Chennai Mathematical Institute

Annual Report

April 2017–March 2018

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1 Preface

Chennai Mathematical Institute (CMI) is a deemed university with a difference. CMI faculty are actively engaged in research and are comparable to those at the leading institutions in the country. CMI has been running high quality undergraduate and postgraduate programmes for 20 years in which the research faculty are actively involved in teaching.

The BSc and MSc programmes in Mathematics and Computer Science at CMI have always had a strong research focus. An overwhelming majority of CMI students go on to complete PhDs at the best institutions across the world, including Caltech, Harvard, MIT and Princeton in USA, ENS Paris in France, the Max Planck Institutes and Humboldt University in Germany as well as the IITs, IMSc, ISI and TIFR in India, not to mention CMI itself.

CMI has made significant contributions to India's scientific manpower. CMI graduates are now faculty members at institutions such as IITs, IISERs, IMSc, TIFR and CMI, as well as researchers in organizations such as Microsoft Research India. In addition, CMI students have begun to take up careers in sectors such as finance, insurance and data analytics that require a strong background in mathematics, statistics and computing.

CMI has seen a significant growth in its activities since 2010. The faculty size has almost doubled while the student body has multiplied three fold. This growth has been organic, with no compromise in quality. The Institute expects to expand at a similar rate and in a sustainable manner over the next five years. This growth will allow CMI to cater to a wider range of subjects in the mathematical sciences, both in terms of research and teaching. There will also be a conscious effort to increase the level of engagement with the industry by taking on meaningful collaborative R&D projects.

Rajeeva L Karandikar
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    Professor, Chennai Mathematical Institute, Chennai
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    Professor, Chennai Mathematical Institute, Chennai
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    Professor, Indian Institute of Technology Bombay, Mumbai

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1. K.V. Subrahmanyam (CMI), Chair
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1. Pramathanath Sastry (CMI), Chair
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	K. Narayan Kumar
	Pramathanath Sastry
	S. Senthamarai Kannan
	Shiva Shankar
	V.V. Sreedhar
	K.V. Subrahmanyam
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	Clare D'Cruz
	Krishna Hanumanthu
	Govind S. Krishnaswami
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Adjunct Professors

Manindra Agrawal
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Ranbir Chakrabarti (until June 2017)
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S. Kesavan
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V. Lakshmibai
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H. S. Mani
Neeraj Kayal
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T. Parthasarathy

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Sundareswaran Ramasubramanian
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V. Swaminathan
A. Thyagaraja
V. Vinay

Research Scholars

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Athira P V
Sarjick Bakshi
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Suryajith Chillara (until September 2017)
Debayudh Das
Sourav Das
Rajit Datta
Navnath Daundkar
Abhishek Dodda
Abhijeet Ghanwat
Debodirna Ghosh
Govind R
Varunkumar Jayapaul (until September 2017)
K Sandesh Kamath
Abdullah Khadir
Mitra Koley (until September 2017)
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Kedar Kolekar
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Kumar Madhukar
A Manu
Malay Mandal
Anish Mukherjee
Debangshu Mukherjee
Sayan Mukherjee
Subramani Muthukrishnan (until June 2017)
Muthuvelmurugan I

S P Murugan Paramasivam
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7 Faculty Profiles

Rajeeva L. Karandikar

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

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

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

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

Madhavan Mukund

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

He is Director of the Indo-French Research Lab in Computer Science ReLaX, an International Joint Unit (UMI) under CNRS, the French National Centre for Scientific Research. He has served as President of the Indian Association for Research in Computing Science (IARCS), as well as the ACM India Council. He is a Fellow of the Indian Academy of Sciences.

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

C.S. Seshadri

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

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

He has been a Visiting Professor at the University of Paris, France; Harvard University,

Cambridge, U.S.A.; Institute for Advanced Study, Princeton, U.S.A.; University of California at Los Angeles, Los Angeles, U.S.A.; Brandeis University, U.S.A.; University of Bonn, Bonn, Germany; Kyoto University, Kyoto, Japan.

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

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

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

His research interests are: Algebraic Geometry and Algebraic Groups.

T.R. Ramadas

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

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

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

His research interests are: Differential and Algebraic Geometry.

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.

V. Balaji

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

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

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

His research interest is Algebraic Geometry.

Samir Datta

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

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

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

K. Narayan

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

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

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

K. Narayan Kumar

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

His research interests include Logic, Automata theory and Concurrency.

Pramathanath Sastry

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

He has been a Teaching Assistant, a Research Assistant at Purdue University, U.S.A. (1984-1990), a Visiting Assistant Professor at University of Missouri, U.S.A. (1990-1991), a Visiting Fellow at the Tata Institute of Fundamental Research, Mumbai (1991-1992), a Fellow at SPIC Science Foundation (1992-1995), a Reader at SPIC Science Foundation (1995-1996), a Reader at Harish-Chandra Research Institute, Allahabad (1996-1999), a Reader F at Harish-Chandra Research Institute, Allahabad (1999-2001), a Visiting Assistant Professor at Purdue University, U.S.A. (1999-2001), an Asst. Assoc. Professor (Term) at the University of Toronto, Canada (2001-2006), CLA at McMaster University, Canada (2006) and an Assistant Professor at East Carolina University, U.S.A. (2007-2009).

His research interest is Algebraic Geometry.

S. Senthamarai Kannan

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

His research interests are Representation Theory and Algebraic Geometry.

Shiva Shankar

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

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

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

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

V.V. Sreedhar

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

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

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

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

K.V. Subrahmanyam

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

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

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.

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.

Govind S. Krishnaswami

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

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

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

Upendra Kulkarni

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

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

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

Manoj Kummini

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

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

His research interest is commutative algebra.

Alok Laddha

Alok Laddha received his B.Sc. in Physics from University of Mumbai (1998), M.Sc. in Physics from Indian Institute of Technology (2000) and Ph.D. in Theoretical Physics from Institute of Mathematical Sciences (2008).

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

His research interest is: Loop Quantum Gravity.

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.

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.

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.

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. 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.

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.

Amitabh Virmani

Amitabh Virmani received his M.Sc. degree in Physics from Indian Institute of Technology, Kanpur (2003) and Ph.D. in Physics from University of California, USA (2008).

He has been a Postdoctoral Researcher at Université Libre de Bruxelles and International Solvay Institutes, Belgium (2008-2011), Junior Scientist at Max-Planck-Institut Für Gravitationsphysik, Germany (2011-12), Assistant Professor at Institute of Physics, Bhubaneshwar (2012-2014) and Reader-F at Institute of Physics, Bhubaneshwar (2014-2017).

His research interests are general relativity and gravitational aspects of string theory & classical and quantum aspects of black holes.

Aiswarya Cyriac

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

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

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

Sourish Das

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

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

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

Priyavrat Deshpande

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

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

His research interest are: Topology, Combinatorics and Algebra.

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.

M. Praveen

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

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

His research interests are: Computational complexity of modelling and verifying concurrent infinite state systems, logic and parameterized complexity.

Geevarghese Philip

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

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

His research interest is: Parametrized Algorithms and Complexity.

Vijay Ravikumar

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

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

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

B. Srivathsan

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

Science from LaBRI, Université Bordeaux 1 (2012).

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

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

8 Acheivements

- CNRS LIA Informel upgraded to joint international unit (UMI) RELAX with CMI and IMSc as Indian partners from 2017.
- K.G. Arun awarded N.R. Sen Young Researcher Award for 2017 by Indian Association for General Relativity and Gravitation.
- CMI team (Sreejata Bhattacharyya, Rajat De, Anish Sevekari) qualifies for ACM ICPC World Finals, May 2017.
- CMI contributes to third LIGO gravitational wave detection, June 2017.
- Madhavan Mukund elected Fellow of Indian Academy of Sciences in 2018.

9 Research Activities

Mathematics

Research activities in mathematics are in the areas of number theory, commutative algebra, algebraic geometry, algebraic groups and representation theory, combinatorics, topology, functional analysis, operator algebras, probability and statistics and applications.

In number theory, members have been studying the relation between attaching L-values to cyclotomic fields to existence of Fermat and Sophie Germain primes, the representations of the p-adic groups and their applications to automorphic forms, multiple zeta values and multiple Apery-like sums, the extension of a question of Baker to arbitrary algebraic fields over rational numbers and the extension of a conjecture of Milnor to number fields.

Research in commutative algebra was centred on the following topics: the Eisenbud-Green-Harris conjecture, homological properties of local complete intersection rings, understanding Koszul homology modules, singularities of co-normal varieties, the Rees polynomial and the growth of multiplicity functions, blowup rings of curves, symbolic powers, Castelnuovo-Mumford regularity, the Betti numbers of a compressed Gorenstein algebras, and group actions on polynomial rings.

In algebraic geometry, members studied regularity and Waldschmidt constant for curves, Seshadri constants and positivity of linear systems on complex varieties, local positivity of line bundles on complex varieties, Nagata and SHGH Conjectures, bounded negativity problem for algebraic surfaces, Torelli-type theorem over irreducible nodal curves, defining the notion of the Brauer group for a map of schemes and giving its cohomological interpretation, modular description of the Laza-Sacca-Voisin hyper-Kahler manifold, Torelli theorem for the moduli space of vector bundles on a curve by derived category methods, and stability of parabolic Poincare bundle.

Activities in the area of algebraic groups and representation theory involved computing stable rank for free quantum groups, automorphism group and rigidity of Bott-Samelson-Demazure-Hansen varieties, Pieri rules for Grassmannians in K-theory and cohomology, giving bases for local Weyl modules of the current algebra in type C, Schubert variety in a Grassmanian having semistable points for the natural torus action, explicit basis of $\mathrm{GL}(n, q)$-irreducible representations on Grassmanians over the finite field with q elements, and Halpern-Leistner's theory of semi-orthogonal decompositions via variation of GIT.

In geometry and topology, members worked on immersion and embedding problems in contact and symplectic category, generalization of Goresky-MacPherson formula using simplicial resolutions, analogues of Benedicks Theorem for H-type groups reflection groups affine arrangements and related combinatorics, trying to prove that geometric realization of product of face poset of an essential and central arrangement is homotopy equivalent to Salvetti's complex, moduli space of polygons, the first order theory of braid groups and mapping class group, the elementary theory of knot groups and the pseudo-Anosov maps arising from

Thurston's construction.

In functional analysis and operator algebras, research was conducted on E_0-semigroups related to quantum Azema martingales, extending E_0-semigroups to more general semigroups, topologies on spaces of von-Neumann algebras, characterization of Gaussian states on infinite modes and multi-parameter E_0-semgroups.

In probability and statistics, members studied the fundamental theorems of asset pricing and related questions such as stochastic integral representation of martingales, asymptotic distribution for Blind Source separation model, Berry-Esseen bound for distribution of estimators from modeled by FBM and weak convergence of empirical probability generating function of a stationary Markov chain.

Work on applications included developing a dynamical systems perspective of cell wall assembly in various cells like bacteria, yeast etc, classification of multi parameter CCR flows focusing on a new notion of consistency in such systems, document clustering using topological data analysis, applications of persistent homology for document analysis, forecasting of the Arctic sea ice melting and risk and return using Dirichlet process prior.

Computer Science

In Computer Science, research was carried out on the complexity of k-disjoint paths in planar graphs, dynamic complexity of approximation, parallel algorithms for maximum matching in planar graphs, dynamic complexity of reachability/distance under multiple updates, and computing permanents/Hamiltonian permanents of low rank matrices parametrized complexity of Grundy colouring, parametrized complexity of minimum fill-in with tree-width as the parameter, below-guarantee parameterization of vertex cover, turbo-charging the greedy algorithms for (i) chromatic number of graphs, (ii) shortest common superstring, finding sub-quadratic vertex kernels for the subset FVS problem in split graphs and chordal graphs, faster FPT algorithm for the edge Hamiltonian path problem in graphs, parameterized turbo-charging of the greedy algorithm for minimum fill-in, on lower bounds for (min,+) circuits, understanding the approximate complexity in the setting of fine-grained arithmetic circuit complexity, multi-linear formula size lower bounds for iterated matrix multiplication polynomial, parameterized algorithms for minimum fill-in parameterized by vertex cover number, on many-to-one matchings with preferences and lower quota, on first order logic (and sometimes those extended with modulo counting quantifiers) over various vocabularies, algebraic characterization for MSO[successor] over countable linear orderings, separation results for logics over partial orders, information leakage in systems and verification strategies, enhancing the popular applied π framework for modeling security protocols with communicated assertions, quantifying information flow in protocols for "Russian Card" type of problems, on solving the derivability and active intruder problem for Dolev-Yao enhanced with existentially quantified assertions, robustness of asynchronous programs with respect to weak memory models, formal models for speculation and other complex behaviour in replicated datatypes, on replicated data structures focusing on a new notion of consistency in such

systems, multi-pushdown systems with data, verifying concurrent systems with locks, grammar controlled counter systems, studying temporal logic of repeating values, the synthesis problem for extensions of LTL with data from an infinite domain, strategy synthesis for parity games, finite duration imperfect information games, distributed games with causal memory strategies. verification of session systems, formal semantics for tabular notation for timing constraints, abstractions for timed automata with diagonal constraints, revisiting partial order reduction for timed systems, models of Bridge, the use of the bi-spectrum of images for classification purpose, photogrammetry and its applications in drone imagery, inter-procedural bounded model checking, extending precise loop acceleration to handle overflows, loop invariant generation for array manipulating programs, on extending the proteus tool to accelerate loops in the presence of overflow, quantitative analysis of recursive programs, asynchronous programs with locks, language separability results for infinite state systems and on decision problems for automata augmented with a queue data structure.

