Chennai Mathematical Institute

Annual Report

April 2015– March 2016

H1, SIPCOT IT Park, Siruseri
Kelambakkam Post
Chennai 603 103
India.

Tel.: +91-44-6748 0900,
+91-44-2747 0226/0227/0228/0229,
+91-44-3298 3441/3442
Fax: +91-44-2747 0225
WWW: http://www.cmi.ac.in

1 Preface

The academic program at CMI is attracting very good students. Large proportion of our students go onto graduate studies. The institutions where our students have gone include Berkeley, Caltech, Chicago, Harvard, MIT, NYU (Courant), Princeton, Penn, Yale in USA, ENS Paris, ENS Cachan, Univ Paris-Sud and Univ Bordeaux in France, the Max Planck Institutes and Humboldt University in Germany and the Harish-Chandra Research Institute, IITs, IMSc, ISI and TIFR in India.

Over a dozen CMI graduates have returned to India after completing their PhDs to take up academic positions at institutions like CMI, IMSc, ISI Kolkata, IIT Bombay, IIT Kanpur, TIFR, IISER Mohali, IISER Pune, IISER Kolkata, IISER Bhopal as well as in research labs such as Microsoft Research. Another dozen have faculty or postdoctoral research positions at academic and research institutions across the world.

Students with CMI Ph D's have taken up academic positions at IIT Bombay, IIT Guwahati and IIM Indore. CMI graduates have also moved into areas such as financial mathematics and analytics, both in India and abroad. The places where they have found placements include IBM, TCS R&D, Veritas, Barclays, Goldman Sachs, HSBC, ICICI, Mu Sigma and some startups. It is the students who have been trained in CMI that are responsible for the tremendous goodwill that CMI enjoys across the spectrum and have helped us create brand equity around brand CMI.

CMI was one of the nine Indian institutes which contributed to the first detection of gravitational waves by the LIGO (Laser Interferometric gravitational wave observatory) detector. CMI contributed to various aspects related to the detection, especially in the source modelling of binary black holes and testing the correctness of Einstein's theory of gravity using the observed event.

Chennai Mathematical Institute has exchange programmes with leading French institutions such as the Ecole Normale Superieure in Paris and Cachan as well as the Ecole Polytechnique. CMI is one of three non-European partners in the Erasmus Mundus Master Programme ALGANT (ALgebra Geometry And Number Theory), funded by the European Union. The ALGANT programme allows students to pursue Masters and Doctorate degrees across the institutions participating in the programme.

Since 2012, CMI has been a partner in a virtual laboratory in computer science with the French National Centre for Scientific Research (CNRS). CMI is an advanced stage of discussions with CNRS to upgrade this virtual laboratory to a joint international lab based at CMI.

In the last 5 years, we have added 15 young researchers to our faculty at CMI, who have been carrying out and publishing top quality research in Mathematics, Computer Science and Physics. This momentum promises great things in future.

During the past year, CMI has initiated two major R&D collaborations in computer science in the area of formal verification, with Honeywell Technologies and Tata Consultancy

Services.

In addition, a new society called Algolabs has been created to promote interaction between CMI and the industry. The activities of Algolabs include joint projects in areas such as analytics and mathematical modelling, as well as part-time training programmes for the industry. CMI had sought accreditation from National Assessment and Accreditation Council (NAAC) and the NAAC committee visited CMI for inspection. I am happy to report that CMI has received A grade from NAAC.

Soon after the last convocation, we hosted an International Conference on Algebra, Geometry and History of Mathematics in July 2015. This was in honour of Professor R. Sridharan on the occasion of his 80th birthday.

Last year we celebrated 50 years of the landmark Narasimhan Seshadri Theorem. We celebrated the event with a workshop and a conference aptly titled NS@50. Several experts from all over the globe participated in the event. The goal of this activity was to present a comprehensive view of some of the most important developments that have taken place in the last 50 years derived from the Narasimhan- Seshadri Theorem, and explore further directions of the theory.

Both these conferences were part of our year long silver jubilee celebrations.

CMI hosted a Research Workshop and Conference on Statistical Methods in Finance.

At CMI, we regularly conduct Lecture Programme for students of class XI and XII, in association with National Academy of Sciences. This is a initiative by Professor Mani, who has been organising this for last few years.

CMI also hosted Advanced Instructional School in Commutative Algebra. This is an activity of the National Center for Mathematics, NCM and is aimed at improving the quality of Ph D students in mathematics across the country. CMI and its faculty participate in this every year.

CMI has been supported by DAE for the last 15 years. We have received support from UGC, primarily for the construction of the multi-storied building. Two years ago, DAE and DST have signed an agreement to support CMI. The DST support for CMI comes via SERB-Science and Engineering Research Board while the support from DAE will continue to come via National Board of Higher Mathematics (NBHM).

In addition to the generous support from the DAE, DST and UGC, CMI also receives support from private sources. We have Corpus fund for supporting research activities at the institute and we have received generous donations from well wishers over the last few years.

I would like to place on record the support from Shri R Thyagarajan and Shri Lakshmi Narayanan who have supported us whole heartedly to tide over crisis coming from delays in getting our grants.

Dr. R. Swaminathan made a generous endowment in the memory of his uncle Mr. K. Lakshmanan and Dr. Usha Rubugunday made a similar endowment in memory of her husband. This has led to annual Lakshmanan and Rubugunday memorial lectures at CMI. This year

S.R.S. Varadhan, Courant Institute of Mathematical Sciences, New York University, U.S.A., delivered K. Lakshmanan Memorial Distinguished Lecture on *Probability and Partial Differential Equations* and Michel Brion, Institut Fourier, Grenoble, France, delivered R.K. Rubugunday Distinguished Lecture on *Automorphism groups in algebraic geometry'*.

The family of Shri Madhav Sarma, who was the secretary of the CMI trust, has made a donation for an annual lecture in his memory. This year, Xavier Viennot, CNRS Emeritus Research Director, LaBRI, Bordeaux, France & Adjunct Professor, Institute of Mathematical Sciences, Chennai, delivered K. Madhava Sarma Memorial Distinguished Lecture on *From a letter of Leonhard Euler to modern researches at the crossroad of algebra, geometry, combinatorics and physics*.

Thanks to the support from the government as well as private donors, we have established CMI as a much desired destination for students to study Mathematics, Computer Science and Physics and for faculty to teach and carry out their research. I am confident that CMI will continue to grow as a centre of excellence in the years to come.

Rajeeva L Karandikar
Director

2 Board of Trustees

1. Dr. A.C. Muthiah (Founder and Managing Trustee)
   Chairman Emeritus, SPIC Ltd., Chennai

2. Mr. Arun Duggal, Trustee
   Chairman, Shriram Capital Ltd., New Delhi

3. Mr. S. Gopalakrishnan, Trustee
   Former Vice-Chairman, Infosys Ltd., Bangalore

4. Dr. Anil Kakodkar, Trustee
   Former Chairman, Atomic Energy Commission
   INAE Satish Dhawan Chair of Engineering Eminence, Bhabha Atomic Research Centre, Mumbai

5. Mr. N. Lakshmi Narayanan, Trustee
   Vice Chairman, Cognizant Technology Solutions, Chennai

6. Prof. M.S. Raghunathan, F.R.S., Trustee
   Director, National Centre for Mathematics, IIT Bombay, Mumbai

7. Dr. M.R. Srinivasan, Trustee
   Former Chairman, Atomic Energy Commission

8. Shri Jawahar Vadivelu, Trustee
   Chairman, Navia Corporate Services Ltd., Chennai

3 Governing Council

1. Prof. R. Balasubramanian (Chairman)
   Institute of Mathematical Sciences, Chennai
2. Prof. V. Balaji
   Chennai Mathematical Institute, Chennai
3. Dr. Ravi Kannan
   Microsoft Research, Bangalore
4. Prof. Rajeeva L. Karandikar
   Director, Chennai Mathematical Institute, Chennai
5. Prof. Madhavan Mukund
   Dean of Studies, Chennai Mathematical Institute, Chennai
6. Prof. Nitin Nitsure
   Tata Institute of Fundamental Research, Mumbai
7. Prof. Bimal Roy
   Indian Statistical Institute, Kolkata
8. Prof. C.S. Seshadri, F.R.S.
   Director-Emeritus, Chennai Mathematical Institute, Chennai
9. Prof. K.V. Subrahmanyam
   Chennai Mathematical Institute, Chennai
10. Prof. P.S. Thiagarajan
    Visiting Professor, Harvard Medical School, USA

4 Academic Council

1. R.L. Karandikar (Chairman),
   Director, Chennai Mathematical Institute, Chennai

2. Madhavan Mukund, (Convenor)
   Dean of Studies, Chennai Mathematical Institute, Chennai

3. M.S. Ananth,
   Indian Institute of Science, Bangalore

4. V. Balaji,
   Professor, Chennai Mathematical Institute, Chennai

5. R. Balasubramanian,
   Institute of Mathematical Sciences, Chennai

6. S.G. Dani,
   Professor, Tata Institute of Fundamental Research, Mumbai

7. Gadadhar Misra,
   Professor, Indian Institute of Science, Bangalore

8. S. Kesavan,
   Professor, Institute of Mathematical Sciences, Chennai

9. N. Mukunda,
   Professor, Indian Institute of Science, Bangalore

10. Rajaram Nityananda,
    Professor, Azim Premji University, Bangalore

11. Jaikumar Radhakrishnan
    Professor, Tata Institute of Fundamental Research, Mumbai

12. G. Rajasekaran,
    Professor, Chennai Mathematical Institute, Chennai

13. T.R. Ramadas
    Distinguished Professor, Chennai Mathematical Institute

14. C.S. Seshadri, F.R.S.
    Director-Emeritus, Chennai Mathematical Institute, Chennai

15. Shiva Shankar,
    Professor, Chennai Mathematical Institute, Chennai

16. K.V. Subrahmanyam
    Professor, Chennai Mathematical Institute, Chennai

17. Jugal Verma
    Professor, Indian Institute of Technology Bombay, Mumbai

5 Boards of Studies

Mathematics

1. V. Balaji (CMI), Chair
2. S.A. Choudum (IIT, Madras)
3. R. Karandikar (CMI)
4. S. Kesavan (IMSc)
5. Pramathanath Sastry (CMI)
6. Shiva Shankar (CMI)
7. V. Suresh (University of Hyderabad)
8. K.V. Subrahmanyam (CMI, Chair, Board of Studies in Computer Science)

Computer Science

1. K.V. Subrahmanyam (CMI), Chair
2. Manindra Agrawal (IIT, Kanpur)
3. V. Arvind (IMSc)
4. Madhavan Mukund (CMI)
5. K. Narayan Kumar (CMI)
6. V. Vinay (LimberLink, Bangalore)
7. V. Balaji (CMI, Chair, Board of Studies in Mathematics)

Physics

1. G. Rajasekaran (IMSc/CMI), Chair
2. R. Jagannathan (CMI)
3. H.S. Mani (CMI)
4. R. Parthasarathy (CMI)
5. J. Samuel (RRI)
6. V.V. Sreedhar (CMI)
7. C.S. Sundar (IGCAR, Kalpakkam)

Undergraduate Studies

1. Pramathanath Sastry (CMI), Chair
2. V. Balaji (CMI)
3. K. Narayan Kumar (CMI)
4. V.V. Sreedhar (CMI)
5. K.V. Subrahmanyam (CMI)

6 Institute Members

Director	
	Rajeeva L. Karandikar
Dean of Studies	
	Madhavan Mukund
Director-Emeritus	
	C.S. Seshadri
Distinguished Professors	
	T.R. Ramadas
Professors	
	V. Balaji
	Samir Datta
	K. Narayan
	K. Narayan Kumar
	Pramathanath Sastry
	S. Senthamarai Kannan
	Shiva Shankar
	V.V. Sreedhar
	K.V. Subrahmanyam
Associate Professors	
	K.G. Arun
	Sourav Chakraborty
	Clare D'Cruz
	Govind S. Krishnaswami
	Upendra Kulkarni
	Manoj Kummini
	Partha Mukhopadhyay
	Dishant M. Pancholi
	Purusottam Rath
	Sasanka Roy (Until August 2015)
	R. Srinivasan
	M. Sundari
	S.P. Suresh
Assistant Professors	
	Aiswarya Cyriac
	Sourish Das
	Priyavrat C Deshpande
	Krishna Hanumanthu
	Alok Laddha
	Sukhendu Mehrotra

Prajakta Nimbhorkar
M. Praveen
Geevarghese Philip
Vijay Ravikumar
B. Srivathsan
S. Sundar

Visiting Faculty

Sazzad Ali Biswas
Seshadri Chintapalli
Krishanu Dan
Dhriti Ranjan Dolai
Ananya Lahiri
Amaldev Manuel
Ashish Mishra
Debajyoti Nandi
Pranab Sardar
Sachin Sharma
Kavita Sutar
Sushmita Venugopalan
Sreejith AV

Adjunct Professors

Manindra Agrawal
Ranabir Chakrabarti
J.V. Deshpande
T. R. Govindarajan
Ramesh Hariharan
R. Jagannathan
S. Kesavan
V. Lakshmibai
H. S. Mani
Neeraj Kayal
R. Parthasarathy
T. Parthasarathy
G. Rajasekaran
S. Ramanan
B.V. Rao
Rani Siromoney
R. Sridharan
Mandayam Srivas
V. Swaminathan
A. Thyagaraja
V. Vinay

Research Scholars

Anbu Arjunan
Aneesh P B
Vipul Arora
Arjun Arul
Athira P V
Sarjick Bakshi
Nikhil Balaji
Suratno Basu
Abhishek T Bharadwaj
Suryajith Chillara
Debayudh Das
Sourav Das
Abhijeet Ghanwat
Varunkumar Jayapaul
Nitesh Jha
K Sandesh Kamath
Shyamlal Karra
Abdullah Khadir
Mitra Koley
Naveen Kumar
Kumar Madhukar
Anish Mukherjee
Debangshu Mukherjee
Subramani Muthukrishnan
Muthuvelmurugan I
S P Murugan Paramasivam
Sachin S Phatak
Vinoth Kumar Raman
Kedar Kolekar
Krishnendu N V
A Manu
Keerthan Ravi
Praveen Kumar Roy
Sonakshi Sachdev
Kuldeep Saha
Pinakinath Saha
Prakash Saivasan
Rajiv Sambasivan
Rajib Sarkar

Himalay Senapati
Gautham Shenoy R
Shraddha Srivastava
Vaishnavi Sundararajan
Rajeswaran Viswanathan
Ramadas N
Vishnu T R

Administrative Staff

S. Sripathy
V. Vijayalakshmi
Rajeshwari Nair
Ranjini Girish
G. Samson

7 Faculty Profiles

Rajeeva L. Karandikar

Rajeeva L. Karandikar received his B.Sc. from Indore University, Indore (1976), M.Stat. form Indian Statistical Institute, Kolkata (1978) and Ph.D. from Indian Statistical Institute, Kolkata (1981).

He has been an Associate Professor at the Indian Statistical Institute, Delhi (1984-89), a Professor at the Indian Statistical Institute, Delhi (1989-2006), a Professsor-in-Charge at the Indian Statistical Institute, Delhi (2000-2002), Head, Delhi Center at the Indian Statistical Institute, Delhi (2000) and (2004-2006) and an Executive Vice-President at Cranes Software International Limited.

He received the Shanti Swarup Bhatnagar Award in 1999. He has been awarded the P C Mahalanobis Gold medal by the Prime Minister at the Indian National Science Congress in February 2014. He is a fellow of the Indian Academcy of Sciences and the Indian National Science Academy.

His research interests are: Probability theory and Stochatic Processes, Applications of Statistics and Cryptography.

Madhavan Mukund

Madhavan Mukund received his B.Tech. (Computer Science and Engineering) from the Indian Institute of Technology, Bombay (1986) and his Ph.D. (Computer Science) from Aarhus University, Aarhus, Denmark (1992).

He is a member of the Executive Council and President of the Indian Association for Research in Computing Science (IARCS), as well as a member of the ACM India Council.

His research interests include models for concurrent and distributed systems, formal verification and distributed algorithms.

