

ACTIVITY REPORT

(January-April 2023)

Two renowned mathematicians and a theoretical physicist, with close ties to ICTS, were among the recipients of the Padma Awards this year. ICTS International Advisory Board member, S. R. SRINIVASA VARADHAN received the **Padma Vibhushan**, India's second highest civilian honour. Former ICTS Program Committee member, DEEPAK DHAR received the **Padma Bhushan** while ICTS senior faculty associate, SUJATHA RAMDORAI was awarded the **Padma Shri**.

ICTS ACTIVITIES

Summary of Programming Activities *(For details see following pages)*

Programs/Discussion Meetings held: 11

Academic visitors to ICTS-TIFR: 70

Seminars and colloquia: *(For details see Annexure – A)*

Summary of Research Activities *(For details see Annexure - B)*

Papers published: 23

arXiv submissions: 26

Ia. PROGRAMS

Less Travelled Path to the Dark Universe

Organizers: Arka Banerjee, Subinoy Das, Koushik Dutta, Raghavan Rangarajan, Vikram Rantala | 13-24 March 2023

Probabilistic Methods in Negative Curvature

Organizers: Riddhipratim Basu, Anish Ghosh, Subhajit Goswami, Mahan MJ | 27 February-10 March 2023

Vortex Moduli

Organizers: Nuno Romão, Sushmita Venugopalan | 6-17 February 2023

Turbulence: Problems at the Interface of Mathematics and Physics

Organizers: Uriel Frisch, Konstantin Khanin, Rahul Pandit | 16-27 January 2023

Topics in High Dimensional Probability

Organizers: Anirban Basak, Riddhipratim Basu | 2-13 January 2023



Ib. DISCUSSION MEETINGS

Inaugural meeting of Asian-Oceanian Women in Mathematics

Organizers: Rukmini Dey, Sanoli Gun, Purvi Gupta, Hyang-Sook Lee, Polly Sy, Melissa Tacy | 24-28 April 2023

Lunar Gravitational-Wave Detection

Organizers: Parameswaran Ajith, Jan Harms, Andrea Maselli, Rajesh Nayak, P. Sreekumar | 17-20 April 2023

Topics in Hodge Theory

Organizers: Indranil Biswas, Mahan Mj | 20-25 February 2023

Second Preparatory School on Population Genetics and Evolution

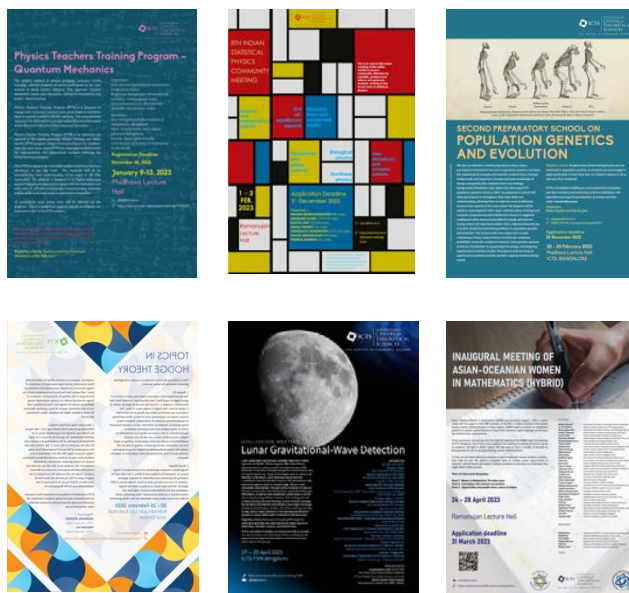
Organizers: Deepa Agashe, Kavita Jain | 20-24 February 2023

8th Indian Statistical Physics Community Meeting

Organizers: Ranjini Bandyopadhyay, Abhishek Dhar, Kavita Jain, Rahul Pandit, Samridhi Sankar Ray, Sanjib Sabhapandit, Perna Sharma | 1-3 February 2023

Physics Teachers Training Program – Quantum Mechanics

Organizers: Raghavan Rangarajan, SVM Satyanarayana, M Sivakumar | 9-13 January 2023



