Chennai Mathematical Institute

Annual Report

2014–2015

1   Preface

The Chennai Mathematical Institute has continued to grow, both in faculty and student strength, to be one of the finest institutions for research and teaching in Mathematics, Computer Science and Physics.

The institute has about 200 students pursuing under-graduate, post-graduate and doctoral studies in mathematics and allied sciences. They learn through their interaction with our faculty, full-time, adjunct and visiting, in courses, seminars and discussions. We hope to maintain and further develop the vibrant atmosphere in which these interactions take place.

This year was the 25th year since the founding of the institute, and we celebrated this with a series of lectures, titled silver jubilee seminars, delivered by eminent mathematicians, computer scientists and physicists. A number of conferences/workshop were also held to mark this occasion. I am particularly glad that the first CMI Alumni Conference was held this year where a number of our old students, who have established themselves as leading researchers, lectured on their work.

I am also very happy to note that the work of Arul Shankar, who completed his BSc (Hons) degree in 2007 at CMI, was cited in the Field's Medal awarded to his doctoral advisor Prof. Manjul Bhargava (Princeton University).

This year is also significant as the year in which the joint support by DAE and DST to CMI has commenced. We do hope that with the support from the two ministries, CMI will continue to grow. We also received support from UGC for many of our activities.

For years CMI has received support from several enlightened individuals as well as organizations in the private sector. In this context, I am very happy to mention a significant development. We received a generous donation of Rs 33 crores from the Infosys Foundation for a corpus to support the activities of the Institute. The interest from this corpus will be used for providing additional financial incentives to faculty and students and for other research activities such as research visits and conferences. Further, the interest will also be used to support visits by eminent academicians. I am glad to mention the creation of two Infosys Chair (Visiting) Professorships as part of this initiative. We acknowledge donations from Dr. Usha Rubugunday, Ms. Uma Maheswari, Mr. Rajiv Sambasivan, Mr. G Surya Narayanan, Shriram Capital Ltd., TNQ Books and Journal Pvt. Ltd. The auditorium and other facilities in the multi-storey building on campus should be ready very soon thanks to the support from Mr. N. Lakshmi Narayan, the Infosys Foundation and the Jain Family Foundation.

We do hope that in addition to the support we already receive, other leading industries will also step in and support this Institute in its endeavor to be a center of excellence in research and teaching in the mathematical sciences.

Rajeeva L Karandikar
Director

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   Chennai Mathematical Institute, Chennai

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   Professor, Institute of Mathematical Sciences, Chennai

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    Professor, Indian Institute of Science, Bangalore

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

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    Professor, Tata Institute of Fundamental Research, Mumbai

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

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
Director-Emeritus	
	C.S. Seshadri
Dean of Studies	
	Madhavan Mukund
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
	R. Srinivasan
	M. Sundari
	S.P. Suresh
	M.K. Vemuri - Until July 2014
Assistant Professors	
	Sourish Das
	Krishna Hanumanthu
	Alok Laddha
	Sukhendu Mehrotra

	Prajakta Nimbhorkar
	M. Praveen
	Shrihari Sridharan - Until November 2014
	B. Srivathsan
	S. Sundar
Visiting Faculty	
	Priyavrat C Deshpande
	T. Geetha
	Ananya Lahiri
	Bhavin Moriya - Until November 2014
	Sauvik Mukherjee
	Prem Prakash Pandey
	Vijay Ravikumar
	Samar Singh - Until November 2014
	Santanu Sarkar - Until October 2014
	Kavita Sutar
	Sushmita Venugopalan
Adjunct Professors	
	Manindra Agrawal
	T. R. Govindarajan
	N. D. Hari Dass
	Ramesh Hariharan
	R. Jagannathan
	S. Kesavan
	H. S. Mani
	Neeraj Kayal
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	T. Parthasarathy
	G. Rajasekaran
	S. Ramanan
	B.V. Rao
	Rani Siromoney
	R. Sridharan
	Mandayam Srivas
	V. Swaminathan
	A. Thyagaraja
	V. Vinay

Research Scholars

Janson Antony A
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Arjun Arul
Sarjick Bakshi
Nikhil Balaji
Suratno Basu
Abhishek T Bharadwaj
Narasimha Chary B
Suryajith Chillara
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Shyamlal Karra
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Mitra Koley
Krishnendu N V
Naveen Kumar
Kumar Madhukar
Sayanta Mandal
Anish Mukherjee
Debangshu Mukherjee
Subramani Muthukrishnan
Muthuvelmurugan I
S P Murugan Paramasivam
Sachin S Phatak
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Anwesh Ray
Praveen Kumar Roy
Sonakshi Sachdev
Kuldeep Saha
Prakash Saivasan
Rajiv Sambasivan
Rajib Sarkar

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Rohith Varma
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Rajeswaran Viswanathan

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 Professor-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 Academy of Sciences and the Indian National Science Academy.

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

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.

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.

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 Automata theory, Concurrency, Logic and Verification.

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 (1999-2000), 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.

M.K. Vemuri

M.K. Vemuri received his M.S. (Mathematics) from Syracuse University, U.S.A. (1989) and Ph.D. from the University of Chicago, U.S.A. (1997).

He has been a Visiting Assistant Professor at Colgate University, U.S.A. (1997–99), an Instructor at Polytechnic University, U.S.A. (1999–2000) and a Teaching Research Associate at Syracuse University, U.S.A. (2000–2002).

His research interest is Analysis.

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.

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. (Physics) from the University of Mumbai (1998), M.Sc. (Physics) from the Indian Institute of Technology (2000) and Ph.D. (Theoretical Physics) from the Institute of Mathematical Sciences, Chennai (2008).

He has been a Teaching Assistant at University of Utah, U.S.A. (2000–2003), a Research Fellow at the Institute of Mathematical Sciences, Chennai (2004-2008), a Post-doctoral Fellow at Raman Research Institute, Bangalore (2008-2010) and a Post-doctoral Fellow at Institute of Gravitation and Cosmos, Pennsylvania State University (2010-2012) and a Ramanujan Fellow at the Chennai Mathematical Institute, Chennai (2012-2014).

His research interests are Loop Quantum Gravity and Mathematical Aspects of Quantization.

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.

Shrihari Sridharan

Shrihari Sridharan received his B.Sc. (Mathematics) from Barathidasan University, Trichy (1998), M.Sc. (Mathematics) from Anna University, Chennai (2000) and Ph.D. (Mathematics) from the University of Manchester, Manchester (2004).

He has been a Post-doctoral Fellow at the Institute of Mathematical Sciences, Chennai (2004–2006), a Post-doctoral Fellow at the Indian Institute of Science, Bangalore (2006–2007) and a Senior Lecturer at the Department of Mathematics, Indian Institute of Technology, Guwahati (2007–2008).

His research interests are Complex Dynamics and Ergodic Theory.

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

- T.R. Ramadas awarded the J.C. Bose National Research Fellowship in January 2015.

9   Research Activities

Mathematics

In Mathematics work was carried out on the notion of observability in PDEs, contact analogue of Thurston's classification of foliations on closed manifolds, theory of E_0 semigroups on general factors, geometric properties of varieties arising from simple Lie algebras over finite field complex numbers, duality and representation stability of some topological spaces, semistable points of Richarson varieties and Mikovic-Vilonen cycles, syzygies of embeddings in projective varieties and moduli of sheaves on K3 surfaces, cohomology of blow-ups and numerical invariants of free resolutions, Toeplitz algebras associated to endomorphisms of ore semigroups, financial mathematics and obtaining geometric descriptions of a variation of Hodge structures on the moduli space of hypokahler manifolds of $K3^{[n]}$-type.

Computer Science

In Computer Science work was carried out on adding assertion capabilities to the Dolev-Yao model, complexity of intuitionistic propositional logic, query languages for graph databases in the presence of data values from an infinite domain, connections between invariant theory and symbolic determinent testing, connection between internal tensor product of polynomial functors and the Kronecker multiplicity problem for symmetric group representations, machine learning of Lie group representations, identifying decidable classes of communicating recursive multi-threaded programs that are controllable, improved cycle detection algorithms for timed automata, dynamic complexity of reachability and related problems, model-checking qualitative properties of distributed Markov Chains, synthesis of distributed transition systems from global specifications modulo behavioural equivalence, algorithms for matching with preferences, derandomization problems related to arithmetic complexity and computational algebraic geometry and on the block sensitivity conjecture and the entropy influence conjecture.

Physics

In theoretical physics work was carried out on the physical correspondence between Higgs mechanism and the added mass effect, the classic 3 body problem, computation of the metric corresponding to the inspiral-merger-ringdown gravitational waveforms from binary black hole systems, gravitational waveforms for compact binary systems in elliptical orbits, ready-to-use gravitational waveforms from spinning compact binary systems, generalized BMS group and radioactive phase space, Hamiltonian constraint in LQG, entanglement entropy in the string realizations of certain nonrelativistic generalizations of holography, aspects of extremal surfaces in de Sitter and asymptotically de Sitter spacetimes, charged-particle optics and classical/quantum mechanics of a point particle confined to move on a torus knot.

10 Publications

Journal Articles

Mathematics

J1 Purusottam Rath, S. Gun and M. Ram Murty: A note on special values of L-functions, Proc. Amer. Math. Soc. 142 (2014), no. 4, 1147-1156.

J2 V. Balaji and C.S. Seshadri: Moduli of parahoric $\mathcal{G}$–torsors on a compact Riemann surface, Journal of Algebraic Geometry, Volume 24, pages 1-49, (2015).

J3 Priyavrat Deshpande: Arrangements of spheres and projective spaces, to appear in the Rocky Mountain Mathematics Journal.

J4 Indranil Biswas, S. Senthamarai Kannan and D.S. Nagaraj: Equivariant vector bundles on complete symmetric varieties of minimal rank, to appear in International Journal of Mathematics.

J5 Indranil Biswas, S.S. Kannan and D.S. Nagaraj: On equivariant principal bundles over wonderful compactifications, to appear.

J6 S. Sundar: A computation with the Connes-Thom isomorphism, to appear in in the Candian Mathematical Bulletin.

J7 Priyavrat Deshpande and K. Sutar: Deletion-restriction in toric arrangements, to appear in Journal of Ramanujan Mathematical Society.

J8 R. Sridharan: Otto Holder: A Multifaceted Mathematician, to appear in the Journal of the History of Science, INSA, (in their Centenary Volume).

J9 Ananya Lahiri, Debasis Kundu and Amit Mitra: Estimating the parameters of multiple chirp signals, to appear in Journal of Multivariate Analysis.

J10 Vijay Ravikumar: Triple Intersection Formulas for Isotropic Grassmannians, to appear in Algebra and Number Theory.

J11 Rohith Varma: On Higgs bundles on Elliptic surfaces, to appear in Quarterly Journal of Mathematics.

Computer Science

J12 S. Akshay, B. Bollig, P. Gastin, M. Mukund and K. Narayan Kumar: Distributed Timed Automata with Independently Evolving Clocks, Fundamenta Informaticae, 130(4), (2014) 377–407.

J13 Minati De, Subhas C. Nandy and Sasanka Roy: In-place algorithms for computing a largest clique in geometric intersection graphs, Discrete Applied Mathematics 178: 58-70 (2014).

J14 Minati De, Subhas C. Nandy and Sasanka Roy: Prune-and-Search with Limited Workspace, To appear in Journal of Computer and System Sciences (JCSS).

J15 M. Praveen, Gilles Geeraerts, Alexander Heubner and Jean-Francois Raskin: Omega-Petri nets, to appear in Fundamenta Informatica.

J16 Sourav Chakraborty, Eldar Fischer and Arie Matliah: Query Complexity Lower Bounds for Reconstruction of Codes, Theory of Computing 10: 515-533 (2014).

J17 M.F.Atig, K. Narayan Kumar and P. Saivasan: Adjacent Ordered Multi-pushdown Systems, Int. Journal of the Foundations of Computing Science, Vol 25(8), 1083–1096.

