

ACTIVITY REPORT

(September-December 2022)

ICTS ACTIVITIES

Summary of Programming Activities *(For details see following pages)* ^[L]_[SEP] Programs/Discussion Meetings held: 13

Academic visitors to ICTS-TIFR: 74

Seminars and colloquia: *(For details see Annexure – A)* ^[L]_[SEP]

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

Papers published: 26

arXiv submissions: 20



ICTS academic activities, particularly programs and discussion meetings, are now being held in person, online as well as in the hybrid format.

Ia. PROGRAMS

Ergodic Theory and Dynamical Systems (Hybrid)

Organizers: **C. S. Aravinda, Anish Ghosh and Riddhi Shah** | 5-16 December 2022

ICTP-ICTS Winter School on Quantitative Systems Biology (Hybrid)

Organizers: **Vijay Balasubramanian, Antonio Celani, Pratik Chaudhari, Matteo Marsili and Guido Sanguinetti** | 5-16 December 2022

Horizons in Accelerators, Particle/Nuclear Physics and Laboratory-based Quantum Sensors for HEP/NP (Hybrid)

Organizers: **Swapan Chattopadhyay and Rohini Godbole** | 14-17 November 2022

Statistical Biological Physics: from Single Molecule to Cell

Organizers: **Debashish Chowdhury, Ambarish Kunwar and Prabal K. Maiti** | 11-22 October 2022

Tipping Points in Complex Systems (Hybrid)

Organizers: **Partha Sharathi Dutta, Vishwesha Guttal, Mohit Kumar Jolly and Sudipta Kumar Sinha** | 19-30 September 2022

Frustrated Metals and Insulators (Hybrid)

Organizers: **Federico Becca, Subhro Bhattacharjee, Yasir Iqbal, Bella Lake, Yogesh Singh and Ronny Thomale** | 5-16 September 2022

Ib. DISCUSSION MEETINGS

Statistical Physics of Complex Systems

Organizers: **Sumedha, Abhishek Dhar, Satya Majumdar, R. Rajesh, Sanjib Sabhapandit and Tridib Sadhu** | 19-23 December 2022

Structured Light and Spin-Orbit Photonics

Organizers: **Bimalendu Deb, Tarak Nath Dey, Subhasish Dutta Gupta and Nirmalya Ghosh** | 29 November-2 December 2022

Bangalore Quantum Technology Initiative

Organizers: **Subhro Bhattacharjee and Arindam Ghosh** | 29 November 2022

Particle Physics: Phenomena, Puzzles, Promises

Organizers: **Amol Dighe, Rick S Gupta, Sreerup Raychaudhuri and Tuhin S Roy** | 21-23 November 2022

Mathematics Teachers Training Camp at ICTS

Organizers: **Prithwijit De and Pranav Pandit** | 4-7 November 2022

The Future of Indian Astronomy (Hybrid)

Organizers: **Parameswaran Ajith, G. C. Anupama, Dipankar Banerjee, Varun Bhalerao, Poonam Chandra and Divya Oberoi** | 31 October-2 November 2022

Targeted Questions in Condensed Matter (Online)

Organizers: **Subhro Bhattacharjee, Arun Paramakanti and Nandini Trivedi** | 22 September 2022



IC. LECTURE SERIES

INFOSYS-ICTS CHANDRASEKHAR LECTURES

Multiple Phase Transitions in a System of Hard Core Rotors on a Lattice
Deepak Dhar (Distinguished Emeritus Professor and NASI-Senior Scientist, IISER-Pune) | 19-21 December 2022

Looking Into the Future of High-Energy Particle Physics
Gian Giudice (CERN, Switzerland) | 21-23 November 2022

DISTINGUISHED LECTURES

Maxwell's Demon Goes Optical!

Swapan Chattopadhyay (FNAL, USA & IISc, Bengaluru) | 15 November 2022

Controlling Activation of G Protein-Coupled Receptors for New Drugs to Relieve Pain, Give Pleasure, and Modulate Nerve Transmission

William A. Goddard III (California Institute of Technology, USA) | 11 October 2022

A Material Quest: Building Technology with Atomic Layers (An Infosys Prize Lecture)

Arindam Ghosh (IISc, Bengaluru) | 28 September 2022

ICTS-INFOSYS STRING THEORY LECTURES

Symmetries in QFT and Their Relationship With Category Theory

Lakshya Bhardwaj (Mathematical Institute, University of Oxford) | 10-12 October 2022

FOUNDATION DAY LECTURE

The Edge of a Cell: A Living Fabric

Satyajit Mayor (NCBS-TIFR) | 13 December 2022

Id. VISITS OF SCIENTISTS

The following researchers visited ICTS during September-December 2022.

