 01--December '01, the following activities were undertaken by the Industrial Mathematics Group.

1. Study Group Meeting with BARC held on 3rd November, 2001, in the IMG Lab at IIT Bombay.

The main theme of the meeting was Simulation of Fusion Grade Plasma.

After 3 rounds of discussion between IMG and Plasma Group (BARC), the Study Group meeting was conducted in the IMG Lab on 3rd November'01. In the beginning, Professor M. C. Joshi described briefly the activities of IMG and the objective of the Study Group Meeting. Then, Dr. S. K. H. Auluck, Head, Plasma Group (BARC) presented their Group activity in BARC, the problem faced by them and also discussed the mathematical modeling and available public domain Software packages related to their problems. Dr. Auluck was looking for a long term collaboration between BARC and IMG for developing `Advanced Computational Tools for 2-D and 3-D MHD Simulation of Plasma Experiments'. After a due deliberation, it is decided that the group will first work on a sample problem using the Public Domain Package called `ZEUS-2D' and subsequently enhance the package to suit to the problem in MHD plasma. The work is in progress.

2.There is collaborative activity with Central Railway for Identification and formulation of Failure Mechanism and Brake Design. This is to be formulated as a project which will deal with:

* Mathematical Modelling involving Finite Element Method and Optimisation.
* Statistical Analysis.
* Stress Analysis.

3. Industrial Interactions through Individual Contacts.

Apart from the study group meeting mentioned above, from time to time, the members of the IMG are interacting with senior executives of various industries, namely; Cytel Software (India) Pvt. Ltd. (Pune), Pfizer Ltd., and Hindustan Motors.

Some of the major developmental works already completed or in progress are as follows:

Consultancy project:

Organization: QuantLink Solutions Pvt. Ltd., Pune

Topic : Comprehensive Testing of Statistical Features in the XLMiner Excel Add-In

4. Resource Generated (Techniques / Software Developed In-House).

Tracking Across Discontinuities in ODE using Gears Algorithm (IMG-RR-01--04).

5. Collaborative Research with Academic Institutes.

* Harsh Jain from Cambridge University visited IMG Lab for two months in summer and did work on `Neural Network Solutions of ODEs', (TR-01--02).

* National Training Programme and Short Course on Industrial Mathematics and Applications, organized by Department of Mathematics, University of Keylania, Srilanka and IMG at Keylania, Sri Lanka- 26th to 30th December' 01.

It was funded by UNESCO and the IMG Resource persons were - Professors Mohan C Joshi , Amiya K Pani and Kannan Moudgakya. Professor Mohan C. Joshi discussed a module on `Optimization' Professor Amiya Kumar Pani talked about `Scientific Computing' and Professor Kannan Moudgalya spoke on `Modelling and Simulation'.

The general format was based on Case study approach to motivate the mathematical techniques, the advantages and disadvantages associated with the tools and PC based tutorials. The participants were drawn from universities, research organizations and industry of Sri Lanka. The programme was highly appreciated and a MOU for close interactions with Kelaniya University on Industrial Mathematics was drafted in the final day of this programme.

6. Lecture Series:

During the last semester, the IMG organized two weekly lecture series :

1. Development of Riemann Solvers for Hyperbolic Conservation Laws: Professor J. C. Mandal gave a series of lectures on every Saturday during September--November'01.
2. As a part of our activity on financial mathematics, Professor Suresh Kumar gave a series of lectures on financial derivatives on every Monday from October--December'01.

During the last semester, IMG also organized a few talks on MATLAB, MATHEMATICA as a part of its activity to develop awareness amongst the campus community.

7. Research Reports and Technical Reports brought by IMG.

Technical Reports.

1. IMG-TR-2001-1, Ch. V. V. M. Sarma and Mohan C. Joshi, Solving Ordinary Differential Equations using Feedforward Neural Networks.

2. IMG-TR-2001-2, Harsh V. Jain (University of Cambridge, U.K.), Computation of Transition Matrix for Solving Semi-Linear Differential Equations using Neural Networks.

3. IMG-TR-2001-3, Sachin B. Patkar and Ravi Shankar Gautam, Geometric Modeller for Convex Surfaces.

4. IMG-TR-2001-4, M. K. Ram Prasad and Mohan C. Joshi, Parameter Estimation involving Differential Equations.

Research Reports.

1. IMG-RR-2001-1 Kannan Moudgalya, A Class of Discontinuous Dynamical Systems - III: Degrees of Freedom Analysis.

2. IMG-RR-2001-2 Pradeepa Nair and Amiya K. Pani, Finite Element Approximations to an Injection Moulding Process.

3. IMG-RR-2001-3 Amiya K. Pani, Jin Yun Yuan and Pedro D. Damzio,
On Linearized Backward Euler Method for the Equations of Motion Arising in the Oldroyd Model.

4. IMG-RR-2001-4 Jyoti Agrawal, Kannan M. Moudgalya and Amiya K. Pani,
An Efficient Integration Algorithm for a Class of Discontinuous Dynamical Systems in Sliding Motion.

5.IMG-RR-2001-5 Prashant Vora, Kannan M. Moudgalya and Amiya K. Pani,
Control of a Higher Index DAE System through a Linear Control Law.

6. IMG-RR-2001-6 Manuel C. J. Barreda, Amiya K. Pani and Jin Yun Yuan,
Discontinuous Galerkin Methods for Linear Parabolic Equations.

7. IMG-RR-2001-7 Carlos H. Santos, Amiya K. Pani and Jin Yun Yuan,
Spectral Galerkin Method for the Equations of Motion Arising in the Kelvin-Voight Fluids.