C.S. Seshadri

C.S. Seshadri received his B.A. Hons. (Mathematics) degree from Madras University (1953) and his Ph.D. from TIFR/Bombay University (1958).

He was at the School of Mathematics, Tata Institute of Fundamental Research, Bombay from 1953 to 1984 starting as a Research Scholar and rising to a Senior Professor. He was then a Senior Professor at the Institute of Mathematical Sciences, Madras (1984–89).

He has been a Visiting Professor at the University of Paris, France; Harvard University, Cambridge, U.S.A.; Institute for Advanced Study, Princeton, U.S.A.; University of California at Los Angeles, Los Angeles, U.S.A.; Brandeis University, U.S.A.; University of Bonn, Bonn,

Germany; Kyoto University, Kyoto, Japan.

He has given invited talks at many international conferences including the International Congress of Mathematicians, Nice, France, 1970.

He has received the Shanti Swarup Bhatnagar Award (1972) and the Srinivasa Ramanujan Medal of Indian National Science Academy (INSA). He was awarded the D.Sc. Degree (Honoris Causa) of Banaras Hindu University, Varanasi (1985). He has been awarded the Shanti Swarup Bhatnagar Medal (1995) of INSA and Srinivasa Ramanujan Birth Centenary Award (1995-96) of Indian Science Congress Association (ISCA). He has received G.M. Modi Science Award (1995), The Trieste Science Prize of the Academy of Sciences for the Developing World in (2006) and H.K. Firodia Award for Excellence in Science & Technology, Pune (2008).
He has also been awarded Padma Bhushan by the President of India (2009).

He is a Fellow of the Indian Academy of Sciences, Indian National Science Academy and a Fellow of the Royal Society. He has been appointed National Research Professor of the Ministry of Human Resource Development Government of India in 2006.

His research interests are: Algebraic Geometry and Algebraic Groups.

T.R. Ramadas

T.R. Ramadas received his M.Sc. in Physics from the Indian Institute of Technology, Kanpur (1977) and Ph.D. in Mathematics from TIFR/University of Bombay (1982).

He has been a Professor at the School of Mathematics, TIFR till June 2002, a Professor at the University of Montpellier, France (2000-03), a Research Scientist at ICTP (2003-10) and Head, Mathematics Group, ICTP (2010-13).

He has received the Shanti Swarup Bhatnagar Award for Mathematical Sciences (1998). He is a Fellow of the Indian Academy of Sciences.

His research interests are: Differential and Algebraic Geometry.

V. Balaji

V. Balaji received his B.A. Hons. (Mathematics) from University of Delhi (1982), his M.A. (Mathematics) from University of Delhi (1984), his Ph.D. from University of Madras (1991).

He has been an NBHM Post-doctoral Fellow at the Chennai Mathematical Institute (1989–92).

He received the Shanti Swarup Bhatnagar Award in 2006 and is a Fellow of the Indian Academy of Sciences.

His research interest is Algebraic Geometry.

Samir Datta

Samir Datta received his B.Tech. (Computer Science and Engineering) from the Indian Institute of Technology, Kanpur (1995), M.S. from Rutgers University (1997) and Ph.D. from Rutgers University (2004).

He has been a Network Architect at Tellium Inc. (2000-03) and a Post Doctoral Fellow at WINLAB, Rutgers University (2004-05).

His research interests are Complexity Theory, Wireless and High Speed Networking.

K. Narayan

K. Narayan received his B.Tech. (Engineering Physics) from the Indian Institute of Technology Bombay, Mumbai (1997), M.S. (Physics) from the Cornell University, U.S.A. (1999) and Ph.D. (Physics) from the Cornell University, U.S.A. (2002).

He has been a Research Assistant at the Cornell University, U.S.A. (1998-2001), a Research Assistant at the Cornell University, U.S.A. (2001-02), a Postdoctoral Research Fellow at the Duke University, U.S.A. (2002-04) and a Postdoctoral Research (Visiting) Fellow at the Tata Institute of Fundamental Research, Mumbai (2004-07).

His research interests are String theory and cosmology, Stringy geometry and D-brane gauge theories.

K. Narayan Kumar

K. Narayan Kumar received his M.Sc. (Tech.) in Computer Science from Birla Institute of Technology and Science, Pilani (1990). He received his Ph.D. from the TIFR/University of Bombay (1997).

His research interests include Logic, Automata theory and Concurrency.

Pramathanath Sastry

Pramathanath Sastry received his B.Sc. (Hons) in Mathematics from University of Delhi, New Delhi (1982), M.Stat. from the Indian Statistical Institute, New Delhi (1984) and Ph.D. (Mathematics) from Purdue University, U.S.A. (1990).

He has been a Teaching Assistant, a Research Assistant at Purdue University, U.S.A. (1984-1990), a Visiting Assistant Professor at University of Missouri, U.S.A. (1990-1991), a Visiting Fellow at the Tata Institute of Fundamental Research, Mumbai (1991-1992), a Fellow at SPIC Science Foundation (1992-1995), a Reader at SPIC Science Foundation (1995-1996), a Reader at Harish-Chandra Research Institute, Allahabad (1996-1999), a Reader F at Harish-Chandra Research Institute, Allahabad (1999-2001), a Visiting Assistant Professor at Purdue

University, U.S.A. (1999-2001), an Asst. Assoc. Professor (Term) at the University of Toronto, Canada (2001-2006), CLA at McMaster University, Canada (2006) and an Assistant Professor at East Carolina University, U.S.A. (2007-2009).

His research interest is Algebraic Geometry.

S. Senthamarai Kannan

S. Senthamarai Kannan received his B.Sc. from HKRH College, Uthama Palayam (1985–88), M.Sc. from the Madurai Kamaraj University (1988–90) and Ph.D. from the Chennai Mathematical Institute, (1992–98). He has been a Post-doctoral Fellow at the International Centre for Theoretical Physics (1999–2000).

His research interests are Representation Theory and Algebraic Geometry.

Shiva Shankar

Shiva Shankar received his B.Tech. (Electrical Engineering) from the Indian Institute of Technology, Delhi (1978) and his Ph.D. from SUNY, Stony Brook (1983).

He has been an Assistant Professor, at the Department of Applied Mathematics, SUNY, Stony Brook (1983–84), a Visiting Fellow at the School of Mathematics, Tata Institute of Fundamental Research, Bangalore (1984–88), an Associate Professor at the Department of Electrical Engineering, Indian Institute of Technology, Bombay (1988–2000).

Visiting Positions include Institute of Mathematical Sciences, Chennai, and at Mathematics Institute, University of Groningen.

His research interests are Partial Differential Equations, Mechanics and Control Theory.

V.V. Sreedhar

V.V. Sreedhar received his B.Sc. from Andhra University, Visakhapatnam, M.Sc. (Physics) from the Indian Institute of Technology, Madras and received his Ph.D. (Physics) from Saha Institute of Nuclear Physics, Jadavpur University, Calcutta.

He has been an Assistant Professor in the Department of Physics at the Indian Institute of Technology, Kanpur, a Post-doctoral researcher at the School of Theoretical Physics, Dublin Institute of Advanced Studies, Dublin, Ireland and a Post-doctoral researcher at the Institute for Theoretical Physics, Uppsala University, Uppsala, Sweden.

His visiting positions include stints at the S. N. Bose National Centre for Basic Sciences, Kolkata, Raman Research Institute, Bangalore, Universities of Rochester, New York and Cincinnati, Ohio, U.S.A. and the High Energy Research Organization (KEK), Tsukuba, Japan.

His research interests are Quantum Entanglement, Classical and Quantum Field Theory and Fluid Dynamics.

K.V. Subrahmanyam

K.V. Subrahmanyam received his B.Tech. (Computer Science and Engineering) degree from the Indian Institute of Technology, Bombay (1986) and M.S. from Vanderbilt University, U.S.A. in 1987. He received his Ph.D. from the TIFR/University of Bombay in December, 1995.

His research interests are Circuit Complexity, Algebraic methods in Complexity theory.

K.G. Arun

K.G. Arun received his B.Sc. (Physics) from Calicut University, Calicut (1998), M.Sc. (Physics) from Cochin University of Science and Technology (2001) and Ph.D. (Physics) from Raman Research Institute, Bangalore.

He has been a Postdoctoral Research Associate, Washington University in St Louis and VESF Fellow, LAL Orsay & IAP, Paris (2009-2010).

His research interests are Gravitational Wave Astrophysics, Modelling compact binaries, High energy Astrophysics and Cosmology, Tests of General Relativity and Alternative theories of gravity.

Sourav Chakraborty

Sourav Chakraborty received his B.Sc. from Chennai Mathematical Institute (2003), M.S. from University of Chicago (2005) and Ph.D. from University of Chicago (2008).

He has been a Post-doctoral researcher at Technion, Israel (2008-2009) and a Post-doctoral researcher at CWI, Amsterdam (2009-10).

His research interests are Complexity and Algorithms

Clare D' Cruz

Clare D' Cruz received her M.Sc. (Mathematics) from the Indian Institute of Technology, Bombay (1991) and her Ph.D. (Mathematics) from the Indian Institute of Technology, Bombay (1996).

She has been a Post-Doctoral Fellow at the Tata Institute of Fundamental Research, Mumbai (1996–98) and a Visiting Scholar at the Northeastern University, Boston, U.S.A. (1997–98).

Her research interest is Commutative algebra.

Govind S. Krishnaswami

Govind S. Krishnaswami received his B.Sc. (Physics), B.A. (Mathematics) from University of Rochester,U.S.A. (1999), M.A. (Physics), from University of Rochester, U.S.A. (2001) and Ph.D. (Physics) from University of Rochester, U.S.A. (2004).

He has been a Marie Curie Fellow, Spinoza Institute & Institute for Theoretical Physics, Utrecht University, The Netherlands.

His research interests are Quantum Field Theory, Hydrodynamics and Mathematical Physics

Upendra Kulkarni

Upendra Kulkarni received his B.Tech. (Computer Science and Engineering) from the Indian Institute of Technology Bombay, Mumbai (1992) and Ph.D. (Mathematics) from Brandeis University, U.S.A. (1998).

He has been a Visiting Assistant Professor at the University of Massachusetts Amherst (1998-2000), an Assistant Professor at the Truman State University (2000-05), An Associate Professor at the Truman State University (2005), a Visiting Scientist at the Indian Statistical Institute, Bangalore (2005-06) and a Visiting Fellow at the Tata Institute of Fundamental Research, Bangalore (2006-07).

His research interests are Representations of algebraic groups over the integers and in characteristic p, Algebraic aspects of Lie representation theory including Lie algebras, quantum groups and related combinatorics and in solving elementary challenging problems.

Manoj Kummini

Manoj Kummini has received his B.Tech. (Electronics and Communication Engineering) from the University of Calicut (1999), M.E. (Telecommunication Engineering) from the Indian Institute of Science, Bangalore (2002), M.A. (Mathematics) from the University of Kansas, Lawrence (2005) and Ph.D. from University of Kansas, Lawrence (2008).

He has been a Software Engineer at Sasken Communication Technologies, Bangalore (19992000), a Senior Design Engineer (2003) & Design Engineer (2002-2003) at Texas Instruments India, Bangalore, Graduate Teaching Assistant, University of Kansas, Lawrence, KS, U.S.A. (2003-2008), Research Assistant Professor, Purdue University, West Lafayette, IN, U.S.A. (2008-2011) and a Post-doctoral Fellow at Mathematical Sciences Research Institute, Berkeley, CA, U.S.A. (2012).

His research interest is commutative algebra.

Partha Mukhopadhyay

Partha Mukhopadhyay received his B.E. (Electronics & Telecommunication Engineering) from Jadavpur University, Kolkata (2000), M.Tech. (Computer Science) from the Indian Statistical Institute, Kolkata (2002) and Ph.D. from the Institute of Mathematical Sciences, Chennai (2009).

He has been a Software Engineer at Motorola India Electronics Ltd., Bangalore (2002-2003), a Research Associate at the Indian Statistical Institute, Kolkata (2003-2004) and a Postdoctoral Fellow at Technion, Israel (2009-2010).

His research interests are Complexity Theory and Additive Combinatorics.

Dishant M. Pancholi

Dishant M. Pancholi received his B.Sc. from M.S. University of Baroda, Vadodara (1996), M.Sc. from M.S. University of Baroda, Vadodara (1998) and Ph.D. from Tata Institute of Fundamental Research, Mumbai (2006).

He has been a Visiting Fellow at TIFR Centre, Bangalore (2006-07) and a Post doctoral Fellow at the International Centre for Theoretical Physics, Trieste, Italy (2008-10).

His research interests are Contact and symplectic topology.

Purusottam Rath

Purusottam Rath received his Ph.D. (Mathematics) from Harish Chandra Research Institute, Allahabad (2006).

He has been a Visiting Fellow at the Institute of Mathematical Sciences, Chennai (2006–2007) and a Coleman Research Fellow at Queen's University, Canada (2007–2008).

His research interests are Combinatorial Number Theory, Diophantine Approximation and Transcendental nature of special values of L-functions.

Sasanka Roy

Sasanka Roy received his B.Sc. (Mathematics) from A.B.N. College, West Bengal, M.C.A. from North Bengal University, West Bengal (2001) and Ph.D. from Indian Statistical Institute, Kolkata (2007).

He has been a Scientist at the Tata Research Development and Design Centre, Pune (2006-09) and a Centenary Postdoctoral Fellow at the Indian Institute of Science, Bangalore (2009-10).

His research interests are Computational Geometry and Algorithms.

R. Srinivasan

R. Srinivasan received his Ph.D. degree in Mathematics from the Indian Statistical Institute and the Institute of Mathematical Sciences (1998).

He has been a Visiting Fellow at the Harish-Chandra Research Institute, Allahabad (1998-2000), a Post Doctoral Fellow at the Indian Statistical Institute (2000-01), a Post Doctoral Fellow at Universite d'Orleans, France (2001-02), a Visiting Scientist at the Indian Statistical Institute (2002-03), a Visiting Fellow at ICTP, Trieste, Italy (2003) and a JSPS Post Doctoral Fellow at University of Tokyo, Japan (2003-2005).

His research interests are Operator Algebras and Operator Theory.

M. Sundari

M. Sundari received her M.Sc. (Mathematics) from the University of Hyderabad, Hyderabad (1988), M.Phil. (Mathematics) from the University of Hyderabad, Hyderabad (1990) and Ph.D. (Mathematics) from the Indian Statistical Institute, Bangalore (1996).

She has been a Visiting Mathematician at the International Center for Theoretical Physics, Trieste, Italy (1996), a Research Associate at the University of New South Wales, Sydney, Australia (1996-97), an Assistant Professor in the Effat College, Jeddah, Saudi Arabia (2000-01), a Faculty member at the ICFAI Institute of Science and Technology, Hyderabad (2003-04) and an Assistant Professor at the Indian Institute of Technology Roorkee, Roorkee (2004-06).

Her research interests are Representation theory of Lie groups, Uncertainty Principles in Harmonic Analysis, Wiener-Tauberian theorems.

S.P. Suresh

S.P. Suresh received his M.C.A. from R.E.C. Trichy (1996), his M.Sc. (by Research) from Anna University (1999), and his Ph.D. from the Institute of Mathematical Sciences (2003).

His research interests are Logic in Computer Science, Reasoning about Security protocols and Classical Indian Epistemology.

Aiswarya Cyriac

Aiswarya Cyriac received her B.Tech. in Computer Science and Engineering from National Institute of Technology (2008), First year of Masters from Institute of Mathematical Sciences, Chennai (2009), Second year of Masters from Master Parisien de Recherche en Informatique (MPRI), Ecole Normale Superieure de Cachan, France (2010) and Ph.D. in Computer Science from Laboratoire Spécification et Vérification, Ecole Normale Superieure de Cachan, France (2014).

She has been a Teaching Assistant at ENS, Cachan (2010-13), a Lecturer and a Postdoctoral Researcher at Uppsala University (2014-15).

Her research interests are: Lossy channel systems with data, Gossip beyond channel bounds and Under-approximate analysis of data-centric data-base systems.

Sourish Das

Sourish Das received his B.Sc. (Statistics) from St. Xavier's College, Calcutta (2001), M.Sc. (Statistics) from Calcutta University, Calcutta (2003) and Ph.D. (Statistics) from the University of Connecticut, U.S.A. (2008).