1. **Subhajit Goswami** (TIFR, Mumbai)
2. **Adway Mitra** (IIT, Kharagpur)
3. **Dootika Vats** (IIT, Kanpur)
4. **Nabamita Banerjee** (IISER, Bhopal)
5. **Suvankar Dutta** (IISER, Bhopal)
6. **Raghu Mahajan** (Stanford University, USA)
7. **Galin Jones** (University of Minnesota, USA)
8. **Sameer Murthy** (King's College London, UK)
9. **Ranjani Seshadri** (Ben-Gurion University, Israel)
10. **Elisa Celis** (Yale University, USA)
11. **Nisheeth Vishnoi** (Yale University, USA)
12. **Soumya Ranjan Padhi** (NISER, Bhubaneswar)
13. **Ashirbad Padhan** (NISER, Bhubaneswar)
14. **Tapan Mishra** (NISER, Bhubaneswar)
15. **Ganapathy Murthy** (University of Kentucky, USA)
16. **Sahil Lalsodagar** (IISER, Berhampur)
17. **Viraja Dodderi** (IISER, Tirupati)
18. **Kaushik Basu** (University of California, Berkeley, USA)
19. **Arnab Rudra** (IISER, Bhopal)
20. **Herbert Spohn** (Technical University of Munich, Germany)
21. **Mahesh Bandi** (Okinawa Institute of Science and Technology, Japan)
22. **Vaishak Prasad** (IUCAA, Pune)

23. **Soham Bhattacharyya** (Max Planck Institute, Hannover, Germany)
24. **Suman Jyoti De** (Harish-Chandra Research Institute, Allahabad)
25. **Anurag Kaushal** (TIFR, Mumbai)
26. **Swati Singh** (IIT, Patna)
27. **Vaishnavi V G** (St Joseph's University)
28. **Faruk Abdulla** (Harish-Chandra Research Institute, Allahabad)
29. **Nirnoy Basak** (Harish-Chandra Research Institute, Allahabad)
30. **Ashwin Girish**
31. **Debmalya Sarkar** (IIT Kanpur)
32. **Tamaghna Hazra** (Rutgers University)
33. **Prashant Kocherlakota** (Harvard University, USA)
34. **Ipsita Mandal** (The Henryk Niewodniczanski Institute of Nuclear Physics, IFJ PAN)
35. **Inder Monga** (Lawrence Berkeley National Laboratory, Energy Sciences Network, Berkeley, USA)
36. **Brato Chakrabarti** (Flatiron Institute, Simons Foundation)
37. **Vidyanand Nanjundiah** (Centre for Human Genetics, Bangalore)
38. **Srinivas Raghu** (Stanford Institute for Theoretical Physics, USA)
39. **Anuj Mishra** (Inter-University Centre for Astronomy and Astrophysics, Pune)
40. **Debashis Ghoshal** (Jawaharlal Nehru University, New Delhi)
41. **Bijay Kumar Agarwalla** (IISER Pune)
42. **Alok Laddha** (CMI, Chennai)
43. **Sourin Das** (IISER Kolkata)
44. **Mukund Rangamani** (University of California, Davis, California)
45. **Ranjani Seshadri** (Ben-Gurion University, Israel)
46. **Harsh Prahladh** (TIFR, Mumbai)
47. **Anshu Kumari** (University of Helsinki)
48. **Sachin Jain** (IISER, Pune)
49. **Pavan Vynatheya** (Max Planck Institute for Astrophysics, Garching, Germany)
50. **Ayan Mukhopadhyay** (Indian Institute of Technology Madras)
51. **Bishal Ghosh** (IISER Pune)
52. **Debasish Chaudhuri** (Institute of Physics, Bhubaneswar)
53. **Ronny Thomale** (Julius-Maximilians-Universität Würzburg, Germany)
54. **Devashish Tupkary** (Institute for Quantum Computing University of Waterloo, Canada)
55. **Sourav Manna** (Weizmann Institute of Science and Tel Aviv University, Israel)
56. **Joseph Ivin** (NIAS, Bengaluru)
57. **Tejas Gorur Murthy** (Indian Institute of Science, Bengaluru)
58. **Sreedev M** (IISER Pune)
59. **Devendra Singh Bhakuni** (Department of Physics Ben-Gurion University, Israel)
60. **Lakshya Bhardwaj** (University of Oxford, UK)
61. **Shiraz Minwalla** (TIFR, Mumbai)
62. **Ramachandran Shankar** (Institute of Mathematical Sciences, Chennai)
63. **Swapan Chatterji** (Fermi National Accelerator Laboratory, USA)
64. **Poulami Dutta Roy** (Indian Institute of Technology, Kharagpur)