Faculty and their Specializations:
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1. Chaturani P.
Applied Mathematics(Fluid Mechanics, Biomechanics)

2. Ghorpade S.R.
Algebra, Algebraic Geometry, Combinatorics, Coding Theory, Commutative Algebra

3. Joshi K.D.
Topology / Algebraic Topology

4. Joshi M.C.
Nonlinear Analysis, Control Theory, Industrial Mathematics

5. Joshi R.R.
Computational Biology. Biostatistics. Bioinformatics.

6. Kulkarni R.P.
Numerical Functional Analysis, Spline Theory, Computer Aided Geometric Designs.

7. Limaye B.V.
Numerical Functional Analysis

8. Pai D.V.
Functional Analysis, Approximation Theory, Set-valued Analysis

9. Pani A.K.
Numerical Analysis, Partial Differential Equations, Industrial Mathematics.

10. Parihar K.S.
Mechanics of Solids

11. Patkar S.,B.
Mathematical Programming, Combinatorial Optimization

12. Prem Narain
Numerical Analysis

13. Prakash J.
Tribology

14. Rana I.K.
Real Analysis

15. Ranjan A.
Differential Geometry.

16. Sabnis S.V.
Reliability Theory and Applied Statistics

17. Sharma V.D.
Quasi-linear Systems of Partial Differential Equations/Nonlinear Waves

18. Shastri A.R.
Algebraic Topology, Algebraic Geometry

19. Srinivasan G.K.
Partial Differential Equations

20. Srinivasan M.K.
Combinatorics

21. Sureshkumar K.
Stochastic Calculus and its Applications

22. Subramanyam A.
Statistical inference, Geo-statistics

23. Swaminathan V.
Statistical Inference for Stochastic Processes

24. Vellaisamy P.
Statistical Inference, Applied Probability, Sampling Plans

25. Verma J.K.
Commutative Algebra

26. Balwant Singh (Visiting Faculty)
Algebraic Geometry and Commutative Algebra

Collaborative Research Outside the Institute.

Balwant Singh

On varieties with semi-normal sections with Leslie G. Roberts of Queen's University, Kingston, Canada.

Chaturani P.

1. Jamia Millia Islamia University (UGC project)
2. Rajasthan Univ., Jaipur (CSIR Project)

Ghorpade S. R.

1. Prof. Christian KRATTENTHALER
   Institut fur Mathematik der Universitaet Wien
   Vienna, AUSTRIA

2. Prof. Gilles LACHAUD
   Institute de Mathematiques de Luminy (IML)
   Marseille, FRANCE

3. Prof. Michael A. TSFASMAN
   Institute for Information Transmission Problems
   Moscow, RUSSIA [and also IML, Marseille, FRANCE]

4. Prof. Daya-Nand VERMA
   (retired from:) Tata Institute of Fundamental Research
   Mumbai.

Joshi M. C.
University of Kaiserslautern, Germany and University of Twente, Netherlands

Joshi R. R.
Research interaction with molecular biophysics labs in TIFR, BARC and with the Bioinformatics Center, Pune.

Limaye B. V.

1. M. Ahues and A. Largillier of the University of St-Etienne, France.
2. Prepared the manuscript of a paper entitled `Computation of Spectral Subspaces for Weakly Singular Operators' jointly with M. Ahues.

Pani A. K.

1. Rajen K. Sinha (IIT Guwahati) on numerical methods for the strongly damped wave equations.

2. Graeme Fairweather (Colorado School of Mines) on mixed finite element methods and ADI orthogonal collocation procedures for partial integro-differential equations.

3. Jin Yun Yuan (UFPR, Curitiba, Brazil) on on theoretical and computational issues related to Oldroyed Model in Viscoelastic Fluid Flow Problems.

4. Sang K. Chung (Seoul National Univ., Korea) on finite element methods for fourth order Evolution Equations.

Shastri A. R.
Partial results obtained on some problems on Map-coloring with Prof. A.R. Aithal, University of Mumbai.

Sureshkumar K.
1. Prof. A. Bagchi, University of Twente, The Netherlands
2. Prof. M.K. Ghosh, IISc Bangalore

Vellaisamy P.
With Prof. M. Taniguchi of Osaka University on developing sampling plans for monitoring general dependent process.

Awards and Honours:

Joshi Rajni :

Member National Task Force on Bioinformatics

Murali K. Srinivasan:

Excellence in Teaching by IIT Bombay .

Sharma V.D.:

1. M.N.Saha Award for Research in Theoretical Sciences for the Year 2001;instituted by the University Grants Commission, Govt. of India as the UGC-Hari Om Ashram Trust National Award.

2. Distinguished Services Award from Vijnana Parishad of India and the Indian Society of Information Theory and Applications for Outstanding Contributions to Promote Applications of Mathematics in India, 2002.

Workshops Organised:

Patkar S.B.:

1. Title: IEP workshop on Combinatorial Optimization in VLSI Layout
Duration: 18 February 2002 to 1st March 2002
Details: The audience included faculty members from Regional Engineering Colleges

2. Title: CEP on Java 2 Standard Edition (for ZILS)
Duration: November 2001 to December 2001
Details: Videotapes of 20 hours duration were prepared. 500 slides were prepared for presentation.

Verma J.K.:

1. Title: NBHM Nurture Programme in mathematics
Duration: one month
Details: Training programme sponsored by NBHM at TIFR, Bombay

2. Title: Ramanujan Day
Duration: one day
Details: Programme organized for school children to celebrate Ramanujan's birthday at Nehru Science Planetarium, Mumbai.

Consultancies:
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Patkar S.B.:

1. Title: Investigations in Multidimensional Databases
Sponsor: vistaar.com
Amount: 200000
Begin year: 2001
End year: 2002
Details: Vistaar.com is a startup engaged in building enterprise application servers.

2. Title: Analysis of Resource Allocation for a pumps manufacture
Sponsor: Det Norske Veritas
Amount: 15000
Begin year: 2001
End year: 2002
Details: Resource allocation problems were modeled and solved.

Sponsored Projects:
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Joshi M.C. and Pani A.K.:

Primary Investigator: Joshi M.C. and Pani A.K.
Title: Doing Industrial Mathematics ....
Sponsor: DST
Amount: ~ Rs. 30 lacs
Begin year: 1999
End year: Ongoing
Code:

Joshi Rajni :

Primary Investigator: Prof. Rajani Joshi
Title: Development of Neural Network Based A.I. Software for Epitope-Paratope Designing.
Sponsor: Department of Biotechnology, New Delhi
Amount: ~ Rs. 12.3 lacs
Begin year: 2001
End year: 2002
Code: 98DB001

Patkar S.B.:

1. Primary Investigator: H. Narayanan (Dept EE, IIT B)
Co Investigator: Sachin Patkar, Madhav Desai
Title: Circuit Simulator, General Purpose Partitioners
Sponsor: Naval Research Board
Begin year: 2002
End year: 2002
Code: 98NR002

2. Primary Investigator: S.S.S.P.Rao
Co Investigator: Sachin Patkar, Madhav Desai, H. Narayanan
Title: SMDP (Sustained Manpower Development Programme) Project on Development of Lecture Modules for a 40 hour course on Combinatorial Optimization in VLSI Layout
Sponsor: Dept. I.T. Government of India
Begin year: 1999
End year: 2002

Sabnis Sanjeev V. :

Primary Investigator: Sanjeev V. Sabnis
Co Investigator: -
Title: Study of Optimal Reliability Test Plans
Sponsor: DST
Amount: 5.18 lacs
Begin year: 2002
End year: 2002
Code: N.A.