He has been a Postdoctoral Fellow at the Statistical and Applied Mathematical Science Institute (aka SAMSI) (2008-10), A Postdoctoral Associate at Duke University (2008-10) and a Scientist - Analytics at SAS Research & Development, India (2010-13).

His research interests are: Biostatistics, Financial Statistics, Functional Data Analysis and Bayesian Statistics.

Priyavrat Deshpande

Priyavrat Deshpande received his B.Sc. in Mathematics from Pune University, Pune (2000), M.Sc. in Mathematics from Pune University, Pune (2002), M.Sc. in Mathematiacs from the University of Western Ontario (2007) and Ph.D. in Mathematics from the University of Western Ontario, Canada (2011).

Priyavrat Deshpande has been a Junior Research Fellow at Computational Mathematics Lab, Pune (2002-04), a Visiting Lecturer at Institute of Management and Career Courses, Pune (2005), a Lecturer at S.P. College, Pune (2004-06), a Graduate Teaching Assistant at University of Western Ontario, Canada (2006-11), a Lecturer in Mathematics at University of Western Ontario, Canada (2011), a Visiting Research Scholar at Northeastern University, Boston, USA (2011-12) anda Visiting Fellow at the Chennai Mathematical Institute (2012-15).

His research interest are: Topology, Combinatorics and Algebra.

Krishna Hanumanthu

Krishna Hanumanthu received his B.Sc. (Mathematics) from the Chennai Mathematical Institute (2001), M.Sc. (Mathematics) from the Chennai Mathematical Institute (2003) and Ph.D. (Mathematics) from the University of Missouri (2008).

His research interests are Algebraic Geometry and Commutative Algebra.

Alok Laddha

Alok Laddha received his B.Sc. in Physics from University of Mumbai (1998), M.Sc. in

Physics from Indian Institute of Technology (2000) and Ph.D. in Theoretical Physics from Institute of Mathematical Sciences (2008).

He has been a Teaching Assistant at University of Utah, USA (200-03), a Research Fellow at Institute of Mathematical Sciences , Chennai (2004-08), a Postdoctoral Fellow at Raman Research Institute, Bangaloru (2008-10), a Postdoctoral Fellow at Institute of Gravitation and Cosmos, Pensylvania State University (2010-12), and a Ramanujan Fellow at the Chennai Mathematical Institute, Chennai (2012-14).

His research interest is: Loop Quantum Gravity.

Sukhendu Mehrotra

Sukhendu Mehrotra received his B.Sc. (Hons) in Mathematics from Delhi University (1998), M.S. in Mathematics from the University of Delaware (2000) and Ph.D. in Mathematics from the University of Pennsylvania (2005).

He has been a Visiting Assistant Professor at the University of Massachusetts Amherst (2005–2009) and Van Vleck Visiting Assistant Professor at the University of Wisconsin Madison (2009–2012).

His research interests are algebraic geometry and homological algebra—more specifically, derived categories, Bridgeland stability conditions and moduli problems, and string theory.

Prajakta Nimbhorkar

Prajakta Nimbhorkar received her B.E. (Computer Science and Engineering) from Government College of Engineering, Aurangabad (2003), M.Tech. (Information Technology) from Indian Institute of Technology, Bombay (2005) and Ph.D. from The Institute of Mathematical Sciences, Chennai (2010).

Her research interests are Complexity and Algorithms.

M. Praveen

M. Praveen received his B.E. in Electronics and Communication Engineering from R.V. College of Engineering, Bangalore University, Bangalore (2001), M.Sc. in Theoretical Computer Science from the Institute of Mathematical Sciences, Homi Bhabha National Institute, Chennai (2008) and Ph.D. in Theoretical Computer Science from the Institute of Mathematical Sciences, Homi Bhabha National Institute, Chennai (2011).

He has been a Software Engineer at Mindtree Consulting Pvt. Ltd., Bangalore (2002-06), a Research Intern at Microsoft Research, Bangalroe (2011), ERCIM Postdoctoral Researcher at Inria Saclay - Ile de France (2012) and a Postdoctoral Researcher at Laboratoire Bordelais de Recherche en Informatique, France (2013-14).

His research interests are: Computational complexity of modelling and verifying concurrent

infinite state systems, logic and parameterized complexity.

Geevarghese Philip

Geevarghese Philip received his B.Sc. in Physics from St. Berchmans' College, Chenganassery, Kerala (1998), MCA from Regional Engineering College, Kozhikode, Kerala (2001), M.Sc. in Theoretical Computer Science from Institute of Mathematical Sciences, Chennai (2008) and Ph.D. in Theoretical Computer Science from Institute of Mathematical Sciences, Chennai (2011).

He has been Senior Application Developer - Oracle Apps at Oracle India Pvt. Ltd., Bangalore, (2002-06), and a Postdoctoral researcher at Max Planck Institute for Informatics, Saarbruecken, Germany (2011-2015).

His research interest is: Parametrized Algorithms and Complexity.

Vijay Ravikumar

Vijay Ravikumar received his BA in Mathematics from Amherst College, Amherst MA (2006), Ph.D. in Mathematics from Rutgers University, New Brunswick NJ (2013).

He has been a Graduate Coordinator for the DIMACS REU program (2007-08), a Teaching Assistant at Rutgers University (2007-13), a Postdoctoral Fellow at TIFR, Mumbai (2013-14) and a Postdoctoral Fellow at CMI, Chennai (2015-16).

His research interests are: Quantitative methods for improving sustainability and Bioinformatics and population genetics.

B. Srivathsan

B. Srivathsan received his B.Tech. and M.Tech. (Dual Degree Programme) in Computer Science and Engineering from the Indian Institute of Technology (2009) and Ph.D. in Computer Science from LaBRI, Université Bordeaux 1 (2012).

He has been a Postdoctoral Researcher at RWTH-Aachen (2012-13).

His research interests are: Theoretical foundations of formal verification and Formal langualge theory.

S. Sundar

S. Sundar received his B.Sc. (Mathematics) from Manonmanian Sundaranar University (2005), M.Sc. (Mathematics) from the Homi Bhabha National Institute (2007) and Ph.D. (Mathematics) from the Homi Bhabha National Institute (2010).

He has been a Post-doctoral researcher at the University of Caen, France (2010–2011) and Visiting Scientist at the Indian Statistical Institute, Delhi (2011–2012).

His research interest is operator algebras—in particular, noncommutative geometry, K-theory, inverse semigroups and their C^*-algebras.

8 Awards

- K.G. Arun, member of LIGO team that discovered gravitational waves, February 2016.

9 Research Activities

Mathematics

In mathematics, research was carried out in the following areas:

Commutative algebra and algebraic geometry: cohomology of normalized blow-ups; linear systems of curves corresponding to line bundles; GIT quotients of Richardson varieties modulo maximal torus; resolution of indeterminacies of certain rational maps in a concrete fashion; non-commutative deformations of $K3$ surfaces; degenerations of surfaces of general type via exceptional objects on them; higher jet ampleness and N_p - property (also called p-th syzygy property) of theta divisor on the desingularisation of the compactified jacobians $J^d(X_k)$ of a nodal curve X_k with k nodes as singularities over algebraically closed field; spherical varieties; Gorenstein rings of socle degree three and four; studying the automorphism group of a BSDH variety associated to a non reduced words in the Weyl group; set-theoretic complete intersections.

Representation theory: constructing a basis for a subspace of a basic representation which is compatible affine Slofstra-Brylinski filtration; tensor structure of strict polynomial functors of dregree d and the Kronecker product of the representations of symmetric group S_d; higher derived functors of the internal tensor product; extend earlier results on the internal tensor product of polynomial functors to the unbounded derived setting; a Pieri formula for equivariant K-theory of isotropic Grassmannians; giving a VOA and Lie-theoretic interpretation to some recent partition identities that seems to come from D4(3); studying the action of general linear group on q-analog of Boolean algebra.

Probability and statistics: stochastic calculus; connection between martingale theory and theory of asset pricing; properties of quadratic variation estimator arises from fractional Brownian market for Hurst parameter H¿3/4 case and Gaussian process regression for sea surface temperature data; multivariate Dirichlet processes; properties of estimator of diffusion coefficient for mixed fractional brownian motion driven SDE; questions in theory of stochastic integration & connections with theory of asset pricing.

Number theory: investigating possible links between transcendence theory and zeros of the Riemann zeta function, studying the distribution of exponential sequences modulo 1

Operator algebras: K-group computations associated to Wiener-Hopf algebras; E_0-semigroups;

Differential equations: the relationship between Kalman's notion of controllability and Newton's notion of a potential; Galois theory of differential equations

Topology: combinatorially defined complexes which model the homotopy type of the configuration space of points on graphs

Mathematical physics: theory of Gaussian states; mathematics of conformal field theory.

Computer Science

In Computer Science research was carried out in the following topics, grouped according to broad areas.

Algebraic and circuit complexity Shift equivalence testing for polynomials, structural results on bounded tree width arithmetic circuits, hardness of testing the existence of sparse shifts for polynomials, on circle-monoids with a view to studying countable linear orders, finding super quadratic lowerbounds on size of arithmetic formulas computing explicit polynomials, dynamic complexity, on the non-commutative Edmonds problem and its connection to matrix invariants. orbit closure of the 4 by 4 determinant polynomial, parallel complexity of k-Disjoint paths in planar praphs, approximating planar maximum matching in logspace, transcendence and algebraic independence of some classes of irrational numbers,

Algorithms Parallel algorithms for disjoint paths in planar graphs, counting euler tours in bounded tree width graphs, logspace approximation to maximum cardinality matching in planar graphs, complexity of grundy colouring and the biclique parition problem, matchings with preferences in one-sided preference model, in particular fair matchings, space bounds on string matching with wild cards, FPT algorithm for hitting points with lines.

Automata theory and verification Verification problems related to one counter systems and analysis of infinite state systems arising from asychronous programs, automata-theoretic approach to verification of distributed algorithms, reachability problems for lossy channel systems with data, computing closures and Parikh-images of one counter languages.

Foundations of databases Query rewriting using views on data graphs, impact of nesting depth of graph database query operators on expressivity and complexity of query evaluation.

Formal verification On producing a random satisfying solution to a SAT instance using SAT solvers exploiting techniques from property testing, formal semantics for a tabular notation for timing constraints, computational models for sugar assembly in Golgi apparatus.

Logic Complexity of disjunction in intuitionistic logic, finding lower bounds for majority logics, using finite state transducers and temporal logics to reason about values from a dense linear order.

Logical foundations of security Variations of the Dolev-Yao models with rational players and dishonest agents, adding communicable certification to the Dolev-Yao model.

Machine learning Learning efficient solutions to the facility location problem in computational geometry, learning groups from images, learning group transformations.

Probabilistic and distributed systems Model-checking qualitative properties for distributed Markov chains, distributed Markov chains for business processes, verification of eventually consistent replicated datatypes.

Property testing On the sensitivity conjecture, the Fourier entropy influence conjecture for random LTFs and uniformity testing for joint distributions using conditional samples.

Physics

Research in theoretical physics was carried out in a variety of areas including mathematical physics, fluid dynamics, gravitational waves, plasma and condensed matter physics, quantum field theory, particle physics, string theory, and loop quantum gravity. Some of the more important results obtained are listed below:

In string theory, extremal surfaces in de Sitter space were studied with a view to exploring entanglement entropy in dS/CFT duality. Some aspects of hydrodynamics in certain non-relativistic holographic theories and their gauge/string realizations were examined. The shear diffusion constant in hyperscaling violating backgrounds in the context of non-relativistic holography and hydrodynamics was also studied.

In mathematical physics, both the classical and quantum mechanics of a particle constrained to move on a torus knot were studied and exact results obtained. The stability of classical Hamiltonian systems (including three-body problem) was investigated by interpreting trajectories as re-parametrized geodesics with respect to a natural Hamilton-Jacobi metric on configuration space. Work was carried out on the edge states on manifolds with boundary and stability questions were studied when the boundary is time-dependent with applications to quantum hall effect, horizon states of blackholes, and topological insulators. Some aspects of quantum algebras, and the quantum theory of accelerator optics were also studied.

In fluid dynamics, a new conservative short-distance regularization of the equations of ideal compressible fluid and magnetohydrodynamics was developed. The correspondence between the Higgs mechanism and the added-mass effect was worked out, including effects of compressibility, and generalizations to quark/lepton masses, and Casimir effect.

In gravitational waves, focus was on computing the gravitational waveforms for compact binary systems with small eccentricity, and on the universality of the signal to noise ratio distribution of compact binaries detectable by gravitational wave detectors up to arbitrary redshift. An interpretation was given of the gravitational wave data of the first science run of advanced LIGO interferometer in the context of testing general relativity using gravitational wave observations and the parameter estimation problem of compact binaries with spins

which are aligned with respect to the orbital angular momentum of the binary.

10 Publications

Journal Articles

Mathematics

J1 B. Narasimha Chary, S. Senthamarai kannan and A. J. Parameswaran: Automorphism group of a Bott-Samelson-Demazure-Hansen variety, to appear in Transformation Groups.

J2 Krishanu Dan and Sarbeswar Pal: Semistability of certain bundles on second symmetric power of a curve, Journal of Geometry and Physics, Vol. 103, 37-42.

J3 Priyavrat Deshpande: On arrangements of pseudohyperplanes, to appear in Proceedings Mathematical Sciences.

J4 Priyavrat Deshpande and R. Das: Coxeter transformation groups and reflection arrangements in smooth manifolds, J. Homot. Rel. Struct., 2015, DOI 10.1007/s40062-015-0117-8.

J5 Priyavrat Deshpande and Kavita Sutar: Deletion-restriction in toric arrangements, J. Ramanujan Math. Soc. 31, No.1 (2016) 17-30.

J6 Kummini Manoj, Lakshmibai Venkatramani, Sastry, Pramathanath and Seshadri Conjeerveram, Free resolutions of some Schubert singularities, Pacific J. Math. 279 (2015), no. 1-2, 299-328.

J7 Purusottam Rath, A. Beshenov, Margaret Bilu, and Yuri Bilu: Rational points on analytic varieties. EMS Surv. Math. Sci. 2 (2015), no. 1, 109-130.

J8 Purusottam Rath, T. Chatterjee and S. Gun: A Number Field Extension of a Question of Milnor, to appear in Contemporary Mathematics, American Math. Society.

J9 Vijay Ravikumar: Triple Intersection formulas for Isotropic Grassmannians' in Algebra and Number Theory, published April 2015.

J10 Vijay Ravikumar and Changzheng Li: Equivariant Pieri rules for isotropic Grassmannians, to appear in Mathematische Annalen in July 2015.

J11 S. Senthamarai Kannan and Krishna Hanumanthu: Syzygies of Some GIT Quotients, to appear in Journal of Ramanujan Mathematical Society.

J12 S. Senthamarai Kannan: On the automorphism group of a smooth Schubert variety, to appear in Algebras and Representation Theory.

J13 Shiva Shankar: Interconnections of L^2 behaviors: lumped systems, to appear in the Trentelman Festchrift, Lect. Notes Control, Springer.

J14 Shiva Shankar: Interconnections of L^2-behaviors: lumped systems, Behavioral Systems and Robust Control, 221-229, Lecture Notes in Control and Information Sciences, Springer, 2015.

J15 Sushmita Venugopalan: Vortices on surfaces in cylindrical ends, appeared in December issue of Journal of Geometry and Physics.

J16 Sushmita Venugopalan: Yang-Mills heat flow on gauged holomorphic maps, to appear in 'Journal of Symplectic Geometry'.

Computer Science

J17 S. Akshay, Paul Gastin, Madhavan Mukund, and K. Narayan Kumar: Checking conformance for time-constrained scenario-based specifications, Theoretical Computer Science, Vol 594 (2015) 24-43.

J18 Nikhil Balaji and Samir Datta: Bounded Treewidth and Space-Efficient Linear Algebra, TAMC 2015: 297-308.

J19 Sourav Chakraborty, Eldar Fischer, Arie Matsliah and Yonatan Goldhirsh: On the Power of Conditional Samples in Distribution Testing, to appear in SIAM Journal of Computing (SICOMP).

