

ACTIVITY REPORT

(January-April 2024)

SPENTA WADIA was elected to the **American Academy of Arts and Sciences (AAA&S)** as an **International Honorary Member**.

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ICTS ACTIVITIES

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

Programs/Discussion Meetings held: 15

Academic visitors to ICTS-TIFR: 52

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

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

Papers published: 29

arXiv submissions: 23

1a. PROGRAMS

Understanding the Universe Through Neutrinos

Organizers: Amol Dighe (TIFR, Mumbai), Srubabati Goswami (PRL, Ahmedabad), Alex Himmel (Fermilab, Chicago, USA), Rukmani Mohanta (University of Hyderabad) and Sanjay Kumar Swain (NISER, Bhubaneswar) | 22 April-3 May 2024

School for Advanced Topics in Particle Physics (SATPP): Selected Topics in Effective Field Theories

Organizers: Rick Sandeepan Gupta (TIFR, Mumbai), Tuhin S. Roy (TIFR, Mumbai) and Sudhir Vempati (IISc, Bengaluru) | 8-19 April 2024

Theoretical Approaches in Cancer Progression and Treatment

Organizers: Helen Byrne (Oxford University, UK), Shaon Chakrabarti (NCBS-TIFR, Bengaluru), Mohit Kumar Jolly (IISc, Bengaluru) and Franziska Michor (Harvard University, USA) | 11-22 March 2024

Future Roadmap Vision 2047 - Chintan Shivir

Organizers: Heads of Aided Institutes of DAE | 5-9 March 2024

Predictability in General Relativity

Organizers: Shalabh Gautam (ICTS-TIFR, Bengaluru), Prayush Kumar (ICTS-TIFR, Bengaluru), Kartik Prabhu (RRI, Bengaluru) and Sumati Surya (RRI, Bengaluru & current president of the IAGRG) | 28-29 February 2024

Recent Advances on Control Theory of PDE Systems

Organizers: Shirshendu Chowdhury (IISER Kolkata), Debayan Maity (TIFR-CAM, Bengaluru) and Debanjana Mitra (IIT Bombay, Mumbai) | 12-23 February 2024

Sixth Bangalore School on Population Genetics and Evolution

Organizers: Deepa Agashe (NCBS, Bengaluru) and Kavita Jain (JNCASR, Bengaluru) | 12-23 February 2024

International School and Workshop on Probing Hadron Structure at the Electron-Ion Collider

Organizers: Abhay Deshpande (CFNS, Stony Brook University and BNL), Bedangadas Mohanty (NISER, Bhubaneswar), Asmita Mukherjee (IIT Bombay, Mumbai) and Marco Radici (INFN Pavia, Italy) | 29 January-9 February 2024

Stability of Quantum Matter in and out of Equilibrium at Various Scales

Organizers: Arnab Das (IACS, Kolkata), Roderich Moessner (Max Planck Institute for the Physics of Complex Systems, Dresden, Germany), Anatoli Polkovnikov (Boston University, USA), Tomaz Prosen (University of Ljubljana, Slovenia) and Dibyendu Roy (RRI, Bengaluru) | 15-26 January 2024

Zariski Dense Subgroups, Number Theory and Geometric Applications

Organizers: Gopal Prasad (University of Michigan, USA), Andrei Rapinchuk (University of Virginia, USA), B Sury (Indian Statistical Institute,

Bengaluru) and Aleksy Tralle (University of Warmia and Mazury, Poland) | 1-12 January 2024



ib. DISCUSSION MEETINGS

Gravitational Wave Open Data Workshop

Organizers: Parameswaran Ajith, Ankur Barsode, Bala Iyer, Prayush Kumar and Akash Maurya (ICTS-TIFR, Bengaluru) | 18-20 April 2024

9th Indian Statistical Physics Community Meeting

Organizers: Ranjini Bandyopadhyay (RRI, Bengaluru), Abhishek Dhar (ICTS-TIFR, Bengaluru), Kavita Jain (JNCASR, Bengaluru), Rahul Pandit (IISc, Bengaluru), Samridhhi Sankar Ray (ICTS-TIFR, Bengaluru), Sanjib Sabhapandit (RRI, Bengaluru) and Prerna Sharma (IISc, Bengaluru) | 3-5 April 2024