Sharma V.D.:

Primary Investigator: Prof. V.D.Sharma
Co Investigator: Prof.G.K.Srinivasan
Title: On Analytical and Numerical Solutions of Hyperbolic and Parabolic PDEs with Applications.
Sponsor: CSIR
Amount: 6 lacs
Begin year: 2002
End year: 2005

Vellaisamy P.:

Primary Investigator: P. Vellaisamy
Co Investigator: nil
Title: Design, Estimation and Software development of Single and Double Sampling Plans for Dependent Production Processes.
Sponsor: CSIR, New Delhi.
Amount: Rs. 402267
Begin year: 2001
End year: 2002
Code: PCX98011

Publications:
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(A) Books / Chapters in Book

Joshi K.D.:

Title: Calculus for Scientists and Engineers- An Analytic Approach
Year: 2002
Publisher: Narosa Publishing House, New Delhi
Details: Calculus for Scientists and Engineers - An Analytic Approach(advance copy)

Joshi M.C.:

Coauthors: Kannan Moudgalya
Year: 2002
Publisher: Narosa Publishing
Details: Jointly with Kannan Moudgalya, Department of Chemical Engineering Optimization - TO be Published by Narosa Publishing Co-sponsored by the Curriculum Development Cell, IITB

Pai D.V.:

Coauthors: Indira K.
Title: Strong Unicity in Simultaneous Approximation
Year: 2002
Publisher: Narosa Publishing House, New Delhi
Details: Page Nos.207-219, in the book entitled `` Analysis and Applications`` edited by H. P. Dikshit and Pawan K. Jain

(B) Papers in Proceedings

Ghorpade Sudhir R. :

Coauthors: G. Lachaud
Title: Number of solutions of equations over finite fields, and a conjecture of Lang and Weil,
Year: 2002
Proceedings: Number Theory and Discrete Mathematics (Chandigarh, 2000),
National/International: international
Details: Number of solutions of equations over finite fields, and a conjecture of Lang and Weil, in: Number Theory and Discrete Mathematics (Chandigarh, 2000), A. K. Agarwal, B. Berndt, C. Krattenthaler, G L Mullen, K Ramachandra and M. Waldschmidt Eds., Hindustan Book Agency, New Delhi (2002), pp. 269-291 [Co-published outside India as a volume in the Trends in Mathematics series by Birkhauser, Basel.]

Pani A.K.:

1. Coauthors: Pradeepa Nair
Title: Finite element approximation to an evolutionary variational inequality with a Volterra term
Year: 2002
Proceedings: Finite element approximation to an evolutionary variational inequality with a Volterra term
National/International: international
Details: Proceeding of the First International Conference on Industrial Mathematics in the Indian Sub-Continent.

2. Coauthors: Prashant Vora and Kannan M. Moudgalya
Title: Control of higher index DAE system through a linear control law
Year: 2002
Proceedings: Proceedings of 2002 American Control Conference
National/International: international
Details: Accepted in the Proceedings of 2002 American Control Conference

3. Coauthors: Jyoti Agrawal and Kannan M. Moudgalya
Title: A nonlinear gas-liquid system in sliding motion
Year: 2002
Proceedings: Proceedings of 2002 American Control Conference
National/International: international
Details: Accepted in the Proceedings of 2002 American Control Conference(2002 ACC)

4. Coauthors: Pradeepa Nair
Title: Finite element approximation to an injection moulding process
Year: 2001
Proceedings: Proceedings of the Internation Conference on Industrial Mathematics,IIT Madras
National/International: international
Details: Proceeding of the International Conference on Industrial Mathematics, IIT Madras(August 12-14-2001)

SureshKumar K.:

Coauthors: A. Bagchi

Title: Dynamic asset management: Risk-sensitive criterion with nonnegative factors constraints.
Year: 2002
Proceedings: Proceedings of the International Conference on Mathematical Finance, Shanghai, China, World Scientific, Singapore.
National/International: international
Details: Dynamic asset management: Risk-sensitive criterion with nonnegative factors constraints, Proceedings of the international conference on Mathematical Finance, Ed. J. Yong, World Scientific, Singapore, 2002.

(C) Publications in Referreed Journals

(i) National

Pai D.V.:

1. Coauthors: Sadiq Basha S. and Veeramani P.
Title: Best proximity pair theorems
Year: 2001
Journal: Indian J. Pure Appl. Math.
Issue: 32(2001), no.8, 1237-1246
Details: Best proximity pair theorems, Indian J. Pure Appl. Math. 32(2001), no. 8, 1237-1246

2. Title: Strong uniqueness of best simultaneous approximation
Year: 2001
Journal: J. Indian Math. Soc.
Issue: (N.8)67(2001), n0. 1-4, 201-215
Details: Strong uniqueness of best simultaneous approximation, J. Indian Math. Soc. (N.8)67(2001), no.1-4, 201-215

(ii) International

Balwant Singh:

Title: Weak sub-integrality and invertible modules in graded rings
Year: 2001
Journal: J. Algebra
Issue: Vol, 237(2001), 657-672
Details: Weak sub-integrality and invertible modules in graded rings, J. Algebra, Vol.237 (2001), 657-672

Ghorpade Sudhir R. :

1. Coauthors: G. Lachaud
Title: Hyperplane sections of Grassmannians and the number of MDS linear codes
Year: 2001
Journal: Finite Fields and their Applications
Issue: Vol. 7, No. 4 (October 2001)
Details: Hyperplane sections of Grassmannians and the number of MDS linear codes, Finite Fields and their Applications, Vol. 7, No. 4 (2001), pp. 468-506.

2. Title: Hilbert functions of ladder determinantal varieties
Year: 2002
Journal: Discrete Mathematics
Issue: Vol. 246 (March 2002)
Details: Hilbert functions of ladder determinantal varieties, Discrete Mathematics, Vol. 246 (2002), pp. 131-175.

Joshi M.C. :

1.Coauthors: H.C.Dhariwal, D.N.Malkhede
Title:On Optimisation of PID Governor for diesel engines.
Year: 2002
Journal: Mathematical Modeling and Analysis.
Issue: Vol.7(2002).

Joshi Rajni :

1. Coauthors: Jyothi S.
Title: Ab-initio Structure of Human Seminal Plasma Prostatic Inhibin Gives Significant Insight into its Biological Functions. Jnl. Of Molecular Modeling.
Year: 2002
Journal: Jnl. Of Molecular Modeling
Issue: Vol. 8(2) 50-57

2. Title: Epitope-Paratope Recognition by Knowledge Based Correlation Mapping Using Hopfield Network.
Year: 2001
Journal: Protein Peptide Letters
Issue: Vol. 8 (4) pp. 257-264.