J20 Sourav Chakraborty, Akshay Kamath and Rameshwar Pratap: Testing whether the Uniform Distribution is a Stationary Distribution, Information Processing Letter, Volume 116, Issue 7, July 2015, Pages 475-480.

J21 Sourav Chakraborty, Raghav Kulkarni, Satyanarayana V Lokam and Nitin Saurabh: Upper Bounds on Fourier Entropy, to appear in Theoretical Computer Science.

J22 Samir Datta, Raghav Kulkarni, Anish Mukherjee, Thomas Schwentick and Thomas Zeume: Reachability is in DynFO, ICALP (2) 2015: 159-170.

J23 Fedor V. Fomin, Daniel Lokshtanov, Neeldhara Misra, Geevarghese Philip, and Saket Saurabh: Hitting Forbidden Minors: Approximation and Kernelization, SIAM Journal of Discrete Mathematics, Volume 30, Issue 1, pages 383-410.

J24 Madhavan Mukund, Gautham Shenoy R, and S P Suresh: Effective verification of Replicated Data Types using Later Appearance Records (LAR), to appear in ATVA 2015.

J25 Ashish Mishra: The Okounkov-Vershik approach to the representation theory of $G \sim S_n$, Journal of Algebraic Combinatorics.

J26 Gabor Ivanyos, Young Qiao and K V Subrahmanyam: Non-Commutative Edmonds problem and Matrix Semi-invariants, to appear in Computational Complexity.

Physics

J27 K.G. Arun: Observation of Gravitational Waves from a Binary Black Hole Merger, Phys. Rev. Lett. 116, 061102 (2016) (With LIGO Scientific Collaboration & Virgo Collaboration) arXiv:1602.03837.

J28 K.G. Arun: Astrophysical Implications of the Binary Black-Hole Merger, GW150914, Astro Physical Journal Letters, 818, L22, 2016 (arXiv:1602.03846), (With LIGO Scientific Collaboration & Virgo Collaboration).

J29 K.G. Arun: GW150914: Implications for the stochastic gravitational wave background from binary black holes, With LIGO Scientific Collaboration & Virgo Collaboration, arXiv:1602.03847 (2016). (Accepted to Physical Review Letters)

J30 R. Chakrabarti and V. Yogesh: Evolution of a hybrid micro-macro entangled state of the qubit-oscillator system via the generalized rotating waves, J. Phys. B: Atomic, molecular and optical physics 49 (2016) 075502.

J31 Alok Laddha: Asymptotic symmetries of QED and Weinberg's soft photon theorem, Miguel Campiglia (Republica U., Montevideo), Published in JHEP 1507 (2015) 115.

J32 G.S. Krishnaswami, S. Sachdev, A. Thyagaraja: Local conservative regularizations of compressible magnetohydrodynamic and neutral flows, Phys. Plasmas 23, 022308 (2016).

J33 K. Narayan: de Sitter space and extremal surfaces for spheres, Phys. Lett. B 753, 308 (2016), arXiv:1504.07430 [hep-th].

J34 V.V. Sreedhar: The classical and quantum mechanics of a particle on a knot, Annals of Physics 359 (2015) 2030.

Conference Papers

Mathematics

C1 Shiva Shankar: Interconnections of L^2 behaviors: lumped systems, Behavioral Systems and Robust Control, 221-229, Lecture Notes in Control and Information Sciences, Springer, 2015.

Computer Science

C2 C. Aiswarya, Parosh Aziz Abdulla, Mohamed Faouzi Atig, Marco Montali and Othmane Rezine, Recency-Bounded Verification of Dynamic Database-Driven Systems, To appear in the proceedings of The Principles of Database Systems (PODS) symposium 2016, San Francisco, USA.

C3 Nikhil Balaji, Samir Datta and Venkatesh Ganesan: Counting Euler Tours in Undirected Bounded Treewidth Graphs, FSTTCS 2015.

C4 Sourav Chakraborty, Shamik Ghosh, Nitesh Jha and Sasanka Roy: Maximal and Maximum transitive relation contained in a given binary relation, to appear in 21st International Computing and Combinatorics Conference (COCOON 2015).

C5 Sourav Chakraborty, Raghav Kulkarni, Satya Lokam and Nitin Saurabh: Upper Bounds on Fourier Entropy, to appear in 21st International Computing and Combinatorics Conference (COCOON 2015).

C6 Samir Datta, Raghav Kulkarni, Anish Mukherjee, Thomas Schwentick and Thomas Zeume: Reachability is in DynFO, ICALP (2) 2015: 159-170.

C7 Madhavan Mukund, Gautham Shenoy R and S P Suresh: Effective verification of Replicated Data Types using Later Appearance Records (LAR), to appear in Proc 13th International Symposium on Automated Technology for Verification and Analysis (ATVA 2015), Shanghai, China, October 2015.

C8 Geevarghese Philip and Shivam Garg: Raising The Bar For Vertex Cover: Fixed-parameter Tractability Above A Higher Guarantee, Proceedings of the 27th Annual ACM-SIAM Symposium on Discrete Algorithms, SODA 2016, Arlington, VA, USA, January 2016.

C9 Geevarghese Philip, Ashutosh Rai, and Saket Saurabh: Generalized Pseudoforest Deletion: Algorithms and Uniform Kernel, Mathematical Foundations of Computer Science 2015 - 40th International Symposium, MFCS 2015, Milan, Italy, August 2015, Proceedings, Part II. Lecture Notes in Computer Science Vol. 9235, Springer, 2015. pp. 517-528.

C10 Geevarghese Philip, Fahad Panolan and Saket Saurabh: b-Chromatic Number: beyond NP-hardness, 10th International Symposium on Parameterized and Exact Computation, IPEC 2015, Patras, Greece (to appear).

C11 Geevarghese Philip, Prachi Goyal, Pranabendu Misra, Fahad Panolan and Saket Saurabh: Finding Even Subgraphs Even Faster, 35th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science, FSTTCS 2015, Bangalore, December 2015 (to appear).

C12 M. Praveen and B. Srivathsan: Defining Relations on Graphs: How Hard is it in the Presence of Node Partitions?, Proceedings of the 34th ACM Symposium on Principles of Database Systems, Pages 159-172, ACM New York, NY, U.S.A.

C13 R Ramanujam, Vaishnavi Sundararajan and S P Suresh: Complexity of fragments of intuitionistic logic with disjunction, Proceedings of LFCS 2016, Springer LNCS volume 9537, pages 349-363.

C14 B. Srivathsan and M. Praveen: Defining Relations on Graphs: How hard is it in the presence of node partitions?, Proceedings of ACM PODS 2015:159 - 172.

C15 Sasanka Roy, Niranka Banerjee, Sankardeep Chakraborty, Venkatesh Raman and Saket Saurabh: Time-space Tradeoffs for Dynamic Programming in Trees and Bounded Treewidth Graphs, to appear in COCOON 2015.

C16 Varunkumar Jayapaul, Venkatesh Raman and Srinivasa Rao Satti: Finding mode using equality comparisons, to appear in Walcom 2016

Preprints

Mathematics

P1 B. Narasimha Chary and S. Senthamarai Kannan: Rigidity of Bott-Samelson-Demazure-Hansen Variety for $PSp(2n, \mathbb{C})$.

P2 Sourish Das and Rajiv Sambasivan: Gaussian Process Prior for Big Data.

P3 Rajeeva L. Karandikar and B.V. Rao: On the Second Fundamental Theorem of Asset Pricing.

P4 Krishna Hanumanthu: Positivity of line bundles on general blow ups of $\mathbb{P}^2$.

P5 Krishna Hanumanthu and Anwesh Ray: Syzygies of line bundles on GIT quotients.

P6 Manoj Kummini and Shreedevi K. Masuti: On conjectures of Itoh and of Lipman on the cohomology of normalized blow-ups, arXiv:1507.03343.

P7 Debajyoti Nandi: Partition identities arising from the level 4 standard modules for the affine Lie algebra A2(2), in progress.

P8 Debajyoti Nandi: Partition identities arising from level 4 standard modules of A2(2)" (under review).

P9 Priyavrat Deshpande and A. Ray: On the topology of the complement of affine curves.

P10 S. Senthamarai Kannan, Indranil Biswas and D. S. Nagaraj: Automorphisms of $\overline{T}$.

P11 M. Subramani: Cyclic Cubic Euclidean Number Fields.

P12 Upendra Kulkarni: Polynomial Functors and the Kronecker Product.

P13 Sushmita Venugopalan: Local model for the moduli space of affine vortices.

P14 Vijay Ravikumar, V. Lakshmibai and William Slofstra: The Cotangent Bundle of a Cominuscule Grassmannian.

Computer Science

P15 Parosh Aziz Abdulla, C. Aiswarya and Mohamed Faouzi Atig: Data Communicating Processes with Unreliable Channels, submitted to Logic in Computer Science (LICS), 2016.

P16 C. Aiswarya: Benedikt Bollig and Paul Gastin, An Automata-Theoretic Approach to the Verification of Distributed Algorithms.

P17 C. Aiswarya, P. Gastin and K. Narayan Kumar: Maintaining Latest Information Beyond Channel Bounds.

P18 M.F. Atig, D. Chistikov, P. Hofman, K. Narayan Kumar, P. Saivasan and G. Zetzsche: Complexity of Regular Abstractions of One Counter Languages, http://arxiv.org/abs/1602.03419

P19 Nikhil Balaji, Samir Datta, Raghav Kulkarni, Supartha Podder: Graph properties in node-query setting: effect of breaking symmetry. CoRR abs/1510.08267 (2015) 2014.

P20 Gabor Ivans, Young Qiao and K V Subrahmanyam: Constructive non-commutative rank computation in deterministic polynomial time over fields of arbitrary characteristic.

P21 Suryajith Chillara: Revisiting the Arithmetic Circuit Size and Determinantal Complexity Lower Bounds.

P22 M. Praveen: Nesting Depth of Operators in Graph Database Queries: Expressiveness Vs. Evaluation Complexity, http://arxiv.org/abs/1603.00658.

P23 R Ramanujam, Vaishnavi Sundararajan and S P Suresh: Assertions in the Dolev-Yao model, Journal article in preparation.

P24 R Ramanujam, Vaishnavi Sundararajan and S P Suresh: The complexity of disjunction in intuitionistic logic.

P25 R Ramanujam, Vaishnavi Sundararajan and S P Suresh: Communicating assertions in security protocols: formal models and complexity.

Physics

P26 K.G. Arun: uTests of general relativity with GW150914, (With LIGO Scientific Collaboration & Virgo Collaboration), arXiv:1602.03841 (2016).

P27 K.G. Arun, Chandra Kant Mishra, Aditya Kela, Guillaume Faye, C K Mishra, A Kela and G Faye: Ready-to-use post-Newtonian gravitational waveforms for binary black holes with non-precessing spins: An update , arXiv:1601.05588 (2016).

P28 K.G. Arun, B. Moore, M. Favata, C. K. Mishra: Gravitational Phasing for low-eccentricity in spiralling compact binaries to 3PN order.

P29 K.G. Arun: Properties of the binary black hole merger GW150914, With LIGO Scientific Collaboration and Virgo Collaboration, arXiv:1602.03840 (2016).

P30 K.G. Arun: The Rate of Binary Black Hole Mergers Inferred from Advanced LIGO Observations Surrounding GW150914, With LIGO Scientific Collaboration and Virgo Collaboration, arXiv:1602.03842 (2016).

P31 K.G. Arun: GW150914: First results from the search for binary black hole coalescence with Advanced LIGO, with LIGO Scientific Collaboration and Virgo Collaboration, arXiv:1602.03839 (2016).

P32 Ranabir Chakrabarti: Evolution of a hybrid micro-macro entangled state of the qubit-oscillator system via the generalized rotating wave approximation (ArXiv no. 1509.07030 quant-ph).

P33 G. S. Krishnaswami, S. Sachdev, A. Thyagaraja: Conservative regularization of compressible flow and ideal magnetohydrodynamics, arXiv:1510.01606 [physics.flu-dyn].

P34 G. S. Krishnaswami, S. Sachdev, A. Thyagaraja, Local conservative regularizations of compressible magnetohydrodynamic and neutral flows, arXiv:1602.04323 [physics.plasma-ph].

P35 Alok Laddha: Asymptotic symmetries of gravity and soft theorems for massive particles Miguel Campiglia, September 4, 2015. 30 pp. e-Print: arXiv:1509.01406.

P36 K. Narayan: de Sitter space and extremal surfaces for spheres, arXiv:1504.07430 [hep-th].

P37 K. Narayan: On dS4 extremal surfaces and entanglement entropy in some ghost CFTs", arXiv:1602.06505 [hep-th].

P38 Sonakshi Sachdev: arXiv:1510.01606 - Conservative regularization of compressible flow.

Book

Physics

B1 R. Parthasarathy: Introduction to General Relativity, Narosa Publishing Pvt. Ltd. ISBN: 978-81-8487-428-0. Copyright year 2016.

Ph.D. Thesis

T1 Ankit Gupta: Arithmetic Circuits: Lower Bounds, Derandomization, Reconstruction (May 2015).

T2 Rohith Varma: Higgs Bundles on Elliptic Surfaces (March 2016).

11 The National Undergraduate Programme

In 1998, CMI initiated an National Undergraduate Programme in the Mathematical Sciences in collaboration with Madhya Pradesh Bhoj Open University with a 3 year course in Mathematics and Computer Science, leading to a B.Sc. Honours degree. In 2001, this programme was extended to the postgraduate level with separate 2 year courses leading to M.Sc. degrees in Mathematics and Computer Science. The scope of the undergraduate programme was expanded in 2003 to incorporate a 3 year course leading to a B.Sc. Honours degree in Physics. CMI commenced a two year course leading to an M.Sc. degree in Applications of Mathematics in 2010.

From 2012, the B.Sc. Physics programme has been restructured as a B.Sc. programme in Mathematics and Physics. There is a common admission to the B.Sc. programmes in Mathematics and Computer Science and Mathematics and Physics and all students do the same courses in the first semester. Students choose their stream at the end of the first semester.

The undergraduate and postgraduate teaching programmes at CMI are both run in cooperation with the Institute of Mathematical Sciences (IMSc), Chennai. These programmes tap the teaching talent available at the elite research institutes of the country, which are normally outside the university system. Students are thus exposed to lectures by active researchers who bring a very different perspective to the teaching.

B.Sc. (Hons.) Mathematics and Computer Science

In 2015, the eighteenth batch of students was admitted to the undergraduate programme. At the end of the first semester, 33 opted for B.Sc. in Mathematics and Computer Science. The second year B.Sc. class has 23 students in Mathematics and Computer Science and the third year B.Sc. class has 18 students. Out of the 13 students of the 2012 batch who took their degrees at the convocation in July 2015, several have been placed in very prestigious institutions.

- Aditya Aradhye
  MSc student in Computer Science, Chennai Mathematical Institute
- Debdyuti Banerjee
  MSc student in Mathematics, Chennai Mathematical Institute
- Ranadeep Biswas
  MSc student in Computer Science, Chennai Mathematical Institute
- Sougata Bose
  MSc student in Computer Science, Chennai Mathematical Institute

- Debsoumya Chakraborti
  PhD student in Mathematics, Carnegie Mellon University, Pennsylvania, USA
- Diptaishik Choudhury
  MSc student in Mathematics, Chennai Mathematical Institute
- Abhratanu Dutta
  PhD student in Computer Science, Northwestern University, Evanston, IL, USA
- Prantar Ghosh
  MSc student in Computer Science, Chennai Mathematical Institute
- Tanay Jain
  MSc student in Computer Science, Chennai Mathematical Institute
- Arpita Kar
  PhD student in Mathematics, Queen's University, Kingston, Canada
- Saubhik Mukherjee
  MSc student in Quantitative Economics, Indian Statistical Institute Calcutta, Kolkata
- Rijul Saini
  PhD student in Mathematics, Tata Institute of Fundamental Research, Mumbai
- Utsab Sarkar

B.Sc. (Hons.) Mathematics and Physics

Of the 42 students admitted to the undergraduate programme in 2015, 9 students opted for B.Sc. in Mathematics and Physics as the end of the first semester. The second year class has 4 students. The third year class has 8 students. Out of the 5 students of the 2012 batch who took their degrees at the convocation in July 2015, several have been placed in very prestigious institutions.