Ic. LECTURE SERIES

INFOSYS-ICTS RAMANUJAN LECTURES

Critical Phenomena Through the Lens of the Ising Model

Hugo Duminil-Copin (Institut des Hautes Études Scientifiques, France & University of Geneva, Switzerland) | 9-13 January 2023

DISTINGUISHED LECTURES

The Ubiquity of Logarithmically Correlated Fields and Their Extremes

Ofer Zeitouni (Weizmann Institute of Science, Israel & New York University, USA) | 5 January 2023

ABDUS SALAM MEMORIAL LECTURES

The Future of the Indian Space Programme

S. Kiran Kumar (Vikram Sarabhai Professor at ISRO and Member of the Space Commission, Govt of India) | 18 April 2023

CENTENNIAL TRIBUTE TO AMAL RAYCHAUDHURI

This is a special lecture series conducted as a centennial tribute to Amal Kumar Raychaudhuri. The lecture series provides a brief overview of topics relevant to current research on General Relativity.

Advanced General Relativity: A Centennial Tribute to Amal Kumar Raychaudhuri

Sunil Mukhi (Adjunct Professor, ICTS- TIFR, Bengaluru) | 24, 27, 31 March, 3, 7, 10, 15, 17, 21, 24, 28 April 2023

SPECIAL ICTS KOLMOGOROV SYMPOSIUM

On the occasion of A.N. Kolmogorov's 120th birth anniversary, a symposium was held on 25 April 2023. The symposium featured online talks by leading researchers in the fields where Kolmogorov had an impact on in its early stages.

The speakers were Hao Wu (Tsinghua University), Samriddhi Sankar Ray (ICTS-TIFR), Prahladh Harsha (TIFR, Mumbai), Amit Apte (ICTS-TIFR, on lien at IISER Pune), Alison Etheridge (Oxford University), Riddhipratim Basu (ICTS-TIFR) and S.R.S. Varadhan (Courant Institute of Mathematical Sciences, NYU) and K.R. Parthasarathy (Indian Statistical Institute).

Id. VISITS OF SCIENTISTS

The following researchers visited ICTS during January-April 2023.

1. **Radhika Achikanath Chirakkara**, The Australian National University, Australia
2. **Soham Bhattacharyya**, Max Planck Institute, Hannover, Germany.
3. **Krishanu Roy Chowdhury**, Saha Institute of Nuclear Physics, Kolkata
4. **Deepayan Sarkar**, Indian Statistical Institute, Delhi
5. **Caroline Uhler**, Massachusetts Institute of Technology, USA
6. **Sunil Mukhi**, IISER Pune
7. **Soumendu Sundar Mukherjee**, Indian Statistical Institute, Kolkata
8. **Shubadip Chakraborti**, Friedrich-Alexander-Universität Erlangen-Nürnberg, Germany
9. **Rajdeep Sensarma**, TIFR Mumbai
10. **Aritra Kundu**, University of Luxembourg
11. **Cedric Jean Antoine Bernardin**, Université Côte d'Azur, France
12. **Raphael Benjamin Chetrite**, Dieudonne Laboratory JA, France
13. **Shannon Olsson**, NCBS-TIFR, Bangalore
14. **Prashant Kumar**, Princeton University, USA
15. **Ravindra N Bhatt**, Princeton University, USA
16. **Vikas Trivedi**, European Molecular Biology Laboratory, Barcelona, Spain
17. **Maura McLaughlin**, West Virginia University, USA
18. **Arvind Shekar**, University of Southampton, UK
19. **Manoj Gupta**, S.N. Bose National Centre for Basic Sciences, Kolkata
20. **Aradhita Chattopadhyaya**, Dublin Institute of Advanced Studies, Ireland
21. **Swapnamay Mondal**, Trinity College, Dublin, Ireland
22. **Prakriti Pal Choudhury**, University of Cambridge, UK
23. **Mohit Garg**, University of Bremen, Germany
24. **Raghu Mahajan**, Stanford University, USA
25. **Arnab Sarkar**, S. N. Bose National Centre for Basic Sciences, Kolkata
26. **Mritunjay Verma**, University of Southampton, UK

