



Mathematics

Introduction

From its inception to the present, the Department of Mathematics has evolved and grown in several directions. There are 42 faculty members in the Department and this includes an Emeritus Fellow and four long-term visiting faculty members. During April 1, 2013 to March 31, 2014, three faculty members joined the Department namely, Prof. Prachi Mahajan, Prof. Radhendushka Srivastava and Prof. Koushik Saha. In addition, the Department has been able to attract several eminent short-term visitors from institutions in India and abroad.

The year 2013-2014 witnessed excellent contributions and achievements of faculty and students in research, interaction with industry and noted national and international institutes, organizations, and outreach activities. A comprehensive review of the Department and its academic activities during the five year period 2008-2012 was conducted by a panel of distinguished experts: Prof. R. Bhatia, (ISI, Delhi), Prof. A. Bose (ISI, Kolkata), Prof. C. Carstensen, (Humboldt Univ., Berlin), Dr. R. Kannan (Microsoft Research Labs, Bangalore), Prof. O. Pironneau (Univ. Pierre et Marie Curie, Paris), and Prof. V. Srinivas (TIFR, Mumbai). The panelists visited the Department during January 2014 and interacted with faculty and students. The reviewers have complimented the Department on some of its achievements and also provided pointers and suggestions to facilitate further growth. The report and the suggestions together with an action plan have been discussed with the Board of Governors of the Institute.

Academic Programmes

The Department offers two Master's programmes, one in Mathematics and the other in Applied Statistics and Informatics, and also a Ph.D. programme. There are also Minor programmes for undergraduates offered in both Mathematics and Statistics, in addition to commitments to the core undergraduate curriculum.

Degree Awarded

Ph. D.	-	05
M. Sc. (MA)	-	16
M. Sc. (ASI)	-	25

R & D Activities

The research pursued in the department includes a wide spectrum of interests in both Mathematics and Statistics.

Outreach activities encompass consultancy, organisation of workshops and conferences, training of doctoral students from all over India, training of both school and university teachers, and efforts to popularise mathematics at all levels. Members of the Department have also taken active leadership roles in mathematical organisations and programmes at the national level. Notable among these are the following:

National Centre for Mathematics (NCM): This is a collaborative venture of IIT Bombay with the Tata Institute of Fundamental Research designed to promote research and instructional activity for doctoral students and researchers throughout the country. Its apex committee includes three members of the department's faculty.

National Programme for Differential Equations: Theory, Computation & Applications (NPDE): This has been initiated by faculty members of the Department with an aim to create human resource and generate knowledge source for academia and industry in the area of Differential Equations for real life problem solving.

Technology and Innovation in Mathematics Education (TIME): The TIME Conferences for mathematics teachers and math educators are held once every two years. These conferences are a meeting place for teachers from all over the country to discuss and to probe major issues associated with mathematics teaching and learning.

The **Mathematics Association** of the Department is a student-run organization. Its enthusiastic members conduct the annual IIT Bombay Mathematics Olympiad, which attracts a large number of school and college students to the campus.

Sponsored Research Project

Sponsored Project	-	22
Ongoing	-	15
New	-	05
Completed	-	02

List of Sponsored research projects is following:

Sr. No.	Project Title	Sponsoring by	Status (New/Ongoing/Completed)
1	DST/Inspire- Analysis of the Wu metric on Thullen domains in C^n	Department of Science & Technology (DST)	Ongoing
2	Statistical Modelling and Inference for Time Series and High-Dimensional Data.	DST	Ongoing
3	Risk Sensitive Stochastic Control.	DST	Ongoing
4	Advanced Instructional School (AIS) - "Lie Groups"	National Centre for Mathematics (NCM) / Tata Institute of Fundamental Research (TIFR) Project	Ongoing
5	Workshops for Undergraduate Teacher's Enrichment Programme (TEP) & Research-In-Pairs (RiP)	NCM and Advancement of Arts and Sciences from India (AASI)	Ongoing
6	Some Measures of Association and their A-Collapsibility	DST	Ongoing
7	Characteristic fast marching method for fronts propagating in an inhomogeneous moving fluid.	DST	Ongoing
8	Robust parameter designs for quality and safety critical processes	DST	Ongoing
9	The 54th Meeting of the PAC on Mathematical Sciences (PAC-MS) on November 22-23, 2012 at IIT Bombay	DST	Completed
10	Indo-Russian Project: Algebraic Varieties over Fields & Linear Error Correcting Codes	DST	Ongoing
11	INSPIRE Faculty award research grant	DST	Ongoing
12	Post Doctorate Fellowship to Dr.Stuti Borgohain	National Board For Higher Mathematics (NBHM)	Ongoing
13	Contactless Tags	National Payments Corporation of India (NPCI)	Ongoing
14	National Centre for Mathematics (NCM) IITB - TIFR Joint project	TIFR	Ongoing