Physics

In Physics, research was carried out on the conservative regularisation of two-fluid plasmas and shocks, stability of the classical three-body problem, integrability of a 1+1 dimensional nilpotent sigma model and its mechanical reduction, studying ghost-spin chains with nearest neighbour interactions and entanglement, on shear diffusion in hyperscaling violating Lifshitz theories, on two independent methods to test the binary black hole nature of compact binary mergers using spin-induced quadrupole moment, tidal deformability, on developing new methods to test the binary black hole nature of compact binaries and tests of non-GR modes of gravitational wave polarisations, developing an analysis scheme to jointly analyse gravitational waves from binary neutron stars and associated gamma ray burst to infer the nature of the gamma ray burst jet, a test of GR sub-group towards implementing a scheme to test the binary black hole nature of compact binaries (towards the LIGO scientific collaboration), topological quantum computation, problems related to quantum black holes, gravitational waves in de Sitter space-time, on phase space dynamics and integrability of a model introduced by Rajeev and Ranken that arises as a mechanical reduction of a 1+1 dimensional scalar field theory, on a simpler analogue of the gravitational three body problem, on dilation-gravity-matter theories obtained by dimensional reduction of higher dimensional hyperscaling violating Lifshitz theories, obtained a Lax pair for the Rajeev-Ranken model and studied the functional independence of conserved quantities, on chaos in the three rotor problem, on the relationship between classical Gravitational waves and soft theorems in Quantum Gravity, contributions to the analysis and interpretation of the binary neutron star merger discovery by LIGO scientific collaboration and Virgo Collaboration, contributions to the interpretation of the short Gamma Ray Burst jet associated with the binary neutron star merger, study of the propagation of energy flux on de Sitter space-time, understanding of a class of multi-center black holes from a two-dimensional duality group perspective, on the asymptotic symmetries of Yang Mills theory, on perturbations of a regularised vortex sheet, on periodic solutions and their stability in the classical three rotor problem, trying to find

entropy of a system of free identical particles in one dimension, on Gravitational Aspects of string theory, to develop a parametrised multi-polar post-Newtonian phasing and devising a new test of multi-polar structure of compact binaries in General Relativity, developing an analytical model of the post-merger dynamics of compact binaries, implementing the tests of binary black hole nature using spin-induced multipole moment measurements in LALInference, a parameter algorithm used for analysing LIGO data and on extremal surfaces in de Sitter space.

10 Publications

Journal Articles

Mathematics

J1 S.S. Kannan, K. Paramasamy, S.K. Pattanayak and Shyamashree Upadhyay: *Torus quotients of Richardson varieties*.

J2 Sourish Das and Rajiv Sambasivan: *A statistical machine learning approach to yield curve forecasting*, IEEE Proceedings for ICCIDS 2017, DOI: 10.1109/ICCIDS.2017.8272667.

J3 Issan Patri and Kunal Mukherjee: *Automorphisms of Compact Quantum Groups*, to appear in Proceedings of London Mathematical Society (PLMS).

J4 Krishna Hanumanthu: *Seshadri constants on surfaces with Picard number 1*, Manuscripta Math. 153 (2017), no. 3-4, 535-543.

J5 Sazzad Ali Biswas: *One, Title- Invariant formula of the determinant of a Heisenberg representation*, to appear in International Journal of Mathematics.

J6 Priyavrat Deshpande and C. Karthik: *Face enumeration for line arrangements in a 2-torus*, Indian J. Pure Appl. Math., 48(3): September 2017.

J7 Parangama Sarkar: *Multigraded regularity, reduction vectors and postulation vectors*, to appear in J. Algebra.

J8 Krishna Hanumanthu: *Positivity of line bundles on special blow ups of* P^2, J. Pure Appl. Algebra 221 (2017), no. 9, 2372-2382.

J9 S. Sundar and S.P. Murugan: *An essential representation for a product system over a finitely generated subsemigroup of* Z^d, to appear in Proceedings of Indian academy of Sciences.

J10 Manoj Kummini, Caviglia, Ha, Herzog, Terai and Trung: *Depth and regularity modulo a principal ideal*, to appear in Journal of Algebraic Combinatorics.

J11 Thriyambakam Krishnan: *Chapters for Sridhar Seshadri and Bhimasankaram Pochiraju (Editors): "Essentials of Business Analytics: An Introduction to the Methodology and its Applications"* to be published in Springer International Series in Operations Research & Management Science in 2018.

J12 Thriyambakam Krishnan: *Chapters on: "Advanced Statistical Methods: Count Data" "Advanced Statistical Methods: Survival Analysis"*.

J13 Clare D'Cruz: *Symbolic Blowup algebras of monomial curves in A^3 defined by arithmetic sequence*, to appear in Math. Student.

J14 Issan Patri and T. Banica: *Maximal torus theory for compact quantum groups*, to appear in Illinois Journal of Mathematics.

J15 Krishna Hanumanthu and Alapan Mukhopadhyay: *Multi-point Seshadri constants on ruled surfaces*, Proceedings of American Mathematical Society 145 (2017), 5145-5155.

J16 Krishna Hanumanthu and Brian Harbourne: *Single point Seshadri constants on rational surfaces*, to appear in Journal of Algebra.

J17 Sazzad. A. Biswas: *Computation of the Lambda function for a finite Galois extension*, Journal of Number Theory (2018), `https://doi.org/10.1016/j.jnt.2017.09.025.`

J18 Sukhendu Mehrotra and Eyal Markman: *Rigid hyperholomorphic sheaves remain rigid along twistor deformations of the underlying hyparkahler manifold*, to appear in European J. of Math.

J19 Rajeeva L. Karandikar: *Remarks on the Stochastic Integral*, Indian J. Pure Appl. Math., 48(4): 469-493, December 2017.

J20 Sourish Das and Rajiv Sambasivan: *Big Data Regression Using Tree Based Segmentation*, to appear in IEEE Proc. INDICON-2017.

J21 Clare D'Cruz and A Guerrieri: *Homology, mixed multiplicities and Hilbert coefficients of the finer cone*, to appear in Journal of Algebra and its Applications.

J22 S. K. Masuti and L. Tozzo: *The structure of the inverse system of level K-algebras*, Collectanea Mathematica (2018), 1-27 (https://doi.org/10.1007/s13348-018-0212-3).

J23 P. Chakraborty and S. K. Masuti: *Rational homotopy of maps between certain complex Grassmann manifolds*, Math. Slovaca 68 (2018), 181-196.

J24 S. K. Masuti and M. E. Rossi: *Artinian level algebras of socle degree 4*, to appear in Journal of Algebra.

J25 Sourish Das, Purba Das and Ananya Lahiri: *Understanding Sea Ice Melting via Functional Data Analysis*, to appear in Current Science.

J26 Krishna Hanumanthu and Praveen Kumar Roy: *Seshadri constants on hyperelliptic surfaces*, to appear in Proceedings of American Mathematical Society.

Computer Science

J27 Ankit Shukla, Arnab Bhattacharya, Lakshmanan Kuppusamy, Mandayam Srivas and Mukund Thattai: *Discovering vesicle traffic network constraints by model checking*, PLOS ONE (Biology) http://journals.plos.org/plosone/

J28 Samir Datta, Anish Mukherjee, Thomas Schwentick, Nils Vortmeier and Thomas Zeume: *A Strategy for Dynamic Programs: Start over and Muddle Through*, to appear in Journal LMCS.

J29 Gabor Ivanyos, Youming Qiao, K. V. Subrahmanyam: *Constructive non-commutative rank is in deterministic polynomial time*, to appear in Journal of Computational Complexity.

J30 Prachi Goyal, Pranabendu Misra, Fahad Panolan, Geevarghese Philip, Saket Saurabh: *Finding Even Subgraphs Even Faster*, to appear in Journal of Computer and System Sciences.

J31 C. Aiswarya, Benedikt Bollig and Paul Gastin: *An automata-theoretic approach to the verification of distributed algorithms*, Information and Computation, Volume 259, Part 3, 2018, Pages 305-327, ISSN 0890-5401, https://doi.org/10.1016/j.ic.2017.05.006.

Physics

J32 K.G. Arun: *GW170104: Observation of a 50-Solar-Mass Binary Black Hole Coalescence at Redshift 0.2*, LIGO Scientific Collaboration & Virgo Collaboration [Significant contribution to the analysis, interpretation and writing of the section on constraints on gravitational wave dispersion], Phys. Rev. Lett., 118(22):221101, 2017.

J33 Kedar Kolekar, Debangshu Mukherjee and K. Narayan: *Notes on hyperscaling violating Lifshitz and shear diffusion*, arXiv:1612.05950 [hep-th], to appear in Phys. Rev. D (2017).

J34 N.V. Krishnendu, K. G. Arun and C.K. Mishra: *Testing the Binary Black Hole Nature of a Compact Binary Coalescence*, Physical Review Letters, 119, 091101 (2017).

J35 A. Samajdar and K. G. Arun: *Projected constraints on the dispersion of gravitational waves using advanced ground- and space-based interferometers*, Phys. Rev. D 96, 104027 (2017).

J36 A. Gupta, K. G. Arun and B. S. Sathyaprakash: *Implications of Binary Black Hole Detections on the Merger Rates of Double Neutron Stars and Neutron Star-Black Holes*, Astrophys.J. 849 (2017), L14.

J37 K.G. Arun: *GW170817: Observation of Gravitational Waves from a Binary Neutron Star Inspiral*, Phys. Rev. Lett. 119 161101 (2017) [With LIGO scientific collaboration and Virgo collaboration].

J38 K.G. Arun: *Gravitational Waves and Gamma-rays from a Binary Neutron Star Merger: GW170817 and GRB 170817A*, The Astrophysical Journal Letters, 848:L13 (27pp), 2017 (LIGO Scientific Collaboration, Virgo Collaboration, Fermi Gamma-Ray Burst Monitor, INTEGRAL groups).

J39 M. Saleem, L. Resmi, Kuntal Misra, Archana Pai and K. G. Arun: *Exploring Short-GRB afterglow parameter space for observations in coincidence with gravitational waves*, Monthly Notices of the Royal Astronomical Society, 474(4), 5340-5350 (2018).

J40 M. Saleem, Archana Pai, Kuntal Misra, L. Resmi and K.G. Arun: *Rates of Short-GRB afterglows in association with Binary Neutron Star mergers*, Monthly Notices of the Royal Astronomical Society 475(1), 699-707, (2018).

J41 Kedar Kolekar, Debangshu Mukherjee and K. Narayan: *Notes on hyperscaling violating Lifshitz and shear diffusion*, arXiv:1612.05950 [hep-th], Phys.Rev. D96 (2017) no.2, 026003.

J42 Dileep Jatkar and K. Narayan: *Entangled spins and ghost-spins*, arXiv:1608.08351 [hep-th], Nucl.Phys. B922 (2017) 319-345.

J43 Himalaya Senapati: *An article on medians of spherical/hyperbolic triangles to appear as a chapter in a book compiled by Athanase Papadopoulos on non-Euclidean geometry.*

J44 K.P.N Murthy: *Lecture Notes on Thermal Physics for Undergraduate Students (2017).*

J45 A.Laddha and Ashoke Sen: *Sub-subleading soft theorems in generic theories of Quantum Gravity*, JHEP, October-2017.

J46 Dileep P. Jatkar and K. Narayan: *Ghost-spin chains, entanglement and bc-ghost CFTs*, arXiv:1706.06828 [hep-th], Phys. Rev. D 96, 106015 (2017).

J47 Debangshu Mukherjee and K. Narayan: *Hyperscaling violation, quasinormal modes and shear diffusion*, arXiv:1707.07490 [hep-th], JHEP 1712, 023 (2017).

J48 R. Parthasarathy and J.Pasupathy: *Review article on Classical to Quantum Evolution in Mod- ern Atomism Book.*

J49 Govind S Krishnaswami, Sonakshi Sachdev and A. Thyagaraja: *Conservative regularization of compressible dissipationless two-fluid plasmas*, Physics of Plasmas 25, 022306 (2018); arXiv:1711.05236v2.

J50 S. J. Hoque and A. Virmani: *On Propagation of Energy Flux in de Sitter Spacetime*, arXiv:1801.05640 [gr-qc], General Relativity Gravitation (2018) 50:40 https://doi.org/10.1007/s10714-018-2359-3

J51 K. Narayan: *On extremal surfaces and de Sitter entropy*, Phys. Lett. B779, 214 (2018), arXiv:1711.01107 [hep-th].

Conference Papers

Mathematics

C1 M. Sundari: *An analogue of Benedicks theorem for H-type groups*, to appear in conference proceedings of 'the international conference on Mathematics and applications held at Ramjas College, New Delhi in April 2017.

C2 Sayak Chakrabarty and Arghya Datta: *The Repeated Divisor Function and Possible Correlation with Highly Composite Numbers*, to appear in "20th International Workshop for Young Mathematicians "Number Theory" proceedings of the conference in 2018.

Computer Science

C3 Prajakta Nimbhorkar, Arvind Rameshwar V: *Dynamic rank-maximal matchings*, to appear in COCOON 2017.

C4 Meena Mahajan, Prajakta Nimbhorkar and Anuj Tawari: *Computing max using (min,+) formulas*, to appear in MFCS 2017.

C5 Varunkumar Jayapaul: *The complexity of finding (approximate sized) distance d dominating sets* in tournaments (FAW 2017).

C6 R Ramanujam, Vaishnavi Sundararajan and S P Suresh: *Existential Assertions for Voting*, to appear in post-proceedings of Voting 2017.