J18 P. Karandikar, M. Kufleitner, and Ph. Schnoebelen: On the index of Simon's congruence for piecewise testability, Information Processing Letters, November 2014.

J19 P. Jancar, P. Karandikar, and Ph. Schnoebelen: On Reachability for Unidirectional Channel Systems Extended with Regular Tests, Logical Methods in Computer Science, 2014.

J20 P. Karandikar and Ph. Schnoebelen: Generalized Post Embedding Problems, Theory of Computing Systems, September 2014.

Physics

J21 N.D. Hari Dass: Ontology and Quantum Mechanics, QUANTA Vol 3 No 1 (2014) p.47-66.

J22 N.D. Hari Dass: The superposition principle in quantum mechanics - did the rock enter the foundation surreptitiously?, being published in the proceedings of the conference "100 years of the Bohr Atom 1913-2013" by the Royal Danish Academy of Sciences.

J23 N.D. Hari Dass: Repeated weak measurements on a single copy are invasive, submitted to Physical Review Letters, recommended by one referee for publication in Physical Review E; arXiv 1406.0270[quant-ph].

J24 Hideyuki Tagoshi, Chandra Kant Mishra, Archana Pai, and K.G. Arun: Parameter estimation of neutron star-black hole binaries using an advanced gravitational-wave detector network: Effects of the full post-Newtonian waveform, Phys. Rev. D *90*, 024053 (2014).

J25 K.G. Arun, Hideyuki Tagoshi, Archana Pai and Chandra Kant Mishra: Synergy of short gamma ray burst and gravitational wave observations: Constraining the inclination angle of the binary and possible implications for off-axis gamma ray bursts, Phys. Rev. D *90*, 024060 (2014).

J26 Debangshu Mukherjee and K. Narayan: AdS plane waves, entanglement and mutual information", Phys. Rev. D 90, 026003 (2014), [arXiv.org:1405.3553 [hep-th]].

J27 Govind S. Krishnaswami, Rajaram Nityananda, Abhijit Sen and Anantanarayanan Thyagaraja: Comment on "Spin-Gradient-Driven Light Amplification in a Quantum Plasma", Phys. Rev. Lett. 112, 129501 (2014).

J28 Govind S. Krishnaswami, Rajaram Nityananda, Abhijit Sen, Anantanarayanan Thyagaraja: A critique of recent semi-classical spin-half quantum plasma theories, Contrib. Plasma Phys. 55, No.1, 3-11 (2015) (Invited Paper, published online 12 Nov 2014) [arXiv:1407.6865] [physics.plasma-ph].

J29 Alok Laddha: Asymptotic symmetries and subleading soft graviton theorem, Phys. Rev. D 90, December 2014.

J30 V.V. Sreedhar: A general method for deriving vector potentials produced by knotted solenoids, Mod.Phys.Lett. A29 (2014) 35, 1450189.

J31 Govind S. Krishnaswami and Sachin Phatak: Higgs Mechanism and the Added-Mass Effect, Proc. R. Soc. A 471: 20140803 (2015).

J32 K. Narayan: On a lightlike limit of entanglement, Phys. Rev. D (2015), arXiv:1408.7021 [hep-th].

Conference Papers

Computer Science

C1 S. Akshay, L. Helouet and M. Mukund: Sessions with an unbounded number of agents, Proc. International Conference on Application of Concurrency to System Design (ACSD) 2014, IEEE (2014) 166-175.

C2 C. Aiswarya, P. Gastin and K. Narayan Kumar: Controllers for the Verification of Communicating Multi-Pushdown Systems Proc. of CONCUR'14. Springer LNCS 8704 (2014), 297-311.

C3 P.A. Abdulla, M.F. Atig, P. Hofman, R. Mayr, K. Narayan Kumar and P. Totzke: Infinite State Energy Games, Proc. of the Joint Meeting of the Twenty-Third EACSL CSL and the Twenty-Ninth ACM/IEEE LICS (CSL-LICS '14), ACM, New York, NY, USA. (2014).

C4 Partha Mukhopadhyay: On the limits of depth reduction at depth three over small finite fields, MFCS 2014.

C5 Prajakta Nimbhorkar, Pratik Ghosal and Meghana Nasre: Rank-Maximal Matchings: Structure and Algorithms.

C6 M. Praveen, Jérôme Leroux and Grégoire Sutre: Hyper-Ackermannian Bounds for Push-down Vector Addition Systems, In proceedings of the joint meeting of the Twenty-Third EACSL Annual Conference on CSL and the Twenty-Ninth Annual ACM/IEEE Symposium on LICS, July 2014.

C7 Samir Datta and Raghav Kulkarni: Space Complexity of Optimization Problems in Planar Graphs, TAMC 2014: 300-311.

C8 Anish Mukherjee, Samir Datta, Raghav Kulkarni, Thomas Schwentick and Thomas Zeume: Reachability is in DynFO, in Track B of the 42nd International Colloquium on Automata, Languages, and Programming (ICALP 2015), Kyoto, Japan.

C9 Samir Datta, William Hesse and Raghav Kulkarni: Dynamic Complexity of Directed Reachability and Other Problems, ICALP (1) 2014: 356-367.

C10 Eric Allender, Nikhil Balaji and Samir Datta: Low-Depth Uniform Threshold Circuits and the Bit-Complexity of Straight Line Programs, MFCS (2) 2014: 13-24.

C11 Binay K. Bhattacharya, Minati De, Tsunehiko Kameda, Sasanka Roy, Vladyslav Sokol and Zhao Song: Back-Up 2-Center on a Path/Tree/Cycle/Unicycle, COCOON 2014: 417-428.

C12 Binay K. Bhattacharya, Subhas C. Nandy and Sasanka Roy: Computing Centerpoint of a Point Set in R^2 with Few Extra Variables, CCCG 2014.

C13 Binay K. Bhattacharya, Minati De, Subhas C. Nandy and Sasanka Roy: Maximum Independent Set for Interval Graph and Tree in Space-efficient Models, CCCG 2014.

C14 Sourav Chakraborty, Rameshwar Pratap, Sasanka Roy and Shubhangi Saraf: Helly-Type Theorems in Property Testing, Theoretical Informatics - 11th Latin American Symposium (LATIN 2014).

C15 Sourav Chakraborty, Rupam Acharyya and Nitesh Jha: Counting Popular Matchings in House Allocation Problems, Computer Science - Theory and Applications - 9th International Computer Science Symposium in Russia, (CSR 2014).

C16 Sourav Chakraborty, Abhishek Bhrushundi and Raghav Kulkarni: Property Testing Bounds for Linear and Quadratic Functions via Parity Decision Trees, Computer Science - Theory and Applications - 9th International Computer Science Symposium in Russia, (CSR 2014).

C17 M. Mukund, Gautham Shenoy R. and S.P. Suresh: Bounded Implementations of Replicated Data Types, Proc. International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI) 2015, Springer Lecture Notes in Computer Science 8931 (2015) 355-372.

C18 R. Saha, J. Esparza, S.K. Jha, M. Mukund, R. Saha and P.S. Thiagarajan: Distributed Markov Chains, Proc. International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI) 2015, Springer Lecture Notes in Computer Science 8931 (2015) 117-134.

C19 R Ramanujam, Vaishnavi Sundararajan, and S P Suresh: Extending Dolev-Yao with assertions, Proceedings of ICISS 2014, Springer LNCS volume 8880, pages 50–68.

C20 Binay K. Bhattacharya, Minati De, Anil Maheshwari Subhas C. Nandy and Sasanka Roy: Maximum Independent Set for Interval Graph and Tree in Space-efficient Models, to appear in CALDAM 2015.

C21 C. Aiswarya, P. Gastin and K. Narayan Kumar: Verifying Communicating Multi-pushdown Systems via Split-width, Proc. of ATVA'14 (2014), Springer LNCS Vol 8837, pp 1-17.

C22 M.F.Atig, A. Bouajjani, K. Narayan Kumar and P. Saivasan: On Bounded Reachability Analysis of Shared Memory Systems, Proc. of FSTTCS'14 (2014), LIPics Vol 29, pp 611-623

C23 Prajakta Nimbhorkar, Pratik Ghosal and Meghana Nasre: Rank-Maximal Matchings – Structure and Algorithms, International Symposium on Algorithms and Computation (ISAAC 2014).

C24 M. Praveen and B. Srivathsan: Defining relations on graphs: how hard is it in the presence of node partitions? to appear in ACM PODS conference.

C25 Nikhil Balaji and Samir Datta: Bounded Treewidth and Space-Efficient Linear Algebra, to appear in TAMC 2015.

C26 Nikhil Balaji, Andreas Krebs and Nutan Limaye: Skew Circuits of Small Width, International Conference on Combinatorics and Computing(COCOON) 2015.

C27 P. Karandikar and Ph. Schnoebelen: On the state complexity of closures and interiors of regular languages with subwords, In Proc. DCFS 2014, volume 8614 of Lecture Notes in Computer Science, pages 234-245. Springer, 2014.

Preprints

Mathematics

P1 V. Balaji, P. Barik and D.S. Nagaraj: A degeneration of moduli of Hitchin pairs.

P2 V. Balaji, I. Biswas and Yashonidhi Pandey: Connections on parahoric torsors on smooth projective varieties (work in progress).

P3 Clare D'Cruz and Shreedevi K. Masuti: Local cohomology of bigraded Rees algebras, Bhattacharya coefficients and joint reductions.

P4 Priyavrat Deshpande and K. Chandrashekhar: Face enumerations for line arrangements in a 2-torus, arXiv:1404.1665.

P5 Priyavrat Deshpande and K. Sutar: Deletion-restriction in toric arrangements, arXiv:1406.0302.

P6 Priyavrat Deshpande and R. Das: Coxeter transformation groups and reflection arrangements in smooth manifolds, arXiv:1408.3921.

P7 Purusottam Rath, S. Gun and T. Chatterjee: Number Field extension of a conjecture of Milnor.

P8 Indranil Biswas, S. Senthamarai Kannan and D.S. Nagaraj: On a smooth compactification of G/T.

P9 R. Srinivasan and Oliver T. Margetts: Non-cocycle-conjugate E_0-semigroups on factors (43 pages), arXiv: 1404.5934, http://xxx.imsc.res.in/abs/1404.5934.

P10 Sourish Das, Nitin Agarwal and Bharat Kumar: Estimating Cortisol using Voice Attributes via Mobile Phones.

P11 Priyavrat Deshpande and R. Das: Topological aspects of reflection arrangements in spheres.

P12 Priyavrat Deshpande and K. Chandrashekhar: On the combinatorics of finitely many geodesics in the hyperbolic plane.

P13 Prem Prakash Pandey and R. Balasubramanian: A note on a Theorem of Freiman.

P14 Vijay Ravikumar, V. Lakshmibai and William Slofstra: The Cotangent Bundle of (Co)minuscule Grassmannians.

P15 Sukhendu Mehrotra and Eyal Marman: Integral transforms and deformations of K3 surfaces.

P16 Upendra Kulkarni: On the internal tensor product of polynomial functors.

P17 Upendra Kulkarni, Shraddha Srivastava, K V Subrahmanyam: On the internal tensor product of polynomial functors.

P18 Shraddha Srivastava: Polynomial functors and Kronecker Product.

Computer Science

P19 M. Mukund, Gautham Shenoy R. and S.P. Suresh: Bounded Implementations of Replicated Data Types, Preprint, September 2014.

P20 Madhavan Mukund, Gautham Shenoy R and S P Suresh: Effective verification of Replicated Data Types using Later Appearance Records (LAR).

P21 R Ramanujam, Vaishnavi Sundararajan and S P Suresh: The complexity of disjunction in intuitionistic logic.

P22 J. Esparza, S.K. Jha, M. Mukund, R. Saha and P.S. Thiagarajan: Distributed Markov Chains Preprint, September 2014.

P23 Binay K. Bhattacharya, Minati De, Subhas C. Nandy and Sasanka Roy: Facility location problems in the constant work-space read-only memory model, CoRR abs/1409.4092 (2014).