3. Coauthors: Jyothi S.
Title: Protein Structure Determination by Nonparametric Regression and Knowledge Based Constraints
Year: 2001
Journal: Computers & Chemistry
Issue: Vol.25 (3) pp. 283-299.

4. Coauthors: Jyothi S.
Title: Protein Structure Determination by Nonparametric Regression and Knowledge Based Constraints
Year: 2001
Journal: Computers & Chemistry
Issue: Vol.25 (3) pp. 283-299.

Kulkarni Rekha P. :

Title: Spectral Approximation using Iterated Discrete Galerkin method
Year: 2002
Journal: Numerical Functional Analysis and Optimization
Details: Spectral Approximation using Iterated Discrete Galerkin method, Accepted for publication in Numerical Functional Analysis and Optimization

Pai D.V.:

Coauthors: Shunmugaraj P.
Title: Stability results for optimal values, Constrained level sets and approximate minima
Year: 2001
Journal: Nonlinear Anal. Forum
Issue: 6(2001), no.1, 219-231
Details: Stability results for optimal values, constructed level sets and approximate minima, Nonlinear Anal. Forum 6(2001), no.1, 219-231

Pani A.K.:

1. Coauthors: Sang K. Chung
Title: Numerical methods for the Rosenau equation
Year: 2001
Journal: Applicable Analysis
Issue: 77(2001), pp. 351-369
Details: Numerical methods for the Rosenau equation, Applicable Analysis, 77(2001), pp. 351-369

2. Coauthors: Graeme Fairweather
Title: Galerkin mixed finite element methods for parabolic integro-differential equations in one space variable
Year: 2002
Journal: IMA J. Numer. Anal.
Issue: 22 (2002), pp. 231--252
Details: Galerkin mixed finite element methods for parabolic integro-differential equations in one space variable.

3. Coauthors: Graeme Fairweather
Title: An H^1-Galerkin mixed finite element method for an evolution equation with a positive type memory term, (Accepted)
Year: 2002
Journal: SIAM J. Numer. Anal.
Issue: (accepted)

Patkar S.B.:

1. Coauthors: Satoru Fujishige
Title: Realization of set functions as cut functions on graphs and hypergraphs Discrete Mathematics, 226, 199-210, (2001).
Year: 2001
Journal: Discrete Mathematics
Issue: 226
Details: pp. 199-210

2. Coauthors: H. Narayanan
Title: A Note on Optimal Covering Augmentation for Graphic Polymatroids, Information Processing Letters, 79, 285-290, 2001
Year: 2001
Journal: Information Processing Letters
Issue: 79
Details: pp. 285-290

Sabnis Sanjeev V. :

Coauthors: Hariharan Nair
Title: A Reliability Test Plan for Systems with Components having Stochastic Failure Rates
Year: 2002
Journal: IEEE Transactions on Reliability
Issue: March 2002
Details: Vol. 51, pages 17-22.

Sharma V.D.:

Coauthors: J.Jena
Title: "Propagation and Interaction of Waves in a Non-ideal Gas"
Year: 2001
Journal: ZAMM(Germany)
Issue: Vol.81,Pages 417-429.

SureshKumar K.:

1. Coauthors: M.K.Ghosh, A.K. Nandakumaran, K.S.M. Rao
Title: A note on Stochastic Minimax Principle
Year: 2001
Journal: Differential Equations and Dynamical Systems
Issue: Vol 9, pp. 105-112
Details: A note on Stochastic Minimax Principle, Differential Equations and Dynamical Systems, (2001) Vol. 9, pp. 105-112

2. Coauthors: M. K. Ghosh
Title: A Stochastic differential game in the orthrant
Year: 2002
Journal: Journal of Mathematical Analysis and Applications
Issue: 265, pp. 12-37.
Details: A Stochastic differential game in the orthrant, (2002) No. 265, pp. 12-37.

Swaminathan V. :

Title: Inference for finite Markov process in random environments
Year: 2001
Details: Submitted for publication.

Vellaisamy P.:

1. Coauthors: Abraham P. Punnen
Title: On the nature of the binomial distribution.
Year: 2001
Journal: Journal of Applied Probability
Issue: Vol. 38(2001), pp. 36-44
Details: On the nature of the binomial distribution. Journal of Applied Probability, 38(2001), 36-44,

2. Coauthors: S. Sankar
Title: Sequential and systematic sampling plans for Markov-dependent production process
Year: 2001
Journal: Naval Research Logistics
Issue: Vol. 48(2001), pp. 451-467

3. Coauthors: S. Hande
Title: Some majorization properties of order statistics from heterogeneous populations.
Year: 2001
Journal: Metron
Issue: Vol. 59(2001), pp. 55-65.

4. Coauthors: Abraham P Punnen
Title: Improved estimators for the selected location parameters.
Year: 2002
Journal: Statistical Papers
Issue: Vol.43, pp. 291-299

5. Coauthors: S. Sankar
Title: Two-stage component test plans for testing the reliability of a series system.
Year: 2002
Journal: Naval Research Logistics
Issue: Vol. 59 (2002), pp. 95-116

Presentation/Participation in Conferences / Symposia/Special Lectures:
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Balwant Singh:

Topic: A glimpse of Algebriac Geometry
Venue: IIT Bombay
Details: A glimpse of Algebriac Geometry

Ghorpade Sudhir R. :

1. Topic: "Linear Codes associated to Grassmannians and Schubert Varieties"
No of lectures: 1
Venue: International Conference on Arithmetic, Geometry and Coding Theory(AGCT - 8), Centre Internationale de Recontres Mathematiques (CIRM), Luminy ,France
Date: May 2001
Details: "Linear Codes associated to Grassmannians and Schubert Varieties"International Conference on Arithmetic, Geometry and Coding Theory(AGCT - 8), Centre Internationale de Recontres Mathematiques (CIRM), Luminy ,France May 2001

2. Topic: "Hilbert Series of Pfaffian rings"
No of lectures: 1
Venue: International Conference on Algebra and Geometry, University of Hyderabad, Hyderabad
Date: December 2001

Details: "Hilbert Series of Pfaffian rings" International Conference on Algebra and Geometry, University of Hyderabad, Hyderabad December 2001

3. Topic: Bezout's Theorem
Type: Invited Lecture
No of lectures: 5
Venue: UGC Refresher Course on Elliptic Curves and Cryptography, University of Mumbai
Date: February-March 2002.
Details: `Bezout's Theorem'', A series of five lectures, UGC Refresher Course on Elliptic Curves and Cryptography, University of Mumbai, Mumbai, February-March 2002.