65. **Tarun Souradeep** (Raman Research Institute, Bengaluru)
66. **Brandon Vaidyanathan** (The Catholic University of America, USA)
67. **R Rajesh** (The Institute of Mathematical Sciences, Chennai)
68. **Sayali Atul Bhatkar** (TIFR, Mumbai)
69. **Mohit Gupta** (School of physics and astronomy, University of Minnesota, USA)
70. **Sarita Vig** (IIST, Thiruvananthapuram)
71. **Rakshita Ulhas Joshi** (IISc, Bengaluru)
72. **Ankur Das** (Weizmann Institute of Science, Israel)
73. **Md. Abhishek** (Harish-Chandra Research Institute, Allahabad)
74. **Isha Anantpurkar** (University of California, Santa Barbara, USA)

e. NEWS ON GRANTS, AWARDS AND FELLOWSHIPS



SUBHRO BHATTACHARJEE received the Indian Physics Association's **Buti Foundation Award for Excellence in Theoretical Physics, Astrophysics and Biophysics 2022**. He also received a five-year associateship at the International Centre for Theoretical Physics (ICTP), Trieste, for six years (2023-28).



RAMA GOVINDARAJAN received the **IIT Delhi Distinguished Alumni Award** in recognition of her achievements in teaching and research.



R. LOGANAYAGAM received the Indian Physics Association's **N.S. Satya Murthy Memorial Award in Physics for 2022**. Loganayagam was recognised for his "innovative work on anomalies, fluid dynamics and the non-linear Langevin



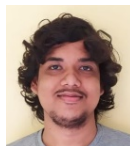
SUMATHI RAO was elected **Fellow of the American Physical Society**. She has been cited "For contributions to transport in low-dimensional interacting systems, especially junctions of more than two wires, edge/surface physics of topological systems, and for contributions to overcoming the under-representation of women in physics."



STHITADHI ROY'S publication (in collaboration with Aydin Deger and Achilles Lazarides from Loughborough University), titled *Constrained Dynamics and Directed Percolation*, was highlighted as **Editors' Suggestion in Physics Review Letters**.



JIM THOMAS was awarded a **SERB-Early Career Research Grant**. The SERB-Early Career Research Grant is given by the Science and Engineering Research Board to enable young researchers to pursue exciting and innovative research in frontier areas of science and engineering.



ICTS graduate student PRNOBESH MAITY was selected for the prestigious **KITP Graduate Fellowship Program**.



ICTS graduate student PRASHANT SINGH'S work, done together with his advisor Anupam Kundu, has been selected for the **Top Cited Paper Awards India 2022** in the mathematical sciences category by IOP Publishing.

II

ICTS PEOPLE

Ila FACULTY

1. **Siva Athreya** join ICTS-TIFR on 1 November 2022, as a senior professor of mathematics. He was previously with ISI, Bangalore.
2. **Sumanta Chakraborty** (IACS, Kolkata), **Shasvath Kapadia** (IUCAA, Pune), **Mukund Thattai** (NCBS, Bengaluru), and **Yasir Iqbal** (IIT Madras, Chennai) have joined ICTS-TIFR as new Faculty Associates.

Iib STUDENTS

GRADUATE PROGRAM

1. The following students successfully defended their thesis.
 - a. **Arnab Seth** (advisor Anupam Kundu)
 - b. **Akhil Sivakumar** (advisor R. Loganayagam)
 - c. **Santhosh Ganapa** (advisor Abhishek Dhar, co-advisor- Amit Apte)
 - d. **Joydeep Chakravarty** (advisor Suvrat Raju)
 - e. **Kohinoor Ghosh** (advisor Rukmini Dey)
2. **Sparsh Gupta** (GS PhD 2020) has registered for PhD in September 2022.
3. **Jigyasa Watwani** has been selected to attend Global Young Scientists Summit 2023 in Singapore.