P24 A. Deshpande, F. Herbreteau, B. Srivathsan, T.T. Thanh and I. Walukiewicz: Fast detection of cycles in timed automata.

P25 M. Praveen and B. Srivathsan: Defining relations on graphs: how hard is it in the presence of node partitions? Preprint uploaded to arxiv.org.

P26 Nikhil Balaji and Samir Datta: Bounded Treewidth and Space-Efficient Linear Algebra, CoRR abs/1412.2470 (2014).

P27 Sourav Chakraborty and Nitesh Jha: On the size of maximum directed cuts in triangle free graphs.

P28 Sourav Chakraborty, Rameshwar Pratap and Akshay Kamath: Testing Uniformity of Stationary Distribution.

P29 Herbreteau, B. Srivathsan and I. Walukiewicz: Better abstractions for timed automata, Long version of a Logic in Computer Science'2012 Conference paper.

P30 Samir Datta, Raghav Kulkarni, Anish Mukherjee, Thomas Schwentick and Thomas Zeume: Reachability is in DynFO. CoRR abs/1502.07467 (2015).

P31 Anish Mukherjee, Samir Datta and Raghav Kulkarni: Efficient Parallel Algorithms for Shortest k-Disjoint Paths Problem in Planar Graphs.

P32 Gabor Ivanyos, Youming Qiao, K V Subrahmanyam: Non Commutative Edmonds problem and Matrix Semiinvariants.

P33 Partha Mukhopadhyay: Depth 4 Identity Testing and Noether's Normalization Lemma.

P34 Sourav Chakraborty, Shamik Ghosh, Nitesh Jha and Sasanka Roy: Maximal and Maximum transitive relation contained in a given binary relation.

P35 Sourav Chakraborty, Raghav Kulkarni, Satya Lokam and Nitin Saurabh: Upper Bounds on Fourier Entropy.

P36 Sourish Das, Rajiv Sambasivan and Sasanka Roy: Efficient Algorithms for Gaussian Process for Big Data.

P37 Nikhil Balaji, Samir Datta and Venkatesh Ganesan: Counting Euler Tours in Undirected Bounded Treewidth Graphs, Preprint, 2015.

P38 P. Karandikar, M. Niewerth, and Ph. Schnoebelen: On the state complexity of closures and interiors of regular languages with subwords, CoRR, submitted to DCFS special issue of Theoretical Computer Science, abs/1406.0690, 2014.

Physics

P39 Alok Laddha and Miguel Campiglia: On asymptotic symmetries and subleading soft graviton theorem, Preprint number : arXiv:1408.2228

P40 N.D. Hari Dass: Ontology and Quantum Mechanics.

P41 N.D. Hari Dass: The superposition principle in quantum mechanics - did the rock enter the foundation surreptitiously?

P42 N.D. Hari Dass: Repeated weak measurements on a single copy are invasive.

P43 K. Narayan: On a lightlike limit of entanglement, [arXiv.org:1408.7021 [hep-th]].

P44 V.V. Sreedhar: Classical and Quantum Mechanics of a Particle on a Knot.

P45 Govind S. Krishnaswami and Sachin Phatak: Higgs Mechanism and the Added-Mass Effect, arXiv:1407.2689 [hep-th].

P46 T R Govindarajan: Boundary conditions and Dirac operators: Edge effects.

P47 C.K. Mishra, K.G. Arun and Bala R. Iyer: The third post-Newtonian gravitational waveforms for compact binary systems in general orbits: Instantaneous terms, [arxiv: 1501.07096] (http://xxx.lanl.gov/abs/1501.07096) [Under review with Physical Review D].

P48 Chinmay Kalaghatgi, P. Ajith and K.G. Arun: Template-space metric for searches of gravitational waves from the inspiral, merger and ringdown of binary black holes, [arXiv: 1501.04418] (http://xxx.lanl.gov/abs/1501.04418) [Under review with Physical Review D].

P49 K. Narayan: de Sitter extremal surfaces, arXiv:1501.03019 [hep-th].

Book

Mathematics

B1 Purusottam Rath and M. Ram Murty: Transcendental Numbers. Springer Verlag, 2014.

Physics

B2 Alok Laddha and Madhavan Varadarajan: Quantum Dynamics - A chapter (title: Quantum Dynamics) for the book titled "Loop Quantum Gravity" to be published by World Scientific.

Ph.D. Thesis

T1 Pabitra Barik: Hitchin pairs on a singular curve (May 2014).

T2 Rameshwar Pratap Yadav: Some problems in sublinear algorithms (November 2014).

T3 Prateek Karandikar: Subwords: Automata, Embedding Problems, and Verification (February 2015).

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 co-operation 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 2014, the seventeenth batch of students was admitted to the undergraduate programme. At the end of the first semester, 23 opted for B.Sc. in Mathematics and Computer Science. The second year B.Sc. class has 18 students in Mathematics and Computer Science and the third year B.Sc. class has 17 students. Out of the 17 students of the 2011 batch who took their degrees at the convocation in August, 2014, several have been placed in very prestigious institutions.

- Shreejit Bandyopadhyay
  MSc student in Mathematics, Chennai Mathematical Institute

- Suguman Bansal
  PhD student in Computer Science, Rice University, USA

- Aman Barot
  MSc student in Mathematics, Chennai Mathematical Institute

- Prantik Biswas
  MSc student in Applications of Mathematics, Chennai Mathematical Institute

- R Chandra Sekhar
  PhD student in Mathematics, Stanford University, USA

- Rajit Datta
  MSc student in Computer Science, Chennai Mathematical Institute

- Miheer Ulhas Dewaskar
  MSc student in Computer Science, Chennai Mathematical Institute

- Varun B Dwarakanathan
  PhD student in Computer Science, University of Illinois at Chicago

- Soumendra Ganguly
  MSc student in Mathematics, Chennai Mathematical Institute

- K Gautam Gopal
  PhD student in Mathematics, Cornell University, USA

- B Janaki Raman
  MSc student in Mathematics, Ramanujan Institute for Advanced Study in Mathematics, University of Madras

- Sushrut Karmalkar
  MSc student in Computer Science, Chennai Mathematical Institute

- Navaneeth C C
  MSc student in Mathematics, Chennai Mathematical Institute

- Abhishek Oswal PhD student in Mathematics, Univ. of Toronto, Canada

- Siddhi Sudhir Pathak
  MSc/PhD student in Mathematics and Statistics, Queen's University, Canada

- Richick Sinha

- Abhinav Tamaskar
  PhD student in Computer Science, New York University, USA

B.Sc. (Hons.) Physics

This programme was started in 2003 with the assistance of the Physics Faculty of the IMSc., Chennai, and the active participation of physicists across the country.

Out of the 8 students of the 2011 batch who took their degrees at the convocation in August, 2014, several have been placed in very prestigious institutions.

- Lakshya Bhardwaj
  PhD student in Physics, Perimeter Institute of Theoretical Physics, Canada

- Aditya Kela

- Adwait Jayant Gaikwad
  PhD student in Physics, Tata Institute of Fundamental Research, Mumbai

- Navaneeth Mohan
  Pre-PhD student in Physics, Chennai Mathematical Institute

- Debsuvra Mukhopadhyay
  PhD student in Physics, S.N. Bose National Centre for Basic Sciences, Kolkata

- Soutick Saha
  MSc student in Physics, IIT Madras

- Kishor Salunkhe
  Pre-PhD student in Physics, Chennai Mathematical Institute

- Devashish Singh
  Masters student in Physics, Universit Francois Rabelais des sciences et techniques, Tours, France

B.Sc. (Hons.) Mathematics and Physics

Of the 27 students admitted to the undergraduate programme in 2014, 4 students opted for B.Sc. in Mathematics and Physics as the end of the first semester. The second year class has 8 students. The third year class has 5 students

M.Sc. Mathematics

In 2014, 15 students have joined the programme. There are 11 students in the second year of the programme. Eight students who joined the programme in 2012 have completed the programme successfully.

- Sarjick Bakshi
  PhD student in Mathematics, Chennai Mathematical Institute

- Suprajo Das
  PhD student in Mathematics, University of Missouri, USA

- Chandranandan Gangopadhyay
  PhD student in Mathematics, Tata Institute of Fundamental Research, Mumbai

- Sudipta Kolay
  PhD student in Mathematics, Georgia Institute of Technology, USA

- Ankit Rai
  PhD student in Mathematics, Tata Institute of Fundamental Research, Mumbai

- Vangala Ravitheja
  PhD student in Mathematics, Tata Institute of Fundamental Research, Mumbai

- Akash Kumar Sengupta
  PhD student in Mathematics, Princeton University, USA

- Dinesh Valluri
  PhD student in Mathematics, University of Western Ontario, Canada

M.Sc. Computer Science

In 2014, 15 students have joined the programme. There are 9 students in the second year of the programme. Eight students who joined the programme in 2012 have completed the programme successfully.

- Rupam Acharyya
  PhD student in Computer Science, University of Rochester, USA

- Soumya Banerjee
  Bally Technologies Pvt Ltd, Bangalore

- Dhananjay R
  PhD student in Computer Science, University of Texas at Austin, USA

- Akshay D Kamath
  PhD student in Computer Science, University of Texas at Austin, USA

- Tulasimohan Molli PhD student in Computer Science, TIFR, Mumbai.

- Anish Mukherjee
  PhD student in Computer Science, Chennai Mathematical Institute

- Muthuvelmurugan I
  PhD student in Computer Science, Chennai Mathematical Institute

- Rajeev Ranjan

M.Sc. Applications of Mathematics

In 2014, 8 students have joined the programme. There are 7 students in the second year of the program. Twelve students who joined the programme in 2012 have completed the programme successfully.

- Souvik Ash

- Sebanti Chakrabarti

- Ankani Chattoraj
  PhD student in Computer Science, Chalmers University, Sweden

- Prajjal Kumar De

- Samik Mitra

- Dipankar Mondal

- Tamal Kanti Panja
  Tiger Analytics

- Suvadip Roy
  CRISIL, Mumbai

- Puranjit Sanyal
  Credit Suisse, Mumbai

- Shouvik Sardar
  CRISIL Global Research and Analytics, Mumbai

- Banhirup Sengupta

- Md Shariq
  PhD student in Statistics, University of Connecticut, Storrs, USA

Convocation

The 12th Annual Convocation of CMI was held on 31 July 2014. Degrees were awarded to 58 successful candidates at various levels. Of these, 25 were B.Sc. candidates, 32 were M.Sc. candidates and 1 was a Ph.D. candidate. Prof. G. Rajasekaran, Adjunct Professor, CMI delivered the convocation address.

For the B.Sc. programmes, the CMI Gold Medal of Excellence was awarded to R. Chandra Sekhar in Mathematics and Computer Science and Lakshya Bhardwaj in Physics for their outstanding performance at the undergraduate level. For the M.Sc. programmes, the CMI

Gold Medal of Excellence was awarded to Sudipta Kolay in Mathematics, Md Shariq in Applications of Mathematics and Akshay D Kamath in Computer Science.

The S. Parthasarathy Commemorative Prize for original research work by undergraduate students was awarded to Lakshya Bhardwaj.

12 Activities of the Undergraduate Students

Navaneeth C C

Attended AIS School on Schemes & Cohomology (2014), at KSOM, Kozhikode during December 2014.

Sambit Senapati:

Visited IISc during November 2014 for 'National Science (VIJYOSHI) Camp-2014.

Sambit Senapati, Mohan Swaminathan and R Goutham:

Participated in 'FORAYS 2015' at IIT-Madras in March 2015, Event: 'Battle Of Brains (College)' (Team event).

Sanjukta Roy:

Received Best Student Paper Award at CoDS 2015, 2nd IKDD Conference on Data Sciences in March 2015 for the paper "Measuring Network Centrality Using Hypergraphs" S. Roy, B. Ravindran.

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 2014, R Chandrasekhar, K Gautam Gopal and Abhishek Oswal visited the ENS.

Nicolas Garrel from the ENS visited CMI during April 2014.