- Rudradip Biswas
  MRes Student in Mathematics, University of Leicester,UK
- Akashdeep Dey
  MSc student in Mathematics, Chennai Mathematical Institute
- Sayantan Ghosh
  PhD student in Physics, Indian Institute of Science, Bangalore
- Alapan Mukhopadhyay
  MSc student in Mathematics, Chennai Mathematical Institute

- Prakash Kumar Singh
  MSc student in Mathematics, Chennai Mathematical Institute

M.Sc. Mathematics

In 2015, 7 students have joined the programme. There are 15 students in the second year of the programme. 10 students who joined the programme in 2013 have completed the programme successfully.

- Sujoy Chakraborty
  PhD student in Mathematics, Tata Institute of Fundamental Research, Mumbai
- Ronno Das
  PhD student in Mathematics, University of Chicago, Chicago, Illinois, USA
- Chan Eng Dy
- Jayan Mukherjee
  PhD student in Mathematics, University of Kansas, Lawrence, USA
- Sayanta Mandal
  PhD student in Mathematics, University of Illinois at Chicago, Chicago, Illinois, USA
- Sourav Kanti Patra
- Anwesh Ray
- Debaditya Raychoudhury
  PhD student in Mathematics, University of Kansas, Lawrence, USA
- Amit Roy
- Gobinda Sau

M.Sc. Computer Science

In 2015, 22 students have joined the programme. There are 15 students in the second year of the programme. 9 students who joined the programme in 2013 have completed the programme successfully.

- Deepayan Bhattacharjee
  PhD student in Computer Science, Stony Brook University, New York, USA

- Chetan Gupta
  Research Assistant, Indian Institute of Technology Madras, Chennai
- Shyamalal Karra
  PhD student in Computer Science, Chennai Mathematical Institute
- Avijit Mandal
- Drimit Pattanayak
- Aditya Potukuchi
- Sanjukta Roy
  PhD student in Computer Science, The Institute of Mathematical Sciences, Chennai
- Roohani Sharma
  PhD student in Computer Science, The Institute of Mathematical Sciences, Chennai
- Vimalraj Sharma
  iNautix, Chennai

M.Sc. Applications of Mathematics

In 2015, 4 students have joined the programme. There are 8 students in the second year of the program. 4 students who joined the programme in 2013 have completed the programme successfully.

- Srijan Datta
  Ernst & Young LLP, Bangalore
- Tvisha Gupta
  Ernst & Young (EY), Bangalore
- Phanindra Krishna Jakkam
- Biswajit Mahato

Convocation

The 13th Annual Convocation of CMI was held on 25 July 2015. Degrees were awarded to 49 successful candidates at various levels. Of these, 23 were B.Sc. candidates, 23 were M.Sc. candidates and 3 was a Ph.D. candidate. Prof. Manjul Bhargava, Princeton University, USA was the Chief Guest and delivered the convocation address.

For the B.Sc. programmes, the CMI Gold Medal of Excellence was awarded to Debdyuti Banerjee in Mathematics and Computer Science and Akashdeep Dey in Mathematics and Physics for their outstanding performance at the undergraduate level. For the M.Sc. programmes, the CMI Gold Medal of Excellence was awarded to Ronno Das in Mathematics, Tvisha Gupta in Applications of Mathematics and Roohani Sharma in Computer Science.

12 Activities of the Undergraduate Students

Informatics Olympiad

CMI faculty coordinate the training and selection of students to represent India at the International Olympiad in Informatics through the Indian Association for Research in Computer Science (IARCS). CMI hosts the official IARCS website. From September 2004, a monthly online programming competition has been conducted by the CMI faculty via the IARCS website.

Sambit Senapati:

- Attended Asian Science Camp 2015 held at Pathum Thani, Thailand from August 1-8.

Sridhar V

- Selected for the Asian Science Camp 2015 and attended it in Thailand in August 2015.

Sambit Senapati, Tejaswini, and Sridhar:

- Won 'first prize' in the 'Battle of Brains' contest at 'Forays-2016' held in IIT Madras, in March, 2016.

Interaction with graduate students from Ecole Normale Supérieure

Chennai Mathematical Institute has an agreement with the Ecole Normale Supérieure in Paris, France, one of the leading institutions in the world for teaching and research in Mathematics. This agreement provides for regular exchange visits by academic members of CMI and ENS, Paris. This includes, in particular, exchanges of visits by undergraduate students between the two institutions.

Every year, the top three students passing out from the B.Sc. Mathematics programme spend 8 weeks at the ENS, where they work on research projects with the ENS faculty. In May–June 2015, Alapan Mukhopadhyay, Akashdeep Dey and Debdyuti Banerjee visited the ENS.

Interaction with graduate students from Ecole Polytechnique

Chennai Mathematical Institute has an agreement with the Ecole Polytechnique in Paris, France, one of the leading institutions in the world for teaching and research in Physics.

13 Undergraduate/Graduate Courses

August – November 2015

Algorithmic Game Theory	:	Sourav Chakraborty
Advanced GTR	:	K G Arun
Algebra I	:	Upendra Kulkarni
Algebra III	:	Purusottam Rath
Algebra IV	:	Shiva Shankar
Design & Analysis of Algorithms	:	Samir Datta
Analysis I	:	S Sundar
Analysis	:	Alladi Sitaram
Approximation Algorithms	:	Sourav Chakraborty
Advanced Probability	:	B V Rao
Applied Probability with R	:	Sourish Das
Advanced QFT	:	V V Sreedhar
Algebraic Topology	:	Manoj Kummini
Advanced Topics in Verification	:	M K Srivas
Caculus III	:	V Balaji
Commutative Algebra	:	Clare D'Cruz
Commutative Algebra Reading Seminar	:	Manoj Kummini
Classical Mechanics	:	R Jagannathan
Classical Mechanics I	:	K Narayan
Complexity II	:	Partha Mukhopadhyay
Concurrent Programming	:	Madhavan Mukund/S P Suresh
Discrete Mathematics	:	K V Subrahmanyam
Data Mining & Machine Learning	:	K V Subrahmanyam
Econometrics I	:	V Swaminathan
Electrodynamics	:	R Parthasarathy
English	:	Usha Mahadevan
Functional Analysis	:	S Srinivasan
Graduate Algebra I	:	Pramathanath Sastry
Graduate Analysis I	:	T R Ramadas
Graduate Topology I	:	S Senthamarai Kannan
Histoty of Mathematics	:	Sriram Nambiar
Homotopy Theory	:	Priyavrat Deshpande
Laboratory 1	:	K G M Nair

Logic, Automata & Games	:	B Srivathsan
Linear Algebra	:	M Sundari
Mathematical Logic	:	Madhavan Mukund
Intro to Manifolds	:	Vijay Ravikumar
Mathematical Finance	:	Sreejata Banerjee
Multivariate Statistical Analysis	:	J V Deshpande
Math Seminar	:	Pramathanath Sastry
Measure Theoretic Probability	:	Rajeeva Karandikar
Optimization	:	T Parthasarathy
Parameterized Algorithms	:	G Philip
Probability and Statistics	:	B V Rao
Intro to Programming (Haskell)	:	S P Suresh
Intro to Programming (Python)	:	Narayan Kumar
Quantum Mechanics I	:	G Rajasekaran
Quantum Mechanics	:	H S Mani
Real Analysis	:	Rajeeva Karandikar
Stochastic Games	:	T Parthasarathy
Statistical Mechanics	:	Alok Laddha
Topics in Automata Theory	:	K Narayan Kumar
Topics in Differential Topology	:	Dishant Pancholi
Theory of Computation	:	M Praveen
Thermal Physics	:	T R Govindarajan

January - April 2016

Algebra, Computation and Algorithms	:	Partha Mukhopadhyay
Adv. Combinatorics/Probabilistic Mthds	:	Sourav Chakraborty
Algebra II	:	V Balaji
Algebraic Curves	:	Seshadri Chintapalli
Design & Analysis of Algorithms	:	Prajakta Nimbhorkar
Analysis II	:	S Sundar
Advanced Programming	:	Narayan Kumar
Advanced QFT	:	V V Sreedhar
Topics in Automata Theory 2	:	Narayan Kumar/M Praveen
Basics of Gravitational Wave Data Analysis	:	K G Arun
Complex Analysis	:	Purusottam Rath
Classical Mechanics II	:	Govind Krishnaswami
Continuum Mechanics & Nonlinear Dynamics	:	H S Mani
Concurrency Theory	:	Madhavan Mukund
Complex Analysis	:	Dishant Pancholi

Characteristic-p Methods	:	Manoj Kummini
Complexity Theory	:	Samir Datta
Cryptography	:	K V Subrahmanyam
Differential Equations	:	Sushmita Venugopal
Topics on Derivatives	:	Sreejata Banerjee
Discrete Mathematics	:	Sourav Chakraborty
Economics	:	Malathi Velamuri
Econometrics II	:	V Swaminathan
Electrodynamics I	:	R Jagannathan
The Art of the Short Story	:	M Usha
Implementation of FP Languages	:	Madhavan Mukund/S P Suresh
Financial Risk Management	:	Sourish Das
Graduate Algebra II	:	Upendra Kulkarni
Graduate Analysis II	:	T R Ramadas
General English	:	M Usha
Game Theory	:	T Parthasarathy
General Relativity	:	T R Govindarajan
Graduate Topology II	:	Shiva Shankar
Harmonic Analysis	:	M Sundari
Homotopy Type Theory	:	Priyavrat Deshpande/S P Suresh
Intro to Kac-Moody Lie Algebras	:	Debajyoti Nandi
Intro to Reflection Groups	:	Kavita Sutar
Laboratory	:	K G M Nair
Low-dimensional Geometry & Topology	:	R Vijay
Lie Algebras	:	Senthamarai Kannan
Model Checking and Systems Verification	:	M Srivas/B Srivathsan
Mathematical Finance	:	Sreejata Banerjee
Operator Algebras	:	R Srinivasan
Optics	:	R Chakraborti
Programming Language Concepts	:	S P Suresh
Probability Theory	:	R V Ramamoorthi
Quantitative Automata Theory	:	Aiswarya Cyriac/B Srivathsan
Quantum Computation	:	V V Sreedhar
Quantum Field Theory	:	R Parthasarathy
Quantum Mechanics II	:	G Rajasekaran
Regression & Classification	:	J V Deshpande
Research Seminar in Mathematics	:	Pramath Sastry
Representation Theory of Finite Groups	:	Sachin Sharma
Special English	:	Usha Mahadevan
Statistical Field Theory	:	K Narayan
Simulation Methods	:	Rajeeva Karandikar
Stochastic Processes I	:	Rajeeva Karandikar

Special Topics in QFT	:	Alok Laddha
Special Topics in General Relativity	:	Alok Laddha
Some Topics in Group Theory	:	Pranab Sardar
Topics in Commutative Algebra	:	Clare D'Cruz
Topics in Differential Topology	:	Dishant Pancholi
Topology	:	Krishna Hanumanthu
Time Series Analysis	:	Ananya Lahiri

14 Special Lectures

- R. Sridharan: A letter of Cabeza De Vaca, a Spanish conquistador, to the King of Spain (April 2015).
- Ronno Das: Thesis Defence: Salvetti Complex Construction for Manifold Reflection Arrangements (April 2015).
- Sayanta Mandal: Curves on nonsingular projective surfaces (MSc Thesis Defence) (July 2015).
- Manoj Kummini: Directing a seminar on commutative algebra for MSc and PhD students.
- Ranabir Chakrabarti: Quantum Mechanics I (in the absence of Professor G. Rajasekaran, who is in charge of the course) (August 2015).
- Govind S. Krishnaswami: Classical Integrable Systems (Informal Course).
- B.V. Rao: Fourier Analysis (Course of lectures).
- Madhavan Mukund: Neural Networks (Course of lectures) (Aug-Nov 2015).
- T. Parthasarathy: Stochastic Games and Related Concepts (Lecture Series) - (September - October 2015).
- Madhavan Mukund: Design and Analysis of Algorithms (NPTEL MOOC, Jan-Mar 2016).
- Madhavan Mukund: Functional Programming in Haskell (NPTEL MOOC, Aug-Nov 2015 & Jan-Mar 2016).
- S.P. Suresh: Programming in Haskell (NPTEL MOOC) (August – October 2015).
- Rajeeva L. Karandikar: Power and Limitations of Opinion Polls (February 2016).
- K V Subrahmanyam: Invariants of several matrices under SL(n) x SL(n) action (January 2016).
- K. Narayan: Critical phenomena, renormalization group and quantum field theory (January-March 2016).
- V. Balaji: Semisimplicity of tensor products of representations and the Etale slice theorem in positive characteristics (February 2016).
- K.G. Arun: The Dawn of Gravitational Wave Astronomy: Observation of Gravitational Waves from the merger of two black holes (March 2016).

15 CMI Silver Jubilee Lecture Series

- Sandip Trivedi, TIFR, Mumbai: Inflation, Initial Conditions and Symmetries (April 2015).
- S.G. Rajeev, University of Rochester: It is a Rough World In There: Regularity of Quantum Fields (August 2015).
- R. Parimala, Emory University: Local-global principles over function fields (August 2015).
- Joseph Samuel, Raman Research Institute, Bangalore: Classical and Quantum Cloning (August 2015).
- Sinnou David, University of Paris VI, France: On Lehmer Problem on semi-abelian varieties (August 2015).
- Loic Merel, University of Paris VII, France: The explicit version of the Manin-Drinfeld theorem (August 2015).
- Sunil Mukhi, TIFR, Mumbai: The Wonders of Conformal Field Theory (August 2015).
- V Balakrishnan, IIT Madras: Random Walks on Sierpinski Fractals (September 2015).
- Rajesh Gopakumar, ICTS, Bangalore: The Remarriage of Mathematics and Physics (September 2015).

16 Silver Jubilee Conferences and Workshops

International Conference on Algebra, Geometry and History of Mathematics in honour of R. Sridharan on the occasion of his 80th birthday (July 2015)

Ramaiyengar Sridharan was born on July 04, 1935. This year marks his 80th birthday and CMI is organizing a conference in his honour.

Professor Sridharan has been primarily responsible for the development of a modern school of Algebra in India. He has made significant contributions to the study of projective modules over polynomial rings over division rings. This led to the understanding of problems on quadratic forms. His collaborative work with mathematicians all over the world has also had extensive impact in many areas of algebra.

Professor Sridharan has also made significant contributions to the study of history of mathematics since the ancient times. His publications and lectures on the subject have greatly expanded our knowledge in this area.

He is a superb teacher with an unparalleled capacity to inspire students with his lectures. As an outstanding expositor, his writings on various subjects have enthralled mathematicians of all persuasions. He has inspired generations of students and colleagues over the past sixty years. In the last fifteen years, he has been a wonderful mentor and teacher to young students at CMI. His active and enthusiastic engagement with students to this day has enriched countless students.

This conference in his honour is also a part of the Silver Jubilee celebrations of CMI.

The speakers and the title of the talks were as follows.

(1) Jean Barge, Ecole Polytechnique/CNRS, Paris: Ternary index of Lagrangians old and new.

(2) Niveditha Bhaskar, Emory, Atlanta: Serre's injectivity question for reductive groups.

(3) Senthamarai Kannan, CMI, Chennai: GIT quotients of Richardson varieties by a maximal torus.

(4) Sudhesh Khanduja, IISER, Mohali: Dedekind's Theorem on splitting of primes and simple extensions of integrally closed domains

(5) Max Knus, ETH, Zurich: Low dimensions and exceptional phenomena.

(6) Amit Kulshreshta, IISER, Mohali: A rational Wedderburn decomposition using quadratic forms.

(7) M Ojanguren, Ecole polytechnique federale de Lausanne: Two birds with one stone.

(8) M S Raghunathan, NCM, IITB, Mumbai: On Imbedding Harish-Chandra modules in Principal Series.

(9) Preeti Raman, IITB, Mumbai: Adjoint classical groups over $Q_p(X)$ and R-equivalence.

(10) S Ramanan, CMI, Chennai: Higgs moduli on hyper-elliptic curves and Hitchin fibre.

(11) Ravi Rao, TIFR, Mumbai: Normality of the DSER group of elementary orthogonal transformations.