27. **Pradeep Chitta**, Max Planck Institute for Solar System Research (MPS), Göttingen, Germany
28. **Raghav Somani**, University of Washington, Seattle, USA
29. **Siddharth Bhandari**, Toyota Technological Institute at Chicago
30. **Sreedev M**, IISER Pune
31. **Vivek S. Borkar**, Indian Institute of Technology, Bombay
32. **Onkar Parrikar**, TIFR Mumbai
33. **Pulapre Balakrishnan**, Ashoka University
34. **Moumanti Podder**, IISER Pune
35. **Amala Mahadevan**, Woods Hole Oceanographic Institution, USA
36. **Alex Kinsella**, Woods Hole Oceanographic Institution, USA
37. **Priyank Vasu**, Indian Institute of Technology, Patna
38. **Siddharth Panigrahi**, Indian Institute of Technology, Patna
39. **Subham Paul**, Indian Institute of Technology, Patna
40. **Rahul Kumar Singh**, Indian Institute of Technology, Patna
41. **Deepayan Sarkar**, Indian Statistical Institute, Delhi
42. **Pratik Rath**, University of California, Santa Barbara
43. **Bulbul Chakraborty**, Martin A. Fisher School of Physics, Brandeis University, USA
44. **Vaibhav Kalvakota**, Turito institute, Hyderabad
45. **Kartick Ghosh**, IISc Bengaluru
46. **Sumanta Chakraborty**, Indian Association for the Cultivation of Science, Kolkata
47. **Rajesh Mondal**, The Oskar Klein Centre, Stockholm University, Sweden
48. **Kartick Sarkar**, Tel Aviv University, Israel
49. **Arnab Dhani**, Penn State University, USA
50. **Arun Paramekanti**, University of Toronto, Canada
51. **Masroor C. Pookkillath**, Centre for Theoretical Physics and Natural Philosophy, Mahidol University, Thailand
52. **Divya Singh**, Pennsylvania State University, USA
53. **Payel Sarkar**, BITS-Pilani, Goa
54. **Surbhi Khetrpal**, School of Physics, University of Hyderabad
55. **Suman Jyoti De**, Harish-Chandra Research Institute, Allahabad
56. **Swati Singh**, Indian Institute of Technology, Patna
57. **Vaishnavi V.G.**, St Joseph's University
58. **Nirnoy Basak**, Harish-Chandra Research Institute, Allahabad
59. **Ashwin Girish**
60. **Faruk Abdulla**, Harish-Chandra Research Institute, Allahabad
61. **Shailesh Chandrasekharan**, Duke University, USA
62. **Ahmed Almheiri**, NYU Abu Dhabi
63. **Heather Sharkey**, University of Pennsylvania, USA
64. **Vijay Balasubramanian**, University of Pennsylvania, USA
65. **Aswin Parayil Mana**, Stony Brook University, USA
66. **R. Shankar**, Institute of Mathematical Sciences, Chennai
67. **Chethan Krishnan**, IISc Bengaluru
68. **Eluvathingal D. Jemmis**, IISc Bengaluru

69. **Divya Jyoti**, Indian Institute of Technology Madras, Chennai
70. **Kajal Singh**, Harish-Chandra Research Institute, Allahabad

e. NEWS ON GRANTS, AWARDS AND FELLOWSHIPS



SUBHRO BHATTACHARJEE received the **Indian National Science Academy (INSA) Medal for Young Scientists 2022**. Subhro was awarded for “outstanding contributions to the theory of phase transitions beyond the conventional symmetry-breaking framework, the relation between transport and chaos, and an unexpected connection between granular elasticity and gauge theories.” He was also awarded an **Indo-Swedish Initiation grant for collaboration with Sergej Moroz of Karlstadt University**. Also, Subhro’s publication (in collaboration with Jishnu N. Nam-poothiri, Michael D’Eon, Kabir Ramola and Bulbul Chakraborty), titled *Tensor Electromagnetism and Emergent Elasticity in Jammed Solids*, was **highlighted as Editors’ Suggestion in Physical Review E**.