13 Undergraduate/Graduate Courses

August - November 2014

Course	Instructor
Algebra	Upendra Kulkarni
Algebra I	Shiva Shankar
Algebra III	Manoj Kummini
Algebra IV	Krishna Hanumanthu
Design & Analysis of Algorithms	Prajakta Nimbhorkar
Analysis	Shrihari Sridharan
Approximation Algorithms	Sourav Chakraborty
Algebraic Topology	Priyavrat Deshpande
Calculus I	Purusottam Rath
Caculus III	V Balaji
Commutative Algebra	Clare D'Cruz
Classical Electrodynamics	H S Mani
Computational Geometry	Sasanka Roy
Classical Mechanics	N D Hari Dass
Classical Mechanics I	Alok Laddha
Coding Theory	Sourav Chakraborty/K V Subrahmanyam
Concurrent Programming	Madhavan Mukund/S P Suresh
Cryptography	Santanu Sarkar
Differential & Integral Eqns	Dishant Pancholi
Discrete Mathematics	Partha Mukhopadhyay
Data Mining & Machine Learning	K V Subrahmanyam
Principles of Digital Systems Design & Modeling	M Srivas
Econometrics I	V Swaminathan
English	Usha Mahadevan
Functional Analysis	Sundar Sobers
Finance I	Sreejata Banerjee
Geometric Invariant Theory	T Ramadas
Advanced General Relativity	K G Arun/K Narayan
Laboratory 1	K G M Nair
Logic, Automata Theory & Games	B Srivathsan

Course	Instructor
Logical Foundations of Databases	Madhavan Mukund
Linear Algebra	M Sundari
Introduction to Logic	K Narayan Kumar
Mathematical Methods	T R Govindarajan
Multivariate Statistical Analysis	Ananya Lahiri
Optimization	T Parthasarathy
Optics	R Jagannanthan
Probability and Statistics	Sourish Das
Particle Physics	Govind Krishnaswami
Intro to Programming (Haskell)	S P Suresh/K Narayan Kumar
Intro to Programming (Python)	Madhavan Mukund
Quantum Mechanics I	G Rajasekaran
Quantum Mechanics	V V Sreedhar
Real Analysis	R Srinivasan
Real Analysis	B V Rao
Reinforcement Learning	Madhavan Mukund
Stochastic Processes I	Rajeeva Karandikar
Seminar on Schubert Varieties	Krishna H/Manoj Kummini
Theory of Computation	M Praveen
Topology	S Senthamarai Kannan
Thermal Physics	R Parthasarathy

January - April 2015

Advanced Algorithms	:	Sourav Chakraborty/Samir Datta
Algebra II (MSc)	:	Clare D'Cruz
Algebra II	:	V Balaji
Algebraic Curves	:	Krishna Hanumanthu
Design & Analysis of Algorithms	:	Sasanka Roy
Advanced Programming	:	Madhavan Mukund
Advanced Stochastic Processes II	:	B V Rao
Calculus II	:	T R Ramadas
Complex Analysis	:	S Ramanan
Commutative Algebra (Reading Seminar)	:	Manoj Kummini
Classical Mechanics II	:	H S Mani
Continuum Mechanics & Nonlinear Dynamics	:	K G Arun
Seminar on Configuration Spaces	:	Priyavrat Deshpande/Ronno Das
Complex Analysis	:	Shiva Shankar
Complexity Theory	:	Partha Mukhopadhyay
Differential Equations	:	Dishant Pancholi
Differential Geometry	:	Sushmita Venugopalan
Discrete Mathematics	:	Sourav Chakraborty/Samir Datta
Differential/Symplectic Geometry	:	Dishant Pancholi
Economics	:	Malathi Velamuri
Econometrics II	:	V Swaminathan
Elliptic Functions	:	R Sridharan
Electrodynamics I	:	R Parthasarathy
The Art of the Short Story	:	M Usha
Finance	:	Sreejata Banerjee
Finite Model Theory	:	M Praveen/B Srivathsan
Geometric Invariant Theory	:	T R Ramdas
Game Theory	:	T Partharathy
General Relativity	:	Alok Laddha
Gravitational Wave Astronomy	:	K G Arun
Harmonic Analysis	:	M Sundari
Laboratory	:	K G M Nair
Intro to Mathematical Logic	:	Sriram Nambiar
Machine Learning	:	Discussion Group
Model Checking and Systems Verification	:	M Srivas
Mathematical Finance	:	Sreejata Banerjee
Measure Theory	:	R Srinivasan

Operator Algebras	:	Sundar Sobers
Optimization	:	K V Subrahmanyam/Sourav Chakraborty
Optics	:	R Jagannathan
Language Concepts	:	S P Suresh
Particle Physics II	:	Govind Krishnaswami
Probability Theory	:	Manoj Kummini
Quantitative Automata Theory	:	Madhavan Mukund/B Srivathsan
Quantum Field Theory	:	V V Sreedhar
Quantum Mechanics II	:	G Rajasekaran
Quantum Groups	:	Upendra Kulkarni
Regression & Classification	:	Sourish Das
Representation Theory	:	Kavita Sutar/K V Subrahmanyam
Schubert Varieties	:	Krishna Hanumanthu/Manoj Kummini
Simulation Methods	:	Sourish Das/Rajeeva L Karandikar
Stochastic Processes I	:	Rajeeva L Karandikar
Statistical Mechanics	:	T R Govindarajan
PhD Seminars–CS	:	M Praveen/M Srivas
CS Seminars	:	M Praveen
Topology	:	S Senthamarai Kannan
Topics in Topology	:	Priyavrat Deshpande

14   Special Lectures

- T.R. Ramadas: Limit Mixed Hodge Structures (Part 1 & 2) (April 2014).

- K.G. Arun: What can Gravitational Waves tell us about Short Gamma Ray Bursts (April 2014).

- Nikhil Balaji: A bit of arithmetic circuits: computation and complexity (May 2014).

- Akash Sengupta: Tropical Geometry and its Applications to Algebraic Geometry (Thesis Defence) (June 2014).

- Suprajo Das: Boij-Soederberg Theory (MSc Thesis Defence) (June 2014).

- Ankit Rai: Floer cohomology (June 2014).

- Anwesh Ray: Toric Deligne-Mumford Stacks (July 2014).

- Suryajith Chillara: On the Limits of Depth Reduction at Depth 3 Over Small Finite Fields (August 2014).

- Nikhil Balaji: Division in Arithmetic circuits (August 2014).

- Krishna Hanumanthu: Reading seminar on Schubert varieties (August 2014).

- Manoj Kummini: Reading seminar on Schubert varieties (August - September 2014).

- Manoj Kummini: Seminar on Local cohomology (graduate).

- T.R. Govindarajan: QFT on manifolds with boundary: Edge states, Horizon states and stability (September 2014).

- Suratno Basu: Analogue of a theorem of Mumford-Newstead for singular curves (September 2014).

- Manoj Kummini: Free Resolutions of some determinantal-like varieties (September 2014).

- Santanu Sarkar: Cryptanalysis of RSA Variants (September 2014).

- R. Srinivasan: Cohomology for super-product system (September 2014).

- Priyavrat Deshpande: Cutting, counting and the ubiquitous Mobius inversion (September 2014).

- Ronno Das: Artin groups related to reflections on manifolds (September 2014).

- Prem Prakash Pandey: A structure theorem in additive number theory (September 2014).

- K G Arun: Gravitational Wave Astronomy (September 2014).

- T. Geetha: Schur-Weyl duality, diagram algebras and cellular algebras (October 2014).

- Bhavin Moriya: Some wighted zero sum problems (November 2014).

- Priyavrat Deshpande: Cohen-Macaulay property for topological spaces, February 2015.

- Vijay Ravikumar: The cohomology ring of the complex Grassmannian.

- Sushmita Venugopalan: Moment maps and vortices, February 2015.

15 CMI Silver Jubilee Lecture Series

- David Mumford, Professor Emeritus of Applied Mathematics, Brown University, U.S.A.: Information theory and the analysis of language (September 2014).

- David Mumford, Professor Emeritus of Applied Mathematics, Brown University, U.S.A.: Mathematical Models of the Heavens: from yugas to chaos (K. Madhava Sarma Memorial Distinguished Lecture) (September 2014).

- David Mumford, Professor Emeritus of Applied Mathematics, Brown University, U.S.A.: Feynman path integrals in the finite dimensional case and applications (September 2014).

- P S Thiagarajan, National University of Singapore, Singapore: Approximate analysis of hybrid systems (October 2014).

- R. Balasubramanian, Director, Institute of Mathematical Sciences, Chennai: The ternary Goldbach conjecture (October 2014).

- Mukund Thattai, National Centre for Biological Sciences, Bangalore: The watchmaker's apprentice: building a synthetic genetic oscillator with parts borrowed from nature (October 2014).

- Jaikumar Radhakrishnan, TIFR, Mumbai: Mutual Information in One-Shot (November 2014).

- Heribert Vollmer, Univ. of Hannover, Germany: Modal Independence Logic (November 2014).

- Kim Plofker, Union College, Schenectady, NY, USA: Algebraic and other approximations of trigonometric functions in 12th-century Sanskrit astronomy (December 2014).

- Parosh Aziz Abdulla, Uppsala University, Sweden: Cut-offs in Parameterized Verification (December 2014).

- Madhu Sudan, MIT and Microsoft Research, U.S.A.: Communication Amid Uncertainty, January 2015.

- Dipak K. Dey, Board of Trustee Distinguished Professor and Associate Dean, University of Connecticut, U.S.A.: Clique-based Method for Social Network Clustering, January 2015.

- S.R.S. Varadan, New York University, U.S.A.: Random Graphs, January 2015.

- Peter Symonds, University of Manchester, U.K.: Group actions on polynomial rings, January 2015.

- Ahmed Bouajjani, University of Paris Denis Diderot (Paris 7): Tractable Refinement Checking for Concurrent Objects, January 2015.

- V. Lakshmibai, Northeastern University, U.S.A.: Ubiquity of Schubert varieties, January 2015.

- Alladi Sitaram, Professor (Retd.), Indian Statistical Institute, Bangalore: Fourier and Harish-Chandra; the tale of two harmonic analysts, February 2015.

- Howard Straubing, Boston College, U.S.A.: What can automata theory tell us about computational complexity?, February 2015.

- Deepak Dhar, TIFR, Mumbai: Rocks, Rivers and Sand: Simple models of complex systems, February 2015.

- Pascal Weil, LaBRI, University of Bordeaux, France: An overview of the theory of varieties of languages, February 2015.

- Philippe Schnoebelen, LSV, ENS Cachan: Basics of WQO theory, with some applications in computer science, February 2015.

- V. Kumar Murty, University of Toronto, Canada: Rational Points on Elliptic Curves, February 2015.

- Bala R Iyer, ICTS-TIFR, Bangalore: LIGO-India: Towards Multi-messenger Astronomy, March 2015,

- Tarun Souradeep, IUCAA, Pune: In pursuit of elusive cosmic gravitational waves, March 2015.

- Sukanta Bose, IUCAA, Pune: What Physics and Astrophysics of Compact Objects will Gravitational Wave Observations Teach Us?, March 2015.

- Kavita Ramanan, Brown University: Projections of high-dimensional probability measures, March 2015.

- Naresh Dadhich, IUCAA, Pune and Centre for Theoretical Physics, Jamia Millia Islamia, Delhi: Why Einstein?, March 2015.

- A. Raghuram, IISER, Pune: From Calculus to Number Theory (via Cohomology), March 2015.

- Manjunath Krishnapur, IISc, Bangalore: How likely is a random matrix to be singular?, March 2015.

- Michael Berry, University of Bristol, U.K.: Nature's optics and our understanding of light, March 2015.

16   Workshops/Schools/Conferences

NCM Advanced Instructional School in Algebraic Number Theory (July 2014)

The goal of this instructional school is to cover some of the salient features, both algebraic as well analytic, of algebraic number fields which every beginning researcher of number theory should be aware of.

- Krishna Hanumanthu, CMI and Clare D'Cruz, CMI: Module-1: Basic Commutative Algebra Prerequisites (Four lectures).