Grothendieck Teichmüller Theory

Organizers: Pierre Lochak (CNRS and IMJ-PRG, Paris, France) and Devendra Tiwari (Bhaskaracharya Pratishthana, Pune) | 26 February-1 March 2024

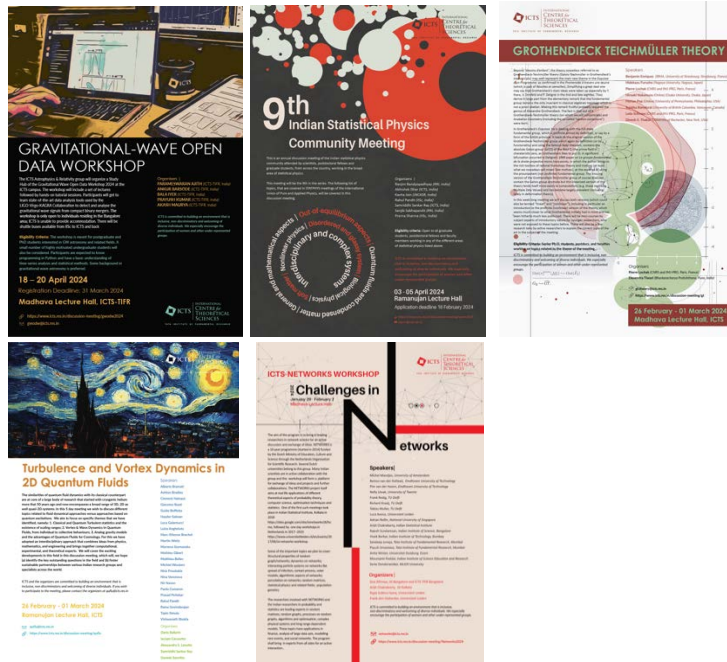
Turbulence and Vortex Dynamics in 2D Quantum Fluids

Organizers: Dario Ballarini (CNR NANOTEC, Italy), Iacopo Carusotto (CNR-INO, BEC Center, Trento), Alessandra S. Lanotte (CNR NANOTEC and INFN, Lecce, Italy), Samridhhi Sankar Ray (ICTS-TIFR, Bengaluru) and Daniele Sanvitto (CNR NANOTEC, Italy) | 26 February-1 March 2024

ICTS-NETWORKS Workshop “Challenges in Networks”

Organizers: Siva Athreya (ISI, Bengaluru and ICTS-TIFR, Bengaluru), Arijit Chakraborty (ISI Kolkata), Rajat Subhra Hazra (Universiteit Leiden,

Netherlands) and Frank den Hollander (Universiteit Leiden, Netherlands) | 29 January-2 January 2024



ic. LECTURE SERIES

DISTINGUISHED LECTURES

The Evolutionary Enigma of Sex

Sarah Otto (University of British Columbia, Canada) | 16 February 2024

VISHVESHWARA LECTURES

'Assaying' the Eight Metals of Antiquity: Archaeometallurgical Perspectives on Indian Heritage

Sharada Srinivasan (National Institute of Advanced Studies, Bengaluru) | 12-14 March 2024

Gravitational-wave Astronomy: New Discoveries, Puzzles & Prospects

B.S. Sathyaprakash (Penn State University, USA & Cardiff University, Wales) | 3 January 2024

id. VISITS OF SCIENTISTS

The following researchers visited ICTS during January-April 2024.

1. **Mahesh Bandi**, Okinawa Institute of Science and Technology, Japan
2. **Hemanta Phurailatpam**, The Chinese University of Hong Kong
3. **Shouvik Roy Choudhury**, Academia Sinica Institute of Astronomy and Astrophysics, Taiwan
4. **Arnab Priya Saha**, IISc, Bengaluru
5. **Vinutha HA**, Georgetown University, USA