C7 Abdullah Abdul Khadir, Madhavan Mukund and S P Suresh: *Knowledge transfer and information leakage in protocols*, to appear in Proceedings of ATVA 2017, Springer LNCS (2017).

C8 Sumanth Prabhu, Peter Schrammel, M.K. Srivas, Michael Tautschnig and Anand Yoelekar: *Concurrent Program Verification With Invariant-guided Underapproximation*, Automated Technology for Verification and Analysis (ATVA 2017), Pune, India, October 3-6, 2017.

C9 Kumar Madhukar, Peter Schrammel and M.K. Srivas: *Compositional Safety Refutation Techniques*, Automated Technology for Verification and Analysis (ATVA 2017), Pune, India, October 3-6, 2017.

C10 Samir Datta, Anish Mukherjee, Thomas Schwentick, Nils Vortmeier and Thomas Zeume: *A Strategy for Dynamic Programs: Start over and Muddle through*, (ICALP 17).

C11 V. Arvind, Rajit Datta, Partha Mukhopadhyay and S. Raja: *Efficient Identity Testing and Polynomial Factorization over Non-associative Free Rings*, to appear in 42nd International Symposium on Mathematical Foundations of Computer Science (MFCS'17).

C12 Parosh Aziz Abdulla, C. Aiswarya and Mohamed Faouzi Atig: *Data Multi-Pushdown Automata*, In Proceedings of CONCUR 2017, LIPIcs, Schloss Dagstuhl.

C13 Abdullah Abdul Khadir, Madhavan Mukund and S P Suresh: *Knowledge transfer and information leakage in protocols*, to be presented at ATVA 2017, October 2017. Pune.

C14 Varunkumar Jayapaul: *Finding modes with equality comparisons.*

C15 Samir Datta, Anish Mukherjee, Thomas Schwentick, Nils Vortmeier and Thomas Zeume: *A Strategy for Dynamic Programs: Start over and Muddle Through*, ICALP 2017

C16 Prajakta Nimbhorkar and V. Arvind Rameshwar: *Dynamic Rank-Maximal Matchings*, COCOON 2017

C17 Prajakta Nimbhorkar, Meena Mahajan and Anuj Tawari *Computing the maximum using (min,+) formulas*, MFCS 2017

C18 Prajakta Nimbhorkar and Meghana Nasre: *Popular Matchings with Lower Quotas*, FSTTCS 2017

C19 M F Atig, A Bouajjani, K Narayan Kumar and P Saivasan: *Asynchronous Programs with Locks*, to appear in FSTTCS 2017.

C20 Prajakta Nimbhorkar: *Popular matchings with lower quotas*, FSTTCS 2017.

C21 M.F. Atig, A. Bouajjani, K. Narayan Kumar and P. Saivasan: *Verification of Asynchronous Programs with Nesting Locks*, in the Proceedings of the 37th International Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 17), LiPICs, Schloss-Dagstuhl, 2017.

C22 D. D'Souza and K. Narayan Kumar (Eds): *Proceedings of the 15th conference on Automated Technology for Verification and Analysis*, Springer LNCS 10482.

C23 Abdullah Abdul Khadir, Madhavan Mukund and S.P. Suresh: *Knowledge transfer and information leakage in protocols*, Proceedings of ATVA 2017, Springer LNCS 10482 (2017), 225-240.

C24 Viktor Malik, Stefan Marticek, Peter Schrammel, Mandayam Srivas, Tomas Vojnar and Johanan Wahlang: *2LS: Memory Safety and Non-Termination (Competition contribution)*, SV-COMP'18 Competition Paper in TACAS 2018.

C25 Ahmed Bouajjani, Constantin Enea, Madhavan Mukund, and Rajarshi Roy: *On Verifying TSO Robustness for Event-Driven Asynchronous Programs*, to appear in the proceedings of the 6th International Conference on Networked Systems (NETYS 2018), Springer Lecture Notes in Computer Science.

C26 Pranjal Dutta, Nitin Saxena and Amit Sinhababu: *Discovering the roots: Uniform closure results for algebraic classes under factoring*, to appear in STOC'2018 (50th Annual ACM Symposium on the Theory of Computing June 25-29, 2018 in Los Angeles, CA).

C27 Denis Kuperberg and Anirban Majumdar: *Width of Non-Deterministic Automata*, to appear in STACS 2018.

C28 A.R.Balasubramanian, Nathalie Bertrand and Nicolas Markey: *Parameterized verification of synchronization in constrained reconfigurable broadcast networks*, to appear in TACAS 2018.

Physics

C29 K.P.N. Murthy: *Metropolis and Wang-Landau Algorithms*, in BRNS School on "Computational Methodologies across Length Scales", BARC, Mumbai, August 28 - September 9, 2017.

C30 Avik Banerjee, Arnab Kundu, Pratik Roy and Amitabh Virmani: *Oscillating Shells and Oscillating Balls in AdS*, arXiv:1704.07570 [hep-th]. 10.1007/JHEP07(2017)026. JHEP 1707 (2017) 026.

Preprints

Mathematics

P1 S.S. Kannan and J.F. Thomsen: GIT quotient of a Bott-Samelson-Demazure-Hansen variety by a maximal torus.

P2 Sourish Das and Rituparna Sen: Bayesian Portfolio Selection.

P3 Sourish Das, Anirban Chakrabarti and Kiran Sharma: Information Flow Networks of Stock Market Indices Across Continents.

P4 Sourish Das and Rahul Sharma: On Copula Prior.

P5 Dipankar Ghosh and Tony J. Puthenpurakal: Vanishing of (co)homology over deformations of Cohen-Macaulay local rings of minimal multiplicity.

P6 Parangama Sarkar: Degrees of Rees polynomial and multiplicity function.

P7 Issan Patri and Teodor Banica: Maximal Torus theory for Compact Quantum Groups.

P8 Krishna Hanumanthu and Brian Harbourne: Single point Seshadri constants on rational surfaces.

P9 Priyavrat Deshpande and Nachiketa Adhikari: Arrangement induced stratification of moduli space of planar polygons.

P10 Priyavrat Deshpande and Kavita Sutar: Face counting formulas for toric arrangements defined by root systems.

P11 Ananya Lahiri: Asymptotic properties of the volatility estimator from high frequency data modelled by mixed fractional Brownian motion.

P12 Shiva Shankar and P.Rocha: The Efficiency of Controller.

P13 Arpan Kabiraj, T.V.H. Prathamesh and Rishi Vyas: Elementary equivalence in Artin groups of finite type and mapping class groups of closed surfaces.

P14 Parangama Sarkar: Degrees of Rees polynomial and multiplicity function.

P15 Kuldeep Saha: On Higher dimensional Contact Embedding and immersion.

P16 Dishant Pancholi, Suhas Pandit and Kuldeep Saha: Open book embeddings of contact manifold

P17 Kuldeep Saha: On contact embedding in Euclidean space with standard contact structure.

P18 Krishna Hanumanthu and Praveen Kumar Roy: Seshadri constants on hyperelliptic surfaces.

P19 Dipankar Ghosh, Tony J. Puthenpurakal and Provanjan Mallick: Asymptotic associate primes.

P20 S. Senthamarai Kannan and Pinakinath Saha: Parabolic subgroups and automorphism groups of Schubert varieties.

P21 S. Sundar and S.P. Murugan: On the existence of E_0^P-semigroups.

P22 Manoj Kummini and Mitra Koley: F-rationality of Rees algebras.

P23 Krishanu Dan, Suratno Basu and Indranil Biswas: Stability of Parabolic Poincaré Bundle.

P24 S. Senthamarai Kannan and Pinakinath Saha: Parabolic subgroups and Automorphism groups of Schubert Varieties.

P25 S. Senthamarai Kannan and Pinakinath Saha: Rigidty of Bott-Samelson-Demazure-Hansen Variety for $PSO(2n+1), C$.

P26 Kuldeep Saha: On Higher dimensional Contact Embedding and immersion.

P27 Dishant Pancholi, Suhas Pandit and Kuldeep Saha: Open book embeddings of contact manifold.

P28 M. Sundari and Suparna Sen: An analogue of Benedicks theorem on two step nilpotent Lie groups

P29 Sourish Das and Rajiv Sambasivan: Big Data Classification Using Augmented Decision Trees (https://arxiv.org/abs/1710.09567).

P30 Sourish Das and Rajiv Sambasivan: Clustering Mixed Datasets Using Homogeneity Analysis with Applications to Big Data.

P31 Sourish Das and Rahul Sharma: Regularization and Variable Selection with Copula Prior (https://arxiv.org/abs/1709.05514).

P32 Sourish Das: Characterization of catastrophic instabilities: Market crashes as paradigm (https://arxiv.org/abs/1801.07213).

P33 V. Swaminathan: Inference for stationary sequence of discrete random variables using empirical probability generating function.

P34 Priyavrat Deshpande: Goresky-MacPherson type formula for toric arrangements.

P35 Mandira Mondal and V. Trivedi: Density function for the second coefficients of the Hilbert-Kunz function, https://arxiv.org/abs/1801.06977

P36 Akhilesh P.: Multiple zeta values and multiple Apery-like sums.

P37 Dipankar Ghosh and Tony J. Puthenpurakal: Asymptotic bound for Castelnuovo-Mumford regularity of certain Exts over complete intersections.

P38 Krishna Hanumanthu, Indranil Biswas, D. S. Nagaraj and Peter Newstead: Seshadri constants and Grassmann bundles over curves.

Computer Science

P39 Prajakta Nimbhorkar: Popular matchings with lower quotas.

P40 R Ramanujam, Vaishnavi Sundararajan and S P Suresh: Assertions in applied pi calculus.

P41 Samir Datta, Anish Mukherjee, Thomas Schwentick, Nils Vortmeier and Thomas Zeume: A Strategy for Dynamic Programs: Start over and Muddle through.

P42 M. Praveen and Mohamed Faouzi Atig: Boundedness and Termination for Vector Addition Systems with Hierarchical Zero Tests and Priority.

P43 Suryajith Chillara, Nutan Limaye and Srikanth Srinivasan: Small-depth Multilinear formula lower bounds for Iterated Matrix Multiplication.

P44 Aiswarya Cyriac, Parosh Aziz Abdulla, Mohamed Fawuzi Atig, Marco Montali and Othmane Rezine: Decidable Schemas for Database Driven Dynamic Systems.

P45 Aiswarya Cyriac, Parosh Aziz Abdulla, Mohamed Fawuzi Atig, Marco Montali and Othmane Rezine: Complexity of Reachability for Data-aware Dynamic Systems

P46 R Ramanujam, Vaishnavi Sundararajan and S P Suresh: Assertions in applied pi calculus.

P47 Varunkumar Jayapaul: Improved bounds for poset sorting in the forbidden-comparison regime.

P48 B. Srivathsan, F. Herbreteau, T.T. Tran and I. Walukiewicz: Why liveness for timed automata is hard, and what can we do about it?

P49 Vaishnavi Sundararajan, Steve Kremer, R Ramanujam and S P Suresh: Applied-pi calculus with existentially quantified assertions: Derivability and static equivalence.

P50 Samir Datta, Siddharth Iyer, Raghav Kulkarni, Anish Mukherjee: Shortest k-Disjoint Paths via Determinants. CoRR abs/1802.01338 (2018).

P51 B. Srivathsan, F. Herbreteau, T.T. Tran and I. Walukiewicz: Why liveness for timed automata is hard, and what we can do about it? (journal version).

P52 B. Srivathsan, Paul Gastin and Sayan Mukherjee: Diagonal constraints in timed automata.

P53 M. Praveen and Diego Figueira: Playing with Repetitions in Data Words Using Energy Games.

P54 Prajakta Nimbhorkar, Meghana Nasre and Nada Pulath: Classified rank-maximal matchings.

P55 Prajakta Nimbhorkar, Krishnapriya A M, Meghana Nasre, and Amit Rawat: How good are popular matchings?

P56 Vaishnavi Sundararajan, R Ramanujam and S P Suresh: Protocol insecurity with finitely many sessions: Communicating quantified assertions, submitted to the conference CSF 2018.

P57 Wojciech Czerwnski, Slawomir Lasota, Roland Meyer, Sebastian Muskalla, K Narayan Kumar and Prakash Saivasan: Regular Separability of Well Structured Transition Systems.

Physics

P58 Govind S. Krishnaswami and Himalaya Senapati: An introduction to the classical three-body problem: From periodic solutions to instabilities and chaos.

P59 Dileep Jatkar and K. Narayan: Ghost-spin chains, entanglement and bc-ghost CFTs, arXiv:1706.06828 [hep-th].

P60 A. Samajdar and K.G. Arun: Projected constraints on the dispersion of gravitational waves using advanced ground and space based interferometers (arXiv:1708.00671).

P61 A. Gupta, K. G. Arun and B.S. Sathyaprakash: Implications of binary black hole detections on the merger rates of double neutron stars and neutron star-black holes (arXiv:1708.03939).

P62 M Suman Kalyan, V.S.S Sastry and K.P.N Murthy: Calculation of Free Energy Differences with Jarzynski Equality exploying Wang-Landau Algorithm.

P63 Debangshu Mukherjee and K. Narayan: Hyperscaling violation, quasinormal modes and shear diffusion, arXiv:1707.07490 [hep-th].

P64 Govind S. Krishnaswami, Sonakshi Sachdev and A. Thyagaraja: Conservative regularization of compressible dissipationless two-fluid plasmas, arXiv:1711.05236 [physics.plasm-ph].

P65 A. Laddha and Prahar Mitra: Asymptotic Symmetries and Subleading Soft Photon Theorem in Effective Field Theories.

P66 K. Narayan: On extremal surfaces and de Sitter entropy, arXiv:1711.01107 [hep-th].