Sr. No.	Project Title	Sponsoring by	Status (New/Ongoing/Completed)
15	National Program on Differential Equations: Theory, Computation & Applications	DST	Ongoing
16	Discontinuous Galerkin Method for Nonlinear Acoustics	Indo-French Centre for the Promotion of Advanced Research	Ongoing
17	Study of RUTF: Processing, Shelf-Life and Exploring Alternative Formulations.	Compatible Technologies International, USA	Ongoing
18	Numerical treatment of integral operators with non-smooth kernels	Indo-French Centre for the Promotion of Advanced Research	Completed
19	Theories, Constructions and Applications of Some Factorial Design	DST	Ongoing
20	Lifting of operator tuples and structure theory of operator algebras	IRCC, IIT Bombay	Ongoing

Conferences/Seminars/Workshops (Organised/Coordinated)

Baskar, S.

Organized a National level training program on Advanced Level Workshop on *Theoretical and Computational Aspects of Nonlinear Waves*, funded by NPDE-TCA (DST) from May 28-31, 2013.

Dani, S.G.

Organized a Symposium as a part of the 28th Annual Conference of the Ramanujan Mathematical Society, held at the Reva Institute of Technology and Management, Bangalore, June 27-30, 2013, consisting of five lectures held on June 29-30, 2013, on “Dynamical Systems”.

Organized a Workshop and Conference on “Ergodic Theory and its Applications”, jointly with Prof. M.G. Nadkarni and Mr. Vivek Wagh, at Sevagram, under the aegis of the Society for Action Research in Education and Livelihood (SAREL), at Nagpur, during July 9-14, 2013.

Served as Chair of the Organizing Committee for the *International Conference on History and Development of Mathematics* organized by the JECRC University, Jaipur, during November 29 - December 1, 2013, jointly with the Indian Society for History of Mathematics.

Ghorpade, S.R.

Organized *NCM-NBHM Advanced Instructional School on Algebraic Combinatorics*, at Indian Statistical Institute, Bangalore, during June 24-July 13, 2013.

Organized DST and NBHM sponsored *International Conference on Algebraic Geometry and Coding Theory (AGCT-India-2013)*, at IIT Bombay, during December 2-6, 2013.

Participated in the Workshop on *Computational Algebraic Geometry*, Indian Institute of Space Science and Technology, Trivandrum, February 9-13, 2014.

Limaye Balmohan, V.

Member of the International Organizing Committee of *International Conference on Semigroups, Algebras and Operator Theory*, held at Cochin University of Science and Technology, February 26-28, 2014.

Nataraj Neela

One of the organizers of *Advanced level training programme of National Programme for Differential Equations and CIMPA workshop* in July 2013 at IISc Bangalore.

One of the organizers of a workshop on *Mathematical Foundation of Advanced Finite Element Methods*, at BITS, in December 2013 in Goa.

Delivered lectures in the *MHRD program Quality Enhancement in Engineering Education*, 2014.

Sabnis Sanjeev

Organized and delivered lectures in an eight-day in-house workshop on *Statistical Modelling* for Karvy Capital Ltd., Mumbai, during November 22-29, 2013, and December 6-26, 2013.

Sane, S.S.

Academic Coordinator of a workshop (*ATMW*) on *Algebraic Graph Theory* at the Centre for Excellence in Mathematical Sciences, Almora, October 2013.

Academic Coordinator of a workshop (*ATMW*) on *Algebraic Graph Theory* at Kerala School of Mathematics, Calicut, March 2014.

Santhanam Rekha

Part of the Scientific committee for Topology Discussion Meeting at Institute of Mathematical Sciences, Chennai, May 2-4, 2013.

Shastri Anant R.

Coordinator of *Annual Foundation Schools of the National Center for Mathematics* (NCM).

Academic organizer of Annual Foundation School III (under NCM) a four-week training programme for Ph.D. students, held at the Department of Mathematics, University of Pune, in June 2013.

Academic organizer of NCM Instructional School for Lecturers in Topology, held at Centre for Excellence in Mathematical Sciences, Almora, Uttarakhand during October 2013.

Verma Jugal K.

Participated in the 28th Annual Conference of the Ramanujan Mathematical Society, Reva Institute of Technology, Bangalore, during June 27-30, 2013.

Conference/Workshops/Seminars (Participated/Paper Presented)

National**Anandavardhanan, U. K.**

Participated in workshop on *Number Theory and Cryptology*, held at National Institute of Technology Karnataka, Surathkal, September 13-14, 2013.

Participated in *INSPIRE Science Internship Camp*, G.N. Khalsa College, Mumbai, September 25-29, 2013.

Baskar, S.