- Kaneenika Sinha, IISER, Pune and Sanoli Gun, IMSc.: Module-2: Introduction to algebraic number fields (Seven Lectures).

- D.S. Ramana, HRI and R. Balasubramanian, IMSc.: Module-3: Arithmetic and Analysis on Quadratic fields (Eight Lectures).

- R. Thangadurai, HRI, A. Mukhopadhyay, IMSc. and Purusottam Rath, CMI: Module-4: Arithmetic and Analysis on Cyclotomic fields (Nine Lectures).

- M. Ram Murty, Queen's University, Kingston and V. Kumar Murty, University of Toronto: Module-5: Arithmetic and Analysis on Arbitrary Number fields (Eight Lectures).

- Tutors: Anwesh Ray, CMI, Prem Prakash Pandey, CMI, Sumit Giri, IMSc., Ekata Saha, IMSc., Biswajyoti Saha, IMSc. and A. Vatwani, Queen's University.

Recent Developments in Commutative Algebra and Applications to Classical Rings, January 2015

An India-UK Scientific Seminar supported by the Department of Science and Technology (India) and the Royal Society (UK) was organized by Manoj Kummini (CMI) and Peter Symonds (Manchester).

The participants in this seminar were, Adam Boocher (Edinburgh), Clare D'Cruz (CMI), Arijit Dev (IIT-Madras), Jonathan Elmer (Aberdeen), Krishna Hanumanthu (CMI), A V Jayanthan (IIT-Madras), Senthamarai Kannan (CMI), Moty Katzman (Sheffield), Neeraj Kumar (IMSc), Manoj Kummini (CMI), Shreedevi Masuti (IMSc), K N Raghavan (IMSc), R J Shank (Kent), Kavita Sutar (CMI) Peter Symonds (Manchester) and Jugal Verma (IIT-Bombay)

Writers in residence

CMI hosts a writers' residency programme in cooperation with Sangam House. Under this programme, CMI supports two international writers each year for a residency of 4-6 weeks.

- **Mathilde Walter Clark**, a writer of novels, short stories and essasys, was in residence in January–February 2015. Her most recent books include the novels Gips (Cast, 2012) and Priapus (Priapus, 2010), the short story collection Grumme historier (Grim Stories, 2011), and a genre-bending art book, Macen Soges (Patron Wanted, 2013), which documents her year-long performance of the same name via e-mails, letters, photos and film. Her short fiction has appeared in the US in The Iowa Review,Absinthe, The Chattahoochee Review, and The Literary Review, and her nonfiction in the Los Angeles Review of Books. In 2006 she was awarded the prestigious Three-Year Scholarship from the Danish Arts Foundation. Her father is American, her mother Danish. She lives in Copenhagen, where she is currently at work on a novel.

- **N.S. Koenings**, a writer, translater and visual artist, in residence in February–March 2015. Her novel, The Blue Taxi, was published in 2006 by Little, Brown and Company, followed by her short story collection, Theft, in 2008. Holder of a Dutch passport, she was born in Belgium and grew up in East Africa and Europe, spends most of her time thinking about money, love, empire, the nature of evil, and the concept of *the nation*. She is currently based in the USA.

Endowment Lectures at CMI

- David Mumford, Professor Emeritus of Applied Mathematics, Brown University, U.S.A. delivered K. Madhava Sarma Memorial Distinguished Lecture on "Mathematical Models of the Heavens: from yugas to chaos" (September 2014).

- Krishna B. Athreya, Distinguished Professor Emeritus, College of Liberal Arts and Sciences, Iowa State University, U.S.A. delivered the K. Lakshmanan Memorial Distinguished Lecture on "What is a Markov chain?" (January 2015).

- Dipendra Prasad, TIFR, Mumbai delivered the R.K. Rubugunday Distinguished Lecture on "Modular forms, motives and L-functions" (January 2015).

17   Silver Jubilee Conferences and Workshops

The 1st CMI Alumni Conference, January 2015

Organized as as part of the silver jubilee celebrations, this event consisted of a number lectures by alumni of CMI who have established themselves in academia in Mathematics, Computer Sciences, Physics and related areas. This event was organized by Krishna Hanumanthu and Sourav Chakraborty and the speakers were

(1) S Akshay, IIT Bombay, Reachability problems for Markov chains.

(2) C S Aravinda, TIFR CAM, Bangalore, Dynamics of geodesic conjugacies.

(3) Baskar Balasubramanyam, IISER Pune, Special values of adjoint L-functions and congruences between automorphic forms.

(4) Anandam Banerjee, IISER Mohali, Equivalence relations on algebraic cobordism cycles.

(5) Kuntal Banerjee, Presidency University, Kolkata, Widths of Arnold tongues and Herman rings.

(6) Shiladitya Banerjee, University of Chicago, USA, Geometry, mechanics and fluctuations in Life.

(7) Pabitra Barik, IIT Madras, Hitchin pairs on a singular curve.

(8) Rajesh Chitnis, Weizmann Institute of Science, Israel, Coping with Big Data and Big Time.

(9) Amit Deshpande, Microsoft Research, Bangalore, The geometry of semidefinite programs.

(10) Deepak D'Souza, IISc, Bangalore, Refinement-Based Verification of Functional Correctness.

(11) Sushmita Gupta, Kyoto University, Japan, Online computation with advice.

(12) Nagarajan Krishnamurthy, IIM Indore, Stochastic Social Cloud.

(13) Raghav Kulkarni, NTU, Singapore, Decision Trees, Solvable Groups, and Music of Primes.

(14) Debapriyo Majumdar, ISI Kolkata, Query Suggestions without Query Logs.

(15) Swarnava Mukhopadhyay, University of Maryland, USA, Strange Duality of G-theta functions.

(16) Debajyoti Nandi, Rutgers University, USA, Interplay between partitions, representation theory and VOAs.

(17) Yashonidhi Pandey, IISER Mohali, Brauer Group of moduli of torsors under parahoric group scheme G over a curve.

(18) Vimala Ramani, Anna University, Chennai, On some fractional differential equations in electro chemistry.

(19) Rajarshi Ray, NIT Meghalaya, Shillong, Parallelizing State Space Exploration Algorithm of Hybrid Systems using Support Functions.

(20) Arnab Saha, Australian National University, Arithmetic Jet Spaces.

(21) Parameswaran Sankaran, IMSc, Chennai, Twisted conjugacy in PL homeomorphism groups of the interval.

(22) Saket Saurabh, IMSc, Chennai, Algorithmic Applications of Two Families Theorem.

(23) Raghunath Tewari, IIT Kanpur, Simultaneous Time-Space Bounds for the Graph Reachability Problem.

4th Workshop on Automata, Concurrency and Timed Systems (ACTS), February 2015

ACTS 2015 was organised as part of the silver jubilee celebrations and is the fourth in a series of works. The previous workshops in this series were held in February 2011, February 2010 and January 2009. This year the Scientific Committee consisting of Paul Gastin (LSV, ENS Cachan), M Praveen (CMI), B Srivathsan (CMI) and J Pascal Weil (LaBRI, Bordeaux) was in-charge of the program. Local organizatoin was handled by K Narayan Kumar (CMI) and Madhavan Mukund (CMI). About 50 academicians from India and abroad attended this workshop. The list of peakers and the title of their talks is as follows.

(1) C Aiswarya (Uppsala University, Sweden): Communicating Recursive Programs: Control and Split-width.

(2) Mohamed Faouzi Atig (Uppsala University, Sweden): The Best of Both Worlds: Trading Efficiency and Optimality in Fence Insertion for TSO.

(3) Benedikt Bollig (LSV, ENS Cachan, France): Towards a Regular Theory of Parameterized Concurrent Systems.

(4) Christopher Broadbent (TU Munich, Germany): Model-Checking Untyped Recursion Schemes over the Modal Mu-Calculus.

(5) Thomas Colcombet (LIAFA, University Paris 7, France): Characterizing logics over infinite words.

(6) Diego Figueira (LaBRI, University of Bordeaux, France): On reflexive-transitive navigation in the presence of data values.

(7) Pierre Ganty (IMDEA Software Institute, Madrid, Spain): Parameterized Verification of Asynchronous Shared-Memory Systems.

(8) Christoph Haase (LSV, ENS Cachan, France): Pushing the boundaries of the complexity of the reachability problem in vector addition systems one step at a time.

(9) Marcin Jurdziski (University of Warwick, UK): The perfect half-spaces technique for multi-dimensional energy games.

(10) Manfred Kufleitner (University of Stuttgart, Germany): Omega-terms and automata.

(11) Akash Lal (MSR Bengaluru, India): A Program Transformation for Faster Goal-Directed Search.

(12) Anthony Widjaja Lin (Yale-NUS College, Singapore): Parikh's Theorem: Complexity and Applications.

(13) Jerome Leroux (LaBRI, University of Bordeaux, France): Hyper-Ackermannian Bounds for Pushdown Vector Addition Systems.

(14) Rupak Majumdar (Max Planck Institute, Kaiserslautern, Germany): What's decidable about asynchronous programs?

(15) Thomas Place (LaBRI, University of Bordeaux, France): Climbing Up the Quantifier Alternation Hierarchy of First-Order Logic over Words.

(16) Gabriele Puppis (LaBRI, University of Bordeaux, France): The Cost of Repairs.

(17) M Praveen (CMI, Chennai, India): Defining relations on graphs: how hard is it in the presence of node partitions?

(18) Jean-Franois Raskin (ULB, Brussels, Belgium): Variations on the stochastic shortest path problem.

(19) Arnaud Sangnier (LIAFA, University Paris 7, France): Distributed local strategies in broadcast networks.

(20) Sylvain Schmitz (LSV, ENS Cachan, France): Towards Complexity Upper Bounds for VASS Reachability.

(21) Simoni Shah (TIFR, Mumbai, India): Recursive po2DFA: Hierarchical Automata for FO-definable languages.

(22) B Srivathsan (CMI, Chennai, India): Fast detection of cycles in timed automata.

(23) Ashutosh Trivedi (IIT Bombay, Mumbai, India): Bounded-Rate Multi-Mode Systems Based Motion Planning.

(24) Marc Zeitoun (LaBRI, University of Bordeaux, France): The separation problem: an introduction and a transfer theorem.

(25) Martin Zimmermann (Saarland University, Saarbrucken, Germany): How Much Lookahead is Needed to Win Infinite Games.

Astronomy, Cosmology and Fundamental Physics with Gravitational Waves, March 2015

A workshop on Astronomy, Cosmology and Fundamental Physics with Gravitational Waves was organized in March 2015 as part of the silver jubilee celebrations. K G Arun (CMI), P Ajith (ICTS-TIFR, Bangalore) and Bala Iyer (ICTS-TIFR, Bangalore) were in charge of the Scientific program and the local organisation was handled by K. G. Arun (CMI), Chinmay Kalaghati (CMI) and N V Krishnendu (CMI).

The workshop aimed to focus on prospective collaborative projects in the emerging field of Gravitational Wave Astronomy through a series of intensive discussions between leading scientists, researchers and students working in the field. The speakers and the title of the talks were as follows.

(1) Resmi L (IIST-Thiruvananthapuram): Implications of GW observations for Short GRBs.

(2) Varun Bhalerao (IUCAA, Pune): Seeing what we hear: finding electromagnetic counterparts for gravitational wave sources.

(3) Bala R Iyer (ICTS-TIFR, Bangalore): LIGO-India: Towards Multi-messenger Astronomy.

(4) L Sriramkumar (IITM, Chennai): Observational constraints on the standard cosmological model and beyond.

(5) Jerome Martin (IAP, Paris): Inflation after Planck.

(6) Archisman Ghosh (ICTS-TIFR, Bangalore): Parameter estimation and cosmology with gravitational waves,

(7) Tarun Souradeep (IUCAA, Pune): In pursuit of elusive cosmic gravitational waves.

(8) K G Arun (CMI, Chennai): Strong-field Tests of Gravity.

(9) P Ajith (ICTS-TIFR, Bangalore): Tests of theories of gravity using gravitational-wave observations.