4. Topic: Grassmannians, Schubert varieties and error correcting codes
Type: seminar
No of lectures: 1
Venue: The Institute of Mathematical Sciences, Chennai
Date: 04-03-2002.
Details: `Grassmannians, Schubert varieties and error correcting codes', Mathematics Colloquum, The Institute of Mathematical Sciences, Chennai, March 2002.

5. Topic: Binomial Coefficients and Determinants
Type: Invited Lecture
No of lectures: 1
Venue: Bhaskaracharya Pratishthana, Pune.
Date: 11-03-2002.
Details: `Binomial Coefficients and Determinants', Special Lecture for College and University Students on the occasion of the Silver Jubilee year, Bhaskaracharya Pratishthana, Pune, March 2002.

6. Topic: Introduction to Coding Theory and Algebraic Geomerty.
Type: seminar
No of lectures: 6
Venue: Shivaji University Kolhapur.
Date: Oct 2001.
Details: Delivered 6 lectures on Introduction to Coding Theory and Algebraic Geomerty at UGC Refresher Course on Recent Developments in Mathematics.

7. Conference Title: Symposium on Mathematics and Mathematics Education (in honour of Prof. C. S. Seshadri's 70-th Birthday)
National/International: national
Lectured (yes/no): no
Organisation: Chennai Mathematical Institute, Chennai
Sponsor: CMI and MatScience, Chennai
From date: 01-03-2002
To date: 01-03-2002

Joshi K.D.:

1. Topic: Ramanujan and Experimentation in Mathematics
Type: Invited Lecture
No of lectures: 1
Venue: Nehru Planetorium, Mumbai
Date: 22-01-2001
Details: Invited Talk delivered in Marathi

2. Topic: Homotopy and Fundamental Group
Type: Invited Lecture

No of lectures: 11
Venue: Gogate-Joglekar College, Ratnagiri
Date: 08-03-2002 to 10-03-2002
Details: Lectures for M.Sc. students at the post-graduate centre of University of Mumbai.

Joshi M.C.:

1. Topic: "Control Theory with Solvability Perspective"
No of lectures: 1
Venue: International Conference on Current Trends in Differential Equations and Dynamical Systems, IIT Kanpur
Date: 15-17 december 2001
Details: INTERNATIONAL CONFERENCE One Hour Invited Talk on:"Control Theory with Solvability Perspective" International Conference on Current Trends in Differential Equations and Dynamical Systems, IIT Kanpur 15-17 december 2001

2. Topic: "Introduction to Optimization"
Venue: National Training Programme and Workshop on Industrial Mathematics at Kelaniya University, Columbo
Date: 26-30 December 2001
Details: INTERNATIONAL CONFERENCE 10 Hour Lecture Series on:"Introduction to Optimization" in the National Training Programme and Workshop on Industrial Mathematics at Kelaniya University, Columbo 26-30 December 2001

Joshi Rajni :

1. Topic: Neural Computing and Applications in Molecular Biology/Bioinformatics
Type: Invited Lecture
Venue: Bioinformatics Center, Pune
Date: 16-18 Feb 2001
Details: Neural Computing and Applications in Molecular Biology/Bioinformatics at Bioinformatics Center, Pune

2. Topic: Artificial Intelligence and Computational Methods in Molecular Immmunology.
Type: seminar
Venue: CBME, IIT Delhi.

3. Topic: Invited Seminar on "Knowledge Based and Statistical Methods for Ab-intio Prediction of Protein Structure".
Type: Invited Lecture
No of lectures: 1
Venue: Functional Genomics Div., CBT, Delhi.
Date: 24th May, 2001

4. Topic: Invited lecture series on "Neural Computing and Applications in Molecular Biology/Bioinformatics"
Type: Invited Lecture
No of lectures: 10
Venue: Bioinformatics Center, Pune.
Date: 16th -18th Feb. 2002

5. Conference Title: Special Workshop on Bioinformatics for Software

Engineers
National/International: national
Lectured (yes/no): yes
Title of Talk: Neural Network Computations andNeural Network Computing and Applications to Antigen Antibody Interactions
No of Lectures: 04
Organisation: Bioinformatics Centre, Pune
Sponsor: Satyam Computers Ltd.
From date: 20 Aug
To date: 21 Aug

Kulkarni Rekha P. :

Topic: Nystron Method
No of lectures: 1
Venue: Cochin University of Science and Technology Cochin
Date: August 6-15 2001
Details: International Invited Lecture on Nystrom Method in the International Workshop on Linear Algebra, Numerical Functional Analysis and Wavelet Analysis held at Cochin Institute of Science and Technology. Cochin

Limaye B.V.:

Topic: Infinite Dimensional Spectral Approximation
Type: Invited Lecture
No of lectures: 1
Venue: Cochin University of Science and Technology
Date: August 2001
Details: Invited Talk on:Infinite Dimensional Spectral Approximation lesser than br greater than in the International Workshop at Cochin University of Science and Technology lesser than b

Pai D.V.:

1. Topic: Optimal estimation of functions
No of lectures: 2
Venue: Dr. BabaSaheb Ambedkar Marathwada University Aurangabad
Date: Sept 2001
Details: International Two lectures entitled Optimal estimation of functions in a U.G.C sponsored Refresher Course in Department of Mathematics Dr. BabaSaheb Ambedkar Marathwada University Aurangabad

2. Topic: Approximation Theory-Some New Glimpses
Type: seminar
No of lectures: 1
Venue: Department of Mathematics, Allahabad University
Date: 14-02-2002
Details: Delivered a one and half hour lecture entitled Approximation Theory-Some New Glimpses at the Department of Mathematics, Allahabad University on the 14th February ,as a part of the programme for the meeting of the Programme Advisory Committee-Mathematical Sciences(PAC-MS) of DST.