Participated in Workshop and delivered five lectures on Numerical Analysis in the UG level training program organized by NPDE-TCA in Birla Institute of Applied Sciences, Bihmtal, June 2013.

Gave an talk on “A Stable Higher Order Numerical Method for a Static Hamilton-Jacobi Equation”, 28th

Annual Conference of the Ramanujan Mathematical Society, Bangalore, 2013.

Dey Santanu

Participated in the International Workshop on *Operator Theory and Applications (IWOTA)*, December 16 -20, 2013 at IISc Bangalore.

Ghorpade, S.R.

Delivered a series of six invited lectures on “Aspects of coding theory”, *NCM-NBHM Advanced Instructional School on Algebraic Combinatorics*, Indian Statistical Institute, Bangalore, July 2013.

Delivered a series of six invited lectures on “Differentiation of vector valued functions of several real variables”, *Teachers Enrichment Workshop on Multivariable Calculus*, Bhaskaracharya Pratishthana, Pune, November 2013.

Delivered a plenary talk on “Consecutive integers, perfect powers, and arithmetic progressions”, *National Conference on Pure and Applied Mathematics*, College of Engineering, Pune, December 2013.

Delivered a talk on “Excerpts from the work of S. S. Pillai and some recent developments”, *UGC Sponsored Two day State Seminar on Impact of Indian Mathematicians on The World of Mathematics*, Patkar-Varde College, Goregaon, Mumbai, January 2014.

Delivered Dr. G.R. Shendge Memorial Lecture (of the Marathwada Mathematical Society) on “Linear Codes associated to some higher dimensional algebraic varieties”, *National Conference on Recent Trends in Pure and Applied Mathematics and Statistics*, N.E.S. Science College, Nanded, January 2014.

Delivered a series of six invited lectures on “Matrices, linear maps, and canonical forms”, *NCM Instructional School for Lecturers (ISL) on Linear Algebra*, Centre for Excellence in Mathematical Sciences, Kumaun University, Almora, Uttarakhand, March 2014.

Mahajan Prachi

Taught a mini course on “One variable Complex Analysis” in Annual Foundation School in June 2013 at the University of Pune, Pune.

Nataraj Neela

Participated at National Conference on *Recent Advances in Numerical Methods and its Applications (RANMA 2014)* held in Pondicherry, January 2014.

Sabnis Sanjeev V.

Gave a talk on “k-out-of-n:G systems under stress and strength models with Positively Quadrant Dependent Stresses” in an *International Conference* held at

Department of Statistics, University of Pune, during December 16-18, 2013.

Gave a talk on “Testing Reliability and Redundancy of Questionnaires meant for studying Co-scholastic Traits in School Kids” in a National Workshop on *Applications of Statistics* held at Nashik during January 27-29, 2014.

Gave a talk on “Applications of Statistics to Geological Data” in the National Conference on *Applied Statistics and Related Working Practices* held at Department of Statistics, North Maharashtra University during January 30-31, 2014.

Shorey, T.N

Advanced Instructional School (AIS) on Analytic Number Theory at Bhuvaneshwar

Srinivasan Srikanth

Presented a paper on “Lower bounds for depth 4 formulas computing iterated matrix multiplication,” co-authored with Herve Fournier, Nutan Limaye, and Guillaume Malod, at TIFR workshop on *Recent Progress in Arithmetic Complexity*.

Verma Jugal K.

Presented a paper on “Normal Hilbert Polynomials”, *National Conference on Mathematics*, Hansraj College, Delhi, March 7, 2014.

International

Anandavardhan, U.K.

Delivered a talk on “Modular Representation Theory of Finite and p -adic Groups”, National University of Singapore, April 1-26, 2013.

Participated in Workshop and International Conference on *Automorphic Forms and Number Theory*, Kerala School of Mathematics, Calicut, August 30 – September 3, 2013.

“Analytic Theory of Automorphic Forms”, Institute of Mathematical Sciences, Chennai, December 9-13, 2013.

“Automorphic Periods and Spherical Varieties”, Tsinghua Sanya International Mathematics Forum, Sanya City, December 18-23, 2013.

“Local Langlands Correspondence”, Tata Institute of Fundamental Research, Mumbai, December 15, 2013 – January 3, 2014.

Baskar S.

Delivered a talk on “A fast method for an anisotropic eikonal equation with application to sonic boom propagation in atmosphere”, *Indo-French Conference*

on Acoustics 2013, at the CSIR-NPL, New Delhi, India, November 10-15, 2013.

Das Ashish

Participated in International Conference on *Statistical Distributions and Applications (ICOSDA)*, Soaring Eagle Casino & Resort, Mount Pleasant, Michigan, USA, October 10-12, 2013.

Delivered a talk on “Frontiers of Statistics and Forecasting,” in Celebration of the *80th Birthday of George C. Tiao* Institute of Statistical Science, Academia Sinica, Taipei, Taiwan, December 17-18, 2013.