RAMA GOVINDARAJAN was awarded the **Archana Sharma Memorial Lecture Award 2022** by the National Academy of Sciences, India (NASI), in recognition of her distinguished contributions to science.



MANAS KULKARNI was selected for the **Indian National Science Academy (INSA) Medal for Young Scientists 2022**. Manas was recognised for his “groundbreaking work on the phenomena of localization, chaos and transport in isolated and open systems, both quantum and classical.”



PRAYUSH KUMAR was awarded the **NASI Young Scientist Platinum Jubilee Award for 2022**. Prayush was recognised for his notable contributions to numerical relativity and gravitational wave astrophysics.



STHITADHI ROY was awarded a new **Max Planck Partner Group**. Sthitadhi will head this partnership with his counterpart Roderich Moessner from MPIKS, Dresden.



ICTS graduate student BHANU KIRAN was selected for an **Institut Henri Poincaré (IHP)-Centre International de Mathématiques Pures et Appliquées (CIMPA) fellowship** that will enable him to participate in the special trimester program on “Higher Structures in Geometry and Mathematical Physics” at IHP in Paris.



JIM THOMAS’ recent publication, titled *Upscale Transfer of Waves in One-Dimensional Rotating Shallow Water*, was selected as a **featured publication by the Journal of Fluid Mechanics**. A special highlighted article about the paper was published in the *Focus on Fluids* section of the journal.

Ila FACULTY

1. SARANG GOPALAKRISHNAN (Princeton University, USA) joined as a Faculty Associate from January 2023.
2. AKSHIT GOYAL will join ICTS in September 2023 as Simons Young Researcher. Akshit is at present the Physics of Living Systems Fellow at MIT, USA.

Iib STUDENTS**GRADUATE PROGRAM**

1. Classes for the new spring semester began on 8 January 2023. Most of the courses are now being conducted offline. A few courses with participants from other TIFR centres are being offered in the hybrid mode. For details, please visit our Moodle page:
<https://courses.icts.res.in/course/index.php?categoryid=18>
2. Apart from the ICTS courses, students have registered for courses from IISc, TIFR Colaba, TIFR CAM and TIFR Hyderabad.
3. **Final year students:**
 - a. Kohinoor Ghosh, working with Rukmini Dey successfully defended his thesis on 3 March 2023.
 - b. Animesh Nanda, working with Subhro Bhattacharjee has submitted his thesis on 30 January 2023.
 - c. Sugan Durai Murugan, working with Samriddhi Sankar Ray successfully completed his synopsis evaluation seminar on 24 February 2023.
4. **Graduate Studies Admissions 2023**
 - a. Applications have been invited for the graduate studies program in Physics and Physics of Life through the TIFR GS channel.
 - b. The interview for the Joint CAM-ICTS PhD program in Mathematics was held on 13 April 2023. 20 applicants were shortlisted through TIFR GS/ GATE/ CSIR-UGC NET streams for the interview.
5. **New initiatives**
 - a) ICTS-TIFR, jointly with NCBS-TIFR, has announced a TIFR interdisciplinary program in Physics of Life (TIFR-PoL). The TIFR-PoL programme is a special stream within the TIFR graduate programme that provides unique flexibilities and resources for students with

quantitative backgrounds. For further details, please visit- <https://pol.icts.res.in/>.

- b) To encourage applications from engineering degree holders, the eligibility criteria for the joint CAM-ICTS PhD program in Mathematics was modified to include GATE scores from a broad spectrum of engineering disciplines <https://www.icts.res.in/graduate-studies/mathematics>.

POSTDOCTORAL PROGRAM

1. From the Fall 2023 hiring cycle, 3 candidates were offered ICTS postdoctoral fellowship (2 of them have accepted the offer

Research group	Name	Current Affiliation
Mathematics	Kartick Ghosh	IISc Bengaluru
Statistician Physics and Condensed Matter Group	Sibaram Ruidas	IISc Bengaluru

VISITING STUDENTS PROGRAM

1. We are in the process of shortlisting students for the ICTS Long Term Visiting Students Program 2023: <https://www.icts.res.in/academic/long-term-visiting-student-program>
2. Twenty offers were made for the ICTS S.N. Bhatt Memorial Excellence Fellowship Program 2023: <https://www.icts.res.in/news/results-icts-s-n-bhatt-memorial-excellence-fellowship-program-2023>.