P67 S. J. Hoque and A. Virmani: On Propagation of Energy Flux in de Sitter Spacetime.

P68 Kedar S. Kolekar and K. Narayan: AdS2 dilaton gravity from reductions of some non-relativistic theories, arXiv:1803.06827 [hep-th].

P69 S Kastha and K G Arun: Imprints of the redshift evolution of double neutron star merger rate on the signal to noise ratio distribution, (arXiv:1801.05942) [Submitted to Phys. Rev. D].

P70 Himalaya Senapati: Monotonicity in spherical and hyperbolic triangles.

P71 Himalaya Senapati: On a theorem of Lambert: Medians in spherical triangles.

P72 M Suman Kalyan, V S S Sastry, and K P N Murthy: Calculation of Free Energy Differences with Jarzynski Equality employing Wang-Landau Algorithm.

P73 Siva Nasarayya Chari, Inguva Ramarao, and K P N Murthy: A new truncation scheme for BBGKY hierarchy : conservation of energy and time reversibility.

P74 Govind S. Krishnaswami and T. R. Vishnu: On the Hamiltonian formulation and integrability of the Rajeev-Ranken model.

Ph.D. Thesis

T1 Nitesh Jha: Finding Transitive Subgraphs and Counting Popular Matchings (July 2017).

T2 Shraddha Srivastava: On internal tensor product of modules over Schur algebra and analogous new centralizer algebras (August 2017).

T3 Varunkumar Jayapaul: Sorting and Selection in Restricted Models (December 2017).

T4 Subramani Muthukrishnan: Euclidean algorithm for certain algebraic number fields (January 2018)

T5 Suryajith Chillara: On some lower bounds in Arithmetic Circuit complexity (February 2018).

11 The National Undergraduate Programme

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

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

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

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

In 2017, the 20th batch of students was admitted to the undergraduate programme. At the end of the first semester, 24 opted for B.Sc. in Mathematics and Computer Science. The second year B.Sc. class has 28 students in Mathematics and Computer Science and the third year B.Sc. class has 32 students. Out of the 20 students of the 2014 batch who took their degrees at the convocation in July 2017, several have been placed in very prestigious institutions.

- Ananyo Kazi
  MSc in Mathematics, ALGANT (Concordia University, Canada and University of Milan, Italy)
- Anish Prasad Sevekari
  PhD in ACO Program, Carnegie Mellon University, USA
- Apoorva Vijay Tamaskar
  Master in Computing Science, University of Glasgow
- Balasubramanian A R
  MSc in Computer Science, Chennai Mathematical Institute

- Bishal Deb
  MSc in Computer Science, Chennai Mathematical Institute
- Chinmay Ajay Tamhankar
  MSc. in Mathematics, Indian Statistical Institute, Bangalore
- Kishor Jothimurugan
  PhD in Computer and Information Science, University of Pennsylvania
- Mirza Ahad Baig
  MSc in Computer Science, Chennai Mathematical Institute
- Mohan Swaminathan
  PhD Mathematics, Princeton University, USA
- Mythili Narayanaswami
  PhD in Mathematics, TIFR Centre for Applicable Mathematics, Bengaluru
- Paramjit Singh
  MSc in Mathemtics, Chennai Mathematical Institute
- Rajarshi Roy
  MSc in Computer Science, Chennai Mathematical Institute
- Ravi Sah
  Credit Suisse, Mumbai
- Ritam Raha
  MSc in Computer Science, Chennai Mathematical Institute
- Sambit Senapati
  MSc in Mathematics, Chennai Mathematical Institute
- Shalmali Bandyopadhyay
  Project Assistant, Indian Institute of Technology, Madras
- Sridhar V
  MSc in Mathematics, Chennai Mathematical Institute
- Sushant Agarwal
  MSc in Computer Science, University of Waterloo, Canada
- Thejaswini K S
  MSc in Computer Science, Chennai Mathematical Institute
- Utsab Ghosal
  MSc in Computer Science, Chennai Mathematical Institute

B.Sc. (Hons.) Mathematics and Physics

Of the 31 students admitted to the undergraduate programme in 2017, 7 students opted for B.Sc. in Mathematics and Physics as the end of the first semester. The second year class has 2 students. The third year class has 8 students. Out of the 4 students of the 2014 batch who took their degrees at the convocation in July 2017, several have been placed in very prestigious institutions.

- Arghya Datta
  MSc in Mathematics, Chennai Mathematical Institute
- Aswin P M
  PhD in Physics, Tata Institute of Fundamental Research, Bangalore
- Bharath G Ron
- Pindiprolu Siva Tej
  Visiting student Researcher, ICTS, Bengaluru

M.Sc. Mathematics

In 2017, 8 students have joined the programme. There are 6 students in the second year of the programme. 7 students who joined the programme in 2015 have completed the programme successfully.

- Nachiketa Adhikari
- Alapan Mukhopadhyay
- Akashdeep Dey
  PhD in Mathematics, Princeton University, USA
- Debdyuti Banerjee
- Diptaishik Choudhury
- Kushal Banerjee
- Prakash Kumar Singh
  PhD in Mathematics, Western University, Canada

M.Sc. Computer Science

In 2017, 18 students have joined the programme. There are 16 students in the second year of the programme. 18 students who joined the programme in 2015 have completed the programme successfully.

- Vipul Arora
  PhD in Computer Science, IISc, Bangalore.
- Aditya Ajit Aradhye
- Adwitee Roy
  PhD in Computer Science, Chennai Mathematical Institute
- Gourab Haldar
- Govind R
  PhD in Computer Science, Chennai Mathematical Institute
- Hendre Aditya Somnath
- Kumar Shubham
- Mamidisetti Charles Babu
- Mohammad Afzal
  Tata Research Development and Design Centre, Pune
- Muqsit Azeem
  Tata Research Development and Design Centre, Pune
- Prantar Ghosh
  Ph.D. in Computer Science, Dartmouth College, New Hampshire, USA
- Ranadeep Biswas
  Doctorat Informatique, Paris Diderot University, France
- Ritwik Mukherjee
- Shagun Ajmera S
- Siddharth S Bhandari
- Sougata Bose
  PhD in Computer Science, LaBRI, Universit? de Bordeaux, France
- Sumanth Prabhu S
  Tata Research Development and Design Centre, Pune

- Soumyajit Paul
  PhD in Computer Science, Chennai Mathematical Institute

M.Sc. Applications of Mathematics

In 2017, 4 students have joined the programme. There are 12 students in the second year of the program. 4 students who joined the programme in 2015 have completed the programme successfully.

- Avishek Roy
- Neha
  PhD, School of Technology and Computer Science, Tata Institute of Fundamental Research, Mumbai
- Nikhil Kashinath Phalak
  Credit Suisse, Mumbai
- Sumegha Premchandar
  Credit Suisse, Mumbai

Convocation

The 15th Annual Convocation of CMI was held on 24 July 2017. Degrees were awarded to 62 successful candidates at various levels. Of these, 26 were B.Sc. candidates, 35 were M.Sc. candidates and 1 was a Ph.D. candidate. Prof. Manindra Agrawal, Professor, Department of Computer Science & Engineering, Deputy Director, Indian Institute of Technology, Kanpur, was the Chief Guest and delivered the convoation address.

For the B.Sc. programmes, the CMI Gold Medal of Excellence was awarded to Mohan Swaminathan in Mathematics and Computer Science and Aswin P M in Mathematics and Physics for their outstanding performance at the undergraduate level. For the M.Sc. programmes, the CMI Gold Medal of Excellence was awarded to Akashdeep Dey in Mathematics, Sumegha Premchandar in Applications of Mathematics and Siddharth S Bhandar in Computer Science.

12 Activities of the UG/MSc Students

ACM Inter-collegiate Programming Contest

CMI was one of teams that qualified to participate in the World Finals of the ACM-ICPC held at Rapid City, USA in May 2017. The team consisted of Sreejatha Bhattacharya, Rajat De and Anish Sevakari. The team received an honorable mention in the contest. This is the fourth time that a team from CMI has qualified for the World Finals.

Pranjal Dutta

- Internship at IIT Kanpur and worked with Dr. Nitin Saxena as Research Assistant during summer 2017.
- Attended a workshop, WACT 2018 (Workshop on Algebraic Complexity Theory) in Paris, in March 2018 and gave a talk on "Discovering the roots: Uniform closure results for algebraic classes under factoring".

Parthiv Chakrabarty

- Internship at ISI Kolkata under Prof. Gopal K Basak during May-July 2017 and December 2017.

Aditya Arun Raut

- Completed a study project last summer (duration June-July 2017) at IISc, Bangalore under Prof. Manjunath Krishnapur on "Application of electrical networks to random walks".

Nivedita Ganesh

- Internship it IITM Research Park, Taramani, Chennai, under Ajit Narayanan, IITM alumni, CEO of Invention Labs at IITM Research Park on "Principles and Parameters Theory".

Agnishom Chattopadhyay

- Internship at R. C. Bose Centre for Cryptology and Security under Dr. Ansuman Banerjee on "Modification of a binary analysis engine called Angr to detect system calls in traces and do taint analysis".

Arnab Kundu

- Was an REU student at the University of Chicago and project was under Drew Moore(Graduate Student) on "Etale Fundamental Group of an Elliptic Curve".

Sayak Chakrabarty

- Worked with Arghya Datta (CMI) on a problem in number theory at IMSc. under Prof. R. Balasubramanian and tried to estimate the order of the repeated divisor function.
- Summer Internship in HRI, Allahabad under Prof. Gyan Prakash and attended a course on probabilistic number theory

Anirban Majumdar

- Internship (May-July 2017) at LIP, ENS Lyon under Denis Kuperberg on "Width of Non-Deterministic Automata"

Subhayan Saha

- Internship at IIT Kanpur during May - July, 2017 under the guidance of Dr. Nitin Saxena on "Some Recent Developments in Polynomial Identity Testing"

Kousik Krishnan

During the period of April 2017 to March 2018

- Intern at Coriolis Technologies. Developed a photo organising tool(App) based on image tagging. Researched on Video Action Localisation, Facial Expression Recognition and Cognitive Computing based access control systems.
- Trexquant Investment LP, USA (Mid-Frequency Equity Trading firm). Generated strong alpha signals that were used to bet on the stock market
- Gyan Data, Pvt Ltd. Collaborated with the Learning and Development Team to design and deliver real time case studies along with the niche solution approach, thereby guiding the clients to advance their skills and knowledge.
- Stealth Mode Startup. Provided Research & Development solution and helped build the backend of the tool.

Amit Behera

- Intern in the Summer Internship Program in Cryptology at the R.C. Bose Centre for Cryptology and Security, ISI Kolkata. Worked with Dr. Goutam Paul on Quantum Cryptography. The work resulted in a paper entitled "Quantum to Classical One Way Function and Its Application in Quantum Money Authentication" (https://arxiv.org/abs/1801.01910).

Rajarshi Roy

- Internsip in IRIF, Univ. Paris Diderot in the summer of 2017 under Prof. Ahmed Bouajjani and Constantin Enea. A paper written on the work titled "On Verifying TSO Robustness for Event-Driven Asynchronous Programs", has been accepted for publication at the conference NETYS.

Balasubramanian A.R

- Internship at INRIA, Rennes, France, from May to July of 2017. Advisors were Nicolas Markey and Nathalie Bertrand. The subject of internship was parameterized verification of broadcast protocols. The resulting work was accepted at TACAS 2018.

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 2017, Mohan Swaminathan, Sridhar Venkatesh and Paramjit Singh visited the ENS.

Apolline Louvet visited CMI during April 2017.

Interaction with graduate students from Ecole Polytechnique

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

Every year, the top three students passing out from the B.Sc. Mathematics programme spend 8 weeks at the ENS, where they work on r'esearch projects with the ENS faculty.