(10) Sukanta Bose (IUCAA, Pune): What Physics and Astrophysics of Compact Objects will Gravitational Wave Observations Teach Us?

18 Conferences, Visits and External Lectures

Rajeeva L. Karandikar

- Delivered a invited public lecture at Indian National Science Academy, New Delhi on "Interface of Mathematics with Society", under Science & Society Public Engagement Programme in April 2014.

- Delivered a popular talk on "Power and Limitations of Opinion Polls" at Indian Association Of Investment Professionals, CFA society, India Chapter in April 2014.

- Gave a special invited lecture at the Annual Meeting of Indian Academy of Sciences in November 2014 on "Power and Limitation of opinion polls".

- Visited Indian Institute of Science Education and Research and gave seminar titled "On Differential equations and Diffusion Processes" and "Power and Limitation of opinion polls"

- Visited Indian Institute of Technology, Indore and gave a colloquium talk on "Introduction to Monte Carlo Simulation".

- Gave an invited talk at National Seminar in Statistics at Presidency College, Kolkata, in February 2015 on "Introduction to Option Pricing".

- Gave an invited talk at IISER (Indian Institute of Science Education and Research), Kolkata in February 2015 on "Power and Limitations of Opinion Polls".

- Gave an invited talk at Ramanujam Symposium at C R Rao Institute, Hyderabad, in March 2015 on "Introduction to Martinagles".

Madhavan Mukund

- Gave a talk on Life and work of Leslie Lamport, Turing Tech Talk Series, Persistent Systems, at Pune in June 2014.

- Presented a talk on "Formal specification of eventually consistent data structures" 13th Update Meeting on Advanced Formal Methods at IIT Kharagpur, in July 2014.

- Gave a talk on "Concurrent programming: old problems, new challenges" at SV College of Engineering, Sriperumbudur, in July 2014.

- Gave a talk on "Concurrent programming: old problems, new challenges" at NGP Institute of Technology, Coimbatore, in August 2014.

- Gave a talk on "Programming for Mathematics" at IMSc Chennai, in August 2014.

- Gave MHRD QEEE online course on "Data Structures and Algorithms" at IIT Madras, during August-September 2014.

- Gave a talk on "Machine Learning" at Hindustan University, Chennai, in September 2014.

- Gave a talk on "Efficient processing of range queries" at SSN College of Engineering, in September 2014.

- Presented an invited tutorial on "Statistical Model Checking" CSI National Conference on Formal Methods at IISc, Bangalore, in October 2014.

- Attended 34th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2014 at New Delhi, in December 2014.

- Visited National University of Singapore, in December 2014.

- Attended 16th International Conference on Verification, Model Checking, and Abstract Interpretation (VMCAI) 2015 at Mumbai, in January 2015.

- Attended 42nd SIGACT/SIGPLAN Symposium on Principles of Programming Languages (POPL) 2015 at Mumbai, in January 2015.

- Attended ACM iSIGCSE workshop on "Effective ways of teaching Computer Science" at Pune, in February 2015.

- Attended ACM India Annual Event and chaired a panel discussion on "Overcoming challenges within the university system" at Goa, in February 2015.

- Attended Workshop on Automata, Concurrency and Timed Systems (ACTS) 2015 at CMI, in February 2015.

- Gave AlgoLabs Certification Course on Machine Learning, in February 2015.

- Delivered a keynote talk on "Formalizing the Cloud", International Symposium on Big Data and Cloud Computing Challenges (ISBCC) at VIT, Chennai, in March 2015.

- Gave a talk on "Correctness in a Connected World" at GKM College of Engineering and Technology, in March 2015.

- Gave a talk on "Design and Analysis of Algorithms" at NPTEL MOOC, during January-March 2015.

T.R. Ramadas

- Attended 50th Anniversary Conference of ICTP, Trieste.

V. Balaji

- Invited to give a Master's Class Course at the QGM Center in Aarhus University.

- Invited to the ICM Satellite Conference in Singapore on "Higgs Bundles" to give a talk.

- Conducted AIS in Algebraic Geometry in the Kerala School of Mathematics in December 2014 (along with D.S. Nagaraj) and gave a series of 5 talks in the Workshop.

Samir Datta

- Visited TU Dortmund, Germany during June - July 2014.

- Gave a talk at TCS mini workshop, TU Dortmund on "Dynamic Complexity of Reachability and Matching"

- Gave a reading course on Advanced Algorithms.

- Gavae a talk on "The Dynamic Complexity of Reachability and related problems" in Indo-UK workshop on Computational Complexity Theory, in January 2015 at IMSc, Chennai.

K. Narayan

- Attended Prospects in Theoretical Physics, advanced school on string theory, Institute for Advanced Study (IAS) & Princeton Univ., Princeton, U.S.A., in June 2014.

- Attended "Strings 2014", international conference on string theory, Institute for Advanced Study (IAS) & Princeton Univ., Princeton, U.S.A., in June 2014.

- Gave a talk on "Aspects of extremal surfaces in (A)dS" at "Entanglement from Gravity" Discussion Meeting around the Chandrasekhar Lectures given by Rob Myers, ICTS, Bangalore,in December 2014.

- Gave a talk on "Aspects of extremal surfaces in (A)dS" at Indian Strings Meeting, international string theory workshop, Puri, in December 2014.

K. Narayan Kumar

- Visited LSV, ENS Cachan, France in May 2014.

- Visited LaBRi, Univ. of Bordeaux, France in May 2014.

- Visited Uppsala University, Sweden in June 2014.

- Attended the 34th Conference on Foundations of Software Technology and Theoretical Computer Science, New Delhi, Dec 2014.

- Attended the 42nd ACM Symposium on Principles of Programming Language (POPL 2015), in TIFR Bombay, Mumbai, in January 2015.

K.V. Subrahmanyam

- Visited IISc, Bangalore for a machine learning workshop in January 2015.

K.G. Arun

- Visited IISER-Thiruvananthapuram in July 2014 and gave a seminar.

- Visited Institute of Mathematical Sciences and gave a talk on "Synergy of Short GRBs and Gravitational Waves" in October 2014.

- Gave a talk on "Strong field Tests of gravity using gravitational waves", at the Work shop on Astronomy, Cosmology & Fundamental Physics with Gravitational Waves at CMI, in March 2015.

- Gave a plenary talk on "Towards first detection of Gravitational Waves: Challenges Prospoects" at the IAGRG 2015 meeting at the Raman Research Institute.

Sourav Chakraborty:

- Gave a talk on "Testing Function Isomorphism" at the CS department in University of California, San Diego (UCSD) in April 2014.

- Was on sabbatical at the University of California, San Diego (UCSD) during April - June 2014.

- Taught "Introduction to Discrete Mathematics" at University of California, San Diego during April - June 2014.

- Visited Moshe Vardi at the Rice University, U.S.A. in June 2014.

- Gave a series of talks at University of Chicago for the program "Research for Under-graduates (REU)" in July 2014.

- Attended the workshop on "Algebra in Computation Complexity" at Dagstuhl.

- Visited ISI Delhi for a couple of days in December 2014.

- Visiting faculty at Rice University from March 2015.

Govind S. Krishnaswami:

- Gave lecture course on time dependent perturbation theory, quantization of the radiation field and radiative transitions at Science Academies' Refresher Course on quantum mechanics in May 2014 at Bishop Moore College, Mavelikara, Kerala.

- Review of Research, Ramanujan Fellows Review Meeting, Kolkata, May 2014.

- Gave a special Lecture on "A Fluid Analogy for the Higgs Mechanism" at the 59th Indian Academy of Science Refresher Course in Experimental Physics, Government College, Rajahmundry, Andhra Pradesh, in June 2014.

- The Higgs Mechanism and Fluids: A Correspondence, 152nd Science Club Meet, June 2014, IMSc Chennai. Lecture delivered by student Sachin Phatak and judged a CBSE science exhibition at the same time.

- Gave a talk on "A fluid analogy for the Higgs mechanism" in the International conference on New Trends in Field Theories, in November 2014 at Banaras Hindu University, Varanasi.

- Gave a lecture course on Lagrangian and Hamiltonian mechanics, Poisson brackets and Canonical transformations, Oscillations and Rigid bodies, at Science Academies' Refresher Course on Classical Mechanics and Electromagnetism in December 2014 at SDM College, Ujire, Karnataka.

- Gave a reading course on "Geometrical and group theoretical methods in physics".

- Hosted Prof A. Thyagaraja, Bristol, UK, in January 2015 for a collaboration meeting.

Manoj Kummini

- Gave a talk at International Conference on Algebra and Applications, Aligarh Muslim University, Aligarh, Uttar Pradesh.

- Instructor at Advance Instructional School on 'Schemes and Cohomology', Kerala School of Mathematics, Kozhikode, Kerala.

- Instructor at Annual Foundational School, IIT-Madras, Chennai, Tamilnadu.

- Gave a talk on "A geometric technique of constructing interesting complexes" at the Indian Statistical Institute, Bangalore, in February 2015.

- Gave a talk on "Free resolutions of some determinantal-line varieties" at CAAG 2015 Conference held at IIT-Guwahati, Guwahati, in February 2015.

- Gave a talk on "Betti tables of p-Borel-fixed ideals" at the Indian Statistical Institute, Kolkata, in February 2015.

Partha Mukhopadhyay

- Visited the Institute of Mathematics, Prague, Czech Republic.

- Gave a talk on "Explicit Cayley Expanders Construction" in the Indo-German Workshop at the Indian Statistical Institute, Kolkata.

Purusottam Rath

- Gave a 12-hour course of lectures on Commutative Algebra in an instructional school at Kerala School of Mathematics, Kozhikode, in May 2014.

Sasanka Roy

- Gave talks on "Clustering techniques" at CMI AlgoLabs Certification Course on Machine Learning in February 2015.

R. Srinivasan

- Gave a talk titled 'Cohomology for spatial super-product systems' in the conference on "Recent Advances in Operator Theory and Operator Algebras" held at ISI, Bangalore, in December 2014.

- Visited Indian Statistical Institute, Bangalore in February 2015.

S.P. Suresh

- Attended Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2014, in December 2014 at New Delhi.

- Attended International Conference on Information Systems Security (ICISS 2014), in December 2014 at IDRBT Hyderabad.

- Attended Asian Logic Conference (ALC 2015), in January 2015 at IIT Bombay.

- Attended Indian Conference on Logic and its Applications (ICLA) 2015 in January 2015 at IIT Bombay.

- Attended Instructional School on Logical Aspects of Multi-Agent Systems (ISLAMAS 2015) in February 2015 at IMSc., Chennai.

Sourish Das

- Presented at the Statistics Department of National University of Singapore titled "Some Perspective on Efficient Market Hypothesis and Multiple Testing Problem" in May 2014.

- Gave a course on "Linear Models" at ISI Chennai Center during April - September 2014.

- Presented at SSN Institute titled "Statistical Data Analysis using R" in September 2014.

- Taught a course on "Linear Models" at ISI, Chennai Center.

- Presented at the International Conference on Applied Statistics at Colombo, SriLanka titled "Efficient Algorithms for Gaussian Process for Big Data" in December 2014.

- Presented Poster at the Indo-Russian Conference on Probability and Statistics, at ISI, Delhi on "Efficient Algorithms for Gaussian Process for Big Data" in January 2015.

- Presented Tutorial at National Conference on Distributed Machine Learning on "Systematic Approach towards Research on Machine Learning and Distributed Computing".

Krishna Hanumanthu

- Lectured on "Differential Topology" in the Annual Foundational School - 2 at Kerala School of Mathematics, Kozhikode during May 2014.

- Lectured on Schemes and Cohomology during the Annual Instructional School at Kerala School of Mathematics, Kozhikode during December 2014.

- Lectured on algebra (group theory) in the Annual Foundational School - 1 at IIT Madras during December 2014.

Alok Laddha

- Visited Raman research Institute, Bangalore in May 2014.

Sukhendu Mehrotra

- Gave invited workshop lecture at National University of Singapore, Singapore in July 2014 on "Noncommutative K3 surfaces and moduli spaces of sheaves".