(12) M D Srinivas, Centre for Policy Studies, Chennai: Combinatorial Methods in Indian Music: Pratyayas in Sangitaratnakara of Sarngadeva.

NS@50: Fifty Years of the Narasimhan-Seshadri Theorem Workshop 5 9 October, and Conference (October 2015)

The goal of this activity was to present a comprehensive view of some of the most important developments that have taken place in the last 50 years derived from the Narasimhan-Seshadri Theorem, and explore further directions of the theory.

Participants:

J Andersen (Aarhus)

G. Berczi (Oxford)

O. Biquard (ENS, Paris)

P. Boalch (ENS, Paris)

L. Brambila-Paz (Guanajuato)

B. Collier (UIUC, Urbana)

Du Pei (Caltech)

E. Franco (Campinas)

J. Heinloth (Essen)

M. Garcia-Fernandez (ICMAT, Madrid)

T. Gomez (ICMAT, Madrid)

J. Iyer (Chennai)

J. Hurtubise (McGill)

I. Mundet i Riera (Barcelona)

A. Oliveira (Porto)

T. Pantev (Philadelphia)

A.J. Parameswaran (Bombay)

A. Peon (Heidelberg)

B. Pym (Oxford)

S. Ramanan (CMI, Chennai)

C. Sabbah (Paris)

F. Schaffhauser (Bogota)

L. Schaposnik (UIUC, Urbana)

S. Szabo (Budapest)

G. Thompson (Trieste)

S. Venugopalan (Chennai)

F. Villegas (Trieste)

J. Weitsman (Northeastern)

R. Wentworth (Maryland)

G. Wilkin (Singapore)

NS@1: Reminiscences by Narasimhan and Seshadri (as well as others) of the historical context out of which the Theorem was born.

Courses

- C Sabbah: Twistor D-modules
  Lecture 1: Overview from the Narasimhan-Seshadri theorem to the theorems of T. Mochizuki
  Lecture 2: Introduction to twistor D-modules
- Biquard: Milnor-Wood inequality from the Higgs bundle viewpoint
- Boalch: Connections on curves and wild character varieties
- Pantev: Foliations in derived geometry, symplectic structures, and potentials
- Du Pei: A New TQFT from Equivariant Integration over Moduli Space of Higgs Bund les

NS Reviews

- Balaji: The Narasimhan-Seshadri theorem and the geometry of principal bundles.
- Bradlow: From Narasimhan-Seshadri to Uhlenbeck-Yau and beyond
- Garcia-Prada: Higgs bundles on Riemann surfaces
- Nagaraj: Parabolic bundles and Parabolic Higgs bundles

- Nitsure: Narasimhan-Seshadri Theorem and Moduli Spaces.
- Ramadas: The Narasimhan-Seshadri Theorem and theoretical physics

Talks

- Andersen: Quantization of the moduli spaces of flat SU(n) and SL(n,C) connections
- Berczi: Tautologial integrals on curvilinear Hilbert schemes
- Biquard: The Hitchin component for $SL(\infty)$
- Boalch: Non-perturbative hyperkahler manifolds
- Brambila-Paz: Coherent Higgs systems
- Collier: Maximal SO(2,3) surface group representations and Labourie's conjecture
- Fernandez: Gravitating vortices, cosmic strings and the Khler-Yang-Mills equations.
- Franco: Moduli spaces of Lambda-modules on abelian varieties
- Gomez: Torelli theorem for the parabolic Deligne-Hitchin moduli space
- Heinloth: Coarse moduli spaces for parahoric bundles using a stack theoretic GIT condition
- Hurtubise: Monopoles on circle bundles.
- Jaya Iyer: Higher-order Chern-Cheeger-Simons invariants
- Oliveira: Quadratic pair moduli spaces
- Parameswaran: Parabolic curves in positive characteristic
- Du Pei: Branes and mirror symmetry in Hitchin moduli space
- Peon
- Pym: Meromorphic connections and the Stokes groupoids.

Slides of the Lecture

- Ramanan: Hyperelliptic curves and the Hitchin map
- Schaffhauser: Real Seifert manifolds and the Narasimhan-Seshadri correspondence.
- Schaposnik: Higgs bundles, branes, and applications.

- Szabo: Spectral data for irregular Higgs bundles
- Thompson: Chern-Simons Theory with a Complex Gauge Group on a Seifert Rational Homology Sphere
- Venugopalan: Hitchin-Kobayashi correspondence for vortices on non-compact Riemann surfaces.
- Weitsman: Recursion and vanishing relations in the cohmology ring of the moduli of parabolic vector bundles
- Wentworth: Towards a strange duality for odd orthogonal bundles
- Wilkin: Classification of Yang-Mills flow lines

17 Workshops/Schools/Conferences

Research Workshop and Conference on Statistical Methods in Finance (July 2015)

The work shop was Organized by Chennai Mathematical Institute and Indian Statistical Institute, Chennai. Supporting organization was The International Society for Business and Industrial Statistics.

The Research Workshop and Conference on Statistical methods in finance aimed to expose the participants to some new and active areas of research and to form working groups of researchers.

There were two mini courses by two experts in the field.

- Susan Thomas, Indira Gandhi Institute of Development Research: The working of financial markets.
- T V Ramanathan, University of Pune: Volatility: Modeling and Estimation .

In addition there were 10-12 invited lectures. The workshop had ample open hours for discussion.

(1) Rudra Pradhan, IIT Kharagpur: Financial Market Forecasting.

(2) N Balakrishna, CUSAT: Financial Time Series Analysis.

(3) Diganta Mukherjee, ISI Kolkata: Pricing a Class of Lévy Driven Barrier Options using PIDE.

(4) Pulak Ghosh, IIM Bangalore: Statistics, Big Data and Finance.

(5) Anindya Goswami, IISER Pune: Statistical Inference in a Regime Switching Market.

(6) Ananya Lahiri, CMI: Fractional Brownian Motion.

(7) P Manimaran, AIMSCS: Time Series Analysis.

(8) Tapen Sinha, ITAM, Mexico: Pricing of Microinsurance of Solar Panels.

(9) Anirban Chakraborti, JNU: Econophysics

(10) Tapen Sinha, ITAM Mexico: Time Series Methods in Geological Time Scale.

Posters

(1) Rishu Kumar Singh, The Institute of Mathematical Sciences, Chennai: Analysis of Financial Markets using High-Frequency Data.

(2) Savitri Joshi, Department of Statistics, Central University of Rajasthan: An Overview of Financial Risk Management: An Opportunity for Statistical Research.

(3) Habib Ur Rehman, Department of Statistics, Banaras Hindu University: A Study of Improved Chain Ratio-cum-Regression type Estimator for Population Mean in the Presence of Non- Response for Fixed Cost and Specified Precision.

(4) Saurabh Kumar, Central University of Rajasthan: Modeling of National Pension Scheme and its performance.

(5) Amarnath Mitra,IBS, Hyderabad: Global Transmission of Volatility across International Stock Markets: A Network Study.

Lecture Programme for students of class XI and XII, in association with National Academy of Sciences, Allahabad (July 2015)

The Chennai Mathematical Institute (CMI) organised a lecture programme for students of class XI and XII in the areas of Mathematics, Computer Science and Physics.

- Amritanshu Prasad, IMSc., Chennai: The Platonic Solids.
- Kamal Lodaya, IMSc., Chennai: From programs to processes to phones.
- Manjari Bagchi, IMSc., Chennai: Twinkle, twinkle little stars; Yes, I know what you are!
- Priyavrat Deshpande, CMI, Chennai: Plausible reasoning - a first step towards shaping our mathematical worldview.
- Meghana Nasre, IIT-M, Chennai: Stable Marriage Problem.
- K. Narayan, CMI, Chennai: Black holes and the Bekenstein-Hawking entropy.

NCM Advanced Instructional School in Commutative Algebra (December 2015 - January 2016)

National Centre for Mathematics - A joint centre of IIT Bombay and TIFR, Mumbai

Advanced Training in Mathematics Schools

AIS Commutative Algebra (2015)

The Advanced Training in Mathematics Schools (ATM Schools) were launched by the National Board for Higher Mathematics (NBHM) in May 2004. The purpose of these schools is to provide training in core subjects in Mathematics to Ph.D. students, young researchers and teachers. The emphasis in these schools is on learning mathematics by doing it. IIT Bombay and TIFR have jointly established the National Centre for Mathematics (NCM) in 2011. The instructional schools and workshops which were earlier planned by an NBHM committee on ATM Schools are now being organised under the supervision of the Apex Committee of the NCM.

The objective is to organize quality schools which help researchers and teachers and learn advanced mathematics in an enjoyable way.

Convener(s)

Manoj Kummini, Chennai Mathematical Institute.

A. V. Jayanthan, Indian Institute of Technology-Madras.

Speakers:

Clare D'Cruz: (CDC)

A. V. Jayanthan: (AVJ)

Manoj Kummini: (MK)

K. N. Raghavan: (KNR)

Srikanth Iyengar: (SI)

Anurag Singh: (AS)

Week 1: (12 Lectures)

L1 (CDC): Basic module theory; free modules; homogeneous Nakayama's lemma

L2 (AVJ): Integral extensions; normal domains; polynomial rings and UFDs are normal

L3 (CDC): Noetherian rings and modules; Hilbert basis; recognizing Noetherian rings (e.g., Atiyah-MacDonald Exercise 7.5)

L4-5 (AVJ): Going up and going down theorems

L6-7 (CDC): Nullstellensatz and dimension theory

L8-9 (AVJ): Graded rings, Hilbert series and examples; degree and dimension from Hilbert series

L10-11 (CDC): Homogeneous systems of parameters; homogeneous Noether normalization; regular sequences

L12 (AVJ): Identifying normal domains, say in the hypersurface case, using the Jacobian criterion

Week 2: (12 Lectures)

L13,15,17,19,21,23 (MK): Regular rings (polynomial rings); Hilbert syzygy theorem; Depth, Projective dimension and Auslander-Buchsbaum formula in the graded situation. Benson Proposition 5.4.2 (Recognizing when a finitely generated algebra, over a field of characteristic zero, is a polynomial ring). Cohen-Macaulay rings (in the graded setting); characterizing CM rings as free over a homogeneous Noether normalization. Proving that one homogeneous sop is a regular sequence iff each is; polynomial rings, complete intersections are CM; Gorenstein rings: R is Gorenstein in the graded setting iff $Hom_A(R, A)$ is isomorphic to a shift of R for some/any homogeneous Noether normalization A; the equivalence of some/any can be proved using Hilbert series in the domain case: Bruns-Herzog Corollary 4.4.6(c).

L14,16,18,20,22,24: (KNR): Group actions: when R is a normal domain, so is R^G; how this helps compute various examples e.g., invariants of symmetric and alternating groups. For finite groups and algebraically closed fields, MaxSpec R^G is in bijection with orbits; example where this fails for infinite groups. Finite generation of R^G in characteristic zero AND in positive characteristic.

Week 3: (10 Lectures) (AS & SI).

L25. Noether bound in characteristic zero; failure in positive characteristic

L26. Noether bound in positive characteristic (Benson's proof)

L27. Molien's formula and examples

L28. Semi-invariants, and Molien for semi-invariants

L29. Laurent coefficients of Hilbert series: degree and number of pseudoreflections

L30. Hochster-Eagon theorem and Bertin's example

L31. Characterize when G is a subgroup of SL in terms of Hilbert series of R^G

L32. Shephard-Todd Theorem

L33. Shephard-Todd Theorem ctd.

L34. Watanabe's theorem

Pre-requisites: Knowledge of basic commutative algebra: localization, Hom and tensor, Noetherian and Artinian rings, associated primes and primary decomposition, integral closure, going up and going down theorems, dimension theory.

References:

(a) D. J. Benson, Polynomial Invariants of Finite Groups Cambridge University Press.

(b) W. Bruns and J. Herzog, Cohen-Macaulay rings, Cambridge University Press.

(c) D. Eisenbud, Commutative Algebra, with a view towards algebraic geometry, Springer Verlag.

(d) H. Matsumura, Commutative Ring Theory, Cambridge University Press.

(e) J.-P. Serre, Local Algebra, Springer Verlag.

(f) R. P. Stanley, Invariants of nite groups and their applications to combinatorics, Bull. Amer. Math. Soc (N.S.), 1979.

CMI Arts Initiative

The objective of the CMI Arts Initiative is to provide a space for students, professionals and anybody else keenly interested in the humanities and arts to interact and learn from experts in these areas. The CMI Arts Initiative is coordinated by K. Srilata, K.V. Subrahmanyam, and Madhavan Mukund.

Writers in residence

CMI is proud to host a writers' residency programme in cooperation with Sangam House. Under this programme, CMI supports two international writers each year for a residency of 46 weeks. International writers for the year 2015-16 are:

- Claus Ankersen, Denmark, February-March 2016.
- Leonora Skov, Denmark, February-March 2016.

Perfomances

- T.M. Krishna (Karnatik Vocal), October, 2015, accompanied by Akkarai Subhalakshmi (violin), N. Manoj Siva (mridangam), and B.S. Purushotham (kanjira).
- Malavika Sarukkai (Bharata Natyam), October, 2015.
- T. Girish (Karnatik Vocal), February, 2016, accompanied by R.K. Sriram Kumar (violin) and K. Arun Prakash (mridangam).
- Sanjay Subrahmanyan (Karnatik Vocal), March, 2016, accompanied by S. Varadarajan (violin) and Thanjavur Ramadas (mridangam).

Weekend programmes

CMI invites distinguished professionals and academicians from the arts and humanites to give a series of lectures and performances of about 15-20 hours, spread over two or three weekends, on a topic of their choice.

Programme for the year 2015-16:

- Poetry Writing Workshop by Sue Butler, October 3 and 10, 2015

Endowment Lectures at CMI

- S.R.S. Varadhan, Courant Institute of Mathematical Sciences, New York University, U.S.A., delivered K. Lakshmanan Memorial Distinguished Lecture on "Probability and Partial Differential Equations" (January 2016).

- Michel Brion, Institut Fourier, Grenoble, France, delivered R.K. Rubugunday Distinguished Lecture on "Automorphism groups in algebraic geometry" (January 2016).

- Xavier Viennot, CNRS Emeritus Research Director, LaBRI, Bordeaux, France & Adjunct Professor, Institute of Mathematical Sciences, Chennai, delivered K. Madhava Sarma Memorial Distinguished Lecture on "From a letter of Leonhard Euler to modern researches at the crossroad of algebra, geometry, combinatorics and physics" (February 2016).

18 Conferences, Visits and External Lectures

Rajeeva L. Karandikar

- Keynote speaker at 4th IIMA International Conference on Advanced Data Analysis, Business Analytics and Intelligence (ICADABAI - 2015), in April 2015 held at IIM Ahmedabad and gave a lecture titled "Role of Statistics in the Big data era".
- Gave invited special lecture at the Award distribution function of the Indian National Mathematical Olympiad at Homi Bhabha centre, Mumbai, in May 2015 on "Introduction to Monte Carlo Simulation".
- Gave a lecture titled "Power and Limitations of Opinion Polls" at the outreach program FACETS at Institute of mathematical sciences, Chennai, in June 2015.
- Gave an invited talk at a conference organised by Indian Association for Test Publishers (IATP) in Delhi in November 2015.
- Visited IISER Bhopal in January 2016 and gave a institute colloquim on "Power and Limitations of Opinion Polls" and a talk on "On Partial Differential Equations and Diffusion Processes".
- Gave a Key note address at ICICI Bank Global Markets conference in Goa, in March 2016. The topic was "Elections, Opinion polls and Markets".
- Conducted a two day workshop at CMI on "Stochastic Calculus" for CMI, ISI and IMSc students in March 2016.

Madhavan Mukund

- Delivered a talk on "Challenges in Indian CS Education: quality, teaching, exams" at ACM India Workshop on Computing Curricula, in Pune, in April 2015.
- Participated in the Microsoft Research Faculty Summit, Redmond, USA, in July 2015.
- Team Leader for India, International Olympiad in Informatics, Almaty, Kazakhstan, July-August 2015.
- Gave a course on "Design and Analysis of Algorithms" at NPTEL MOOC, during July–September 2015.
- Gave a course on "Functional Programming in Haskell" at NPTEL MOOC, during August-November 2015.