POSTDOCTORAL PROGRAM

1. Applications are invited for the Fall 2023 hiring cycle: <https://www.icts.res.in/academic/postdoctoral-fellowships>. The following offers were made from the Summer 2022 hiring cycle:

Research group	Name	Current Affiliation
Statistical Physics and Condensed Matter	Madhumita Saha	IISER, Pune
Mathematics	Sachchidanand Prasad	IISER, Kolkata
Astrophysical Relativity	Vaishak Prasad	IUCAA, Pune
Astrophysical Relativity	Prasad R.	IISER, Bhopal
Himanshu Bimal	NISER	Rukmini Dey

2. From the Fall 2021 hiring cycle, 6 candidates have joined ICTS as postdoctoral fellows. They are Sanjay CP, Subham Ghosh, Arun Kumar Varanasi, Krishnendu N V, Asmamaw Asrat Demise and Navaneeth Krishna Gaddam.

VISITING STUDENTS PROGRAM

1. Applications are invited for the ICTS Long Term Visiting Students Program 2023: <https://www.icts.res.in/academic/long-term-visiting-student-program>
2. Applications are invited for the ICTS S.N. Bhatt Memorial Excellence Fellowship Program 2023: <https://www.icts.res.in/academic/summer-research-program>

KAAPI WITH KURIOSITY**Chance and Chaos: How to Predict the Unpredictable**

Jens Marklof (University of Bristol, UK) | 11 December 2022 | J.N. Planetarium

Beaming into Matter and Life with Particles and Light

Swapan Chattopadhyay (Fermi National Accelerator Laboratory, USA) | 27 November 2022 | J.N. Planetarium

History of Walking Robots

Shishir N.Y. Kolathaya (IISc, Bengaluru) | 30 October 2022 | J.N. Planetarium

Finding Our Place Among Stars

Sarita Vig (Indian Institute of Space Science and Technology, Thiruvananthapuram) | 11 September 2022 | J.N. Planetarium

EINSTEIN LECTURES**Astronomy's New Frontiers**

Ajith Parameswaran (ICTS-TIFR) | 6 October 2022 | St Mary's Convent Girls HSS, Ernakulam

In Search of Brain Plasticity

Kshipra Gurunandan (University of Cambridge, UK) | 5 September 2022 | School of Sciences, Jain University, 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 8 online Maths Circle India sessions during September-December 2022.

Session 28

Conducted by: Divyansh Agrawal, Arnab Chowdhury, Aditya Thorat, Aadi Bhure, Viswanathan S, Joseph Samuel, Atul Shekhar | **Interactive session:** 09 December 2022

Session 27

Conducted by: Divyansh Agrawal, Arnab Chowdhury, Aditya Thorat, Aadi Bhure, Joseph Samuel, Atul Shekhar | **Interactive session:** 25 November 2022

Session 26

Conducted by: Divyansh Agrawal, Arnab Chowdhury, Aditya Thorat, Joseph Samuel, Atul Shekhar | **Interactive session:** 11 November 2022

Session 25

Conducted by: Divyansh Agrawal, Arnab Chowdhury, Aditya Thorat, Joseph Samuel, Atul Shekhar | **Interactive session:** 28 October 2022

Session 24

Conducted by: Kedar S Damle, Amol Dighe, Vikram Tripathi, Dibya Sankar Chattopadhyay, Vineeth Krishna Talasila, Md Zahid Ansari, Nisheeta Desai | **Interactive session:** 14 October 2022

Session 23

Conducted by: Kedar S Damle, Amol Dighe, Vikram Tripathi, Dibya Sankar Chattopadhyay, Vineeth Krishna Talasila, Md Zahid Ansari, Nisheeta Desai | **Interactive session:** 30 September 2022

Session 22

Conducted by: Kedar S Damle, Amol Dighe, Vikram Tripathi, Dibya Sankar Chattopadhyay, Vineeth Krishna Talasila, Md Zahid Ansari, Nisheeta Desai | **Interactive session:** 16 September 2022

Session 21

Conducted by: Kedar S Damle, Amol Dighe, Vikram Tripathi, Dibya Sankar Chattopadhyay, Vineeth Krishna Talasila, Md Zahid Ansari, Nisheeta Desai | **Interactive session:** 2 September 2022

ICTS-RRI MATHS CIRCLE

ICTS in collaboration with RRI is starting in-person maths circle sessions. These sessions will be conducted once every two weeks for Bengaluru students studying in grades 6-10. The related events will be starting from 14 Jan. 2023.