KAAPI WITH KURIOSITY**Opportunities for Breakthrough Science With Lunar Exploration**

Jan Harms (Gran Sasso Science Institute, Italy) | 16 April 2023 | J.N. Planetarium, Bengaluru

What is Natural Selection (And Why it is Not 'Survival of the Fittest')?

Amitabh Joshi (JNCASR, Bengaluru) | 26 March 2023 | J.N. Planetarium, Bengaluru

Ways of Computing

Jaikumar Radhakrishnan (ICTS-TIFR) | 26 February 2023 | J.N. Planetarium, Bengaluru

Black Holes, Quantum Mechanics and the Reversibility of Time

Suvrat Raju (ICTS-TIFR) | 14 January 2023 | J.N. Planetarium, Bengaluru

MATHS CIRCLE INDIA

ICTS is leading a pan-TIFR effort to seed Maths Circles for talented middle school students across the country. To establish proof of concept, ICTS has conducted five online Maths Circle India sessions during January-April 2023.

Session 33

Conducted by: Krishna Menon, Sadhanandha B, Writika Sarkar, Priyavrat Deshpande | **Interactive session:** 7 April 2023

Session 32

Conducted by: Krishanu Maulik, Mridul Nandi, Mrinal Kanti Das, Parthanil Roy | **Interactive session:** 10 March 2023

Session 31

Conducted by: Krishanu Maulik, Mridul Nandi, Mrinal Kanti Das, Parthanil Roy | **Interactive session:** 17 February 2023

Session 30

Conducted by: Krishanu Maulik, Mridul Nandi, Mrinal Kanti Das, Parthanil Roy | **Interactive session:** 3 February 2023

Session 29

Conducted by: Krishanu Maulik, Mridul Nandi, Mrinal Kanti Das, Parthanil Roy | **Interactive session:** 13 January 2023

ICTS-RRI MATHS CIRCLE

ICTS in collaboration with RRI launched in-person maths circle sessions. These sessions are conducted once every two weeks for Bangalore students studying in grades 6-10. During January-April 2023, six sessions of maths circle sessions were held at the Raman Research Institute, Bangalore.

Session 6

Conducted by: Kiran Estake, Kshitij Sharma, Sachchidanand Prasad, Supurna Sinha, Joseph Samuel | **Interactive session:** 8 April 2023 | Raman Research Institute, Bengaluru

Session 5

Conducted by: Kiran Estake, Kshitij Sharma, Sachchidanand Prasad, Supurna Sinha, Parthanil Roy, Joseph Samuel | **Interactive session:** 25 March 2023 | Raman Research Institute, Bengaluru

Session 4

Conducted by: Kiran Estake, Kshitij Sharma, Sachchidanand Prasad, Lakshya Nahar, Supurna Sinha, Joseph Samuel | **Interactive session:** 11 March 2023 | Raman Research Institute, Bengaluru

Session 3

Conducted by: Kiran Estake, Kshitij Sharma, Supurna Sinha, Joseph Samuel | **Interactive session:** 25 February 2023 | Raman Research Institute, Bengaluru

Session 2

Conducted by: Kiran Estake, Kshitij Sharma, Muhammed Irshad, Manish Jain, Joseph Samuel | **Interactive session:** 11 February 2023 | Raman Research Institute, Bengaluru

Session 1

Conducted by: Kiran Estake, Kshitij Sharma, Jitendra Kethepalli, Sachchidanand Prasad, Joseph Samuel | **Interactive session:** 28 January 2023 | Raman Research Institute, Bengaluru

CONNECT INDIA RESIDENCY

The Connect India Residency, an international program intended to foster experimentation in the arts in connection with fundamental science across the world, began at ICTS-TIFR from April 16, 2023. Two selected artists, Elisa Storelli and Rohini Devashar, will spend four weeks at ICTS-TIFR, followed by three weeks at CERN. The Connect India Residency hopes to expose the artists to two unique scientific organisations and the fundamental research conducted there.