Ghorpade S.R.

Delivered a plenary talk on “Linear codes related to Grassmann varieties”, *14th International Conference on Arithmetic, Geometry, Cryptography and Coding Theory (AGCT-14)*, Centre International de Rencontres Mathematiques (CIRM), Luminy, France, June 2013.

Delivered a talk on “Arithmetic progressions in rings of integers of number fields of class number one”, at a *Conference on Global Fields*, French-Russian Poncelet Laboratory, Moscow, Russia, September 2013.

Kulkarni Rekha P.

Participated in *8th International Conference on Mathematical Modelling and Analysis (MMA 2013)*, Tartu, Estonia, May 27-30, 2013.

Paper presented: Modified projection method for nonlinear integral equations.

Limaye Balmohan V.

Delivered a lecture on “Operator Approximation,” at the International Conference on *Semigroups, Algebras and Operator Theory (ICSAOT-2014)*, at Cochin University of Science and Technology, Kochi, Kerala on February 27, 2014.

Mukhopadhyay Siuli

Delivered a lecture on “A Convex Algorithm for Robust Parameter Design,” in the *Quality & Productivity Research Conference*, Niskayuna, USA, June 2013.

Nataraj Neela

Presented a talk entitled “An interior penalty method for distributed optimal control problems governed by the biharmonic operator” in the *14th Conference on the Mathematics of Finite Elements and Applications (MAFELAP)* held in London, June 2013.

Participated in a Workshop on *Advances in PDE Modeling and Computation* held at IIT Madras, October 2013.

Raghunathan Ravi

Delivered a lecture on “Advances in the theory of automorphic forms and their L-functions”, Erwin Schrodinger Institute, Vienna, Austria, October 16 - 25, 2013.

Delivered a lecture on “Certain L -functions associated to $GL(n)$ ”, at the International Conference on *Geometry, Number Theory and Representation Theory*, National Institute of Mathematical Sciences, Daejeon, South Korea, December 4 - 6, 2013.

Delivered a lecture on “The poles of L -functions associated to automorphic representations”, at *Analytic Theory of Automorphic forms*, Institute of Mathematical Sciences, Chennai, December 9 - 13, 2013.

Sane, S.S.

Participated in International Conference on *Algebraic Geometry and Coding Theory* at IIT Bombay, December 2013.

Sharma Vishnu D.

Participated in International Conference on *Computational Analysis of Inverse Problems and Partial Differential Equations*, held at the University of Central Florida, Orlando (USA), on May 11, 2013.

Attended International Conference on the *History and Development of Mathematics (ICHDM)* held at JECRC University, Jaipur, December 1, 2013.

Shorey, T.N.

Participated in *Thue Conference* at University of Bordeaux, during September-October 2013.

Verma Jugal K.

Presented a paper on “Polynomial Equations, Hilbert’s Nullstellensatz and Newton Polytopes”, *International Conference on History and Development of Mathematics*, Jaipur, November 29 – December 1, 2013.

Presented a paper on “Theorem of Rees”, *Commutative Algebra and its Interactions with Algebraic Geometry*, CIRM, Luminy, France, July 8-12, 2013.

Invited Lectures**National****Anandavardhan, U.K.**

Delivered two lectures on “Congruent Numbers”, at a Workshop on *Number Theory and Cryptology*, National Institute of Technology Surathkal, Karnataka, September 13-14, 2013.

Delivered a lecture on “Congruent Numbers,” at the *INSPIRE Science Internship Camp*, G.N. Khalsa College, Mumbai, September 25-29, 2013.

Balachandran Niranjana

Delivered a lecture at Research Promotion Workshop on *Graphs and Geometric Algorithms*, BESU, Shibpur, March 2013.

Dani, S.G.

Gave two invited talks on “Dynamics and Diophantine Approximation” and “Dynamics and Hyperbolic Geometry” at a Workshop on *Complex Analysis*, at the University of Central Rajasthan, Kishangarh, on June 24, 2013.

Gave an invited talk on “Curiosities about Numbers - From Ancient to Modern Times” at the JECRC University, Jaipur, on June 25, 2013.

Gave a Plenary talk on “Roots, Factors and Embeddings of Measures on Groups,” at the *28th Annual Conference* of the Ramanujan Mathematical Society, held at the Reva Institute of Technology and Management, Bangalore on June 29, 2014.

Gave a course of four lectures on “Dynamical systems associated with hyperbolic geometry” in the Workshop on *Ergodic Theory and Applications*, organized by the Society for Action Research in Education and Livelihood (SAREL), Nagpur, at Sevagram, July 9- 14, 2013.

Delivered an invited talk on “Some large subsets of zero measure in geometry and dynamics” in the Conference, on July 15, 2013.