SCIENCE OUTREACH IN SCHOOLS

Science kits have been distributed to 47 government schools. Library kits have been distributed to 20 schools. There have been two teacher training sessions about science demonstrations using these kits. There is a plan to follow up on the usage of science kits and conduct a school-level competition for students to come up with interesting science experiments and demonstrations.

SCIENCE EDUCATION PROGRAM- PROMISE IN SCIENCE AND MATHEMATICS (PRISM)

Prism 02: A Hands-on Exploration of Everyday Physical Phenomena

Kaushik Basu (University of California, Berkeley, USA) | 15 December 2022

ANNEXURE - A

The following are the details of seminars and colloquia during the period September-December 2022:

ZZ Instanton Amplitudes in Minimal String Theory

Raghu Mahajan (Stanford University, USA) | 21 December 2022

Josephson Junction of Nodal Superconductors

Ranjani Seshadri (Ben-Gurion University, Israel) | 20 December 2022

On-Shell Supersymmetry and Higher-Spin Amplitudes

Arnab Rudra (IISER Bhopal) | 16 December 2022

Waltzing Binaries: Probing Line-of-Sight Acceleration of Merging Compact Objects with Gravitational Waves

Avinash Tiwari (IUCAA Pune) | 15 December 2022

The Importance of Using Amplitudes and Phases in Ringdown to Test GR

Swetha Bhagwat (University of Birmingham, UK) | 14 December 2022

Pair Density Wave Superconductivity from Electron Repulsion

Srinivas Raghu (Stanford University, USA) | 14 December 2022

A Continuum Theory for Cytoplasmic Streaming in the Drosophila Oocyte

Brato Chakrabarti (Flatiron Institute, Simons Foundation, USA) | 14 December 2022

ESnet: Role of Networking In Enabling Computational Science

Inder Monga (Lawrence Berkeley National Laboratory, USA) | 13 December 2022

Quantum Hall Ferromagnetism in Monolayer Graphene

Ganpathy Murthy (University of Kentucky, USA) | 13 December 2022

Symmetry, Exceptional Points, and Phase Transitions

Ipsita Mandal (The Henryk Niewodniczanski Institute of Nuclear Physics (IFJ PAN)) | 8 December 2022

Testing the Sagittarius A* Spacetime Metric with the 2017 EHT Observations

Prashant Kocherlakota (Harvard University, USA) | 7 December 2022

Triplet Pairing Mechanisms from Hund's-Kondo Models - Applications to Heavy Fermion Superconductors

Tamaghna Hazra (Rutgers University) | 6 December 2022

Defining Eccentricity for Gravitational Wave Astronomy

Md Arif Shaikh (Seoul National University, South Korea) | 1 December 2022

Anyons and Bosonization in 3d: Mapping Slightly Broken Higher Spin (SBHS) Theory Correlator to Free Theory Correlator

Sachin Jain (IISER Pune) | 24 November 2022

Coronal Mass Ejections: From Observations to Simulations

Anshu Kumari (University of Helsinki, Finland) | 24 November 2022

Dynamical Stability of Triple-Star Systems

Pavan Vynatheya (Max Planck Institute for Astrophysics, Germany) | 17 November 2022

Black Hole Microstate Models, Quantum Weak Measurement and Black Hole Complementarity

Ayan Mukhopadhyay (Indian Institute of Technology Madras, Chennai) | 16 November 2022

Statistical Properties of Single and Multiple Active Particles

Prashant Singh (ICTS-TIFR, Bengaluru) | 14 November 2022

Lessons from Holography for Open Quantum Systems

Mukund Rangamani (UC Davis, USA) | 10 November 2022

Partial Deconfinement

Jack Holden (University of Southampton, UK) | 9 November 2022

Mesoscale Modelling of Multiphase Flow and Wetting

Thejas Hulikal Chakrapani (University of Twente, Netherlands) | 4 November 2022

Full Classification of Transport on an Equilibrated $\nu=5/2$ Edge

Sourav Manna (Weizmann Institute of Science and Tel Aviv University, Israel) | 1 November 2022