6. **Mandar M. Inamdar**, IIT Bombay, Mumbai
7. **Prerna Sharma**, IISc, Bengaluru
8. **Vidyanand Nanjundiah**, Centre for Human Genetics, Bengaluru
9. **Sarthak Chandra**, Massachusetts Institute of Technology, USA
10. **Antareep Mandal**, IIT Madras, Chennai
11. **Baskar Balasubramanyam**, IISER, Pune
12. **Anilatmaja Aryasomayajula**, IISER, Tirupati
13. **Anna-Maria Laetitia Pippich**, University of Konstanz, Germany
14. **Jürg Kramer**, Humboldt-Universität zu Berlin, Germany
15. **Gopal Prabhu**, Savitribai Phule Pune University Campus, Pune
16. **Swarnim Shirke**, IUCAA, Pune
17. **Nikita Agarwal**, IISER, Bhopal
18. **Puskar Mondal**, Harvard University, USA
19. **Vijay Balasubramanian**, University of Pennsylvania, USA
20. **Ajit Kumar Mehta**, University of California, Santa Barbara, USA
21. **Kirill Shtengel**, University of California, Riverside, USA
22. **R. Shankar**, The Institute of Mathematical Sciences, Chennai
23. **Anuraag Reddy**, IISER, Pune
24. **Jean-Pierre Raymond**, Institut de Mathématiques Université Paul Sabatier, France
25. **Ritam Mallick**, IISER, Bhopal
26. **Anubhab Roy**, IIT Madras, Chennai
27. **Anish Ghoshal**, University of Warsaw, Poland
28. **Sumanta Chakraborty**, IACS, Kolkata
29. **Samay Pande**, IISc, Bengaluru
30. **Gautam Mandal**, TIFR, Mumbai
31. **Joydeep Chakravarty**, McGill University, Canada
32. **Diksha Jain**, TIFR, Mumbai
33. **Alok Laddha**, Chennai Mathematical Institute, Chennai
34. **Trishen Gunaratnam**, University of Geneva, Switzerland
35. **Arnab Seth**, Georgia Institute of Technology, Atlanta, USA
36. **Julius**, Harish Chandra Research Institute, Allahabad
37. **Saikruba Krishnan**, IUCAA, Pune
38. **Siddhartha Gupta**, Princeton University, USA
39. **Subhadip Chakraborti**, Friedrich-Alexander Universität Erlangen-Nürnberg, Germany
40. **Sergej Moroz**, Karlstad University, Sweden
41. **Dimitra Karabali**, City University of New York, USA
42. **Ramadevi Pichai**, IIT Bombay, Mumbai
43. **Inti Antonio Nicolas Villadiego**, University of Leipzig, Germany
44. **Claudio Castelnovo**, University of Cambridge, UK
45. **Aditi Saraf**, Utrecht University, The Netherlands
46. **Namit Anand**, NASA Quantum AI Lab Mountain View, CA, USA
47. **Pariksit Gopalan**, Apple
48. **Devashish Tupkary**, University of Waterloo, Canada
49. **Akshay Yelleshpur Srikant**, University of Oxford, UK
50. **Venkatesan Guruswami**, University of California, Berkeley, USA
51. **Anamay Tengse**

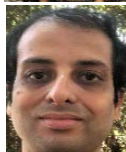
e. NEWS ON GRANTS, AWARDS AND FELLOWSHIPS



RAMA GOVINDARAJAN and her collaborator Prashant Valluri (University of Edinburgh) received the prestigious **Vaibhav Collaborative Fellowship** from DST, Government of India.



AKSHITH GOYAL received the **Ramanujan Fellowship** from DST, Government of India.



MANAS KULKARNI was named the **Institute of Physics CNRS Guest Researcher** for 2024.



AJITH PARAMESWARAN was elected as a **Fellow of the Indian Academy of Sciences**, in recognition of his pioneering work on gravitational wave physics.



Graduate student SOUVIK JANA was awarded the selective pan-TIFR **Sarojini Damodaran International Student Travel Fellowship**.



Graduate student BIKRAM PAIN was awarded the **NORDITA visiting PhD fellowship**.



First year student NITESH KUMAR PATRO topped Utkal University master's program in physics and received a gold medal from the President of India.



Graduate student RITWIK MUKHERJEE received the **pan-TIFR Sarojini Damodaran International Student Travel Fellowship**. He was also selected for the **visiting doctoral student** program of the Academy of Complex Systems of **Universite Cote d'Azur**.