EXHIBITION ON CLIMATE CHANGE

An exhibition, titled “Climate Chaos: We’re Just Warming Up” was displayed at the J.N. Tata Planetarium in collaboration with Science Gallery Bangalore. The exhibition displays an informed, starkly visual impression of what the climate crisis will mean for our lives in urban Indian megacities like Bangalore, Mumbai, Delhi, Chennai and Kolkata.

The exhibition featured interactive demonstrations and videos, like showing the link between carbon dioxide emissions and sea-level rise, the increase in frequency of extreme climate events due to a shifting global mean and a live demonstration of the discomfort of humid heat vs dry heat (a particularly coastal problem). The exhibition also featured AI-generated speculative im-

agery of future scenarios of Indian cities, with and without climate intervention. Finally, the exhibition ended with “The Hope”, demarcating steps and pointers for individuals, to build up consciousness about the effects of the climate crisis on every aspect of our lives and livelihoods.

MEET THE AUTHOR

On January 24, 2023, science writer ANANYO BHATTACHARYA spoke about some of John von Neumann’s incredible mathematical ideas, demonstrating why his legacy is omnipresent in our lives today. Bhattacharya is the author of the book *The Man from the Future: The Visionary Ideas of John von Neumann*. The talk and interaction was part of the Meet the Author series.

KŌLAM, A WESTERN PERSPECTIVE

Kōlam, a Western Perspective, an outreach event, was organised on 13 February 2023. The event consisted of a photography exhibition, an introductory talk by Claudia Silva (a professional photographer and videographer), about kōlam from various points of view: audiovisual, anthropological, educational, ephemeral art, women’s traditions and ethno-mathematical aspects. There was a live performance by Jayanthi Muruges, a kōlam artist from South India, and a kōlam workshop.

ANNEXURE - A

The following are the details of seminars and colloquia during the period January-April 2023:

Uncovering Hidden Orders

Arun Paramekanti (University of Toronto, Canada) | 27 April 2023

Letting the Samples Speak: A New Approach Towards Efficient Importance Sampling for Tail Events

Kartyek Murthy (Singapore University of Design and Technology) | 25 April 2023

Are Classical Information-Theoretic Model Selection Criteria Any Good in High-Dimensional Statistics?

Soumendu Sundar Mukherjee (Indian Statistical Institute, Kolkata) | 25 April 2023

Fuzzballs and Random Matrices

Chethan Krishnan (Indian Institute of Science, Bengaluru) | 19 April 2023

Extended Minimal Theories of Massive Gravity

Masroor C Pookkillath (Mahidol University, Thailand) | 13 April 2023

On the Quantum Mechanics of Near Extremal Black Holes

Luca Iliesiu (Stanford University, USA) | 12 April 2023

Bootstrapping Closed String Field Theory

Atakan Hilmi Farat (MIT, USA) | 5 April 2023

Canonical Purification, Bulk Reconstruction and the Quantum Extremal Shock

Onkar Parikkar (TIFR, Mumbai) | 29 March 2023

Submesoscale Ocean Dynamics: Theory and Progress from Recent Observational Campaigns

Alex Kinsella (Woods Hole Oceanographic Institution, USA) | 29 March 2023

Sampling with Mollified Interaction Energy Descent

Anna Korba (ENSAE/CREST) | 28 March 2023

Learning Operators

Siddhartha Mishra (ETH Zurich, Switzerland) | 28 March 2023

Equations of State in the Curved Space-time of Compact Degenerate Stars

Susobhan Mandal (IISER Kolkata) | 23 March 2023

A Chern-Simons Theory for the Indian Ocean

David Tong (DAMTP, University of Cambridge, UK) | 22 March 2023

Flow-Driven Instabilities in Coastal Wetlands

Amala Mahadevan (Woods Hole Oceanographic Institution, USA) | 20 March 2023

Bond Percolation Games on Rooted Regular Trees and Ergodicity of Related Stochastic Tree Automata

Moumanti Podder (IISER Pune) | 20 March 2023

Extremes of Stable Random Fields: An Overview

Parthanil Roy (Indian Statistical Institute, Bengaluru) | 20 March 2023

Joint Statistics of Cosmological Constant and SUSY Breaking Scale in Flux Vacua with Nilpotent Goldstino.