Pani A.K.:

1. Topic: Oldroyd Model of Viscoelastic Fluids
No of lectures: 1
Venue: IIT Kanpur
Date: 15-17 December 2001
Details: International Oldroyd Model of Viscoelastic Fluids: Some Theoretical and Computational Issues(45 minutes talk) in the International Conferenceon Current Trends in Differential Equations and Dynamical Systems, held in IIT Kanpur from 15-17th December 2001

2. Topic: Finite element approximations to an injectional moulding process
No of lectures: 1
Venue: International Conference on Industrial Mathematics IIT Madras
Date: 12-14 August 2001
Details: International Finite element approximations to an injectional moulding process International Conference on Industrial Mathematics IIT Madras from 12-14 August 2001. (Presented by Pradeepa Nair)

3. Topic: Finite element analysis of a class of viscoelastic problem with memory under conditions of friction
No of lectures: 1
Venue: International Conference on Current trends in Differential Equations and Dynamical Systems IIT Kanpur
Date: 15-17 December 2001
Details: International Finite element analysis of a class of viscoelastic problem with memory under conditions of friction International Conference on Current trends in Differential Equations and Dynamical Systems IIT Kanpur from 15-17 December 2001 (Presented by Pradeepa Nair)

4. Topic: An alternate mixed finite element Galerkin methods for evolution equations
No of lectures: 1
Venue: Department of Mathematics Brunel University U.K
Date: july 2001
Details: International An alternate mixed finite element Galerkin methods for evolution equations (one hour Seminar talk) BICOM Department of Mathematics, Brunel University U.K july 2001

5. Topic: A series of Lectures on Discontinuous Galerkin methods for Elliptic Problems
Venue: Department of Mathematics UFPR(Curitiba) Brazil
Date: June-July 2001
Details: International A series of Lectures on Discontinuous Galerkin methods for Elliptic Problemsries of Lectures on Discontinuous Galerkin methods for Elliptic Problems Department of Mathematics UFPR(Curitiba) Brazil June-July 2001

6. Topic: A Series of Lectures on Kelvin Voight Fluids
Venue: Department of Mathematics UFPR (Curitiba) Brazil
Date: June-July 2001
Details: International A Series of Lectures on Kelvin Voight Fluids Department of Mathematics UFPR (Curitiba) Brazil June-July 2001

7. Topic: Scientific Computing
Venue: National Training Programme and Workshop on Industrial Mathematics Kelaniya University Colombo
Date: 26-30th December 2001

Details: International 10 hour Lectures on Scientific Computing in the National Training Programme and Workshop on Industrial Mathematics Kelaniya University Colombo during 26-30th December 2001

8. Topic: Popular Lecture Series Navier Stokes Equation : A million dollar problem.
No of lectures: 1
Venue: IIT Bombay.

9. Topic: The Mathematical Sciences at IITB:The Road Ahead.
Type: seminar
Venue: IIT Kanpur.
Date: 18-12-2001.
Details: The Mathematical Sciences at IITB:The Road Ahead. A general talk given in the Dept. of Mathematics, IIT Kanpur.

10. Topic: Seven Millennium Prize Problems
Type: seminar
No of lectures: 1
Venue: Department of Mathematics, Utkal University (Orissa)
Date: 19-04-2002

Patkar S.B.:

1. Topic: Applications of Combinatorial Optimization in VLSI Layout
Type: seminar
No of lectures: 14
Venue: CSE Dept. IIT Bombay
Date: Feb 2002
Details: Lectures were part of the IEP Workshop on the same topic for Faculty Members from Regional Engineering Collecge

2. Topic: Applications of Combinatorial Optimization in VLSI Layout
Type: seminar
No of lectures: 20
Venue: Educational Technology Cell, IIT B
Date: December 2001
Details: These lectures were videotaped for limited use by ZILS

Sabnis Sanjeev V. :

1. Topic: Construction of Optimal Reliability Test Plans
Type: Invited Lecture
No of lectures: 1
Venue: Research & Development Establishment (Engineers), DRDO Lab, Pune
Date: 19-4-2002

2. Topic: Logistic Regression and its Applications.
Type: seminar
No of lectures: 2
Venue: University of Mumbai, Mumbai.
Date: Oct 2001.
Details: Two one-half hour lectures on Logistic Regression and its Applications in Refresher Course held at University of Mumbai, Mumbai.

3. Topic: Classification and Regression Trees.
Type: Invited Lecture
No of lectures: 1
Venue: Dept. of Statistics. University of Pune.
Date: 22-10-2001.
Details: Classification and Regression Trees in Dept. of Statistics. University of Pune.

Sharma V.D.:

Topic: On the Transport Equations for Wave Amplitudes in a Non-uniform Atmosphere.
Type: Invited Lecture
No of lectures: 1
Venue: NSIT, New Delhi.
Date: 23-02-2002
Details: Joint 9th National Conference of Vijnana Parishad of India on Applied and Industrial Mathematics and The 5th National Conference of Indian Society of Information Theory and Applications.

Shastri A.R.:

1. Topic: On Basic Properties of Hyperbolic Groups
Type: Invited Lecture
No of lectures: 6
Venue: Stat-Math Division, Indian Statistical Institute, Kolkotta
Date: 11th March to 22 March, 2002
Details: Special Invited Lectures, as a part of the year-long natinal activity on Hyperbolic Groups.

2. Topic: Differential Manifolds
Type: Invited Lecture
No of lectures: 6
Venue: T. I.F.R.
Date: May-June 2001.
Details: Six lectures to NBHM Nurture kids on Differential Manifolds , at T. I.F.R. during May-June 2001. I wasin charge of the training in Topology for these 132 students.

3. Topic: Gluing Metric spaces with Application to Hopficity of Groups Theory.
Type: Invited Lecture
No of lectures: 6
Venue: Harischandra Research Institute, Allahabad.
Date: Sept 17th to 21st , 2001.
Details: Six lectures on ' Gluing Metric spaces with Application to Hopficity of Groups 'in the National symposium on Geometric Group theory at Harischandra Research Institute, Allahabad during Sept 17th to 21st , 2001.

4. Topic: Commutative Algebra and Algebraic Geometry.
Type: Conference
No of lectures: nil.
Venue: Central University of Hyderabad.
Date: 6th-12th Dec. 2001.
Details: Participated in the International conference on Commutative Algebra

and Algebrain Geometry at Central University of Hyderabad , during 6th-12th Dec. 2001.

5. Topic: Regular Homotopies.
Type: Conference
No. of letures: One.
Venue: Dept. Math., University of Dehli
Date: 4th Jan to 8th Jan 2002
Details: International Conference on Transformation Groups and related topics.

Vellaisamy P.:

1. Topic: Systematic sampling Plans for Markov-dependent production Process.
Type: seminar
No of lectures: 1
Venue: IIT Madras.
Date: August 12-14, 2001.
Details: Delivered a lecture and Chaired a Session at the International Conference on Industrial Mathematics held at IIT Madras during August 12-14, 2001.

2. Topic: Estimation of the Selected Poisson Means.
Type: seminar
No of lectures: 1
Venue: Department of Statistics, University of Chandigarh.
Date: December 21-24.
Details: Delivered a lecture and Chaired a Session at the International Conference on statistical Inference and Reliability held at Chandigarh during December 21-24.