SPENTA WADIA was elected to the **American Academy for Arts and Sciences (AAA&S)** as an **International Honorary Member**.

Ila FACULTY

1. DEEPAK DHAR joined the ICTS-TIFR faculty as INSA Distinguished Professor
2. BRATO CHAKRABARTI joined the ICTS-TIFR faculty. He was previously at the Flatiron Institute, New York, USA
3. SOURIN DAS (IISER, Kolkata), KAUSHIK BASU (University of California, Berkeley, USA), SURAJ SHANKAR (University of Michigan, USA) and Govind Menon (Brown University, USA) joined as ICTS Faculty Associates.

Iib STUDENTS**GRADUATE PROGRAM**

1. **Aditya Vijaykumar** (advisor Ajith Parameswaran) successfully defended his thesis on February 9, 2024.
2. **Shashank Kumar Roy** (advisor Samriddhi Sankar Ray) submitted his thesis on January 13, 2024.
3. **Varun Dubey** (advisor Abhishek Dhar) submitted his thesis on March 31, 2024.
4. **Soumyadip Basak** (advisor Ajith Parameswaran) submitted his thesis on April 10, 2024.
5. **Sarthak Duary** (advisor R. Loganayagam) has submitted his synopsis on April 4, 2024.
6. **Mrinal Jyoti Powdel** has registered for PhD in March via Datamet 2.0.
7. **Graduate Studies Admissions 2024:**
 - a. Applications have been invited for the graduate studies programs in physics, mathematics, physics of life, applied and computational mathematics through TIFR GS and GATE/JEST/ CSIR-UGC NET streams.
 - b. The mathematics graduate studies interview was held on April 15-16, 2024. 14 applicants were shortlisted through TIFR GS and CSIR stream for the interview.
 - c. The physics graduate studies interview was held on April 16-18, 2024. 78 applicants were shortlisted through TIFR GS stream for the interview.

POSTDOCTORAL PROGRAM

1. The following offers were made in the Fall 2024 hiring cycle:
2. Subsequent affiliations of postdocs who finished their tenure at ICTS-TIFR between January-April 2024:
 - a. **Sachchidanand Prasad** joined the School of Mathematics, Jilin University, China, as postdoctoral fellow

- b. **Suman Dutta** joined NCBS, Bengaluru, as postdoctoral fellow.
c. **Subhajit Paul** joined the University of Delhi as Assistant Professor.

S. No.	Research Group	Name	Current Affiliation	Current Designation
1	Astrophysical Relativity	Anuj Mishra	IUCAA, Pune	Research Scholar
2	Astrophysical Relativity	Rajes Ghosh	IIT Gandhinagar	Research Scholar
3	Astrophysical Relativity	Samanwaya Mukherjee	IUCAA, Pune	Research Scholar
4	Astrophysical Relativity	Sudeb Ranjan Datta	Astronomical Institute of the Czech Academy of Sciences	Post-doctoral Researcher
5	Statistical Physics and Condensed Matter	Indranil Mukherjee	IISER Kolkata	Research Scholar
6	Statistical Physics and Condensed Matter	Mahesh Chandrasekhar Gandikota	Syracuse University, USA	Research Scholar
7	Statistical Physics and Condensed Matter	Indrajit Sau	IACS, Kolkata	Research Scholar
8	Statistical Physics and Condensed Matter	Souvik Kundu	TIFR, Mumbai	Research Scholar
9	Statistical Physics and Condensed Matter	Krushna Chandra Saha	IISER, Tirupati	Research Scholar
10	String Theory and Quantum Gravity	Shanmugapriya Prakasam	CMI, Chennai	Research Scholar
11	String Theory and Quantum Gravity	Muktajyoti Saha	IISER, Bhopal	Research Scholar
12	String Theory and Quantum Gravity	Ramesh Chandra Ammanamanchi	University of Amsterdam, Netherlands	Research Scholar
13	String Theory and Quantum Gravity	Ubaid Tantry	Kent State University, USA	Research Scholar
14	Fluid Dynamics and Turbulence Group	Durbar Roy	-	-
15	Fluid Dynamics and Turbulence Group	Dylan Reynolds	City University of New York, USA	Research Scholar