- Gave a course on "Representation theory of finite groups" at Universidad Católica de Chile.

- Taught a course on "Representation theory of finite groups" at the Catholic University of Chile (PUC, Santiago).

- Gave a talk entitled "Non commutative K3 surfaces and moduli spaces of sheaves" at the LXXXIII Annual Meeting of the l Sociedad de Matemática de Chile in December 2014.

- Year-long academic visit to Catholic University of Chile (PUC, Santiago).

- Gave multiple talks in a seminar on derived categories at the Department of Mathematics, PUC.

Prajakta Nimbhorkar

- Visitred Institute of Mathematics of the Czech Academy of Sciences, Prague during April - July 2014.

M. Praveen

- Gave a talk on "Defining Relations on Graphs", in the workshop "Automata, Concurrency and Timed Systems" organized in CMI.

B. Srivathsan

- Visited LaBRI, University of Bordeaux (Collaborators: F. Herbreteau, I. Walukiewicz) in May 2014.

- Offered summer projects for CMI students in June - July 2014 (1 Masters student in June, 4 Bachelor students in July).

- Gave a talk at Formal Methods Update Meeting at IIT Kharagpur in July 2014.

- Gave a talk at Workshop for school students organized by National Academy of Sciences at Chennai Mathematical Institute in July 2014.

- Gave a talk at P.S. Senior Secondary School, Chennai, in August 2014.

- Attended FSTTCS conference in New Delhi.

- Attended Kickoff meeting of an Indo-French joint project at FSTTCS.

- Gave a lecture to school students at Bala Vidya Mandir, Chennai about Number theory in Computer Science.

- Visited LaBRI, Bordeaux, France, in January 2015.

- Visited RWTH-Aachen, Germany and presented a talk during January-February 2015.

- Visited University of Oldenburg, Germany, in February 2015.

S. Sundar

- Attended a conference at Oberwolfach, Germany during the period October 2014.

Priyavrat Deshpande

- Gave a talk on "Submanifold arrangements and the tangent bundle complement" at IISER Mohali in April 2014.

- Gave a talk on "Cohomology algebra of the complement of a toric arrangement" at IISER Mohali in April 2014

- Gave a course on "Differential Topology" at the annual foundational school held in KSOM, Kerala, in May 2014.

- Gave a seminar on "Combinatorics and topology of manifold reflection arrangements" at IISER-Bhopal, in March 2015.

Ananya Lahiri

- Visited ISI Delhi in June 2014.

- Visited IIT Kanpur in July 2014.

- Attended Seoul ICM 2014 in August 2014.

- Presented a paper at the conference IASSL 2014, Colombo SriLanka, in December 2014 on Inference for option prices when the stock price is driven by a fractional Brownian motion (jointly with Rituparna Sen).

- Attended a workshop on Lectures in Probability and Stochastic Processes IX, at ISI Kolkata, in December 2014.

- Attended Indo-Russian Joint Conference in Statistics & Probability, in January 2015 at ISI Delhi.

Sauvik Mukherjee

- Attended workshop and conference at HRI.

- Attended workshop and conference at TIFR.

Prem Prakash Pandey

- Guided a winter student from M.S. University of Baroda.

- Have been reading "Geometry of Numbers" during last semester and hope to work on it.

Vijay Ravikumar

- upcoming visit to IBS, Postech, Pohang Korea during April - May 2015 (collaborating with faculty there).

Kavita Sutar

- Taught Algebra at the annual foundational school held in KSOM, Kerala during May 2014.

- Supervised the summer internship of Grishma Palkar, a second year student from IISER Bhopal, during May - July 2014.

Sushmita Venugopalan

- Gave Geometry Seminar at IIT-Madras, in March 2015.

T.R. Govindarajan

- Gave lectures on group Theory at the Center for Theoretical Physics, Jamia Millia University, Delhi, in February 2015.

N.D. Hari Dass

- Visited IMSc., Chennai during April 2014.

- delivered a colloquium at IMSc., Chennai on "A massive saga", in April 2014.

- Gave a talk on "Primordial Gravitational Waves as revealed by BICEP-2: an informal and pedagogical account" at University of Hyderabad in April 2014.

- Gave a talk on "Primordial Gravitational Waves as revealed by BICEP-2: an informal and pedagogical account" at TCIS-Hyderabad in May 2014.

- Visiting Professor at TIFR-Hyderabad (TCIS) during April - June 2014.

H.S. Mani

- Gave a course on "Quantum mechanics", six days (refresher course for teachers agonized by the three academies) in May 2014.

- Gave 12 lectures at Bishop Moore College, Mavelikara (Refresher Course) in May 2014.

- Several academic visits from May till September 2014 to Homi Bhabha Centre for Science Education to discuss problems in School/undergraduate Physics.

- Visited University of Pune, in September 2014 and gave four lectures, one on "Sun rise and set time" and the other three on "Geometric Phase in Physics".

- Gave 12 lectures at Refresher Course at Ujire, Karnataka, in December 2014 (On electrodynamics).

G Rajasekaran

- Gave a short course on High Energy Physics to MSc (Physics) students of Madurai Kamaraj University during January and March 2015.

- Gave a course on "Quantum Mechanics" at the Sunday Class (This is part of the voluntary teaching offering to PG students in and around Chennai every Sunday).

- Convened a Symposium on "High Energy Physics in 2015 and its Future" as a part of Indian Science Congress 2015 at University of Mumbai, in January 2015.

- Gave a talk in Tamil about the India-based Neutrino Observatory at the Rajarajan Institute of Science, Madurai, in January 2015.

- Gave a talk in Tamil "What is Science?" at the Reward Trust for Schools organized by a group of scientists at Kalpakkam, in Janurary 2015.

- Gave a talk in Tamil about the India-based Neutrino Observatory (INO) at a meeting of the Tamil Nadu Science Forum at IMSc, in February 2015.

- Gave a colloquium on "Hundred Years of High Energy Physics and a Crisis" at Tata Institute of Fundamental Research, Mumbai in February, 2015.

- Attended an INO Meeting at Bhabha Atomic Research Centre, in February 2015.

- Gave a colloquium on "Hundred Years of High Energy Physics and a Crisis" at the Institute of Mathematical Sciences, Chennai, in February 2015.

- Gave a public talk on "Hundred Years of Fundamental Physics and the Discovery of Higgs Boson" on Science Day at Lucknow University, in February 2015.

- Gave a colloquium on "Standard Model of High Energy Physics and What Next?" at Madras University, in March 2015.

V. Swaminathan

- Guided two non-CMI students (one from IIT Delhi and the other from St. Stephens College, New Delhi) for their Summer Internship during May - July 2014.

- Attended a National Conference on Recent Advances in Statistics at University of Pune, in January 2015.

Arjun Arul

- Attended International Olympiad in Informatics Training Camp at Bangalore, in May 2014.

- Attended Summer Coding Camp at Amrita University, Bangalore, in June 2014.

- Attended FSTTCS 2014 at New Delhi, in December 2014.

- Attended Winter Coding Camp 2014 at Amrita University, Bangalore, in December 2014.

- Attended Symposium on "Learning Algorithms and Complexity" at IISc Bangalore, in January 2015.

- Attended CEG Coding Camp at Chennai, in March 2015.

Nikhil Balaji

- Attended Mathematical Foundations of Computer Science(MFCS) in August 2014 at Budapest, Hungary.

- Attended Foundations of Software Technology and Theoretical ComputerScience(FSTTCS) in December 2014 at New Delhi.

- Attended Indo-UK workshop on Complexity Theory in January at IMSc, Chennai.

Abhishek T Bharadwaj

- Attended workshop on "On Several Functions of Modular Forms" in Goa during December 2014.

- Gave student seminar talk on "On periods of Weiestrass's p Function of a given lattice whose invariants are algebraic".

Ronno Das

- Tutor for Differential Topology - Annual Foundational School II, Kerala School of Mathematics, in May 2014.

Sourav Das

- Attended School on "Schemes and Cohomology" at KSOM, Kerala.

- Attended Workshop on "Manipal Days on Mathematics at Manipal University".

Sandesh Kamath

- Attended Symposium on Learning, Algorithms and Complexity at IISc.

- Attended Workshop on Learning Sparse Representations for Signal Processing at IISc.

- Gave a talk at CMI Computer Science PhD Seminar Series on "The Multiplicative Weights Update Method : A Meta-Algorithm and Applications".

Prateek Karandikar

- Attended ETAPS 2014 at Grenoble.

- Attended FSTTCS 2014 at Delhi.

- Attended POPL 2015 at Mumbai.

- Attended ACTS 2015 at Chennai.

- Attended Digicosme Research Days Supelec 2015 at Paris.

- Attended SDA2 workshop 2015 at Paris.

- Visited LSV, ENS Cachan, on the Raman Charpak fellowship, during March-May 2015.

- Gave a talk on the state complexity of subwords, superwords, and related questions at ULB (Brussels).

Anish Mukherjee

- Attended Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2014 at New Delhi in December 2014.

Vaishnavi Sundararajan

- Attended Formal Updates Meeting- 28–30 July 2014 (IIT Kharagpur).

- Attended Foundations of Software Technology and Theoretical Computer Science (FSTTCS) 2014, in December 2014 at New Delhi.

- Attended International Conference on Information Systems Security (ICISS 2014), in December 2014 at IDRBT Hyderabad and gave a talk on "Extending Dolev-Yao with assertions".

- Attended Asian Logic Conference (ALC 2015), in January 2015 at IIT Bombay.

- Attended Indian Conference on Logic and its Applications (ICLA) 2015 in January 2015 at IIT Bombay.

- Attended Instructional School on Logical Aspects of Multi-Agent Systems (ISLAMAS 2015) in February 2015 at IMSc., Chennai.

- Gave a talk on "Extending Dolev-Yao with assertions" in March 2015 at IMSc., Chennai.

Rohith Varma

- visited QGM Aarhus in June 2014 and gave an invited talk at QGM (center for Quantum Geometry and Moduli spaces) student seminars.

19 Other Professional Activities

Rajeeva L. Karandikar

- Have been on the council of Indian National Science Academy.

- Have been nominated as a member of the governing council of Presidency University, Kolkata.

- Have been a member of governing council of Indian National Science Academy, Indian Statistical Institute and Presidency University

Madhavan Mukund

- Member, Editorial Board, LIPIcs-Leibniz International Proceedings in Informatics.

- Member, Editorial Board, Transactions on Petri Nets and Other Models of Concurrency (ToPNoC).

- Member, Editorial Board, Acta Informatica.

- Member, Editorial Board, Sadhana, Indian Academy of Sciences.

- Member, Programme Committee, 35th International Conference on Application and Theory of Petri Nets and Concurrency (Petri Nets 2014), Tunis, Tunisia, July 2014.

- Member, Programme Committee, 41st International Colloquium on Automata, Languages and Programming (ICALP 2014), Copenhagen, Denmark, July 2014.

- Member, Programme Committee, 39th International Symposium on Mathematical Foundations of Computer Science (MFCS 2014), Budapest, Hungary, August 2014.

- Member, Programme Committee, 8th International workshop on Reachability Problems (RP 2014) Oxford, UK, September, 2014.

- Member, Programme Committee, 12th International Symposium on Automated Technology for Verification and Analysis (ATVA 2014), Sydney, Australia, November 2014.

- Member, Programme Committee, 34th Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2014), New Delhi, India, December 2014.

- Member, Organizing Committee, Workshop on Automata,Concurrency and Timed Systems (ACTS) 2015, CMI, February 2015.

- President, Indian Association for Research in Computing Science (IARCS).

- Vice-President, ACM India Council, Association of Computing Machinery (ACM).

- Executive Director, International Olympiad in Informatics (till July 2014)

- National Coordinator, Indian Computing Olympiad.

- Chair, Scientific Board, Mysore Park Workshop Series.

- Co-Director, Indo-French Formal Methods Lab INFORMEL, an International Associated Laboratory (LIA) under CNRS.