Gave an invited talk on “Continued fractions and values of binary quadratic forms,” in the Students’ seminar at the Tata Institute of Fundamental Research, Mumbai, on September 23, 2013.

Gave an invited talk on “Ergodic theory, Lie groups and probability measures,” in the DST Inspire programme held at Elphinstone College, Mumbai, on September 26, 2013.

Gave a mini-course of four lectures on “Flows on homogeneous spaces of $SL(2, \mathbb{R})$ and Ratner’s theorem,” in the workshop on *Teichmüller Theory and Interfaces with Ergodic Theory and Group Actions* held at the Jawaharlal Nehru University, Delhi, during October 28-31, 2013.

Gave an invited talk on “Primitive solutions for Khintchine - Groshev type metric Diophantine problems,” in the *National Seminar on Number Theory and Discrete Mathematics* in honour of Professor R.J. Hans-Gill, at Panjab University, Chandigarh, during November 12-13, 2013.

Gave an invited talk on “Growth of Resources for Advanced Mathematical Learning in 20th Century India”, in the *International Seminar on History of*

Mathematics, at Ramjas College, University of Delhi, during November 27-28, 2013.

Gave an invited talk on “Tracing the development of understanding of the circle in ancient and medieval India” in the *International Conference on History and Development of Mathematics* at JECRC University, during November 29 - December 1, 2013, Jaipur.

Gave a Keynote Address on “Ancient Indian Mathematics,” at the Two Day State Level Seminar on *Impact of Indian Mathematics on the World of Mathematics*, organized by the Department of Mathematics, Patkar-Varde College, Goregaon, during January 10-11, 2014, Mumbai.

Gave an invited talk on “Bhaskaracharya’s Lilavati” in a *lecture series on the life and work of Bhaskaracharya*, organized by the Vidya Prasarak Mandal, Thane, at the Thorale Bajirao Peshave Sabhagruha, Thane College, on January 18, 2014, Thane.

Gave an invited talk on “The exponential map and dynamics” in the National Conference on *Differential Equations and Applications* at University of Mumbai, during February 14-15, 2014.

Gave an invited talk on “Some curious subsets of the number line” in the *National Conference on Algebra, Analysis and Fuzzy Mathematics*, held at the North Maharashtra University, Jalgaon, Maharashtra, during February 21-22, 2014.

Dey Santanu

Delivered a lecture on “Characteristic functions for liftings (with solution to the converse problem)”, at *IWOTA*, Bangalore on December 2013.

Delivered a lecture on “Functional models for contractive multi-analytic operators” in *IWOTA*, Bangalore on December 17, 2013.

Ghorpade S.R.

Delivered a lecture on “Elements of algebra”, *DST INSPIRE Internship Science Camp*, Loyola Degree College, Pulivendula, Andhra Pradesh, April 6, 2013.

Delivered a lecture on “Matrices and linear recurrences over finite fields”, Birla Institute of Technology and Science Pilani - Goa Campus, Goa, September 14, 2013.

Delivered a lecture on “Perfect powers and a problem of Waring”, *DST INSPIRE Internship Science Camp*, Loyola Degree College, Pulivendula, AP, January 25, 2014.

“Determinants and binomials in algebra, combinatorics and geometry”, *Prof. S. C. Bhattacharya Award Lecture*, Indian Institute of Technology Bombay, Mumbai, March 13, 2014.

Joshi Rajani R.

Delivered a lecture on “Some Innovative Contributions of Statistical Data Mining,” at *National Conference on Emerging Trends in Computational Research Development* at D.S. University, Haridwar, September 6-7, 2013.

Delivered a lecture on “Computational Analysis and Characterization of Radial Pulse & Cardiac Risks,” at National Workshop/Symposium on *Mathematical Models and Methods in Engineering*, held at Maulana Azad National Institute of Technology, Bhopal, December 16-18, 2013.

Delivered a lecture on “Pharmaco-Kinetic Modeling & Analysis of Pulmonary Drug Administration,” at a National Workshop/Symposium on *Mathematical Models and Methods in Engineering* at Maulana Azad National Institute of Technology, December 16-18, 2013, Bhopal.

Limaye Balmohan V.

Delivered a lecture on “Uniformly Conditioned Bases of Spectral Subspaces” on April 1, 2013, at IIT Hyderabad.

Delivered a lecture on “Reliability of Computations Involving a Basis” on June 21, 2013, at Anna University, Chennai.

Delivered two lectures on “Reliability of Computations Involving a Basis” and “Uniformly Conditioned Bases of Spectral Subspaces” on October 11-12, 2013, at Sardar Patel University, Vallabh Vidyanagar, Gujarat.

Delivered a lecture on “Conditioning of Bases of Finite-Dimensional Normed Spaces” on March 11, 2014 at IIT Gandhinagar, Gujarat.