13 Undergraduate/Graduate Courses

August – November 2017

Abelian Varieties	:	Seshadri Chintapalli
Arithmetic Geometry	:	Sazzad Ali Biswas
Algebra I	:	Purusottam Rath
Algebra III	:	Manoj Kummini
Algebra IV	:	Krishna Hanumanthu
Algebraic Curves	:	Dipankar Ghosh
Design & Analysis of Algorithms	:	Samir Datta
Advanced Machine Learning	:	K V Subrahmanyam
Analysis I	:	Vijay Ravikumar
Analysis III	:	Sukhendu Mehrotra
Analysis	:	Alladi Sitaram
Advanced QFT	:	R Parthasarathy
Calculus	:	M Sundari
Commutative Algebra	:	Clare D'Cruz
Commutative Algebra Seminar	:	Manoj/Speaker
Category Theory	:	Upendra Kulkarni
Classical Mechanics	:	K G Arun
Classical Mechanics I	:	M V N Murthy
Complexity Theory II	:	Partha Mukhopadhyay
Data Mining & Machine Learning	:	Madhavan Mukund
Economics	:	Malathi Velamuri
Electrodynamics	:	V V Sreedhar
English	:	Usha Mahadevan
Enviroment Course	:	Speaker/Movie
Ergodic Theory & Entropy II	:	Issan Patri
Graduate Algebra I	:	Shiva Shankar
Graduate Analysis I	:	S Sundar
Games on Graphs	:	B Srivathsan
Graduate Topology I	:	Senthamarai Kannan
Intro to Linear Lie groups	:	Alladi Sitaram
Infinite State Systems	:	Praveen/Kumar/Madhavan
Laboratory 1	:	K G M Nair
Linear Algebra	:	K V Subrahmanyam

Mathematical Logic	:	M Praveen
Intro to Manifolds	:	Priyavrat Deshpande
Monte Carlo Methods	:	K P N Murthy
Mathematical Finance	:	V Swaminathan
Mathematical Physics	:	T R Govindarajan
Measure Theoretic Probability	:	B V Rao
Matroid Theory and Applications	:	Philip Geevarghese
On Mordell's Conjecture	:	Sinnou David
Optimization Techniques	:	T Parthasarathy
Probability and Statistics I	:	Rajeeva Karandikar
Probability and Statistics III	:	Sourish Das
Parameterized & Exact Algorithms	:	Philip Geevarghese
Intro to Programming (Haskell)	:	S P Suresh
Programming Techniques	:	Narayan Kumar
Quantum Mechanics I	:	K Narayan
Quantum Mechanics	:	H S Mani
Reflection Groups	:	Kavita Sutar
Regression & Classification	:	T Krishnan
Representation Th. of Semisimple Lie Algebras	:	B Ravinder
Representation Theory	:	Upendra Kulkarni
Topics in Security	:	S P Suresh
A Second Course in Sheaf Theory	:	T R Ramadas
Stochastic Processes I	:	S Ramasubramanian
Statistical Mechanics	:	Alok Laddha
Software Verification Using SMT Solvers	:	M Srivas
Theoretical Foundations of CS	:	Prajakta Nimbhorkar
Theory Project	:	K Narayan/VV Sreedhar
Theory of Computation	:	Aiswarya Cyriac
Thermal Physics	:	K P N Murthy

January - April 2018

Advanced Algorithms	:	Sourav Chakraborty
Algebraic Geometry II	:	Krishanu Dan
Algebra II	:	Clare D'Cruz
Design & Analysis of Algorithms	:	K Narayan Kumar
Analysis II	:	Vijay Ravikumar
Analysis on Number Fields	:	Purusottam Rath
Advanced Programming	:	Samir Datta
Advanced Regression	:	T Krishnan
Complex Analysis	:	T R Ramadas
Commutative Algebra Seminar	:	Manoj/Speaker
Classical Mechanics II	:	A K Kapoor
Continuum Mechanics & Nonlinear Dynamics	:	Govind Krishnaswami
Concurrency Theory	:	Madhavan Mukund
Topics in Combinatorics	:	Priyavrat Deshpande
Complex Analysis	:	V Balaji
Complexity Theory	:	Prajakta Nimbhorkar
Automata/Verification Seminar	:	Coordinator
Development Economics	:	Malathi Velamuri
Differential Equations	:	M Sundari
Discrete Mathematics	:	Partha Mukhopadhyay
Econometrics	:	V Swaminathan
Electrodynamics I	:	T R Govindarajan
Environment Course	:	Speaker/Movie
Implementation of FP Languages	:	S P Suresh
Financial Risk Management	:	Sourish Das
Graduate Algebra II	:	Manoj Kummini
Graduate Analysis II	:	S Sundar
Game Theory	:	T Parthasarathy
Games on Graphs 2	:	B Srivathsan
General Relativity	:	K G Arun
Graduate Topology II	:	Upendra Kulkarni
Hodge Theory & Torelli Theorems	:	Sukhendu Mehrotra
Intro to Algebraic Number Theory	:	Sazzad Ali Biswas

Intro to Partial Differential Equations	:	Alladi Sitaram/Sundari Maddala
Laboratory	:	K G M Nair
Logic, Automata and Games	:	M Praveen
Linear Algebra	:	Kavita Sutar
Linear Groups	:	Kumari Saloni
Model Checking and Systems Verification	:	M Srivas/B Srivathsan
Matriod Theory & Applications	:	Geevarghese Philip
Natural Language Processing	:	Ramaseshan Ramachandran
Optimization	:	K V Subrahmanyam
Optics	:	H S Mani
Programming Language Concepts	:	M Praveen/S P Suresh
Probability Theory	:	S Ramasubramanian
Probability & Statistics II	:	Rajeeva L Karandikar
Quantum Field Theory	:	V V Sreedhar
Quantum Information & Quantum Computation	:	R Srinivasan
Quantum Mechanics II	:	K Narayan
Stochastic Calculus	:	B V Rao
Seminar	:	Speaker
Second Course on Sheaf Th	:	T R Ramadas
Special Topics in QFT	:	R Parthasarathy
Spl Topics in Statistical Mechanics	:	K P N Murthy
Topics in Algebra & Analysis	:	Shiva Shankar
Topics in Algebraic Groups	:	Senthamarai Kannan
The Art of Short Fiction	:	Usha Mahadevan
Topology	:	Krishna Hanumanthu

14 Workshops/Schools/Conferences

International Olympiad in Informatics Training Camp (April-May 2017)

The Indian team for IOI was selected at the International Olympiad in Informatics Training Camp (IOITC). IOITC-2017 was held over 10 days in Chennai during the period April- May 2017.

Faculty for IOITC-2017:

- Sundar Annamalai, IIT Madras
- Arjun Arul, Codechef
- Sreejata Kishor Bhattacharya, CMI
- Rajat De, CMI
- Animesh Fatehpuria, Georgia Tech
- Malvika Joshi, MIT
- Tanuj Khattar, IIIT Hyderabad
- Prashant Mahesh, SSN College of Engg
- Balajiganapathi Senthilnathan, Directi
- Satyaki Upadhyay, Directi
- Rajas Vanjape, IIIT Hyderabad

Sasken Technologies Ltd sponsored the camp and Chennai Mathematical Institute hosed the camp.

Student Talks on Trending Topics in Theory 2017 (May 2017)

Student Talks on Trending Topics in Theory 2017 is a discussion meeting on field theory-related topics organised by and for graduate students and postdoctoral fellows working in India. The participants were primarily graduate students from their last two years and postdoctoral fellows.

The primary aims of the meeting (in no particular order) were: to convert the set of Indian grad students and postdocs into a vibrant community, to get us into the habit of

interacting with each other, to broaden the horizons of the participant, to deepen the teaching and speaking experience of students, to create an environment where students can get aggressive feedback about their thoughts in a low-pressure setting, and to open channels of communication between string theory and other field theoretic areas at the level of students and postdocs. This year's meeting was organised by students and postdocs at CMI, IIT Kanpur, IMSc, and TIFR.

AIS on Class Field Theory (May 2017)

An advanced instructional school on Class Field Theory was organized by Sanoli Gun,IMSc, Chennai, Ram Murty, Queen's University, Canada and Purusottam Rath, CMI, at CMI.

AIS on Representation Theory of Finite Groups (June-July 2017)

An Advanced Instructional School on the Theory of finite groups was organized at CMI. The speakers and topics covered were as follows:

- K.N. Raghavan:
  Basics of ordinary representation theory and Representations of the general linear groups.
- Amritanshu Prasad:
  RSK Correspondence; semistandard tableaux; simple representations of the symmetric groups and Representations of the symmetric and alternating groups.
- Sankaran Viswanath:
  Symmetric functions and representations of symmetric groups.

Lecture Programme for students of class XI and XII, in association with National Academy of Sciences, Allahabad (July 2017)

The Chennai Mathematical Institute (CMI) organised a lecture programme for students of class XI and XII in the areas of Mathematics, Computer Science and Physics, in association with National Academy of Sciences, Allahabad in July 2017.

- Kavita Sutar, CMI:
  Origami Geometry.
- Geetha Iyer, Consultant- Education Sushindram:
  From the Donkey poo to DNA and beyond.

- Ajith Kumar, Inter-University, Accelerator Centre, New Delhi
  Science Experiments using ExpEYES.
- Prajakta Nimbhorkar, CMI:
  Popular matchings.
- Rajeeva L. Karandikar, CMI:
  Introduction to Probability Theory.
- P. Vanchinathan, VIT:
  Sikku Kolam, Rational Curves and Pythagorean Triples.

Student Symposium on Verification, Automata and Games (October 2017)

The Student Symposium on Verification, Automata and Games attempted to provide a platform for students of CMI to showcase the research that they have done over the course of the last year in verification, automata theory and games in various universities and labs across the world. The symposium consisted of a series of 10 talks spread over two days. The following talks were presented at Student Symposium on Verification, Automata and Games in October 2017.

- Thejaswini K S:
  On the fly algorithms for Reachability and Safety Games.
- Debraj Chakraborty:
  Asynchronous Distributed Games with Causal Memory.
- Ritam Raha:
  Piecewise Testable Index of Words and Its Algorithmic Evaluation.
- Anirban Majumdar:
  Width of Non-Deterministic Automata.
- Mirza Ahad Baig:
  Verification of message passing programs.
- Varun Ramanathan:
  Separation problem with modular predicates.
- Balasubramanian A R:
  Parameterized verification of broadcast protocols under various constraints.
- Suman Sadhukhan:
  Symbolic Decision Diagrams with Equality Relations.

- Rajarshi Roy:
  TSO non-robustness in programs robust under concurrency.
- Aalok Thakkar:
  Reprogramming Asynchronous Boolean Networks.

Statistical Methods in Finance 2017 (December2017)

The third conference and workshop on Statistical Methods in Finance aimed to expose the participants to new and active areas of research and to engage researchers into active working groups. The conference was jointly hosted by Chennai Mathematical Institute (CMI), and Indian Statistical Institute - Chennai Center. MCX-IPF Trust, Indian Statistical Institute, International Society for Business and Industrial Statistics (ISBIS), International Indian Statistical Association (IISA) sponsored and ISBIS co-sponsored the conference and workshop through funds from the World Bank to the International Statistical Institute (ISI).

Lectures:

- Rajeeva L Karandikar, CMI, India: Introduction to Stochastic Calculus
- Plenary Talk by Ronnie Sircar, Princeton University, USA: Energy Prices, Dynamic Mean Field Games and Stochastic Demand
- Invited Talk by T.V. Ramanathan, Savitribai Phule Pune University, India: Nonstationary Autoregressive Conditional Duration Models
- Invited Talk by Pritam Ranjan, Indian Institute of Management, Indore, India: A comparative study of discrete-time stochastic volatility model
- Plenary Talk by Dipak K Dey, University of Connecticut, USA: Modelling of Large Insurance Claims and Occurrence Data
- Invited Talk by Indranil Sen Gupta, North Dakota State University, USA: Analysis of some variance based instruments for Ornstein-Uhlenbeck type models
- Invited Talk by Ravindra Khattree, Oakland University, USA: Same Leverage, Less Volatility: A Statistical Approach to the Construction of Leveraged Funds MCX Panel Discussion
- Ronnie Sircar, Princeton University, USA
- Thenmozhi, Indian Institute of Technology, Madras, India
- V. Shunmugam, Head, Research, MCX, India
- Velmurugan,Central University of Tamil Nadu, India

- Invited Talk by Santanu Dutta, Tezpur University, Assam, India: Quantile Estimation based on asset return data
- Invited Talk by Sujit Ghosh, North Carolina State University, USA: How High the Hedge: Relationships Between Prices and Yields in the U.S. Federal Crop Insurance Program
- Plenary Talk by Tomasz Bielecki, Illinois Institute of Technology, USA (via Video Conference): Arbitrage-free pricing of derivatives in nonlinear market models
- Invited Talk by Yue Kuen Kwok,Hong Kong University of Science and Technology,Hong Kong, China: Saddlepoint approximation methods for pricing financial options on discrete realized variance
- Invited Talk by Sudheesh K Kattumannil, Indian Statistical Institute, Chennai, India: Modelling Time Series Through Gini Autocovariance Function
- Invited Talk by Anirban Chakraborti,Jawaharlal Nehru University, New Delhi, India: Understanding complexity of "market states"
- Invited Talk by Gopal Basak, Indian Statistical Institute, Kolkata, India: Measures of portfolio efficiency

Conference on Analysis (December 2017)

Prof. Alladi Sitaram turned 70 years this year and one day seminar was oraganized in his honour with the following talks:

- Rudra Sarkar, ISI Kolkata:
  Mean value theorems on Hyperbolic spaces
- R. Radha, IIT Madras:
  Yves Meyer and Wavelet Analysis
- Rama Rawat, IIT Kanpur:
  A sharp form of the Marcinkiewicz Interpolation theorem for Orlicz spaces
- Gadadhar Misra, IISc Bangalore:
  The Bergman kernel.

Seminar on Schubert Varieties (January-February 2018)

V. Lakshmibai, C.S. Seshadri, B. Ravinder, Manoj Kummini, Vijay Ravikumar, Senthamarai Kannan and K.V Subrahmanyam gave series of talks on Schubert varieties. The following lectures were presented.

- V. Lakshmibai and C.S. Seshadri:
  Introduction to standard monomial theory (4 talks).
- C.S. Seshadri:
  Introduction to standard monomial theory.
- B. Ravinder:
  A Pieri-Chevalley formula for K(G/B) after Pittie and Ram.
- Manoj Kummini and Vijay Ravikumar:
  The Fang-Littelmann paper (5 talks).
- Senthamarai Kannan and K.V. Subrahmanyan:
  The Gaussent-Littelmann paper (6 talks).

CMI Arts Initiative

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

Writers in residence

CMI is proud to host a writers' residency programme in cooperation with Sangam House. Under this programme, CMI supports upto two international writers each year for a residency of 4–6 weeks. As part of this program, Emily Holleman, a writer from the U.S.A was in residence in February–March 2018. A graduate of Yale University, Emily Holleman spent several years working as an editor at Salon.com – a job she left to work on her first novel. She is the author of *Cleopatra's Shadows* and *The Drowning King* (Little, Brown and Company), the first of which was long-listed for the HWA Debut Crown. Her *Fall Of Egypt* series is currently in development for television with House Productions in London. Emily's nonfiction has appeared in a variety of online and print publications, including Elle, LitHub, Salon and BookPage. During her visit as a writer-in-residence here at CMI, she was working on a new novel set in the not-so-distant future.