- Member, Board of Studies in Mathematical Sciences, Homi Bhabha National Institute

- Member, Governing Council, Institute for Development and Research in Banking Technology (IDRBT), Hyderabad

T.R. Ramadas

- IISER Math Review Commitee in July 2014.

- Articles published in Current Science:

  M. S. Narasimhan (Living Legends in Indian Science), 25 August 2014, 107 (04).

  V.B. Mehta (19462014), 10 September 2014, 107 (05).

- IISc. Math interview Committee in September 2014.

- Served on Bhatnagar Prize Committee.

V. Balaji

- One of the student Pabitra Barik completed his PhD this year and has gotten a Visiting Research Position at IIT Chennai.

- Two students Suratno Basu and Rohith Verma have completed their research work and should be submitting their thesis by March 2015.

K. Narayan Kumar

- Coach and Leader of the Indian team to the International Olympiad in Informatics, Taipei, July 2014.

- Member Scientific Committee, 16th International Workshop on Verification of Infinite-State Systems (INFINITY 2014), December 2014.

K.G. Arun

- Presently guiding Chinmay Kalaghatgi, an Integrated Ph.D. student in Physics for his theoretical project.

- Member of the LIGO Science Collaboration and IndIGO collaboration.

- 3 contributed posters at the LIGO-Virgo Collaboration meeting in Standford (Septemeber 2014).

- Referee for Physical Review D.

- Examiner for SRF interview of Muhammed Saleem, Graduate student at IISER, Thiruvananthapuram.

- Supervised two Ph D students: Chinmay Kalaghatgi & N V Krishnendu.

- Organized a workshop "Astronomy, Cosmology & Fundamental Physics with Gravitational Waves" at CMI as part of Silver Jubilee celebrations of CMI, in March 2015.

Sourav Chakraborty:

- Rameshwar Pratap defended his phd thesis. Samir Datta and I co-advised him.

Govind S. Krishnaswami

- Judge for Regional Level CBSE Science Exhibition 2014, P.S. Senior Secondary School, Chennai, June 26, 27 and 28, 2014.

- Sachin Phatak completed M.Sc. by research under my supervision in April 2014. Thesis topic: The Higgs Mechanism and the Added Mass Effect.

- ¿From August 2014 onwards, supervising M.Sc. theses of Himalaya Senapati (Classical 3 body problem and stability analysis) and Sonakshi Sachdev (Conservative regularization of compressible fluid and MHD equations), one PhD thesis (Sachin Phatak).

Purusottam Rath

- Organised an advanced instructional school on Algebraic Number Theory at CMI, in July 2014. About fifty students from all over India attended the school.

Sasanka Roy

- Member of CMI AlgoLabs Certification Course on Machine Learning February 2015.

S.P. Suresh

- PC chair of FSTTCS 2014.

- PC member of ICLA 2015.

- PC member of FSTTCS 2015.

- PC chair of ISLA 2016.

Sourish Das

- Published open-source R package named "PortRisk" (version 1.0) with TamalPanja and Rajeshwaran.

- Gave AlgoLab Machine Learning Course.

- AlgoLab Research Project on "Exception Finding in Travel and Expense Report for Auditors" Joint with Cognizant. Developing "Audit Helper"

- Member of the organising committee of National Conference on Distributed Machine Learning 2015.

M. Praveen

- Was part of the scientific committee for organizing the workshop on automata, concurrency and timed systems, held in CMI in February 2015.

B. Srivathsan

- Reviewed 2 papers for FSTTCS 2014, and 2 papers for VMCAI 2015.

- Worked as part of scientific committee for workshop ACTS'2015 to be held in CMI.

- Reviewed for conference TACAS'2015.

- Organized a conference on "Automata, Concurrency, Timed Systems" at CMI and presented a talk in February 2015.

Priyavrat Deshpande

- Karthik Chandrashekhar was selected as a doctoral student in University of Kentucky's discrete mathematics group (headed by Prof Richard Ehrenborg) based on the work he did under supervision.

H.S. Mani

- Revising a book written with Prof.G.K.Mehta on Modern Physics, published more than thirty years ago.

- Looking after the Chennai Chapter of National Academy of Science Allahabad to organize lectures for school children. Have organised several program at CMI and in and around the city.

Arjun Arul

- Teaching Assistant for 'Design and Analysis of Algorithms' in NPTEL, January - February 2015.

Nikhil Balaji

- Reviewer for STACS, 2014.

20 Visitors

- Sergey Arkhipov, University of Aarhus, Denmark. Gave two talks on Introduction to geometric representation theory and a talk on One motivation for categorical representation theory (April 2014).

- T.P.M. Fareed, Ford Motor Credit Company, Chennai. Gave a talk on Survival Analysis Models in Credit Risk followed by a short presentation about analytics in Ford and a Q & A session (April 2014).

- Nicolas Garrel, ENS, France (April 2014).

- Rohini Ramadas, University of Michigan, Ann Arbor, USA. Gave a talk on Moduli Spaces of maps between genus-zero curves, with specified ramification (April 2014).

- Robert Silversmith, University of Michigan, Ann Arbor, U.S.A. Gave a talk on Toward a new way of computing Gromov-Witten invariants (April 2014).

- M.S. Raghunathan, Head NCM, IIT Bombay. Gave three talks on Rationality questions about principal bundles (June and July 2014).

- Sumit Kumar Tetarave, IIT, Patna (June 2014).

- Sathya Peri, IIT, Hyderabad (June 2014).

- Miguel Campiglia, Raman Research Institute, Bangalore (July 2014).

- K. Paramasamy, University of Michigan at Toledo (July - October 2014).

- Yashonidhi Pandey. Gave a series of talk on An Introduction to Algebraic Spaces and Stacks (July 2014).

- Swarnava Mukhopadhyaya, University of Maryland. Gave a talk on Rank-level duality for conformal blocks of type $so(2m+1)$ and Rank-level duality and Conformal Blocks divisors on $\bar{M}_{0,n}$ (July 2014).

- Arnab Saha, Australian National University. Gave a talk on Arithmetic Jet Spaces and Differential Modular Forms (July 2014).

- Tapen Sinha, ITAM, Mexico (July 2014).

- Ramarathman Venkatesan, Microsoft Research. Gave a talk on On Rigorous Analysis of Factoring Algorithms (July 2014).

- Atul Shekhar, Technical University, Berlin. Gave a talk on Introduction to Schramm Loewner evolutions (SLE) (July 2014).

- Snigdhayan Mahanta, University of Muenster Gave a talk on Bivariant homology theories fornoncommutative spaces (July 2014).

- Luis Angel Calvo, ICMAT, Madrid, Spain (August - September 2014).

- Aditya Karnataki, Boston University. Gave a talk on Raising The Level For Automorphic Forms (August 2014).

- Ashwin Deopurkar, Columbia University. Gave a talk on Introduction to Arithmetic Geometry (August 2014).

- R. Parimala, Emory University. Gave a talk on The u-invariant of function fields (August 2014).

- Abhijit Laskar, University of Regensburg, Germany. Gave a talk on On Frobenius conjugacy class of some algebraic varieties over number fields (August 2014).

- Sukumar Das Adhikari, Harish-Chandra Research Institute. Gave a talk on Two applications of van der Waerden's theorem and some related questions (September 2014).

- Shouvik Sur, McMaster U. Gave a talk on Non-perturbative and perturbative non-Fermi Liquids (September 2014).

- Oleg Evnin, Chulalongkorn U. Bangkok. Gave a talk on Renormalization group, secular term resummation and AdS (in)stability (October 2014).

- Rishiraj Bhattacharya, ISI, Kolkata (October 2014).

- Paul Gastin, ENS Cachan (December 2014 - January 2015).

- Shamik Ghosh, Jadavpur University (October-November 2014 & February 2015).

- Sandip Banerjee, ISI, Kolkata (October-November 2014).

- T Esakkiappan. Gave a talk on "Results on metric fixed point theory" (November 2014).

- Benjamin Burton, Computational Geometry & Topology Group, University of Queensland, Australia Gave a talk on Untangling knots using combinatorial optimisation and Exploring parameterised complexity in computational topology (November 2014).

- Debajyoti Nandi. Gave a talk on Combinatorial identities arising from representation theory of affine Lie algebras using vertex-operator-theoretic techniques (November 2014).

- K Paramasamy, University of Toledo, USA. Gave a talk on Cohomology of Schubert varieties and beyond (November 2014).

- Kumar Madhukar, TRDDC Pune and Chennai Mathematical Institute. Gave a talk on Verifying Synchronous Reactive Systems using Lazy Abstraction (November 2014).

- Arne Meier, Leibniz University, Hannover, Germany. Gave a talk on Parameterized Complexity of CTL: A Generalization of Courcelle's Theorem (November 2014).

- Arnab Bhattacharyya, IISc, Bangalore. Gave a talk on Higher-order Fourier analysis and applications (November 2014).

- Rajiv Raman, IIIT, Delhi. Gave a talk on QPTAS for Set Cover in geometric settings (November 2014).

- Glen Van Brummelen, Quest University, Canada, Clemency Montelle, University of Canterbury, New Zealand, Kim Plofker, Union College, Schenectady, NY, USA, Gautami Bhowmik, Lille University, France. Gave a talk on Found in Translation: Rediscovering Classical Indian Mathematics (December 2014).

- Mohamed Faouzi Atig, Uppsala University, Sweden (December 2014).

- Othmane Rezine, Uppsala University, Sweden (December 2014).

- Shyamashree Upadhyay, IIT, Guwahati (December 2014).

- Santosha Kumar Pattanayak, IIT, Kanpur (December 2014).

- Amartya Dutta, ISI, Kolkata (December 2014).

- A Thyagaraja, Culham Centre for Fusion Energy and Bristol University. Gave a talk on "Plasma Transport and Turbulence: some basic principles" (January 2015).

- G Philip, MPI, Saarbrucken. Gave a talk on "Point Line Cover: The Easy Kernel is Essentially Tight" (January 2015).

- Peter Symonds, University of Manchester, UK. Gave a talk on "Group actions on polynomial rings" (January 2015).

- Pramod Padamanabhan, Universidade de Sao Paulo. Gave a talk on "Topological order from Lattice Gauge Models" (January 2015).

- Oscar Garcia-Prada, lnstituto de Ciencias Matematicas (ICMAT), Madrid. Gave a talk on "Antiholomorphic involutions of the moduli space of Higgs bundles" (January 2015).

- A. Bouajjani, University of Paris 7, France (January 2015).

- Raghav Kulkarni, NUS, Singapore (January 2015).

- Jari Stenman, Upsala University, Sweden (January 2015).

- Aiswarya Cyriac, Uppsala University, Sweeden (January 2015).

- Vivekananda Roy, Iowa State University. Gave a talk on "Statistical estimation of integrals with respect to infinite measures" (February 2015).

- Norman Tyler, Beehive collective organization. Gave a talk on "Mesoamerica Resiste" (February 2015).

- Thomas Zeume, TU Dortmund. Gave a talk on "Lower Bounds for Descriptive Dynamic Complexity" (February 2015).

- Saikat Guha, MSR Bangalore. Gave a talk on "Towards Catching Click-Spam on Facebook Ads" (February 2015).

- Sumati Surya, Raman Research Institute, Bangalore. Gave a talk on "The Gibbons-Hawking-York Boundary Term in a Causal Set" (February 2015).

- Subodh Sharma, Oxford in Kroening's Group, U.K. (February 2015).

- Alladi Sitaram, Professor (Retd.), Indian Statistical Institute, Bangalore: (February 2015).

- Xavier Viennot, LaBRI, University of Bordeaux. Gave a talk on "Tamari lattice and its extensions" (March 2015).

- Naresh Dadhich, IUCAA, Pune and Jamia Millia Islamia, Delhi. Gave a talk on "On Pure Lovelock gravity" (March 2015).

- E.K. Narayanan, Indian Institute of Science, Bangalore. Gave a talk on "A test for harmonicity" (March 2015).

- M. Jagadish, IIT, Mumbai (March 2015).

- Sandip Das, ISI, Kolkata (March 2015).