Delivered a lecture on “Zabreiko’s Result and its Consequences”, on March 21, 2014, at University of Pune.

Mukhopadhyay Siuli

Delivered a lecture on “Contingency Tables: A Review”, *3rd Annual Conference of Indian Association for Statistics in Clinical Trials*, April 2013.

Raghunathan M.S.

Participated in Workshop on *Chevalley Groups*, IISER Pune, in November 2013.

Sabnis Sanjeev V.

Delivered a lecture on “Basics of Probability Theory” in a pilot study of MHRD entitled *Quality Enhancement in Engineering Education (QEEE)*. Students and teachers from close to 30 engineering colleges across India participated in this “live lectures” environment.

Sane S.S.

Delivered a lecture on “Mathematics: Finite versus Infinite” at the Institute of Science, Mumbai, in August 2013.

Delivered a Mentoring lecture for the “DST INSPIRE program: Fairness, Marriage Stability, Voting and Social Choice” at M.S. University Baroda, August 2013.

Delivered a lecture on “Mathematical Olympiad” at the Kendriya Vidyalaya, IIT Bombay, in August 2013, and at the DPS School, Nerul, Navi Mumbai, in September 2013.

Gave a course of five lectures on “Symplectic Graphs and Equiangular lines in R^n ,” at the Workshop on *Algebraic Graph Theory, Centre for Excellence in Mathematical Sciences*, Almora, October 2013.

Gave a talk on “Fibonacci Number and the Golden Ratio,” at the DST INSPIRE program at Gulbarga, in October 2013.

Delivered a talk on “Combinatorics of block designs and finite geometries” at the 79th Annual Meeting of the Indian Academy of Sciences at Chandigarh on November 10, 2013.

Delivered a Colloquium lecture on “Maximal Clique Problem” at the ISI Bangalore, January 2014.

Santhanam Rekha

Gave lectures for Mini Course on “Borsuk Ulam theorem (and its applications to Graph Theory), at the Teachers Training Workshop in Topology, during December 23-28, 2013.

Sharma Vishnu D.

Delivered a talk on “PDEs modelling wave phenomena,” at the School of Mathematics and Computer Applications, Thapar University, Patiala, on November 11, 2013.

Delivered a talk on “Development of conservation laws during the last six decades,” at the International Conference on the *History and Development of Mathematics (ICHDM)* held at JECRC University, on December 1, 2013, Jaipur.

Delivered a talk on “Quasilinear PDEs,” at the faculty and research scholars at the Department of Mathematics, Osmania University, January 9, 2014, Hyderabad.

Delivered a lectures on “Numerical methods and stability theory for ODEs,” at Cluster Innovation Center, University of Delhi, during March 7-8, 2014.

Shorey T.N.

Delivered a lecture on “Diophantie equations involving product of factorials,” at JNU, Delhi in July 2013.

VSRP lecture on “Analytic Number Theory (Irreducibility of generalised Hermite-Laguerre polynomials),” at TIFR, Mumbai.

Verma Jugal K.

Delivered a lecture on “Euclid’s Last Proposition,” Inspire Camp at the Pravara Rural College of Pharmacy, December 28, 2013, Nasik.

Delivered six lectures on “Local Cohomology Modules,” at IIT Bombay, 2013.

Delivered a lecture on “Constructible regular polygons,” at the Inspire Science Camp at Dr. Radhakrishna Institute of Technology, September 21, 2013, Jaipur, and at the G. N. Khalsa College, September 28, 2013, Mumbai.

Delivered Colloquium lecture on “Eigenvalues and polynomial equations,” at BITS, Pilani, March 10, 2014.

International**Anandavardhanan U.K.**

Delivered a lecture on “Iwahori-Hecke model for supersingular representations of $GL(2, \mathbb{Q}_p)$, Modular Representation Theory of Finite and p-adic Groups,” at the National University of Singapore, during April 1-26, 2013.

Delivered a lecture on “The degree of certain local L-functions,” at a Workshop and an International Conference on *Automorphic Forms and Number Theory*, Kerala School of Mathematics, during August 30-September 3, 2013, Calicut.

Delivered a lecture on “The degree of certain local L-functions, Analytic Theory of Automorphic Forms,” at the Institute of Mathematical Sciences, December 9-13, 2013, Chennai.

Delivered a lecture on “Local global question in automorphic forms, Automorphic Periods and Spherical Varieties,” at *Tsinghua Sanya International Mathematics Forum*, Sanya City, December 18-23, 2013.

Delivered a lecture on “Self-extensions of supersingular representations of $GL(2, \mathbb{Q}_p)$, Local Langlands correspondence,” at the *Tata Institute of Fundamental Research*, December 15, 2013 – January 3, 2014, Mumbai.