Endowment Lectures at CMI

- Probal Chaudhuri, Indian Statistical Institute, Kolkata delivered K. Madhava Sarma Memorial Distinguished Lecture on "Shape of the Earth, Motion of the Planets and the Method of Least Squares" (November 2017).

- Rajendra Bhatia, Ashoka University, Delhi. delivered R.K. Rubugunday Distinguished Lecture on "The Bures-Wasserstein distance on positive definite matrices" (January 2018).

- Bala Iyer, ICTS-TIFR, Bengaluru. delivered K. Lakshmanan Memorial Distinguished Lecture on "The detection of gravitational waves and the two body problem in general relativity" (January 2018).

15 Conferences, Visits and External Lectures

Rajeeva L. Karandikar

- Visited Pondycherry University, Pondycherrry in October 2017 and gave 3 talks to the Mac students and a public talk at the invitation of the vice chancellor.
- Visited Pune University, Pune, in November 2017 and gave a Short course on Stochastic Calculus at The Special Winter School on Computational Mathematics (6 hours).
- Visited Indian Statistical institute, Delhi and gave a talk at the P C Mahalanobis 125 birthday celebration conference on "Role of Statistics in the era of biodata".
- Visited Pune University, as an invited speaker at SERB School on nonlinear Dynamics, and gave a talk on "Non-Linear Markov Processes", in January 2018.
- Visited Pondycherry University, Statistics Department, and gave a talk on "Power and Limitations of Opinion Polls", in January, 2018.
- Visited IIT, Indore and gave a talk on "Role of statistics in the era of Big Data", in February 2018.
- Visited IIM, Indore and gave a talk on "Role of statistics in the era of Big Data", in February 2018.

Madhavan Mukund

- Gave two lectures on automata theory and computability, in workshop on theoretical computer science for students of the IOI Training Camp 2017, CMI, in May 2017.
- Attended the Workshop on the 20th anniversary of LSV, ENS Paris Saclay in May 2017 and delivered an invited talk entitled "Replicated data, from practice to theory".
- Visited IRIF, Univ Paris Denis-Diderot (Paris 7) in May 2017 for collaborative work on the Indo-French CEFIPRA project AVeCSO.
- Visited LaBRI, Univ Bordeaux in May 2017 for collaborative discussions with Frederic Herbreteau and Igor Walukiewicz.
- Gave lecture entitled "A problem that cannot be solved by any algorithm", in IMSc outreach programme, in June 2017.
- Attended the 50 Years of the ACM Turing Award Celebration in San Francisco in June 2017.
- Gave NPTEL MOOC on Design and Analysis of Algorithms (July-September 2017).

- Gave NPTEL MOOC on Programming Data Structures and Algorithms using Python (July-September 2017).
- Participated in CSPathShala Workshop, ACM India initiative for teaching computer science in schools, Chandigarh, in July 2017.
- Delivered a talk on "Distributed Games", at the Formal Methods Update Meeting 2017, at IIT Mandi, in July 2017.
- Delivered a talk on "Statistical Model Checking", at Thiagarajar College of Engineering, Madurai, in August 2017.
- Participated in the ACM-W India All India Celebration of Women in Computing 2017, at Chennai, in September 2017.
- Delivered a talk on "Efficient Processing of Range Queries", at VIT Chennai, in September 2017.
- Particpated in 15th International Symposium on Automated Technology for Verification and Analysis (ATVA 2017), and chaired a session, Pune, in October 2017.
- Participated in Grace Hopper Celebrations India, Bangalore, in November 2017.
- Participated in AUR@SIA 2017 Symposium organized by CNRS, France in Shanghai, China, in November 2017.
- Particpated in Second Indian SAT-SMT School, Mysore, in December 2017.
- Participated in 37th IARCS Annual Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS 2017) and chaired a session, Kanpur, in December 2017.
- - Visited Uppsala University, Sweden, to participate in the PhD defence of Othmane Rezine as a member of the jury, in January 2018.
- Particpated in ACM India-MSR Academic Research Summit, Hyderabad, in January 2018.
- Delivered a keynote talk entitled "Correctness in a Connected World", at the Doctoral Symposium on Applied Computation and Security Systems (ACSS 2018), Kolkata, in February 2018.
- Delivered a keynote talk on "Computer Science in School" at CSPathshala workshop, Nagpur, in February 2018
- Participated in the ACM India Annual Event, Nagpur, in February 2018.

- Delivered a lecture entitled "Is Mathematics the Language of Science?", Master Classes Series, Department of Higher Education, Goa, in March 2018.

K.G. Arun

- Visited Institute for Gravitation and the Cosmos, Pennsylvania State University on Sabbatical.
- Gave an invited talk on "Post-Newtonian theory and Gravitational Wave Physics" (N. R. Sen Award Lecture) in the IAGRG meeting at IIT Guwahati, in May 2017.
- Gave a talk on "Post-Newtonian theory and Tests of General Relativity: A parametrised multipolar Framework", in the Eastern Gravity meeting, Penn State University, in June 2017.
- Invited to Chair of the Test of GR session in the "Physics and Astrophysics at the Extremes (PAX)" workshop, at NIKHEF, Amsterdam, in August 2017.
- Gave an invited talk at the "Probing dark sector and GR at all scales" workshop at CERN, Geneva, in August 2017.
- Gave an invited colloquium at ICTS-TIFR, Bangalore, IIT Madras, IMSc, Chennai, IGCAR, Kalpakkam and NCRA-TIFR, Pune on the discovery of binary neutron star merger and associated Short Gamma Ray Burst.
- Gave invited talk at the International workshop on Astronomy Astro particle Physics and Cosmology (AAPCOS), Saha Institute, Kolkata.
- Gave invited Colloquia at the following places:
  1. Womens Christian College, Chennai
  2. Cochin University of Science and Technology, Cochin
  3. Kurukshetra Techno fest, CET, Guindy
  4. Vellore Institute of Technology, Chennai Campus.

K. Narayan

- Visited TIFR string theory group, in May 2017.
- Gave a talk at IMSc, Chennai on "Extremal surfaces, entanglement in ghost systems and de Sitter entropy", in November 2017.
- Participted IV Saha Theory Workshop on "Modern Aspects of String Theory", Saha Institute, Kolkata, in February 2018 and gave a talk on "Extremal surfaces, entanglement in ghost systems and de Sitter entropy".

K. Narayan Kumar

- Visited ENS Cachan, France and Univ. of Braunschweig, Germany.
- Visited Uppsala University, in October 2017.
- Attended FSTTCS 2017 in IIT Kanpur, in December 2017.
- Visited CSA, IISc Bangalore, in January 2018.

Senthamarai Kannan

- Gave a talk at the Hindustan University, Padur, in September 2017.
- Gave a Talk at the Department of Mathematics, Gandhigram Rural Institute, Gandhigramam.

Shiva Shankar

- Visited University of Porto and University of Aveiro during May 2017 and gave a talk in the Systems and Control group at the University of Aveiro.

Clare D'cruz

- Gave 6 lectures of 1.5 hours each on Commutative Algebra in Instructional School for College Teachers at St. Joseph's College, Irinjalakuda, Kerala.
- Gave a talk on "Groebner basis and applications to monomial ideals" at the Twenty first Ramanujan Symposium, University of Madras, Chennai, in February 2018.
- Gave a talk on "Linear Algebra and applications to cryptography" at VIT, Chennai, in March 2018.

Krishna Hanumanthu

- Lectured in Instructional School for Teachers in Commutative Algebra, at St Joseph's College, Irinjalakuda, Kerala, in May 2017.
- Lectured on algebra at AFS-2 workshop, Kerala School of Mathematics, Kozhikode, in May 2017.
- Lectured on "Seshadri constants" at National Conference on "Commutative Algebra and Algebraic Geometry" at IISER Pune, in December 2017.

- Lectured on "Seshadri constants and SHGH Conjecture" at Algebraic Geometry and Number Theory conference at ISI Bangalore, in December 2017.
- Lectured on "Seshadri constants on projective varieties" at Analytic and Algebraic Geometry conference, International Center for Theoretical Sciences, Bangalore, in March 2018.

Govind S. Krishnaswami:

- Gave a talk on "The Classical three body problem", at IISER Pune, in May 2017.
- Gave a talk on "The Classical three body problem", at IGCAR, Kalpakkam, in June 2017.
- Gave Swarnajayanthi Fellowship Proposal presentation, at DST-SERB.
- Attended Swarnajayanti Meeting, Indian Academy of Sciences, Bengaluru, in August 2017.
- Gave lectures on "Approximation methods in quantum mechanics", in Workshop at PSGR Krishnammal College for Women, Coimbatore, in October 2017.

Manoj Kummini

- Gave a talk at "Commutative Algebra and Algebraic Geometry (CAAG 2017)" conference at IISER Pune.
- Gave a talk at "Algebraic Geometry and Number Theory" conference at ISI Bengaluru.
- Gave series of talks at Advanced Instructional School on "Groebner bases and applications" at IIIT, Delhi.
- Visited Purdue University, USA and gave talk on "Singularities of conormal varieties, Commutative Algebra Seminar" and "F-rationality of Rees algebras, Algebraic Geometry Seminar".
- Visited Mathematical Sciences Research Institute, USA.
- Visited Ramanujan Institute of Advanced Study in Mathematics, Madras University, and gave a colloquium on "Solving polynomial equations".

Alok Laddha

- Gave a seminar at Tata institute of Fundamental research, Mumbai, in November 2017.

- Gave two lectures at a workshop aimed at graduate students and workshop in IIT Gandhinagar in December 2017.

Prajakta Nimbhorkar

- Gave talks titled "Introduction to Computational Complexity" and "Online and streaming algorithms" in the post-Informatics Olympiad Training Camp workshop.

Purusottam Rath

- Visited University of Paris VI, Jussieu, in June 2017.
- Visited University of Paris VI, Jussieu, during July 2017.
- Visited Harish Chandra Research Institute, in December 2017.
- Visitied IIT Ropar, in December 2017.
- Visited TIFR, Mumbai in February 2018.

R. Srinivasan

- Visited ISI Bangalore for two months in August and September 2017.
- Visited Laboratoire de mathématiques de Besancon, Université de Franche-Comté, Besancon, France in October and November, 2017 and gave a talk titled "E_0-semigroups on factors".
- Visited NISER Bhubaneswar and gave a colloquium talk to M.Sc. students titled "Introduction to the framework of quantum probability".
- Attended a conference on "Non-commutative geometry and quantum groups" at NISER Bhubaneswar and gave a talk titled "E_0-semigroups on Factors".

M. Sundari

- Attended an International Conference on Mathematics and Applications in April 2017 held at Ramjas college, New Delhi and gave an invited talk on "Uncertainty principles in Harmonic analysis on Lie Groups".
- Attended Indian Women and Mathematics conference and gave an invited talk on "An analogue of Benedicks theorem on Nilpotent Lie groups" held at IISC, Bangalore, in July 2017.

- Gave an invited talk on "Various analogues of Benedicks" theorem on two step nilpotent Lie groups" in 15th Discussion meeting on Harmonic analysis held at IISc, Bangalore, in December 2017.

S. Sundar

- Gave 6 lectures of K-theory at the ATM school held at IMSc, Chennai, in September 2017.

S.P. Suresh

- Attended the Voting 2017 workshop at Malta, in April 2017.
- Gave a lecture on Bitcoin at the post-IOITC workshop at CMI, in May 2017.
- Gave a series of lectures on security protocol design and verification at the ACM summer school on Information and Systems Security, in June 2017.
- Attended Formal Methods Update Meeting during July 2017 at IIT Mandi. Gave two lectures, one on bitcoin and consensus algorithms, and another on knowledge transfer in protocols.
- Attended FSTTCS 2017 at IIT Kanpur, during December 2017.

Amitabh Virmani

- Visited Institute of Physics, Bhubaneswar, in November 2017.
- Gave a talk at "National Strings Meeting (NSM) 2017," at NISER/IIT Bhubaneswar, in December 2017.
- Gave a course at "Black Holes: From classical to quantum gravity," IIT Gandhinagar, in December 2017.
- Visited Sikkim University, Gangtok, during January – February 2018 and gave talk on "Advanced Quantum Mechanics" [12 hours] at Science Academies' Refreshers Course, Basic Physics and Topology.
- Visited Center for Theoretical Studies, IIT KGP and gave Colloquium & Seminar, in January 2018.

Aiswarya Cyriac

- Gave a talk on "Recency-bounded verification of dynamic database-driven systems" at Faculty of Computer Science, Free University of Bozen-Bolzano and collaborated with Marco Montali, Diego Calvanese, in May 2017.
- Visited Laboratory of Specification and Verification, ENS Cachan and Collaborated with Paul Gastin, Benedikt Bollig, in June 2017.
- Participated in CONCUR'17 (Berlin) and presented paper at CONCUR'17.

Sourish Das

- Visited "Jawharlal Nehru University" and delivered a talk.
- Visited "IGIDR" and delivered a talk.
- Visiting University of Southampton, UK as Commonwealth Rutherford Fellow.

Priyavrat Deshpande

- Gave an invited talk on "Topology of linkages" in Manipur University in August 2017.
- Gave an invited talk titled "combinatorial aspects of moduli space of polygons" at 7th East Asian Conference on Algebraic Topology held at IISER Mohali, in December 2017.
- Visited IIT Hyderabad during December 2017 regarding a project on word embeddings and algebraic topology.
- Visited Oberwolfach Mathematics Institute, Germany in January 2018 to attend the meeting on representation stability and hyperplane arrangements.