The Standard Model of Wave Interference - A Slight Detour Along the Journey

Joseph Ivin (NIAS, Bangalore) | 28 October 2022

Curiosities in Crossing

Aninda Sinha (Indian Institute of Science, Bengaluru) | 26 October 2022

Fractionalisation in Spin-Orbit Coupled Magnetic Insulators

Arnab Seth (ICTS-TIFR, Bengaluru) | 26 October 2022

Liquid-State Properties and Jamming Dynamics of Persistent Athermal Active Matter

Suman Dutta (ICTS-TIFR, Bengaluru) | 25 October 2022

Thermalized Fluids – Solutions to Truncated Ideal Hydrodynamical Equations

Sugan Durai Murugan (ICTS-TIFR, Bengaluru) | 20 October 2022

At the Boundary of the Swampland

Irene Valenzuela (CERN, Switzerland) | 19 October 2022

Quantum Entanglement in String Theory

Atish Dabholkar (ICTP Trieste) | 14 October 2022

Simulating Turbulent Mixing Caused by Local Instability of Internal Gravity Waves

Yohei Onuki (COAR, Kyushu University, Japan) | 14 October 2022

Constraint-Induced Arrested Classical Many-Body Chaos and Directed Percolation

Sthitadhi Roy (ICTS-TIFR, Bengaluru) | 13 October 2022

Cool Core Cycles - Cold-Mode AGN Feedback in Galaxies, Groups and Clusters

Deovrat Prasad (Michigan State University, US) | 13 October 2022

What Goes into the Images Made by the Event Horizon Telescope?

Rajaram Nityananda (ICTS-TIFR, Bengaluru) | 12 October 2022

Universality, Dynamical Scaling and Surface Growth in Quantum Critical Systems

Devendra Singh Bhakuni (Ben-Gurion University of the Negev, Beersheva, Israel) | 11 October 2022

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

Kohinoor Ghosh (ICTS-TIFR, Bengaluru) | 7 October 2022

Crossing Symmetry in Matter Chern Simons Theories at Finite N and k

Shiraz Minwalla (TIFR, Mumbai) | 7 October 2022

Perturbative Corrections to Infrared Physics in Presence of Small Cosmological Constant.

Sayali Bhatka (TIFR, Mumbai) | 28 September 2022

High Performance Computing Using Rudra Cluster

Siddharth Krithivasan (JNCASR Bengaluru) | 28 September 2022

Demonstrating Wormholes as Black Hole Mimickers: A Perturbation Analysis

Poulami Dutta Roy (Indian Institute of Technology, Kharagpur) | 27 September 2022

Looking for Logic in Social Practices

R.Ramanujam (The Institute of Mathematical Sciences, Chennai) | 23 September 2022

The Waves Within Us: Problems on Dynamics of Passive and Active Filaments

Brato Chakrabarti (Flatiron Institute, New York) | 20 September 2022

Effective Theory of Fluctuating Hydrodynamics from Holography

Akhil Sivakumar (ICTS-TIFR, Bengaluru) | 15 September 2022

6d (2,0) Bootstrap with Soft-Actor-Critic

Vasilis Niarchos (University of Crete, Greece) | 14 September 2022

Parameter Inference from Gravitational Wave Signals Emitted by Compact Binary Mergers

Tejaswi Venumadhav Nerella (University of California Santa Barbara, USA) | 14 September 2022

Phase Transitions in a Gas of Hard Rods on Lattices

R. Rajesh (The Institute of Mathematical Sciences, Chennai) | 13 September 2022

Thermalization, Chaos and Hydrodynamics in Classical Hamiltonian Systems

Santhosh Ganapa (ICTS-TIFR, Bengaluru) | 13 September 2022

Quantum Aspects of Black Holes: The Bags of Gold and Monogamy Paradoxes

Joydeep Chakravarty (ICTS-TIFR, Bengaluru) | 12 September 2022

Part-II: Recent Developments in the Information Paradox

Suvrat Raju (ICTS-TIFR, Bengaluru) | 7 September 2022

The Phase Puzzle of $v = 0$ (charge neutrality) Graphene

Ankur Das (Weizmann Institute of Science, Israel) | 2 September 2022

COLLOQUIA

The Entropy of Hawking Radiation

Raghu Mahajan (Stanford University) | 20 December 2022

Beat, Sync, and Wave: Nonlinear Dynamics of Flagella and Cilia

Brato Chakrabarti (Flatiron Institute, Simons Foundation, USA) | 13 December 2022