Kajal Singh (Harish-Chandra Research Institute, Allahabad) | 14 March 2023

Breakdown of Hydrodynamics Below Four Dimensions in a Dipole-Conserving Fluid

Sahil Kumar Singh (ICTS-TIFR, Bengaluru) | 14 March 2023

Modular Flow in Holographic Theories of Gravity

Pratik Rath (UC, Santa Barbara, USA) | 13 March 2023

A Dynamical Model of Black Hole Evaporation in 2-Dim Gravity

Spenta R. Wadia (ICTS-TIFR, Bengaluru) | 7 March 2023

Berezin Quantization of Even-Dimensional Compact Manifolds and Pullback Coherent States

Kohinoor Ghosh (ICTS-TIFR, Bengaluru) | 3 March 2023

Aspects of the Generalized Second Law and the Covariant Entropy Bound

Vaibhav Kalvakota (Turito Institute, Hyderabad) | 1 March 2023

Tidal Effects in Classical General Relativity and Beyond

Sumanta Chakraborty (Indian Association for the Cultivation of Science, Kolkata) | 28 February 2023

Optimal transport, statistics, and PDE: a fruitful interaction

Soumik Pal (University of Washington, Seattle, USA) | 28 February 2023

A gentle introduction to Optimal Transport

Soumik Pal (University of Washington, Seattle, USA) | 28 February 2023

The 21-cm Cosmology

Rajesh Mondal (Stockholm University, Sweden) | 27 February 2023

On Some Canonical Metrics on Holomorphic Vector Bundles over Kähler Manifolds

Kartick Ghosh (IISc Bengaluru) | 27 February 2023

Robustness of the Kardar-Parisi-Zhang Scaling in a Classical Spin Chain with Broken Integrability

Dipankar Roy (ICTS-TIFR, Bengaluru) | 27 February 2023

Implications of Inviscid Hydrodynamics and its Variants for Turbulence and Statistical Physics

Sugan Durai Murugan (ICTS-TIFR, Bengaluru) | 24 February 2023

Galactic Bubbles and Winds

Kartick Sarkar (Tel Aviv University, Israel) | 23 February 2023

Disordered Electronic Systems: From Single Particle Localization to Many-body Localization

Ravindra N Bhatt (Princeton University, USA) | 30 January, 1, 6, 8, 14, 16, 21, 23 February 2023

*(This was a series of eight lectures covering several aspects of electronic properties of disordered quantum matter)***Many-Body Localization in the Quantum Hall Regime**

Ravindra N Bhatt (Princeton University, USA) | 21, 23 February 2023

Emergent Non-Fermi Liquid in the Excitations of the Half-Filled Landau Level

Prashant Kumar (Princeton University, USA) | 22 February 2023

Algebras and States in JT Gravity

Geoffrey Penington (UC, Berkeley, USA) | 22 February 2023

What is a Random Translation Surface?

Jayadev Athreya (University of Washington, Seattle, USA) | 20 February 2023

Magnetics Behavior Across the MI Transition

Ravindra N Bhatt (Princeton University, USA) | 16 February 2023

(1+1)D QCD with Heavy Adjoint Quarks

Meseret Asrat (ICTS-TIFR, Bengaluru) | 15 February 2023

The Disordered Insulator: Low Temperature Transport and Magnetic Behavior

Ravindra N Bhatt (Princeton University, USA) | 14 February 2023

Numerical Experiments on Coefficients of Instanton Partition Functions

Aradhita Chattopadhyaya (Dublin Institute for Advanced Studies, Ireland) | 8 February 2023