Sukhendu Mehrotra

- Attended the conference, "Algebraic Geometry and Number Theory," held at ISI Bangalore, in December 2017.

Geevarghese Philip

- Visited Department of Informatics, University of Bergen during May-June 2017.

Vijay Ravikumar

- Visited Cristian Lenart at SUNY Albany for collaboration and gave talk in SUNY Albany algebra seminar on "K-theoretic intersection numbers in Schubert Calculus" during April-May 2017.
- Attended conference "Mid-Atlantic Algebraic Geometry and Combinatorics" at Drexel University in Philadelphia, in May 2017.
- Attended AMS sectional meeting in Hunter College, New York City, specifically the special section on "Cohomologies and Combinatorics" in May 2017.
- Visited Elizabeth Milicevic at Haverford College in Philadelphia for collaboration and gave talk in UPenn CAGE seminar in May 2017 titled "Equivariant Pieri rules for Isotropic Grassmannians".
- Visited Alex Yong at University of Illinois Urbana Champaign for collaboration and gave talk in May 2017 titled "Equivariant Pieri rules for Isotropic Grassmannians".
- Gave a course on "Algebra 1" at AFS 1 school in Kozhikode.
- Gave a series of four lectures on Schubert polynomials for ATM school on Schubert Varieties at IMSc, Chennai.
- Gave an invited talk on 'Equivariant Pieri Rules for isotropic Grassmannians' in the 'International Festival of Schubert Calculus' at Sun Yat-sen Univsersity, Guangzhou, China and collaborated with Changzheng Li, in November 2017.
- Gave a talk on 'Positivity of Schubert Polynomials' in Guangzhou University, in November 2017.
- Took part in Schubert Varieties seminar, and lectured, during January and February 2018.

B. Srivathsan

- Gave a course on "Model Checking" at IIT Palakkad, NPTEL MOOC.
- Attended conference ATVA at Pune, in October 2017.
- Attended conference FSTTCS at IIT, Kanpur, in December 2017.

Akhilesh P.

- Delivered two talks in NIT Calicut.

Sazzad Ali Biswas

- Visited the Weizmann Institute of Science, Israel for two months.
- Attended an international conference in Israel on representation theory -http://www.weizmann.ac.il/c

Seshadri Chintapalli

- Visited TIFR mumbai twice (in April and in June 2017) to collaborate with Prof. A.J. Parameswaran.

Krishanu Dan

- Visited IISER, Trivandrum during October 2017 (Host: Dr. Sarbeswar Pal) and gave a talk on "Brill-Noether Loci over very general quintic hypersurface".

Dipankar Ghosh

- Visited Osaka University, Japan, and delivered a research talk there.
- Visited IISER Pune for a conference.
- Viisted IIIT Delhi for a workshop.

Ananya Lahiri

- Gave a talk at IIT Hyderabad.
- Gave a takj at IIT Delhi.
- Gave a talk at IIT Ropar.

Shreedevi K. Masuti

- Visited and gave talks at IISc Bangalore, during January – March 2018.
- Visited and gave talks at IIT Gandhinagar, during January – March 2018.

Mandira Mondal

- Visited TIFR Mumbai during March 2018 for thesis defence.

Issan Patri

- Visited Mathematical Institute (MFO), Oberwolfach, Germany for research in pairs program with collaborators Kunal Mukherjee, Pierre Fima and Francois Le Maitre.
- Gave invited talk in the conference Topological Quantum Groups at Seoul National University, Seoul, South Korea.
- Visited University of Caen, Basse Normandie, France, in December 2017 and gave a talk in Operator Algebra Seminar.

S. Raja

- Attended 49th Annual ACM Symposium on the Theory of Computing (STOC'17), in June 2017 in Montreal and participated in poster presentation of our paper.

B. Ravinder

- Attended the ATM Workshop on Schubert Varieties during October – November 2017 held in IMSc, Chennai.

Parangama Sarkar

- Gave a tolk on "Local cohomology of multi-Rees algebras, joint reduction numbers and product of complete ideals", in conference "The prospects for Commutative Algebra", Osaka, Japan, in July 2017.

H.S. Mani

- Gave lectures at Bishop Moore College, Mavelikara on "Quantum Mechanics" in May 2017.
- Participated in a three day workshop for Vigyan pratibha organized by Homi Bhabha Centre for Science Education.
- Participated in a three day workshop for resource genneration organized by Homi Bhabha Centre for Science education in October 2017.
- Conducted a refresher course at Periyar E.V.R. College and gave 12 lectures on "Quantum Mechanics" during November – Decmeber 2017.
- Conducted a refresher course on Particle and Nucleaar Physics in December 2017.

- Participated in a two day workshop at P.B.Siddhartha College, Vijayawada, in February 2018 on "Topology and Quantum Mechanics".
- Gave seven lectures at T.K.M. College of Arts and Science, in March 2018.

K.P.N. Murthy

- Delivered three talks on Statistical Mechanics in the BRNS School on "Computational Methodologies across Length Scales" held in BARC, Mumbai, during August - September 2017.
- Conducted a Workshop on "Monte Carlo Methods" in September 2017.
- Delivered a special evening lecture on "Ludwig Eduard Boltz- mann, Transport Equation, Microscopic Reversibility and Macroscopic Irreversibility", in December 2017 in DAE- BRNS National Symposium on "Advances in Reactor Physics ARP-2017 - Nuclear Fission Reactors : Nowand Beyond", at DAE Convention Center, Anushakthi Nagar, Mumbai.
- Visited University of Peredenia, Srilanka and gave a lecture on "Monte Carlo methods for entropy calculations and other applications" in February 2018.
- Visited Central University of Rajasthan and gave lectures on "Physics pedagogy and philosophy" in February 2018.
- Visited Central University of Tamilnadu, Thiruvarur and gave lectures on "Statistical Mechanics" in March 2018.

B.V. Rao

- Gave a lecture on "S S Shrikhande and his work" on his 100th Birth day celebrated at CMI, in October 2017.
- Gave lectures at Pune University on "Limit Theorems" at ATM workshop on Asymptotic Theory in October 2017.
- Visited Indian Statistical Institute, Chennai and gave lectures on "Urn Models" & "Random Walks" (February 2018) and "Brownian Motion" & "Martingales" (March 2018).

S. Ramasubramanian

- Gave a talk at the Indian Statistical Institute, Chennai on "Cramer-Lundberg model revisited" in September 2017.

- Gave two lectures on "Poisson processes and applications" at VIT, Chennai campus in February 2018.

M.K. Srivas

- Attended "Automated Technology for Verification and Analysis", ATVA 2017, Pune, in October 2017.

  (Attendees: M.K. Srivas, Kumar Madhukar, Charles M. Babu, Johanan Wahlang).

- Attended the Second Indian SAT+SMT School, Infosys Mysuru Park, December 6-8, 2017.

V. Swaminathan

- Visited the Deparment of Statistics, Savitribai Phule Pune University, Pune, during July 2017.

- Gave 9 lectures and conducted 4 tutorials on Probability in the "Instructional School for Teachers - Asymptotic Theory of Statistical Inference" held at Dept of Statistics, Savitribai Phule Pune University, during October – November 2017.

Anbu Arjunan

- Attented the conference " Conference on Quantum groups & Noncommutative Geometry", in January 2018 at NISER Bhubaneswar.

Athira P.V.

- Participated in the "Kavli Asian Winter School on Strings, Particles and Cosmology 2018" at ICTS.

Abhishek T Bharadwaj

- Gave a talk on "Fatou's Lemma over power series ring" in the Annual Conference of Indian Mathematical Society in Sri Venkateshwara University, Tirupati, in December 2017.

- Gave a talk on "Linear independence of special values of certain L-series over number fields" in the Conference on "Number Theory: Arithmetic, Diophantine and Transcendence" in IIT Ropar, in December 2017.

Suryajith Chillara

- Attended "18th Max Planck Advanced Course on the Foundations of Computer Science" (ADFOCS 2017) during August 2017 in Saarbrücken, Germany.
- Visited Universität Ulm (hosted by Thomas Thierauf) and gave a talk on "The Chasm at Depth Four, and Tensor Rank: Old results, new insights".
- Visited IIT Bombay and was hosted by Nutan Limaye.

Navnath Daundkar

- Attended 7th East Asian Conference on "Algebraic Topology".

Govind R

- Attended ATVA 2017 Conference at Pune, in October 2017.
- Attended FSTTCS 2017 Conference at IIT Kanpur, in December 2017.

Abdullah Abdul Khadir

- Presented a paper entitled "Knowledge transfer and information leakage in protocols" at ATVA 2017 at Pune, in October 2017.

Kedar Shrikrishna Kolekar

- Gave a talk titled "Hyperscaling violation, the membrane paradigm and the shear diffusion constant" at National String Meeting 2017 held at NISER Bhubaneshwar, during December 2017.
- Participated and gave a Gong show talk at Kavli Asian Winter School 2018 held at ICTS Bengaluru during January 2018.
- Participated and gave a Gong show talk titled "Hyperscaling violation, the membrane paradigm and the shear diffusion constant" at Kavli Asian Winter School 2018 held at ICTS Bengaluru during January 2018.

N.V. Krishnendu

- Presented a talk on gravitational wave astronomy at Science academies refresher course on quantum mechanics to E V R Periyar college, Trichy.

Sayan Mukherjee

- visited the international summer school on "Logical Methods for Safety and Security of Software Systems" at Marktoberdorf, Germany during August 2017.
- Attended ATVA Conference at Pune, in October 2017.
- Attended FSTTCS Conference at IIT Kanpur, in December 2017.
- Attended the SAT+SMT school, that was held in Mysore during December 2017.

S.P. Murugan

- Attended AIS in operator theory/algebra.

Soumyajit Paul

- Attended Conference ATVA 2017 at Pune, in October 2017.
- Attended FSTTCS 2017 Conference at IIT Kanpur, in December 2017.

Sonakshi Sachdev

- Participated in SERB School on Nonlinear dynamics held at Pune University, Pune in January 2018.

Himalaya Senapati

- Attended Berlin Mathematical Summer School, titled 'Probabilistic and statistical methods on networks' during August - September 2017, in TU Berlin.
- Attended "Geometry, Groups and Dynamics" at ICTS, Bangalore, in November 2017.
- Visited SERB school on Nonlinear dynamics, Pune in January 2018.

Aditya N.K. Subramaniam

- Attended workshop on "Schubert Varieties" at IMSc, Chennai, during October – November 2017.
- Attended AIS on "Grobner Basis and their Application" at IIIT, Delhi, in December 2017.

Vaishnavi Sundararajan

- Presented a paper at the Voting 2017 workshop at Malta, April 2017.
- Gave two lectures on "Security protocol design and verification" at the ACM summer school on Information and Systems Security, in June 2017.
- Attended Formal Methods Update Meeting in July 2017, at IIT Mandi.
- Attended FSTTCS 2017 in December 2017 in IIT Kanpur.
- Gave a talk titled "Formal verification for security protocols" at SRM, Chennai in March 2018.

16 Other Professional Activities

Madhavan Mukund

- Co-organized the IOI Training Camp 2017 at CMI, during April-May 2017, including a two day post-camp workshop on theoretical computer science for students attending the camp.
- Team Leader, Indian team to the International Olympiad in Informatics 2017, at Tehran, Iran, during July-August 2017.
- Member, Editorial Board, Resonance - Journal of Science Education.
- Elected Fellow of the Indian Academy of Sciences, Bangalore.

K.G. Arun

- Co-recipient of "Princess of Asturias Award for Technical and Scientific Research", as a member of LIGO Scientific Collaboration for the discovery of Gravitational Waves (June 2017).
- Chaired a session on Numerical relativity at the Eastern Gravity Meeting, in Penn State University (June 2017).
- Received N. R Sen Young researcher Award from IAGRG (May 2017).
- Recipient of Extramural Research Grant of SERB, DST for the project "Astrophysics and Fundamental Physics with gravitational wave observations" (May 2017).
- Selected as (an associated) Faculty at Institute for Gravitation and the Cosmos (Three years from January 2018).
- Membership in International Society on General Relativity and Gravitation (ISGRG).
- Appointed as the Chair of the Scientific Organising committee of Indian Association for General Relativity and Gravity Meeting to be held in BITS Hyderabad in Jan 2019.

Samir Datta

- Received SERB-MATRICS award.
- PC member Logic in Computer Science (LICS 2018).

K. Narayan Kumar

- Co-Chair of ATVA 2017, in Pune, in October 2017.
- Member, Program Committee, 28th International Conference on Concurrency Theory, Berlin, Germany, September 2017.
- Member, Steering Committee, International Conference on the Foundations of Software Technology and Theoretical Computer Science (FSTTCS).
- Deputy Leader of the Indian team to the IOI held in Tehran in July 2017.

K.V. Subrahmanyam

- Been invited to speak at a workshop on Complexity theory, Invariant theory and Optimization at the Institute of Advanced Studies Princeton.

Clare D'Cruz

- Wrote on Review for Math. Zentralblatt.
- Conducted Macaulay2 (software package for Commutative Algebra and Algebraic Geometry) Problems in December 2017 at the AIS/IST Gröbner Bases and their Applications Workshop held at Indraprastha Institute of Information Technology, Delhi.
- Refereed papers for Mathematics Student (Journal of Indian Mathematical Society).

Govind S. Krishnaswami

- Serve on the editorial board of Resonance, Journal of Science Education.
- External examiner for PhD thesis of Mahendraprasad Mali, IISER Pune.
- Currently supervising PhD theses of Sachin Phatak, Sonakshi Sachdev, Himalaya Senapati and T R Vishnu and one MSc student Shanmugapriya Prakasam.