It is entropy that counts

Jaikumar Radhakrishnan (ICTS-TIFR, Bengaluru) | 14 November 2022

Understanding Cohesive Granular Materials at Multiple Length Scales

Tejas Gorur Murthy (IISc, Bengaluru) | 17 October 2022

Atomic Interferometry to Probe the Early and Dark Universe - Matter-wave Atomic Gradiometer Interferometric Sensor (MAGIS-100)

Swapna Chattopadhyay (Fermi National Accelerator Laboratory, USA) | 6 October 2022

Beauty in Science: An Empirical Assessment

Brandon Vaidyanathan (The Catholic University of America, USA) | 22 September 2022

Deriving Gauge-String Duality

Rajesh Gopakumar (ICTS-TIFR, Bengaluru) | 19 September 2022

Behold, A Star is Born!

Sarita Vig (Indian Institute of Space Science and Technology, Thiruvananthapuram) | 12 September 2022

ANNEXURE - B

PAPERS PUBLISHED – 46

In Journals – 26

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**, To appear in ApJ Letters.
2. *First Passage Percolation on Hyperbolic groups*. **Riddhipratim Basu**, Mahan Mj. *Advances in Mathematics* 408, Part A, 108599 (2022)
3. *On the Exponent Governing the Correlation Decay of the Airy1 Process*, **Riddhipratim Basu**, Ofer Busani, Patrik L. Ferrari, *Communications in Mathematical Physics* (2022) <https://doi.org/10.1007/s00220-022-04544-1>
4. *Spin–Orbital Liquid State and Liquid–Gas Metamagnetic Transition on a Pyrochlore Lattice*, Nan Tang, Yulia Gritsenko, Kenta Kimura, **Subhro Bhattacharjee**, Akito Sakai, Mingxuan Fu, Abhishek Hikaru Takeda, Huiyuan Man, Kento Sugawara, Yosuke Matsumoto, Yasuyuki Shimura, Jiajia Wen, Collin Broholm, Hiroshi Sawa, Masashi Takigawa, Toshiro Sakakibara, Sergei Zherlitsyn, Joachim Wosnitza, Roderich Moessner, Satoru Nakatsuji. *Nature Physics* 1-7 (2022). **This publication was highlighted in Nature's "News and Views"**
5. *Tensor Electromagnetism and Emergent Elasticity in Jammed Solids*, Jishnu N. Nampoothiri, Michael D'Eon, Kabir Ramola, Bulbul Chakraborty, **Subhro Bhattacharjee**. *Physical Review E* 106 (6), 065004 (2022). **This publication was highlighted as Editors' Suggestion.**
6. *The Waltz of Tiny Droplets and the Flow They Live In*, S. Ravichandran, **Rama Govindarajan**. *Phys. Rev. Fluids* 7 (11), 110512 (2022). **This publication was an invited article.**
7. *A Splash in a One-Dimensional Cold Gas*, **Subhadip Chakraborti, Abhishek Dhar**, P. L. Krapivsky, *SciPost Physics* 13 (3), 074 (2022)
8. *Entropy Growth During Free Expansion of an Ideal Gas*, **Subhadip Chakraborti, Abhishek Dhar**, Sheldon Goldstein, **Anupam Kundu**, Joel L. Lebowitz. *Special Issue Article in Journal of Physics A: Mathematical and Theoretical* 55 (39) 394002 (2022)
9. *Born-Oppenheimer and the Geometry of Ray Space*, **Joseph Samuel**, *J. Phys. A: Math. Theor.* 55 (48) 484002 (2022)
10. *Effects of Equatorially-Confined Shear Flow on MRG and Rossby Waves*, **Mukesh Singh Raghav, Sharath Jose, Amit Apte, Rama Govindarajan**, *Dynamics of Atmospheres and Oceans*, 100, 101331 (2022)
11. *The Timbre of Hawking Gravitons: An Effective Description of Energy Transport from Holography*, Temple He, **R. Loganayagam**, Mukund Rangamani, **Akhil Sivakumar**, Julio Virrueta. *Journal of High Energy Physics* 2022 (09), 92 (2022)

12. *Spectral Properties of Disordered Interacting Non-Hermitian Systems*, **Soumi Ghosh, Sparsh Gupta, Manas Kulkarni** Phys. Rev. B 106 (13), 134202 (2022)
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