VISITING STUDENTS PROGRAM

- Applications are invited for the ICTS Long-Term Visiting Students Program 2024: <https://www.icts.res.in/academic/long-term-visiting-student-program>
- Applications are invited for the ICTS S.N. Bhatt Memorial Excellence Fellowship Program 2024: <https://www.icts.res.in/academic/summer-research-program>

PUBLIC LECTURE**The Forever War Against Cancer**

Herbert Levine (Northeastern University) | 11 March 2024 | Chandrasekhar Auditorium, ICTS-TIFR, Bengaluru

KAAPI WITH KURIOSITY**When Big Meets Small: The Connection Between Particle Physics and Cosmology**

Yvonne Wong (University of New South Wales, Australia) | 28 April 2024

What Does Not Kill Cancer Can Make it Stronger: Investigating Cancer as a Complex System

Mohit Kumar Jolly (Indian Institute of Science, Bengaluru) | 17 March 2024

Fitness Landscapes and the Predictability of Evolution

Claudia Bank (Institute of Ecology and Evolution, University of Bern) | 25 February 2024

Understanding the Glue - the "Super-God Particle" - That Binds Us All

Abhay Deshpande (Stony Brook University, USA) | 28 January 2024

EINSTEIN LECTURES**The Plasma Universe**

Pallavi Bhat (ICTS-TIFR, Bengaluru) | 27 February 2024 | Maharani Lakshmi Ammanni College For Women Autonomous, 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 six online Maths Circle India sessions during January-April 2024.

Session 53

Conducted by: Manoj Kummini, Krishna Hanumanthu | **Interactive session:** 19 April 2024

Session 52

Conducted by: Manoj Kummini, Krishna Hanumanthu | **Interactive session:** 5 April 2024

Session 51

Conducted by: Aprameyo Pal, Anoop Singh | **Interactive session:** 1 March 2024

Session 50

Conducted by: Aprameyo Pal, Anoop Singh | **Interactive session:** 9 February 2024

Session 49

Conducted by: Aprameyo Pal, Anoop Singh | **Interactive session:** 25 January 2024

Session 48

Conducted by: Aprameyo Pal, Anoop Singh | **Interactive session:** 12 January 2024

ICTS-RRI MATHS CIRCLE

ICTS in collaboration with RRI launched in-person maths circle sessions. These sessions are conducted once every two weeks for Bengaluru students studying in grades 6-10. During January-April 2024, six sessions of maths circle sessions were held at the Raman Research Institute, Bengaluru.

Session 25

Conducted by: Jaikumar Radhakrishnan | **Interactive session:** 27 April 2024

Session 24

Conducted by: Jaikumar Radhakrishnan | **Interactive session:** 13 April 2024

Session 23

Conducted by: Apoorva, Khushi, Nishanth, Manu, and Kshitij | **Interactive session:** 18 February 2024

Session 22

Conducted by: Apoorva, Khushi, Nishanth, Manu and Kshitij | **Interactive session:** 10 February 2024

Session 21

Conducted by: Disha Kuzhively | **Interactive session:** 27 January 2024

Session 20

Conducted by: Disha Kuzhively | **Interactive session:** 13 January 2024

MATHS CHALLENGE INDIA

The monthly Maths Circle India Challenge has recently been introduced. It is a maths competition open to everyone, where every second Friday of the month a new problem will be uploaded on the website. One will have three weeks to solve it and submit their answer.

SCIENCE OUTREACH IN SCHOOLS

Through the JNP-ICTS Science Education Program, an experienced team of teachers from Jawaharlal Nehru Planetarium conducts training sessions for teachers from rural districts of Kerala. The team brings simple activities and demonstrations to the classroom to illuminate basic ideas and concepts of science and mathematics. ICTS provides organizational support and the zoom platform for the online sessions. There have been five sessions held during the period of the report.