Athavale Ameer

Delivered a talk titled “On certain multivariable subnormal weighted shifts and their duals”, at the *Sz.-Nagy Centennial Conference* in Szeged, during June 24-28, 2013, Hungary.

Dani S.G.

Gave an invited talk entitled “Geometry in the Vedic Period,” as a part of a special series on the History of Indian Sciences, on *Storia della matematica indiana*, organized by the Scuola Superiore dell’Università di Udine, in collaboration with Progetto Lauree Scientifiche - Matematica e Statistica, Università di Udine, Udine, May 15, 2013, Italy.

Gave invited talks on “Dynamics of the Geodesic Flow on the Modular Surface and Applications in Number Theory” at the *Conference on Statistical Physics and Dynamical Systems*, held at the University of Strasbourg, during May 30 - June 1, 2013, France.

Gave a talk on “Continued fractions and values of binary quadratic forms”, in the conference on *Homogeneous Dynamics, Unipotent Flows, and Applications*, on October 14, 2013, at Hebrew University, Jerusalem, during October 13-17, 2013, in honour of Professor Marina Ratner, in Israel.

Ghorpade S.R.

Delivered a lecture on “Grassmann varieties and linear codes”, at *Coding and Cryptography Research Group (CCRG) Seminar*, Nanyang Technological University, April 24, 2013, Singapore.

Delivered a Colloquium lecture on “Vector spaces, matrices, and linear recurrences over finite fields”, at Brigham Young University, Provo, Utah, May 23, 2013, USA.

Delivered Informatik-Kolloquium lecture on “Recent developments in splitting subspaces and linear recurrences”, Christian-Alberchts Universität Kiel, Kiel, May 31, 2013, Germany.

Delivered a lecture on “Word oriented LFSRs and splitting subspaces over finite fields”, at the Technical University of Denmark, Lyngby, June 11, 2013, Denmark.

Raghunathan M.S.

Delivered a lecture on “Algebraic groups and Arithmetic”, at a *Conference*, Banff, April 15-20, 2013.

Delivered a lecture on “Homogeneous Dynamics & Unipotent Flows”, at a Conference held in Jerusalem, during October 13 -17, 2013.

Sane Sharad S.

Delivered a talk on “Symmetric, Quasi Symmetric Designs and Strongly Regular Graphs,” in the

conference organised in honour of Professor R.J. Hans-Gill at Centre of Advanced Study in Mathematics, Panjab University, on November 12, 2013, Chandigarh.

Sharma Vishnu D

Delivered a lecture on “Euler equations, weak discontinuities and their interaction with elementary waves,” at the Courant Institute of Mathematical Sciences (CIMS), New York University on May 14, 2013.

Shorey T.N.

Delivered a lecture on “Product of factorials,” at University of Bordeaux in October 2013

Significant Awards and Distinctions

Ghorpade S.R.

Prof. S.C. Bhattacharya Award for Excellence in Pure Sciences, IIT Bombay, March 2014.

Mahajan Prachi

INSPIRE Faculty Award 2012, Department of Science & Technology, Government of India.

Pani Amiya K.

Included in the editorial Board of the Wiley Journal : Numer. Meth. PDE

Sharma Vishnu D.

Chairman of the National Committee for the International Union of Theoretical and Applied Mechanics (IUTAM) for its April 2013 meeting held in Delhi.

Member of the Sectional Committee – I (Mathematical Sciences: Applied Mathematics, Pure Mathematics and Statistics) for INSA -2013.

Member of the S.S. Bhatnagar Award Committee in Mathematical Sciences for 2013.

Honorary Work

Dani S.G.

Editor, *Ganita Bharati*, the Bulletin of the Indian Society for History of Mathematics.

Member of the following Editorial Boards: *Journal of Theoretical Probability*; *Monatshefte fuer Mathematik*; *Proceedings of the Indian Academy of Sciences (Math.Sci.)*; and President, Indian Society for History of Mathematics.

Member of: National Board for Higher Mathematics; Advisory Board, *Indian Journal of Pure and Applied Mathematics*; Governing Board, C.R. Rao Advanced Institute for Mathematics, Statistics and Computer

Science, Hyderabad; Governing Board, Indian Institute of Science Education and Research (IISER), Thiruvananthapuram; and Academic Council, Chennai Mathematical Institute, Chennai.

Edited the manuscript of the Marathi translation of Kanigel's book "The Man Who Knew Infinity", sponsored by the Ramanujan Mathematical Society, prepared by Mrs. Neela Chandorkar, published by the National Book Trust.

Ghorpade S.R.

Member, Apex Committee, National Centre for Mathematics, India.

Member, Visiting Advisory Committee for Mathematics, Birla Institute of Science and Technology (BITS) Pilani, September 2013.