- Presented the paper "Effective verification of Replicated Data Types using Later Appearance Records (LAR)", joint work with Gautham Shenoy and S P Suresh at ATVA 2015, the 13th International Symposium on Automated Technology for Verification and Analysis, Shanghai, China, in October 2015.

- Participated in a special session on Computer Science Education organized by ACM iSIGCSE at ACM Compute 2015 in Ghaziabad in October 2015.

- Delivered an invited talk on "Boole and Computer Science" at the Seminar on George Boole, organized at IIT Madras in November 2015 by IIT Madras, IMSc Chennai and University College Cork, Ireland to mark the bicentenary of Boole's birth.

- Lectured for a full day on Algorithms in December 2015 at the Winter School organized by Persistent Computing Institute (PCI) in Pune during November - December 2015.

- Attended Infinity 2015, 17th International Workshop on Verification of Infinite-State Systems at IISc Bangalore, in December 2015.

- Attended FSTTCS 2015, the 35th IARCS Conference on Foundations of Software Technology and Theoretical Computer Science, at IISc Bangalore, in December 2015, and chaired a session.

- Participated in the ACM India Annual Event at Trivandrum, in January 2016.

- Delivered a half-day session on "Dynamic Programming" at the Faculty Development Programme organized by SSN College of Engineering, in January 2016.

- Participated in the Microsoft Research-ACM India Research Summit at Pune, in January 2016. Panelist in a Panel Discussion on "Best practices on partnership models to accelerate the pace of CS research in India".

- Participated in the Mysore Park Workshop on "Trends and Challenges in Quantitative Verfication" held in Mysore, in February 2016.

- Visited the Tata Research Development and Design Centre (TRDDC), Pune for discussions on an ongoing research project, in Feburary 2016.

- Delivered a lecture on "Concurrent Programming: Old Problems, New Challenges" at SRM College of Engineering, Chennai, in February 2016.

- Delivered a lecture on "Boole and Computer Science" at SSN College of Engineering, Chennai, in March 2016.

- Visited IRISA, Rennes, France for an academic research visit, in March 2016.

Samir Datta

- Visited Centre For Quantum Technology (CQT), National University of Singapore.
- Attended Dagstuhl seminar on "Circuits, Logic, Games" during September – October 2015.
- Attended Dagstuhl seminar on Logic, Games and Circuits.
- Research Visit to TU Dortmund (Thomas Schwentick's group).

K. Narayan

- Attended "Strings 2015" international string theory conference at ICTS, Bangalore, in June 2015.
- Visited TIFR string theory group, in June 2015 talk on "de Sitter space, extremal surfaces and the wavefunction of the universe".
- Gave a talk on "Aspects of Extremal Surfaces and Entanglement Entropy in Gauge/Gravity Dualities", at the 1-day Workshop centered around the visit of Abhay Ashtekar, IIT Madras Physics Dept, in October 2016.
- Visited Saha Institute of Nuclear Physics, Kolkata, in November 2016 and gave a talk on "Aspects of Extremal Surfaces and Entanglement Entropy in Gauge/Gravity Dualities".
- Attended Fourth Indo-Israel workshop on quantum field theory and string theory, at Goa, in Decmber 2016 and gave a talk on "Aspects of (A)dS Extremal Surfaces and Entanglement Entropy".
- Attended ICTS Discussion Meeting on "New questions in quantum field theory from condensed matter theory", at ICTS Bangalore, in December - January 2016.
- Visited the String Theory group, HRI Allahabad, in March 2016 and gave a talk on "de Sitter extremal surfaces and entanglement entropy in some ghost CFTs".

K. Narayan Kumar

- Visited Department of Information Technology at Uppsala University, during May-June 2015, to pursue joint research.
- Visited LSV, ENS de Cachan, Paris France, in June 2015.
- Visited LIFA, Univ Paris Diderot, Paris, in June 2015 and gave a talk on "Bounded-time stamps for message-passing systems: Beyond channel bounds".

- Visited LaBRI, Univ of Bordeaux, France, in June 2015 and gave a talk titled "Bounded Analysis of Shared Memory Systems" at the third workshop on Automata, Logics, Formal Languages and Algbera (ALFA) at Bordeaux held in honor of Volker Diekart who turned 60 recently.
- Visited IISc Bangalore and gave a talk titled "Bounded Time-stamping for Message-passing Systems: Beyond Channel Bounds".
- Visited Univ. of Rennes, France, in March 2016 for research discussions as well as to serve as an examiner for the Habilatation defence of Dr. Blaise Genest.

Senthamarai Kannan

- Visited IIT, Kanpur, during May-June 2015.
- Gave few lectures during an instructional Workshop on Linear Algebras and Group Theory.

Shiva Shankar

- Visited the Mathematics Institute, University of Groningen, and gave a talk on the occassion of H.Trentelman's 60th birthday Festschrift in July 2015.

K.V. Subrahmanyam

- Visited IISER Pune for three days in June 2015 and gave a talk on "Lower bounds in Computational complexity": geometric and representation theoretic methods".
- Visited IIT Mumbai, Mathematics Department in October and gave a talk on "Invariants of several matrices under $SL(n) \times SL(n)$-action"
- Gave an invited talk at the workshop on Algebraic Complexity Theory, 2016 held at Tel Aviv University, Israel in February 2016.
- Visited TelAviv University for the Workshop on Algebraic Complexity Theory during Februaru 2016 and gave a talk on "Null cone membership for tuples of matrices under the left-right action".
- Gave a talk at the Institute of Mathematical Sciences on "Polynomial time algorithms for the invariant theory of the left right acton".

K.G. Arun

- Visited ICTS, Bangalore and was a coorganizer of the ICTS summer school on GW Astronomy, during June - July 2015.
- Visited Korean Advanced Institute Science and Technology, Daejeon and gave a series on 3 lectures on "Post-Newtonian theory and applications to Gravitational Wave Data Analysis" as part of Summer school on Numerical Relativity and Gravitational Waves in July 2015.
- Gave 2 pedagogical lectures on Gravitational Waves in the "School on Gravitation and Cosmology" organized by Physics Department of Cochin University of Science and Technology.
- Taught in Indigo School on GravitationalWaves, at M A College Kothamangalam, Kerala (2 lectures).
- Attended Indo-Korean workshop on Gravitational Waves and gave an invited Colloquium on "Tests of General Relativity using Gravitational Wave Observations" in January 2016.
- Gave an invited colloquium at IUCAA, Pune on "The Dawn of Gravitational Wave Astronomy" in February 2016.
- Gave an invited Talk at a one day workshop Universe in New Light at ICTS-TIFR, Bangalore on "The Indian contribution to the Gravitational Wave Discovery" in February 2016.
- Gave an invited Colloquium at IMsc, Chennai on "Tests of General Relativity using GW150914" in March 2016.
- Gave an invited Colloquium in a One day workshop on "Spacetime symphony" IST Colloquium on "Decoding a binary black hole merger: Properties of GW150914" in March 2016.
- Gave an invited Colloquium at IISER-TVM on "Was Einstein Right: Testing General Relativity using GW150914" in March 2016.
- Gave an invited colloquium at Pondicherry University on "The Dawn of Gravitational Wave Astronomy" in March 2016.

Sourav Chakraborty:

- Was a visiting faculty in the Computer Science Department at the Rice University for 3 months from March to May 2015.
- Visited the SIMONS Institute for a week for attending the workshop on Information Thoery.

Clare D'cruz

- Visited IISER Pune, in June 2015 and gave a talk on "Symbolic powers, STCI and Groebner basis".

Govind S. Krishnaswami:

- Attended Review of Research, Ramanujan Fellows Review Meeting, IIT Guwahati, in April, 2015.
- Resource person for the Science Academies national Refresher Course on quantum mechanics, in May 2015 at Loyola College, Chennai and gave a series of lectures on quantum mechanics.
- Gave an invited lecture on "Fluid Mechanics" at Two Day National Workshop on Theoretical Physics, at Alvas college, Moodbidri, Karnataka, in February 2016.

Manoj Kummini

- Lectured in a workshop for students at Madurai Kamaraj University, Madurai.
- Gave a talk on "On the cohomology of normalized blow-ups", Indo-French Mathematics Meeting, at IMSc, Chennai.
- Gave a talk at Stella Maris College, Chennai.

Purusottam Rath

- Was visiting University of Bordeaux for four weeks under an ALGANT fellowship. Gave a lecture at University of Bordeaux, France in May 2015.
- Was visiting University of Paris for six weeks under the MUDULI program. Gave a lecture at University of Paris, Jussieu in June 2015.
- Delivered an invited talk in the conference titled "Triveni Number Theory Meet" at HRI during 4-8, March, 2016

R. Srinivasan

- Visited ISI Kolkata, in December 2015 and gave three talks in a workshop on operator algebras.
- Gave a mini-course (six 90 minutes talks) in a workshop on Operator algebras at IMSc, in February, 2016.

M. Sundari

- Gave a mini course on "Peter-Weyl theorem" in Indian Women in Mathematics conference held at Delhi University, in April 2015.
- Attended Discussion Meeting on Harmonic Analysis in Delhi University, Delhi in December 2015. During this conference met Prof. Alibaklouti from Sfax University, Tunisia and discussed the possibility of working on sharp Hausdorff - Young inequalities on nilpotent Lie groups.

S.P. Suresh

- Atended the Formal Methods Update Meeting at IISc Bangalore, in July 2015 and gave a talk on "The complexity of disjunction in intuitionistic logic".
- Presented the paper titled "The complexity of disjunction in intuitionistic logic" at the LFCS 2016 conference, in January 2016 at Deerfield Beach, Florida, USA.
- Visited Prof. Joshua Guttman (WPI and MITRE) at Boston, USA, in January 2016.

Sourish Das

- (i) visited 5 different colleges of Calcutta and gave a popular talk on "Application of Mathematics and CMI"

  (1) Asutosh College,

  (2) St. Xavier's College

  (3) Presidency University

  (4) Vidyasagar Evening College

  (5) Vishva Bharati University, Shantiniketan
- Delivered an invited talk on "Statistics in Natural Language Pressing" at SSN College, Chennai.

Priyavrat Deshpande

- Visited Institute for mathematical sciences, National university of Singapore in August 2015 and participated in the program titled Combinatorial and Toric Homotopy Theory.
- Invited talk at the Topology and Groups meeting held in University of Goa in October 2015 on "Combinatorics and topology of reflection arrangements on smooth manifolds".

Krishna Hanumanthu

- On sabbatical during August - December 2015. Was visiting Professor Brian Harbourne at University of Nebraska - Lincoln in USA.
- Gave talks on Positivity of line bundles on general blow ups of P^2 at University of Missouri in October 2015 and at University of Kansas in November 2015.

Alok Laddha

- Gave an invited talk at Loops-2015 held in Erlangen, Germany, in July 2015 on "Aspects of Hamiltonian constraint in Loop Quantum gravity".

Sukhendu Mehrotra

- Year-long academic visit to Pontificia Universidad Catolica de Chiel, Santiago (August 2014-July 2015).
- Gave a course on "Introduction to Algebraic Geometry" at PUC Chile.

Prajakta Nimbhorkar

- Attended Dagstuhl seminar on "The Graph Isomorphism Problem" in December 2015.

M. Praveen

- Presented paper on "Defining Relations on Graphs: How Hard is it in the Presence of Node Partitions?" in the 34th ACM Symposium on Principles of Database Systems, held in Melbourne, Australia during May-June 2015.
- Visited Uppsala university, Sweden during June-July 2015, as part of an Indo-Swedish project on verification of concurrent software.
- Presented paper on "Defining Relations on Graphs: How Hard is it in the Presence of Node Partitions?", at the 2015 ACM SIGMOD/PODS conference held in Melbourne, Australia during May - June 2015.
- Visited Prof. Parosh Aziz Abdulla at Uppsala university, Sweden during June - July 2015, as part of the Indo-Swedish project on verification of concurrent software.
- Gave two days of tutorial talks on using theorm provers for requirements analysis during July 2015, as part of CMI-Honeywell project for training on using formal methods in software engineering.

- Gave an invited talk on "Checking MSO definable properties on classes of finite graphs with bounded treewidth" in the national conference on "Automata, Graphs and Logic", organized by the department of mathematics, Madras christian college, Chennai during August 2015.
- Logical foundations of databases (advanced elective course for MSc students).
- Attended the conference 'Foundations of Software Technology and Theoretical Computer Science' from 15-18 December.
- Gave a series of lectures on "Petri Nets and connections to logic", at the Indian School of Logic and its Applications, held at PSG College of Technology, Coimbatore, in March 2016.

Geevarghese Philip

- Attended a Workshop on Satisfiability Lower Bounds and Tight Results for Parameterized and Exponential-Time Algorithms at Simons Institute for the Theory of Computing, University of California Berkeley Campus, Berkeley, California, USA, in November 2015.

Vijay Ravikumar

- Visited Institute for Basic Science in Pohang, Korea, during April - May 2015 and gave talk on "The Cotangent Bundle of a Grassmannian".
- Visited Northeastern University in Boston in June and gave talk on "The quantum to classical principal for the cohomology of Grassmannians".
- Gave Outreach talk at IMSc, Chennai for 250 high school students.

B. Srivathsan

- Gave a course on "Model Checking" at NPTEL MOOC.
- Attended Two day workshop on Model-checking at Honeywell Campus, Bangalore.
- Attended a full day workshop on Model-checking at SSN College of Engineering, Chennai.
- Gave a talk on "Applications of Number theory in Cryptography" at MOP Vaishnav College, Chennai.
- Visited IISc Bangalore and attended Formal Methods Update Meeting'2015.

S. Sundar

- Visited Prof. Renault during May-June 2015 for a month at Orleans, France.

Ananya Lahiri

- Gave a talk at ISI, Kolkata on "On estimation of model parameter of multicomponent chirp signal" in May 2015.
- Gave a course during October – December 2015 on "Linear Models" at ISI Chennai.
- Attended Conference celebrating B V Rao' 70 th Bithday at ISI Delhi during November 2015.
- Attended Indo-UK workshop on Stochastic Partial Differential Equations at IISc during December 2015.
- Attended the yearly probability workshop, Lectures in Probability and Stochastic processes x, during December 2015.

Ashish Mishra

- Research talk titled "The Okounkov-Vershik approach to the representation theory of $G \sim S_n$" at IMSc.
- Participated in ATMW "Probability and Representation theory" at IMSc in March 2016.

Debajyoti Nandi

- Gave a talk on "Representation Theory + VOA = Partition Identities", in March 2016 at BITS, Goa.
- Attended ATM School at IMSc, Chennai on "Representation Theory and Probability".

Sushmita Venugopalan

- Visited Rutgers University.
- Gave a talk on "Hitchin-Kobayashi correspondence for vortices on non-compact Riemann surfaces" at NS50 conference in CMI.

R. Jagannathan

- Participated in Science Academies' Lecture Workshop on "Special Functions and their Applications" organized by the Department of Mathematics, PSGR Krishnammal College for Women, Coimbatore, during December 2015, and gave two invited talks on "q and (p,q) generalizations of special functions and their applications".

H.S. Mani

- Visited IIT, Kanpur and gave talks for college teachers in May 2015.
- Gave 12 lectures and tutorials at Loyola College, Chennai (part of a refresher course) in May 2015.
- Gave lectures on Quantum Mechanics at University of Madras for M.Sc Students in June 2015.
- Visited V.I.T., in August 2015.
- Visited HRI, Allahabad (Harish-Chandra lecture) in August 2015.
- Gave two lectures in a UGC sponsored programme Quantum Mechanics and Applications on "Bell's theorem" "Quantum Tunneling" in October 2015 at Philomena college, Puttur, Karnataka.
- Participated in IIUCA (Pune) in one day meeting for International Astronomy Olympiad in November 2015.
- Gave two lectures on Optics for the teacher's camp at HBCSE in November 2015.
- Gave Refresher course in Quantum mechanics (6 lectures and 6 tutorials) at Melur Government Arts College in February 2016
- Gave 4 lectures on Special Theory of Relativity for Kerala Physics teachers association in February 2016.
- Gave a talk at V.I.T (Chennai campus) in March 2016 on "Experiments with Entangled Photons".