Dielectric Behavior Across the Metal - Insulator Transition

Ravindra N Bhatt (Princeton University, USA) | 8 February 2023

Interaction Effects and Experiment

Ravindra N Bhatt (Princeton University, USA) | 6 February 2023

Networks, Forces and Transitions: A Synthetic Approach to Understand Axial Emergence in Multicellular Systems

Vikas Trivedi (EMBL Barcelona, Spain) | 2 February 2023

A Top-Down Dictionary for Double Holography

Andreas Karch (University of Texas, Austin, USA) | 1 February 2023

Scaling Theory of Localization

Ravindra N Bhatt (Princeton University, USA) | 1 February 2023

Supersymmetric Black Holes and $T\bar{T}$ Deformation

Swapnamay Mondal (Trinity College, Dublin) | 31 January 2023

Lecture - 1: Metal - Insulator Transition: Prehistory

Ravindra N Bhatt (Princeton University, and TIFR) | 30 January 2023

The Second Law of Black Hole Mechanics in Effective Field Theory

Harvey Reall (University of Cambridge, UK) | 25 January 2023

Quantum Chaos and Operator Growth in 2d CFTs

Surbhi Khetrapal (University of Hyderabad) | 24 January 2023

ICM & Gaseous Halos: Cooling Clouds, Heating and Transport Mechanisms

Prakriti Pal Choudhury (University of Cambridge, UK) | 19 January 2023

Rational Conformal Field Theories With A Single Critical Exponent, and Their Classification

Sunil Mukhi (IISER Pune) | 18 January 2023

Scale Invariant Effective Field Theories in AdS/CFT

Mrityunjay Verma (University of Southampton, UK) | 17 January 2023

Majorana Zero Modes and Topological Quantum Computation: What, Why, How, When?

Sankar Das Sarma (University of Maryland) | 13 January 2023

Tracing the Birth of the Solar Wind

Lakshmi Pradeep Chitta (Max Planck Institute for Solar System Research, Germany) | 12 January 2023

Developing a Hybrid-PIC Code with FLASH to Understand Magnetic Field Growth in Collision-Less Plasma

Radhika Achikanath Chirakkara (Australian National University) | 10 January 2023

Hamiltonian Theory of Composite Fermions

Ganpathy Murthy (University of Kentucky, USA) | 3, 6 January 2023

Entanglement Dualities in Supersymmetry

Krishanu Roy Chowdhury (Saha Institute of Nuclear Physics, Kolkata) | 5 January 2023

Dynamical Fluctuations in the Riesz Gas

Rahul Dandekar (Institut de Physique Theorique, CEA, CNRS, France) | 4 January 2023

Blast and Splash in a 1D Infinite System of Cold Gas

Subhadip Chakraborti (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany) | 3 January 2023

Causal Representation Learning in the Context of Cell State Transitions

Caroline Uhler (Massachusetts Institute of Technology, USA) | 2 January 2023

COLLOQUIA

Structural Chemistry of Boron: Inevitable Uncertainties

Eluvathingal D Jemmis (Indian Institute of Science, Bengaluru) | 17 April 2023

Goods and people: Ways of seeing India at 75

Pulapre Balakrishnan (Ashoka University) | 20 March 2023

Topological Phase Transitions in the Quantum Hall Effect

Prashant Kumar (Princeton University) | 21 February 2023

The Insect Mind

Shannon Olsson (NCBS-TIFR, Bengaluru) | 20 February 2023

Pulsar Timing Arrays See Red: The Era of Low-Frequency Gravitational Wave Detection

Maura McLaughlin (West Virginia University, USA) | 30 January 2023

ANNEXURE - B

PAPERS PUBLISHED – 49

In Journals – 23

1. *Prospects for the Observation of Continuous Gravitational Waves from Spinning Neutron Stars Lensed by the Galactic Supermassive Black Hole*, Soumyadip Basak, Aditya Kumar Sharma, Shasvath J. Kapadia, Parameswaran Ajith. The Astrophysical Journal Letters 942 (2) L31 (2023)
2. *Elliptic Harnack Inequality for Z_d* , Siva Athreya, Nitya Gadhiwala, Ritvik R. Radhakrishnan Involve 15 (4) 687-708 (2023)
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