Member, Faculty Selection Committee in Mathematics, IIT Gandhinagar (November 2013), Walchand College of Engineering, Sangli (January 2014), BITS Pilani, Goa Campus (February 2014).

Referee, *Discrete Mathematics*, *IEEE Transactions of Information Theory*.

Joshi Rajani R.

Reviewer for some international journals in Computational Biology /Bioinformatics.

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

Member, BoS in Bioinformatics/Computational Biology, Central University of Pondichery.

Kulkarni Rekha P.

Referee for Ph. D. theses

Limaye Balmohan V.

Member, Advisory Committee of Department of Mathematics at IIT Hyderabad.

Member of the Selection Committee at DAIIT, Ahmedabad

Mukhopadhyay Siuli

Reviewer for Technometrics, Statistical Methodology, Psychological Methods.

Reviewer for BRNS-DAE funded project proposals

Raghunathan Ravi

Reviewer for Mathematical Reviews

Sabnis Sanjeev

Reviewed one research article for the Journal of Applied Statistics.

Member of Faculty Selection Committees for one of the IITs, one University in Gujrat and one in Maharashtra.

Sane Sharad S.

Reviewed 6 papers for Zentralblatt fur Mathematic

Sharma Vishnu D.

Member, CSIR-NET

Member, Faculty Selection Committee at IIT Indore.

Shastri Anant R.

Member of the Syllabus formation committee at Shri Guru Govind Singhji Engineering College Nanded, Maharashtra.

Reviewer for Mathematical Reviews.

Verma Jugal K.

Member, Academic Council of Chennai Mathematical Institute, 2011-(2)

Member, Board of Studies of Central University of Rajasthan, Kishangarh, Rajasthan, 2012.

Member, Board of Studies of Kumaun University, Almora, Uttarakhand, 2011

Secretary, Apex Committee of the National Centre for Mathematics, a joint centre of IIT Bombay and TIFR, 2010

Faculty Members and their specialization

1. Anandavardhanan U.K.

Number Theory

2. Athavale Ameer

Functional Analysis

3. Baskar S.

Hyperbolic Conservation Laws: Theory, Numeric and Application

4. Das Ashish

Design of Experiments

5. Dey Santanu

Operator Algebras

6. Garge Shripad M.

Number Theory, Linear Algebraic Groups

7. Ghorpade Sudhir R.

Algebraic Geometry, Coding Theory, Combinatorics

8. Hariharan Ananthnarayan

Commutative Algebra

9. Joshi Rajani R.

Computational Biology, Biostatistics and Bioinformatics

10. Keshari Manoj Kumar

Commutative Algebra (Projective Modules)

- 11. Kulkarni Rekha P.**
Numerical Functional Analysis, Spline Theory
- 12. Mahajan Prachi**
Several Complex Variables
- 13. Mahajan Swapneel**
Geometry and Topology
- 14. Mukhopadhyay Siuli**
Statistics
- 15. Nataraj Neela**
Finite Element Methods
- 16. Niranjana Balachandran**
Combinatorics
- 17. Pani Amiya K. (Institute Chair Professor)**
Numerical Analysis, Partial Differential Equations, Industrial Mathematics.
- 18. Puthenpurakal Tony J.**
Commutative Algebra
- 19. Raghunathan Ravi**
Automorphic forms, Number Theory
- 20. Raman Preeti**
Number Theory
- 21. Rana Inder K.**
Harmonic Analysis, Mathematics Education
- 22. Ranjan Akhil**
Differential Geometry
- 23. Sabnis Sanjeev**
Reliability Theory, Industrial Statistics
- 24. Saha Koushik**
Probability
- 25. Santhanam Rekha**
Algebraic Topology
- 26. Sharma Vishnu D. (Institute Chair Professor)**
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. Srinivasan Srikanth**
Theoretical Computer Science
- 33. Srivastava Radhendushka**
Statistics
- 34. Subramanyam A.**
Statistical Inference, Geostatistics
- 35. Sureshkumar K.**
Stochastic Differential Game Theory, Mathematical Finance
- 36. Vellaisamy P.**
Statistics and Probability
- 37. Verma Jugal K.**
Commutative Algebra
- Emeritus Fellow**
- 38. Limaye Balmohan V.**
Functional Analysis, Approximation Theory, Setvalued Analysis
- Visiting Faculty**
- 39. Sane Sharad S.**
Probability and Statistics
- Distinguished Visiting Professor and NASI Platinum Jubilee Chair**
- 40. Raghunathan M.S.**
Lie Groups
- Distinguished Visiting Professor**
- 41. Dani S. G.**
Ergodic Theory and Lie Groups
- 42. Shorey Tarlok Nath**
Theory of Numbers
- Professor Emeritus**
- 43. D.V. Pai**
Functional Analysis