ANNEXURE - A

The following are the details of seminars and colloquia during the period January-April 2024:

Signatures of Fractionalized Excitations in Quantum Spin Liquids | Nandini Trivedi (Ohio State University, USA) | 25 April 2024

Multipolar Magnetic Field of Millisecond Pulsars | Anu Kundu (North-West University, Potchefstroom, South Africa) | 25 April 2024

Optimal Cosmological Inference with Weak Lensing Data | Supranta Boruah (University of Pennsylvania, USA) | 24 April 2024

The Ins and Outs of Cosmological Correlators and the de Sitter S-matrix | Enrico Pajer (University of Cambridge, UK) | 17 April 2024

Numerical Filter Stability, Fokker-Planck Equations and Infinite Dimensional Optimization with Deep Learning | Pinak Mandal (ICTS-TIFR, Bengaluru) | 16 April 2024

Dynamics and Information Processing at Different Levels in Cellular Biochemical Networks | J Krishnan (Imperial College, London, UK) | 15 April 2024

LeR, a Statistical-based Python Package for the Simulation of Detectable Gravitational Wave Events and Calculation of Event Rates | Hemantakumar Phurailatpam (The Chinese University of Hong Kong) | 12 April 2024

Interplay of Microscopic and Emergent Symmetries in a Spin-orbit Coupled Dirac Semi-metal | Basudeb Mondal (ICTS-TIFR, Bengaluru) | 12 April 2024

Neutrinos in Cosmology | Shouvik Roy Choudhury (Academia Sinica Institute of Astronomy and Astrophysics, Taiwan) | 8 April 2024

Field Theory Expansions of String Amplitudes | Arnab Priya Saha (Indian Institute of Science, Bengaluru) | 3 April 2024

Liouville, Mach, Mermin, Wagner and Classical Fractons | Shivaji Lal Sondhi (Rudolph Centre for Theoretical Physics, University of Oxford, UK) | 2 April 2024

Rigidity transition in flowing materials: Memory, Mechanical Tunability and Stress Patterns | Vinutha H A (Georgetown University, USA) | 27 March 2024

AdS3/RMT2 Duality | Eric Perlmutter (IPhT, Saclay, France) | 27 March 2024

Air Markov Chain Monte Carlo | Krzysztof Łatuszyński (University of Warwick, UK) | 26 March 2024

Aspects of Celestial Amplitude and Flat-space Limit of AdS/CFT | Sarthak Duary (ICTS-TIFR, Bengaluru) | 26 March 2024

Path Integration in Neural Circuits and Grid Cells | Sarthak Chandra (Massachusetts Institute of Technology, USA) | 22 March 2024

Elastic Eikonal Amplitudes Near the Black Hole | Nico Groenenboom (University of Amsterdam, The Netherlands) | 21 March 2024

Stochastic Nash Evolution | Govind Menon (Brown University, USA) | 20 March 2024

Collective Phototaxis of Microalgae Chlamydomonas Reinhardt II | Prerna Sharma (Indian Institute of Science, Bengaluru) | 19 March 2024

Preserving Large-scale Features in Simulations of Elastic Turbulence | Dario Vincenzi (Université Côte d'Azur, France) | 15 March 2024

Lighting up the Himalayas with Stars: An Astrophotography Journey | Angchuk Dorje (Indian Institute of Astrophysics, Bengaluru) | 14 March 2024

Stretched Horizon, Replica Trick, and Off-shell Winding Condensate, and All That | Indranil Halder (Harvard University, USA) | 13 March 2024

Mean Field Dynamo: Beyond MHD | Vinod Krishan (Indian Institute of Astrophysics, Bengaluru) | 13 March 2024

Lava Flows: Defending Lives and Housing by Theory, Experiments and Field Data | Herbert Huppert (University of Cambridge, UK) | 12 March 2024

Cosmology Without Assuming a Cosmology | Luca Amendola (University of Heidelberg, Germany) | 12 March 2024

Constraining the Abundance of Galactic Compact Objects with Continuous Gravitational Waves | Gopal Prabhu (IUCAA, Pune) | 12 March 2024

Constraining Exotic Matter in Neutron Stars | Swarnim Shirke (IUCAA, Pune) | 11 March 2024

Escape in Open Dynamical Systems | Nikita Agarwal (IISER, Bhopal) | 11 March 2024

Online Bin Packing under Random Order Model | Arindam Khan (Indian Institute of Science, Bengaluru) | 11 March 2024