R. Parthasarathy

- Gave a talk on NEUTRINO at M.I.T. Chromepet, Chennai, in September 2015.

B.V. Rao

- Gave lectures on probability in June 2015 at NISER, Bhubaneswar.

- Visited Indian Statistical Institute Kolkata in June 2015.
- Gave lectures on Probability during June - July 2015 at University of Tripura Agartala.
- Gave lectures on Analysis in July 2015 at Indian Statistical Institute, Tejpur.
- Gave Lectures on Measure theory in September 2015 at the Department of Statistics, Mysore University.

Vipul Arora

- Attended FSTTCS 2015 in December 2015

Arjun Arul

- Gave a series of 5 talks for a Data Structures group in IMSc regarding Cell Probe Model Lower Bounds.

Abhishek T Bharadwaj

- Attended Number Theory Conference at IMSc in December 2015.
- Attending course taught by Prof. Joseph Osterele on Analytic Functions of Several variable.

Suryajith Chillara

- Visited Microsoft Research, Bangalore in December 2015. Hosted by Neeraj Kayal.
- Visited IIT Bombay during December 2015 - January 2016. Hosted by Nutan Limaye.
- Attended FSTTCS Conference in December 2015.
- Visiting Blavatnik School of Computer Science, Tel Aviv University during February - April 2016. Hosted by Prof. Amir Shpilka.
- Attended Workshop on Algebraic Complexity at Tel Aviv University, held during February 2016.

M. Subramani

- Attended a Conference on Number Theory, at IMSc, Chennai.

- Attending a course on Complex analysis on one and several variables by Prof. Joseph Oesterle, University of Paris VI at IMSc, Chennai.

Shraddha Srivastava

- Visited Prof. Antoine Touze', University of Lille 1, France, during November - December 2015.
- Visited Prof. Henning Krause, University of Bielefeld, Germany and also gave a research talk in their representation theory group in December 2015.
- Visited Prof. Wilberd van der Kallen, University of Utrecht, Netherlands, in December 2015.

Vaishnavi Sundararajan

- Visited Prof. Joshua Guttman (WPI and MITRE) at Boston, USA. Jan 8 – 15, 2016.

19 Other Professional Activities

Madhavan Mukund

- Conducted AlgoLabs Training Programme on Predictive Modelling, MRF, in June 2015.
- Member, Program Committee, 36th International Conference on Application and Theory of Petri Nets and Concurrency (Petri Nets 2015) Brussels, Belgium, June 2015.
- Member, Program Committee 30th Symposium on Logic in Computer Science (LICS 2015) Kyoto, Japan, July 2015
- Member, Program Committee 26th Annual Conference on Concurrency Theory (CONCUR 2015) Madrid, Spain, September 2015
- Member, Program Committee Highlights of Logic, Automata and Games Prague, Czech Republic, September 2015
- Member, Programme Committee 13th International Symposium on Automated Technology for Verification and Analysis (ATVA 2015) Shanghai, China, October 2015
- Member, Programme Committee 17th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI 2016) St. Petersburg, USA, January 2016

K. Narayan Kumar

- Participated in the IOI training camp in May 2015 as the coordinator of the scientific activities.
- Member, Expert Review Committee, POPL 2016.
- Deputy Leader, Indian team to the International Olympiad in Informatics, Almaty, Kazakhstan.

K.G. Arun

- Supervising N V Krishnendu (CMI) and Shilpa Kastha (IMsc, Chennai) for their PhDs.
- Referee for Physical Review D Journal.
- Press meetings on Gravitational Wave Discovery:
  Addressed the media in an IndIGO press conference at IUCAA, Pune (February 2016).
  Addressed the media in a press conference called by ICTS-TIFR, Bangalore (February 2016).

- Co-authored an article with P Ajith in Frontline (March 2016) on the Indian contribution to the Gravitational Wave Discovery.
- Contributed a section on Multi-messenger Astronomy using Gravitational Waves to the Explosive Transients Chapter of SKA-India science Document.

Sourav Chakraborty:

- Giving a course on NPTEL on Discrete Mathematics.

Clare D'Cruz

- Referred one thesis and two papers.

Govind S. Krishnaswami

- Supervised Himalaya Senapati's M.Sc. thesis in May 2015 (Classical three body problem and stability analysis).
- Supervised Sonakshi Sachdev's thesis in May 2015 (Conservative regularization of compressible fluid and MHD equations).
- Currently supervising PhD thesis of Sachin Phatak.
- Currently supervising MSc thesis of T R Vishnu.
- On editorial board of Resonance, Journal of science education.

Upendra Kulkarni

- Oversaw BSc selection process with K V Subrahmanyam: design of entrance exam, coordination of correction.

Manoj Kummini

- Organized and lectured in an Advanced Instructional School in commutative algebra in CMI between 14th Dec 2015 and 1st Jan 2016.

R. Srinivasan

- Basically guiding the M.Sc thesis for Debdyuti Banerjee.

S.P. Suresh

- Program Committee Chair of ISLA 2016 (Indian School on Logic and Applications) to be held at PSG College of Technology, Coimbatore, March 2016.

Sourish Das

- Organising second conference on Statistical Methods in Finance at CMI jointly with ISI.

Priyavrat Deshpande

- Organized a two week winter school for Bhutanese mathematicians (January - February 2016) with Vijay Ravikumar and Prof. Michel Waldschimdt.
- Running a learning seminar on Homotopy Type Theory with S.P. Suresh.

H.S. Mani

- Was the chairman of the assessment committee for DRDO during April - May 2015.
- Organised a two day programme at CMI for school students as a part of an initiative of National Academy of Sciences, Allahabad (am the chairman of the Chennai Chapter) on July 2015.
- Was a part of a review committee for the physics department of IISER (Mohali) (September 2015).

20 Visitors

- Sir Michael Berry, University of Bristol, U.K. Gave a talk on "Divergent series: from Thomas Bayes's bewilderment to today's resurgence via the rainbow" (April 2015).
- Sandip Trivedi, Tata Institute of Fundamental Research (TIFR), Mumbai. Gave a talk on "Entanglement in Gauge Theories" (April 2015).
- Pierre Fima, University of Paris, 7. Gave a talk on "Property T and Haagerup property for compact bi-crossed product" (April 2015).
- Soumen Nandi, ISI Kolkata (April 2015).
- Nitin Saxena, IIT Kanpur. Gave a talk on "Towards hitting-sets for multilinear depth-3 circuits" (May 2015).
- Emmanuel Germain, University Caen, France (April-May 2015).
- Dr. Nishanth, AIMS-Delhi (April-May 2015).
- Rakesh Tibrewala, CHEP, IISc, Bangaluru (May 2015).
- Harish Parthasarathy, Netaji Subhash Institute of Technology, University of Delhi, New Delhi. Gave a talk on "The Kushner filter and its quantum generalizations due to V.P.Belavkin" (June 2015).
- M. Ram Murty, Queen's University, Canada. Gave a series of lectures (6 lectures) on "New Directions in Sieve Theory" (June 2015).
- Sanjib Sadhu, NIT, Durgapur.
- A.J. Parameswaran, TIFR, Mumbai.
- Tapen Sinha, ITAM Mexico.
- R. Parimala, Emory University, U.S.A.
- Subhas Nandy, Indian Statistical Institute, Kolkata. Gave a talk on "Algorithm for Plane Matchings in Multipartite Geometric Graphs" (July 2015).
- Ved Datar, University of Notre Dame, U.S.A. Gave a talk on "Kahler-Einstein metrics along the smooth continuity method" (July 2015).
- Sivaram Ambikasaran, Courant Institute, New York, U.S.A. Gave a talk on "Fast algorithms for computational statistics and elliptic partial differential equations" (July 2015).

- R. Loganayagam, IAS, Princeton. Gave a talk on "A topological gauge theory for the entropy current" and "Chern-Simon terms and Holographic Entanglement entropy" (July 2015).

- Vamsi Pritham Pingali, Johns Hopkins University, U.S.A. Gave a talk on "Weighted L^2-Extension of holomorphic functions from singular hypersurfaces" (July 2015).

- S.G. Rajeev, University of Rochester, NY, U.S.A. Gave a talk on "Nilpotent Sigma Models" (August 2015).

- Suresh Nayak, ISI, Bangalore.

- Sunil Mukhi, IISER Pune. Gave a talk on "Modular Invariance and Entanglement Entropy" (September 2015).

- Rudranil Basu, IISER Pune. Gave a talk on "Higher Spin de Sitter Quantum Gravity" (September 2015).

- Shashank Shekhar Dwivedi, MIT, U.S.A. Gave two talks on "Compactification of the moduli space of surfaces of general type $M_{4,5}$" (September 2015).

- Rajesh Gopakumar, ICTS, Bangalore. Gave a talk on "The higher spin square" (September 2015).

- T.V.H. Prathamesh, Institute of Mathematical Sciences, Chennai. Gave a talk on "Mechanising Mathematics" (September 2015).

- Sudarshan Ananth, IISER Pune. Gave a talk on "Fermi-Bose cubic couplings in light-cone field theories" (September 2015).

- Rajesh Gupta, ICTP, Trieste. Gave a talk on "Black Hole Entropy and Holography" (September 2015).

- Aprameyan Parthasarathy Uni. Paderborn, Germany. Gave a talk on "The restriction of discrete series representations to minimal parabolic subgroups - the case of Spin(4,1)" (September 2015).

- V. Kumar Murty, University of Toronto, Canada. Gave a talk on "Explicit arithmetic on abelian varieties" (September 2015).

- Ratul Saha, National University of Singapore, Singapore. Gave a talk on "Model checking distributed probabilistic systems" (September 2015).

- Ipsita Mandal, Perimeter Institute for Theoretical Physics. Gave a talk on "UV/IR mixing in non-Fermi liquids" (October 2015).

- Nityanand Jayaraman, journalist and environmental activist, and a visiting faculty at the Asian College of Journalism. Gave a talk on "Environmental Limitations and the Viability of Make in India" (October 2015).

- Madhu Raka, Punjab University. Gave a talk on "Some basics in Geometry of Numbers" (October 2015).

- Madhu Raka, Punjab University. Gave a talk on "On Conjectures of Woods and Minkowski" (October 2015).

- Ronnie Sebastian, IISER, Pune. Gave a talk on "Voevodsky's smash nilpotence conjecture" (October 2015).

- Tomas Gomez, Instituto de Ciencias Matematicas (ICMAT), Madrid. Gave a talk on "Automorphisms of a symmetric product of a curve" (October 2015).

- Sue Butler, visited Chennai Mathematical Institute as part of the CMI arts initiative. Gave a talk on "Reading of her poetry" (October 2015).

- Ramprasad Saptharishi TAU, Israel. Gave a talk on "Lower bounds for shallow circuits" (October 2015).

- Po-Shen Loh, CMU. Gave a talk on "Math meets the real world" (November 2015).

- Manish Mishra, Ruprecht-Karls-Universitat IHeidelberg. Gave a talk on "Hecke algebras and the Langlands program" (November 2015).

- Koestler Claus, University College Cork Ireland. Gave a talk on "A new approach to the representation theory of the infinite symmetric group" (November 2015).

- Ramarathnam Venkatesan Microsoft, Seattle. Gave a talk on "Rigorous Analysis of a randomized number field Sieve" (November 2015).

- Magnus M. Halldorsson, ICE-TCS, School of Computer Science, Reykjavik University. Gave a talk on "How Well Can Graphs Represent Wireless Interference?" (December 2015).

- Jyotirmoy Sarkar Indiana University Purdue University Indianapolis, USA. Gave a talk on "Weighing Designs to Detect a Single Counterfeit Coin" (December 2015).

- Vijay Nagarajan, University of Edinburgh, UK. Gave a talk on "Hardware Support for Shared-memory Concurrency: Reconciling Programmability with Performance" (January 2016).

- A Thyagaraja, Astrophysics Group, University of Bristol, U.K. Gave two talks on "Computational Plasma Physics" (January 2016).

- Srivatsav Kunnawalkam Elayavalli, University of California, Berkeley. Gave a talk on "An invitation to Extremal Set Theory" (January 2016).
- Arindam Banerjee, Purdue University, USA. Gave a talk on "Graph Connectivity and Binomial Edge Ideal (January 2016).
- Amitabh Trehan, Queens University, UK. Gave a talk on "Compact Routing Messages in Compact Self-Healing Trees (January 2016).
- Christopher T. Woodward, Rutgers University, U.S.A. Gave a talk on "Index formula for moduli of bundles (January 2016).
- R. Shankar, Yale University, U.S.A. Gave a talk on "Dots for Everyone (January 2016).
- Lakshya Bharadwaj, Perimeter Institute. Gave a talk on "UV-complete 6d theories from F-theory (January 2016).
- Kuldeep Meel, Rice University, USA. Gave a talk on "Constrained Sampling and Counting: When Practice Drives Theory (January 2016).
- Ekata Saha, IMSc., Chennai (January 2016).
- Suresh Nayak, ISI, Bangalore (January-February 2016).
- Michel Waldschmidt, University of Paris VI, France (January-February 2016).
- Paul Gastin, ENS Cachan, France (January 2016).
- Uma Divakaran, Centre for Basic Sciences, Mumbai. Gave a talk on "Slow quenches in quantum systems" and "Sudden quenches and semi classical theory of Non-equilibrium dynamics" (February 2016).
- Joost-Pieter Katoen, RWTH-Aachen University, Germany. Gave a talk on "Zero-Defect Software in Space: A True Mission!" and "Probabilistic Programming: Fun but Tricky" (February 2016).
- Siddhartha Gadgil, Indian Institute of Science, Bangalore. Gave a talk on "Homotopy type theory" (February 2016).
- Tomas Gomez, ICMAT, Madrid, Spain. Gave a talk on "Introduction to Algebraic Stacks" (February 2016).
- Claus Ankersen, Writer in Residence, 2016, Chennai Mathematical Institute Arts Initiative. Gave a talk on "Walk the talk – Between the lines and around the worlds A Spoken word Performance-lecture" (February 2016).
- A.P. Balachandran, Chennai Mathematical Institute. Gave a talk on "Localization in Quantum field theory" (February 2016).

- R.V. Ramamoorthi, Michigan State University, U.S.A. & Infosys Chair Professor, Chennai Mathematical Institute. Gave a talk on "Probability and inference - A Bayesian peek" (February 2016).
- Shweta Agrawal, Inspire Fellow, IIT Delhi. Gave a talk on "Constructing cryptography for the cloud" (February 2016).
- Pascal Weil, CNRS and Universite de Bordeaux, France. Gave series of lectures on the Separation Problem (February 2016).
- Leonora Christina Skov, Writer in Residence, 2016, Chennai Mathematical Institute Arts Initiative. Gave a talk on "The life and work of a globetrotting writer" (February 2016).
- J.K. Ghosh, ISI, Kolkata (February 2016).
- M.F. Atig, Uppsala University, Sweden (February-March 2016).
- Pierre Mckenzie, Universite de Montreal, Canada (February - March 2016).
- Rishiraj Bhattacharyya, ISI, Kolkata (March 2016).
- A.J. Parameswaran, TIFR, Mumbai (March 2016).
- V. Lakshmibai, Northeastern University, Boston, U.S.A. Gave a talk on "Cotangent Bundles of the Flag, Grassmannian & Cominuscule Grassmannian Varieties" (March 2016).
- Giulio Caviglia, Purdue University, U.S.A. Gave two talks on "General hyperplane restriction theorems" (March 2016).
- Barbara Fantechi, SISSA, Tireste. Gave Mini-Course of Lectures on "Virtual fundamental classes and Gromov-Witten invariants" (February-March 2016).
- M.S. Raghunathan, NCM, IIT Bombay. Gave a talk on "The Prime number Theorem" (March 2016).
- Giulio Caviglia, Purdue University, U.S.A. Gave a talk on "General hyperplane restriction theorems" (March 2016).
- Dr Mullasari Ajit S. Director, Cardiology, Madras Medical Mission. Gave a talk on "His research work at the Madras Medical Mission for over 20 years" (March 2016).
- S. Raja, IMSc. Gave a talk on "Some Lower Bound Results for Set-Multilinear Arithmetic Computations" (March 2016).