3. Conference Title: International Conference on Industrial Mathematics(ICIM-2001)
National/International: international
Lectured (yes/no): yes
Title of Talk: Systematic sampling Plans for Markov-dependent production Process.
No of Lectures: 1
Organisation: Department of Mathematics, IIT Madras.
Sponsor: NA
From date: 12-08-2001
To date: 14-08-2001

4. Conference Title: International Conference on Statistical Inference and Reliability held at Punjab University, Chandigarh, during Dec. 21-24, 2001.
National/International: international
Lectured (yes/no): yes
Title of Talk: Estimation of the Selected Poisson Means.
No of Lectures: 1
Organisation: Department of Statistics, University of Chandigarh.
Sponsor: NA
From date: 21-12-2001
To date: 24-12-2001

Verma J.K.:

1. Topic: Gorenstein invariant subrings
Type: seminar
No of lectures: 6
Venue: Indian Institute of Science, Bangalore

Date: 21-3-2001-31-3-2001

2. Topic: Finite fields
Type: Invited Lecture
No of lectures: 4
Venue: University of Mumbai
Date: Feb 25-Feb 27, 2001
Details: UGC Refresher Course "Elliptic Curves and Cryptography"

3. Topic: Bernoulli and his numbers
Type: seminar
No of lectures: 1
Venue: Bhavan's college, Andheri
Date: September 8, 2001
Details: Annual Mathematics Festival "Mathminar" of Bhavan's college.

4. Topic: Face rings of shellable simplicial complexes
Type: seminar
No of lectures: 5
Venue: TIFR, Bombay
Date: May-June, 2001
Details: Fourth Mathematics Nurture Programme

5. Topic: Spetral resolution of normal operators
Type: seminar
No of lectures: 4
Venue: University of Indore
Date: October 2001.
Details: UGC Refresher Course in Mathematics

6. Topic: Fourth Nurture and Contact Progremme for 1997 INMO Winners.
Type: seminar
Venue: TIFR Bombay.
Date: May 21 - June 16, 2001.
Details: Fourth Nurture and Contact Progremme for 1997 INMO Winners, supported by NBHM, TIFR Bombay.

Education Extension of Activities - Popular Lecture Series

The Mathematics Association of the Department organized the Popular Lecture series for the fourth year in succession.

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Popular Lecture Series in Mathematics
A joint activity of
Mathematics Association of IIT, Bombay
and
Bombay Mathematical Colloquium

Popular Lecture Series in Mathematics was started in 1997 by the Mathematics Association of IIT, Bombay. Twenty six lectures have been held under this series so far on diverse topics in mathematics. The lectures are aimed at a wide spectrum of audience. Besides mathematicians, we also invite scientists and engineers who apply

mathematics in research and development in their area. The speakers are instructed to start from the basics and build their lecture so that beginners as well as experts can benefit. The series has become extremely popular among students and faculty at IIT and college teachers in Mumbai.

Speakers in 2001-2002

Jan. 11
Sharat Chandran, IIT, Bombay
Calculus of Variations for computer vision

Feb. 8
B. Singh IIT, Bombay
A glimpse of algebraic geometry

Mar 1
S. S. Sane, Univ. of Mumbai
Graphs, groups and configurations

Apr. 5
A. K. Pani IIT, Bombay
Navier Stokes equations : A million dollar problem

Sep. 14
N. Nitsure, TIFR, Bombay
Existence, Truth, and Proof : Intro. to modern foundations of mathematics

Oct. 5
N. Mohan Kumar, Washington University in St. Louis
Equations defining algebraic varieties

Nov. 2
V. M. Gadre, IIT Bombay
An introduction to the world of wavelets

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Honorary work:
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Alladi Subramanyam:

Refereed papers for 3 journals

Chaturani P.:

Member research Board of Jiwaji University, Gwalior

Ghorpade Sudhir R. :

1. Worked as a member of the Board of Studies in Mathematics of University of Mumbai as well as University of Pune. Member of Moderation Committee at University of Pune, Nov. 2001 Appointed as Paper-setter and examiner for some M.A/M.Sc examinations of University of Mumbai. Resource person at the UGC Referesher Course on Recent Developments in Mathematics, held at Shivaji University, Kolhapur, during October 2001

2. Nominated Member of the Subcommittee for the preparation of Mathematics syllabi for the F.Y.B.Sc./B.A./B.C.S. programmes, University of Pune, March-April 2002.

3. Referee for the journal "Designs, Codes and Cryptography", published by Kluwer Academic Publishers, USA.

4. Nominated as a Co-opted Member (in the 'Experts category') on the Board of Studies in Mathematics, University of Pune , June 2001.

5. 'President du seance', that is , the Chairman of a session, during the International Conference on Arithmetic, Geometry and Coding Theory (AGCT- 8) held at the Centre International de Rencontres Mathematiques (CIRM) , Luminy, France, May 2001.

Jagdish Prakash:

1. Reviewed papers for Zentalblatt for Mathematik (Germany)

2. Refereed research papers for (1) Journal of Engineering Tribology, Proceedings of the Institution for Mechanical Engineers (U. K.) (2) Journal of Engineering and Material Sciences (CSIR).

Joshi M.C.:

Refereed research papers for Journal of Math. Anal. and Applications and Nonlinear Analysis - Theory, Methods and Applications. Member of a Selection Committee of one of the IITs

Joshi Rajni :

1. Referee for papers submitted to the international journals "Computers and O.R" and "Neural Processing Letters".

2. Referee for The Projects Submitted to DBT and DST

Kulkarni Rekha P. :

1. Evaluated two Ph.D theses: one from Indian Institute of Technology,Madras second from Jean Mnet University, Saint Etienne, France

2. Member of 0rganizing committee of International Workshop on 'Linear Algebra , Numerical Functional Analysis and Wavelet Theory ' held at Cochin University of Science and Technology , Cochin during August 6-15, 2001.

Murali K. Srinivasan:

Evaluated one Ph.D Thesis (Bombay University). Refereed one paper (for Indian Journal for Pure and Applied Mathematics)

Pai D.V.:

1. Nominated to work as a member of the P.A.C. (Programme Advisory Committee)-Mathematical Sciences, Department of Science and Technology, GOvt of India.