A Spinor Proof of the Positivity of the Quasi-local Energy in (Semi-)Riemannian Geometry | Puskar Mondal (Harvard University, USA) | 6 March 2024

Looking for Non-Abelian Braiding in Quantum Hall Systems | Kirill Shtengel (University of California, Riverside, USA) | 6 March 2024

Tales of Cells Sensors: Through a Cellular-biophysics Lens | Swadhin Chandra Jana (NCBS-TIFR, Bengaluru) | 5 March 2024

Computational Study of Fingering Instability due to an Instantaneous Chemical Reaction in a Porous Medium | Priya Verma (IISc, Bengaluru) | 1 March 2024

Stability and Dynamics of Convection in Dry Salt Lakes | Lucas Goehring (Nottingham Trent University, UK) | 29 February 2024

Manifold Learning via Sparse Self-regularised Transport | Gilles Mordant (Georg-August-University of Goettingen, Germany) | 27 February 2024

The Prospect of Unravelling the Physics of High-density Matter: An Astrophysical Perspective | Ritam Mallick (IISER Bhopal) | 23 February 2024

Quantum Games | Diptiman Sen (IISc, Bengaluru) | 22 February 2024

Hearing the Universe Hum with Gravitational Waves at Pulsar Timing Array: Astrophysical, Cosmological and Particle Physics Interpretations | Anish Ghoshal (University of Warsaw, Poland) | 22 February 2024

On the Role of Particle-flow Interactions in Cloud Microphysics | Anubhab Roy (Indian Institute of Technology Madras, Chennai) | 22 February 2024

Page Curve Entanglement Dynamics of Free Fermions: Results from Numerics and Hydrodynamics | Abhishek Dhar (ICTS-TIFR, Bengaluru) | 21 February 2024

The Conundrum of Tidal Love Number | Sumanta Chakraborty (Indian Association for the Cultivation of Science, Kolkata) | 20 February 2024

Gamma-Ray Bursts (GRBs) as Electromagnetic (EM) Counterparts of Gravitational Wave (GW) Sources with Fermi GBM | Suman Bala (USRA, Huntsville, USA) | 20 February 2024

A New Characterization of Small-scale Dynamics in Turbulent Flows | Rishita Das (Indian Institute of Science, Bengaluru) | 16 February 2024

The S-matrix and Boundary Correlators in Flat Space | Diksha Jain (TIFR, Mumbai) | 14 February 2024

Mass Lysis of Bacterial Predators Drives the Enrichment of Antibiotic Resistance in Soil Microbial Communities | Samay Pande (Indian Institute of Science, Bengaluru) | 14 February 2024

A Fresh Look at the Large N Limit of Matrix Models and Proposal for a New Continuum Description | Gautam Mandal (TIFR, Mumbai) | 13 February 2024

Exploring Gravity, Astrophysics, and Cosmology with Gravitational Waves | Aditya Vijaykumar (ICTS-TIFR, Bengaluru) | 9 February 2024

The 2d Sinh and Sine Gordon Models on the Infinite Cylinder | Trishen Gunaratnam (University of Geneva, Switzerland) | 9 February 2024

Universal Dynamics Across a Phase Transition: From Condensed Matter to Quantum Computing | Adolfo del Campo (University of Luxembourg) | 9 February 2024

Marine Cloud Brightening | Prasanth Prabhakaran (University of Colorado, Boulder, USA) | 9 February 2024

Universal Features of $2 \rightarrow N$ Scattering in QCD and Gravity from Shockwave Collisions | Raju Venugopalan (Brookhaven National Lab, USA) | 7 February 2024

Solving 4D Planar Gauge Theory with Integrability and Conformal Bootstrap | Nika Sokolova (King's College London, UK) | 6 February 2024

X-ray Flaring Event in AGN: Multi-wavelength Investigation and Interpretation of Physical Processes | Saikruba Krishnan (IUCAA, Pune) | 6 February 2024

Impact Phenomena in Liquid Interfacial Systems Across Spatiotemporal Scales | Durbar Roy (Indian Institute of Science, Bengaluru) | 2 February 2024