Manoj Kummini

- PhD student Mitra Koley submitted her thesis in October 2017.

Purusottam Rath

- Organised a three week Advanced Instructional School on Class Field Theory at CMI, in May 2017.

Prajakta Nimbhorkar

- Hosted three summer interns.
- Supervised an intern towards his BTech thesis titled "Dynamic algorithms for graph matchings"
- Hosting another intern for a duration of 5 weeks.

S.P. Suresh

- Was part of the program committee for ATVA 2017 at Pune, in October 2017.

Amitabh Virmani

- Associate Editor, General Relativity and Gravitation, Springer, term 2017 - 2020.
- Head of the Max Planck Partner Group "Quantum Black Holes" between CMI and Albert Einstein Institute Germany, August 2017 - May 2019.
- First Ph.D. student successfully defended her thesis at the Institute of Physics Bhubaneswar in November 2017.

Sourish Das

- Organised the third workshop and conference on "Statistical Methods in Finance 2017" (StatFin2017).
- Working on the planning and admission exam of the MSc Data Science program of CMI.
- Organising 2018 summer school in Math and Finance at CMI.
- Organising StatFin2018 conference.
- Managing the Data Science project for NaviRisk for AlgoLabs.
- Did a technical review for Analytics project of LaTentView.

Priyavrat Deshpande

- Coordinated the Madhava Mathematics Competetion for the Chennai region in January 2018.

- Co-organized a day conference on computational geometry at CMI in January 2018.

Sukhendu Mehrotra

- Advised Dhruva Kelkar on an independent study on algebraic geometry.
- Advised Raneeta Dutta on an independent study on sheaf theory.

Geevarghese Philip

- Supervising the master's thesis of one student during this semester.

Vijay Ravikumar

- Mentored French exchange student Apolline Louvet from ENS Paris, for the months of March and April 2017. Worked on a write-up of the work she did on a certain bijection between puzzles and Young Tableaux, which has plan to send to an expository journal.
- Advising a MSc student, Neetal Neel, who is learning Hyperbolic Geometry and Bishal Deb.
- Began a new project with a Chinese collaborator, Yang Mingzhi, who was hosted in Chennai for the second half of February 2018.
- Supervising a small project for PhD student Pachaiyappan, along with S Sundar.
- On committee to set the entrance exam for our BSc program, along with Priyavrat Deshpande and K.V. Subranmanyam.

Issan Patri

- Invited participant at the CIMPA School on Non-commutative Geometry at Quy Nhon, Vietnam, in July 2017.

H.S. Mani

- Referreed a paper for Physics Education.
- Conducted a two day lecture programme for School Children in July 2017.

M.K. Srivas

- MSc Students Graduated in June 2017 under guidance:

  a. Sumanth Prabhu: Concurrent Program Verification With Invariant-guided Under-approximation.

  b. Ranadeep Biswas: Inter-procedural Cnnstant Propagation for Bounded Model Checking.

  c. Charles Babu M.: Loop Acceleration Techniques for Bounded Model Checking.

B. Ravinder

- Teaching Assistant in the workshop "AIS on Representation Theory of Finite Groups" held in CMI during June - July 2017.

17 Visitors

- Spenta Wadia, ICTS-TIFR Bangalore. Gave a talk on "Holography and Black Holes" and "A gravity dual to the Sachdev-Ye-Kitaev model at low energies" (April 2017).
- Shibasish Dasgupta, Ford Motors. Gave a talk in Honour of Prof J. V. Deshpande on "Variable selection using Kullback-Leibler divergence loss" (April 2017).
- Anup Dixit, University of Toronto. Gave a talk on "On the generalized Brauer-Siegel Theorem" (May 2017).
- Siddhi Pathak, Queens University, Canada. Gave a talk on "On a conjecture of Livingston" (May 2017).
- Rahul Singh, Northeastern University, USA. Gave a talk on "Conormal Varieties on the Cominuscule Grassmannian" (May 2017).
- Anirban Chakraborti, JNU. Gave a talk on "Financial fluctuations and economic fundamentals: A network approach" (June 2017).
- Kiran Sharma, JNU. Gave a talk on "Ethnic conflicts and human rights violations: A complex network analysis" (June 2017).
- Purnaprajna P. Bangere, University of Kansas. Gave a talk on "Geometry in Music" and "Deformation of Canonical morphisms and Moduli spaces (with F. J. Gallego and M. Gonzalez)" (July 2017).
- Pramod Padmanabhan, Institute for Basic Science, South Korea. Gave a talk on "Using Supersymmetry to create Many Body Localized Phases" (July 2017).
- Arul Shankar, University of Toronto. Gave a talk on "On the density of polynomials having squarefree discriminants" (July 2017).
- Purnaprajna P. Bangere, University of Kansas. Gave a talk on "Extremal varieties of general type in all dimensions (with Jungkai Chen and Francisco Gallego)" (July 2017).
- Nikhil Balaji, Aalen University, Germany. Gave a talk on "Low complexity variants of Skolem and positivity problems" (August 2017).
- Gautam Prakriya, University of Wisconsin-Madison. Gave a talk on "Derandomizing Isolation in the Space-Bounded setting" (August 2017).
- J.Samuel, Raman Research Institute. Gave a talk on "Gravity and Decoherence: the double slit experiment revisited" (August 2017).

- Rajamanickam Azhagarasan, English Department, Madras University. Gave a talk on "The 'Subject' of(to) Caste" (August 2017).
- Ronno Das, University of Chicago. Gave a talk on "Simplicial resolution a la Vassiliev and counting points" and "Single cohomology classes in your area - this last weird trick will shock you!" (August 2017).
- Swarna Rajagopalan, The Prajnya Trust, Chennai. Gave a talk on "Gender Matters" (August 2017).
- Vaidyanathan Sivaraman, SUNY Binghamton. Gave a talk on "2-divisibility and perfect divisibility in graphs" (August 2017).
- Sk Jahanur Hoque, Institute of Mathematical Sciences, Chennai. Gave a talk on "Cosmological horizon and quadrupole formula in de Sitter background" (August 2017).
- Ravishankar Krishnaswamy, MSR India. Gave a talk on "Microsoft Research India Research Fellow Program" (September 2017).
- Avirup Ghosh, IIT Gandhinagar. Gave a talk on "Quasi-local Black hole Horizons" (September 2017).
- Jean-Marc Castera, A Mathematician and an Artist. Gave a talk on "Another look on traditional geometric art: Pattern morphogenesis, link with the quasicrystals, contribution to a revival" (September 2017).
- Arup Bose, ISI Kolkata. Gave a talk on "Easy introduction to non-commutative probability" (September 2017).
- Mughilan T. R., CEO, Skylark Drones, Bengaluru. Gave a talk on "Drone applications - insights into some of the computational challenges" (September 2017).
- L. Sriram Kumar, IIT Madras. Gave a talk on "Viable scalar spectral tilt and tensor-to-scalar ratio in near-matter bounces" (September 2017).
- Helmut Seidl, Technical Univ. of Munich, Germany. Gave a talk on "Polynomial Tree Automata" (September 2017).
- Supartha Podder, U. Texas, Austin. Gave a talk on "Garden-Hose Model". (October 2017).
- Nallan Suresh, Global Analytics, Chennai. Gave a talk on "Challenges in lending in the subprime sector" (November 2017).
- Paul Gastin, ENS Cachan, France (November 2017).
- Pascal Weil, LaBRI-CNRS (November 2017).

- Thomas Zeume, TU, Dortmund (November-December 2017).
- Parasara Sridhar Duggirala, University of Connecticut, USA. Gave a talk on "Scalable Dynamic Analysis of Large Linear Hybrid Systems" (December 2017).
- Artur de Araujo, ICMAT, Madrid. Gave a talk on "An inductive formula for the Poincar? polynomial of the moduli of generalized quivers" (December 2017).
- Luis Angel Calvo, ICMAT, Madrid. Gave a talk on "A Hitchin-Kobayashi correspondence for pseudo-real twisted Higgs pairs" (December 2017).
- Yajnaseni Dutta, Northwestern University, USA. Gave a talk on "Fujita type conjectures for log-pluricanonical sheaves: a survey of available tools" (January 2018).
- Akash Sengupta, Princeton University. Gave a talk on "Manin's conjecture and the Fujita invariant of finite covers" (January 2018).
- J.K. Verma, IIT-B, Mumbai. Gave a talk on "Minkowski's inequalities for multiplicities of ideals" (January 2018).
- M.S. Raghunathan, NCM Mumbai. Gave two talks on "Narasimhan-Seshadri Revisited" (January 2018).
- Alexandru Oancea, Univ. Pierre et Marie Curie, France. Gave Mini Course on "Floer theory and applications in symplectic topology" (January 2018).
- Gautam Gopal Krishnan, Cornell University, USA. Gave a talk on "Associated varieties of discrete series representations" (January 2018).
- Siddharth Prabhu, Yale University, USA. Gave a talk on "A spin on gravitational radiation from the classical double copy" (January 2018).
- Xavier Goaoc, Université Paris-Est Marne-la-Vallé. Gave a talk on "Some recent trends in discrete and computational geometry" (January 2018).
- Bindusar Sahoo, IISER TVM. Gave series of lectures on "Supergravity" (January 2018).
- Bindusar Sahoo, IISER TVM. Gave a talk on "Series of lectures on supergravity" (January 2018).
- Xavier Goaoc, Université Paris-Est Marne-la-Vallé. Gave talk on "Helly-type theorems and topological combinatorics" and "Shatter functions of geometric hypergraphs" (January 2018).
- M.M. Radhika, ISI Bangalore. Gave a talk on "On the Congruence Subgroup Problem for Algebraic Groups Over Number Fields" (January 2018).

- Anurag Singh, IIT Kanpur. Gave a talk on "Exact homotopy type of certain graph complexes" (January 2018).
- Virginie Bonnaillie-Noel, CNRS, ENS. Gave a talk on "Influence of the geometry on the onset of superconductivity" (January 2018).
- Sangita Kalanidhi Prof. Trichy Sankaran, Professor Emeritus, Senior Scholar, Music Department, York University, Toronto, Canada. Gave a talk on "Some Mathematical Aspects of Laya and Mrudangam Playing" (January 2018).
- Diptarka Das, Albert Einstein Institute, Germany. Gave a talk on "CFT OPE coefficients from modularity" (February 2018).
- Samir Shukla, ISI, Bengaluru. Gave a talk on "Topological connectivity of graph coloring complexes of certain product graphs" (February 2018).
- Srinivas Bhogle, Honorary Scientist, CSIR Fourth Paradigm Institute. Gave a talk on "How much will it rain in July 2018?" (February 2018).
- Pascal Weil, LaBRI-CNRS (January-February 2018).
- Alain Finkel, LSV, ENS (January-February 2018).
- Sandeep Pandey, Social Activist, Ramon Magsaysay awaardee. Gave a talk on "Corporate social irresponsibility: Case of Coca-Cola" (February 2018).
- Siddharth Krishna, Courant Institute of Mathematical Sciences, NYU. Gave a talk on "Flow Interfaces: Compositional Abstractions for Concurrent Data Structures" (February 2018).
- Mohammad Faouzi Atig, Uppsala Univeristy (February 2018).
- Alexandre Serantes, ICTS. Gave two talks on "An invitation to real-time physics in the AdS/CFT correspondence" (February 2018).
- Mohammad Faouzi Atig, Uppsala Univeristy (February 2018).
- Sitender Kashyap, HRI. Gave a talk on Cadabra : A Symbolic computer algebra for multi-indexed objects (February 2018).
- Hans van Ditmarsch, CNRS. Gave a talk on "Gossip Protocols and the Logic of Knowledge" (February 2018).
- Shannon B Olsson, NCBS, Bangalore. Gave a talk on "Biosynthetic Infochemical Communication" and "Naturalist-inspired Chemical Ecology: From Insect Dreams to Virtual Reality" (February 2018).

- Emily Holleman, Writers in Residence programme. Gave CMI Arts Initiative Lecture on "The End of the World" (March 2018).
- Utsav Choudhury, IISER Kolkata. Gave three lectures on "An Introduction to Nori Motives" (February-March 2018).
- Alexander Vilenkin, Tufts University, USA. Gave a talk on "Black holes from cosmic inflation" (March 2018).
- Arnab Saha, Australian National University. Gave a talk on "Isocrystals associated to arithmetic jet spaces of abelian schemes" (March 2018).
- Snigdha Athaiya, IISc, Bangalore (March 2018).
- K.V. Raghavan, IISc, Bangalore (March 2018).
- Guillaume Faye, GReCO, Institut d'Astrophysique de Paris, UMR 7095, CNRS, Sorbonne Université. Gave a talk on "Modelling binary systems of compact objects: the fourth-order post-Newtonian dynamics" (March 2018).
- PoochiVenkat. Gave a talk on "Poochi Art (Poochi means ?insect' in Tamil)" (March 2018).
- M.S. Raghunathan, NCM, Mumbai. Gave series of lectures (Random Talks) on "A proof of uniformization" "The H Cobordism Theorem" "Exotic Spheres" (two talks), "Compact Lie groups" and "Atiyah-Singer Index theorem" (two talks) (January-March 2018).
- Jagdish Saraswatula, KLA Tencore, Chennai. Gave a talk on "Silicon to semiconductor: A journey through Machine Learning, Algorithms, Physics and Software" (March 2018).
- Goutham Rajendran, University of Chicago. Gave a talk on "Programming and the Goemans Williamson" (March 2018).
- Sujay Ashok, Institute of Mathematical Sciences, Chennai. Gave two talks on "Surface operators in Gauge theories" (March 2018).