2. Member of a Selection Comittee for Faculty of one IIT Evaluated a Ph.D. Thesis of Banaras Hindu University, Banaras.

3. Evaluated a Ph.D. Theses of IIT Kanpur.

4. Refereed a research article for Journal of Indian Academy of Sciences.

5. Participated in the Joint Meeting of the Programme Advisory Committees on Atmospheric And Mathematical Sciences(PAC-AS & PAC-MS) of the Department of Science & Technology, Govt. of India held on the 13th February at Harish-Chandra Research Institute, Allahabad.

Pani A.K.:

1. Refereed for the Journals: Numerical Methods for PDEs, Applied Numerical
Mathematics, J. Computational and Applied Mathematics, SIAM J. Numer. Anal. Examiner of a Master's THesis from Federal Univ. Parana, Curitiba, Brazil

2. Member of the selection committee `Homi Bhabha Fellowships`

3. Member of the organising committee and Chairing two sessions of the International Conference on Current Trends in Differential Equations and dynamical Systems hel in IIT Kanpur during 15-17 Dec 2001.

4. Member of the editorial board,Differential Equations and Dynamical Systems:An Internatiional Journal.

5. Resource Person National Training Programme and Short Course on Industrial Mathematics and Its Applications, held in University of Kelaniya, Sri Lanka.

Patkar S.B.:

1. Refereed papers for Discrete Applied Mathematics, and Elsevier Journal

2. Reviewing a PhD thesis from University of Pune

Sabnis Sanjeev V. :

1. Reviewed one paper.

2. Member of Moderation Committee of the Dept. of Statistics, University of Pune, Pune for the Autumn 2001 semister.

3. Member of Executive Committtee of the Indian Society for Probablity and Statistics.

Sharma V.D.:

1. Reviewed five Papers and two Books for (i) Mathematical Reviews (USA) (ii) Zentralblatt MATH (Germany)

2. Reviewed 8 papers and 3 Books for (i) Mathematical Reviews (USA) (ii) Zentrablatt MATH (Germany)

Shastri A.R.:

1. Reviewed six papers for Math Review. Evaluated a Ph.D. thesis from CMI Chennai.

2. Evaluated applications for NBHM post-doc position.

3. Member of faculty selection committees of several technical institutes.

Swaminathan V. :

1. Refereed a paper for Journal of Indian Statistical Association

2. Refereed a paper for Journal of Indian Statistical Association

Vellaisamy P.:

1. Reviewed a research paper for the international journal Statistics and Probability Letters.

2. Evaluated a PhD Thesis from University of Bombay.

3. Evaluated a paper for Proceedings of an International Conference

4. Chaired a Session at the International Conference on Industrial Mathematics during August 12-14 2001.

5. Chaired a Session at the International Conference on Stastical Inference and Reliability held at Chandigadh during Dec. 21-24 2001.

Verma J.K.:

1. Refereed a paper of Journal of Algebra. Reviewed several articles for Mathematical Reviews

2. Member of the management committee of Bombay Mathematical Colloquium.

3. Nominated for the membership of management committee of "Bombay Mathematical Colloquium"

4. 0ne of the organizers and chair person of a session of the International conference on Algebre and Geometry held in Hyderabad.

5. One of the organizers of "Ramanujan Day celebrations " Organized by Nehru Planetarium and Bombay Mathematical Colloquium Dec22, 2001.

6. 0rganized the " 4th Nurture and Contact programme in Mathematics" at the
Tate Institute of Fundamental Research , Mumbai for the Winners of Indian National Mathematical 0lympiad , 1996.

Foreign Visits

The following faculty visited various institutions and universities outside the country during this period.

Balwant Singh
Queens' University Kingston, Canada, May-July 2001.

Ghorpade S. R.
Institut de Mathematiques de Luminy, Marseille, France, May-July 2001.

Joshi M. C.
Kelaniya Uni. Kelaniya; 26th-30th December 2001.

Kulkarni R.P.

1. INSA, Toulouse, France, 11th December 2001.
2. Jean Monet University, St Etienne, 17th -23rd December.
3. Joseph Fourier University, Grenoble, France, 7th- 16th December 2001 and 24th December to 4th January 2002.

Limaye B. L.
Uni. of St-Etienne, France for a period of 3 weeks during July -August, 2001.

Pani A. K.
1. Federal Univ. Panama, Curitiba (Ma-July 2001).
2. Brunal Univ. (UK), July 2001.
3. Kelaniya Uni. Columbo; 26th-30th December 2001.

Visitors

A Ph. D. student from University of Darmstadt, Germany visited visited the department for four months under DAAD. She was under under the supervision of Prof. A. R. Shastri.

The following seminars were presented by our visiting Faculty.

1. Prof. L. Elsner
University of Bielefeld, Germany
"Always convergent infinite products of matrices"
April 2, 2001

2. Prof. S.S. Bhoosnurmath
Department of Mathematics,
Karnatak University, Dharwar
"On Riemann Hypothesis"
June 6, 2001

3. Dr. Murad Banaji
(Ph.D., Univ. of London)
"Ways of Analysing Systems of Coupled Oscillators"
July 9, 2001

4. Prof. Alain Largillier,
John Monet Univ., Saint Etienne, France
"Eigenvalue Localization : New Trends"
August 2, 2001

5. Prof. Mario Ahues
John Monet Univ., Saint Etienne, France.
"Mathematical & Numerical Models for Radiative Transfer in Stellar: Atmosphere"
August 16, 2001

6. Dr. Mahendra Kumar Jena
Dept. of Mathematics, IIT Kanpur
"Subdivision Schemes in Computer Aided Geometric Design"
Sept. 3,2001

7. Prof. Augustin Chaintreau,

INRIA ENS Paris
Linear transformations in (max,+) algebra, and their spectral theory, with their applications to decision making, and discrete event systems.
Sept. 28, 2001

8. Dr. Balram Dubey,
Indian Institute of Technology, Kanpur
"Models for Resource Depletion with Industrialization and Pollution"
October 18, 2001

9. Prof. Mrinal K. Ghosh,
Indian Institute of Science, Bangalore
"Ergodic Control of Partially Degenerate Diffusions in a Compact Domain"
October 24, 2001

10. Prof. H.N. Mhaskar,
California State University, USA
"Approximation with Scattered data"
November 29, 29001

11. Prof. Vitali Milman
Tel Aviv University
"Surprising Geometric Phenomenon in High-Dimensional Convexity Theory"
Dec. 14, 2001

12. Prof. Shreeram S. Abhyankar
Purdue University USA
"Some Thoughts on the Jacobian Problem"
Dec. 31, 2001

13. Prf. K. Jarosz
Southern Illinois University
"Small perturbations of Banach Algebras and almost multiplicative functionals"
20th February 2002