Gauge Orbit Space and Yang-Mills in 3d and 4d | V. Parameswaran Nair (The City College of New York, USA) | 31 January 2024

Unraveling the Secrets of Particle Acceleration in Collisionless Shocks | Siddhartha Gupta (Princeton University, USA) | 30 January 2024

Hydrodynamic Transport in Active Cellular Aggregates | Subhadip Chakraborti (Friedrich-Alexander Universität Erlangen-Nürnberg, Germany) | 29 January 2024

Parity Breaking in Classical and Quantum Fluids | Dylan Reynolds (City College of New York, USA) | 24 January 2024

Overview of 21cm Experiments Probing the Epoch of Reionisation and Updates on the Square Kilometre Array | Nithyanandan Thyagarajan (CSIRO, Australia) | 24 January 2024

BPS Fivebrane Stars | Yoav Zigdon (University of Cambridge, UK) | 24 January 2024

Extreme Magnetic Fields Around Black Hole Accretion | Koushik Chatterjee (University of Maryland, USA) | 18 January 2024

Aspects of Higher Dimensional Quantum Hall Effect: Effective Actions and Entanglement Entropy | Dimitra Karabali (City University of New York, USA) | 17 January 2024

Falling Particles in Vortical Flows | Elisabeth Guazzelli (CNRS, Paris) | 16 January 2024

Quantum Simulation Using Fermionic Atoms in Optical Lattices with Tunable Geometry | Anant Kale (Harvard University, USA) | 9 January 2024

Information-theoretic Aspects of Scrambling and Chaos | Namit Anand (NASA Quantum AI Lab, USA) | 8 January 2024

Probing Dissipative Effects in Neutron Stars Using Gravitational Waves | Abhishek Hegade Kumbale Raveesha (Illinois Center for Advanced Studies of the Universe, USA) | 4 January 2024

A Brief Introduction to Quantum Key Distribution | Devashish Tupkary (University of Waterloo, Canada) | 4 January 2024

Scattering Amplitudes and Holography | Akshay Yellespur Srikant (University of Oxford, UK) | 3 January 2024

COLLOQUIA

Encoding Memory in Flowing Solids | Vinutha H A (Georgetown University, USA) | 25 March 2024

Emergence of Structure in Cortical Circuits Through Bottom-up Dynamical Principles | Sarthak Chandra (Massachusetts Institute of Technology, USA) | 21 March 2024

Are There Bounds on the Superconducting Transition Temperature? | Mohit Randeria (Ohio State University, USA) | 19 March 2024

Achieving Net-zero and Relevance of Nuclear Power | KN Vyas (Former Secretary, DAE, and Chairman, AEC Govt. of India) | 14 March 2024

Recent Progress in Non-linear Geometric PDEs | Puskar Mondal (Harvard University, USA) | 5 March 2024

Percolation and the Critical Behaviour of ϕ^4 and Blume-Capel Models | Trishen Gunaratnam (University of Geneva, Switzerland) | 8 February 2024

Chern-Simons Field Theory Invariants | Pichai Ramadevi (Indian Institute of Technology Bombay, Mumbai) | 16 January 2024

SPECIAL COLLOQUIUM

Human-Level AI by 2030? | Jared Kaplan (Anthropic and Johns Hopkins University, USA) | 23 April 2024

ANNEXURE - B

PAPERS PUBLISHED - 52

In Journals – 29

1. *Transition to Chaos in Extended Systems and their Quantum Impurity Models*, **Mahaveer Prasad**, Hari Kumar Yadalam, **Manas Kulkarni**, Camille Aron. *J. Phys. A: Math. Theor.* 57 (01), 015308 (2024)
2. *Associating Fast Radio Bursts with Compact Binary Mergers via Gravitational Lensing*, **Mukesh Kumar Singh**, Shasvath J. Kapadia, **Soumyadip Basak**, **Parameswaran Ajith**, Shriharsh P. Tendulkar. *MNRAS*, 527 (2), 4234-4243 (2024)
3. *Flows with Varying Viscosity*. Ritabrata Thakur, Arjun Sharma, **Sharath Jose**, **Rama Govindarajan**. Invited paper in preparation for Reviews of Modern Physics, 2024
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