

ACTIVITY REPORT

(May-August 2021)



A lecture-symposium series named '*Technology and Cosmic Frontiers*' was organised in collaboration with the Office of the Principal Scientific Advisor to the Government of India. The inaugural lecture was given by **Kip Thorne** (Nobel Laureate in Physics, 2017) and **Rana Adhikari** (Caltech) on August 19, 2021. Thorne spoke on *Exploring the Universe with Gravitational Waves* and Adhikari on *The Technology of Gravitational-Wave Detectors*.



A special event was held to honour and celebrate the work of M.S. Narasimhan (1932-2021) and C.S. Seshadri (1932-2020), the doyens of Indian science who placed Tata Institute of Fundamental Research (TIFR) on the mathematical map of the world in the early days of independent India. The speakers in the event were **Vikraman Balaji, Jacques Hurtubise, Shrawan Kumar** and **Edward Witten**.

ICTS ACTIVITIES

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

Programs/Discussion Meetings held: 6

Academic visitors to ICTS-TIFR: 3

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

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

Papers published: 16

arXiv submissions: 26



ICTS academic activities, particularly of programs and discussion meetings, have been affected by the COVID-19 crisis and lockdown. However, a number of programs, classes and seminars are now being held online.

Ia. PROGRAMS

All programs were held online

Elliptic Curves and the Special Values of L-Functions

Organizers: Ashay Burungale, Haruzo Hida, Somnath Jha, Ye Tian | 2-7 August 2021

Quantum Fields, Geometry and Representation Theory 2021

Organizers: Aswin Balasubramanian, Indranil Biswas, Jacques Distler, Chris Elliott, Pranav Pandit | 5-23 July 2021

ICTS Summer School on Gravitational-Wave Astronomy

Organizers: Parameswaran Ajith, K. G. Arun, Bala R. Iyer, Prayush Kumar | 5-16 July 2021

Bangalore School on Statistical Physics - XII

Organizers: Abhishek Dhar, Sanjib Sabhapandit | 28 June-9 July 2021

Summer School for Women in Mathematics and Statistics

Organizers: Siva Athreya, Purvi Gupta, Anita Naolekar, Dootika Vats | 14-25 June 2021

Online School and Discussion Meeting on Trapped Atoms, Molecules and Ions

Organizers: Bimalendu Deb, Sourav Dutta, Saikat Ghosh | 10-22 May 2021



Ic. LECTURE SERIES

DISTINGUISHED LECTURES

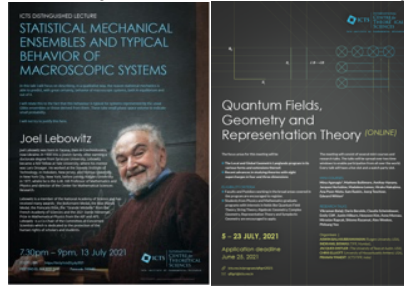
Statistical Mechanical Ensembles and Typical Behavior of Macroscopic Systems

Speaker: Joel Lebowitz (Rutgers University, New Brunswick, USA) | Date: 13 July 2021

TMC DISTINGUISHED LECTURES

Applying Physics to Mathematics | Tadashi Tokieda (Stanford University, USA) | Video release: 7 July 2021; Interactive Session: 20 July 2021

On the MLC Conjecture | Mikhail Lyubich (Stony Brook University) | Video release: 4 June 2021; Interactive session: 23 June 2021



Id. VISITS OF SCIENTISTS

Due to the COVID-19 situation, ICTS hosted very few visitors. However, the following researchers joined ICTS remotely/in person during May-August 2021.

1. **Veronika Reidl** (Friedrich Alexander University, Germany)
2. **Kausik Ghosh** (IISc, Bengaluru)
3. **Aswin Balasubramanian**, Simons Visiting Scholar (Rutgers University, USA)

Ie. NEWS ON GRANTS, AWARDS AND FELLOWSHIPS



ICTS-TIFR faculty member **MANAS KULKARNI** and his collaborator from Rutgers University, Jedediah Pixley, have been selected for a Rutgers Global International Collaborative Research Grant. The aim of the grant is to develop a formal pipeline between Rutgers University and institutions around the world for collaborative research that makes a significant contribution to advancing a particular field of study.



ICTS-TIFR faculty member **SAMRIDDHI SANKAR RAY** was elected a member of the National Academy of Sciences, India. Samriddhi works at the interface of non-equilibrium statistical physics and fluid dynamics. In particular, his research interests lie in fundamental and applied problems of turbulence and turbulent transport.

IIa FACULTY

1. Abhishek Dhar was promoted to the position of Senior Prof. (I). Amit Apte was promoted to Prof. (H). Samriddhi Sankar Ray, Anupam Kundu, Subhro Bhattacharjee, Vijay Kumar Krishnamurthy, Manas Kulkarni and R. Loganayagam were offered tenure and promoted to Associate Professor (G).
2. Poonam Chandra (NCRA, TIFR), Jason Picardo (IIT, Bombay) and Onkar Parrikar (TIFR, Mumbai) joined ICTS-TIFR as new Associates.
3. Swapan Chattopadhyay (Emeritus, Fermilab) was appointed adjunct professor of TIFR, and will be based at ICTS-TIFR.

IIb STUDENTS

GRADUATE PROGRAM

1. The summer semester began from June 2021 and graduate students have registered for various summer projects.
2. The fall semester for CAM-ICTS Joint PhD Program 2021 batch began from the 1st week of August and classes continue to be conducted online via Zoom and Moodle.
3. Apart from the ICTS courses, students have registered for various courses from IISc, TIFR Colaba, and CAM TIFR.
4. Subir Sachdev (Harvard University) will be teaching a joint TIFR-IAS course, **The Quantum Phases of Matter**, starting from the 1st week of September.
5. Following students have registered for their PhD via new datanet based module, Datanet 2.0:
 1. **2018 Integrated PhD batch:** Aditya Kumar Sharma, Chandramouli Chowdhury, Saikat Santra, Saumav Kapoor and Saurav Pandey.
 2. **2019 PhD batch:** Anup Kumar, Bhanu Kiran S, Mahaveer Prasad, Mukesh Kumar Singh, Omkar Sanjay Shetye, Priyadarshi Paul, Shivam Kumar Sharma, Souvik Jana, Tuneer Chakraborty and Uddeeptha Deka.
6. **Final year students:**
 - Pushkal Shrivastava, student of Suvrat Raju, successfully defended his thesis on 28th May 2021.
 - Avijit Das, student of Abhishek Dhar submitted his thesis on 20th July 2021.
 - The final year students (2015 Integrated PhD and 2016 PhD batch) have been given a one-year extension with full fellowship due to the COVID situation.
7. **Graduate Studies Admissions 2021:**
 - Online interviews for the CAM-ICTS Joint PhD Program 2021 were conducted on 30th April & 1st May via TIFR GS, GATE & CSIR-NET

stream. Five offers were made, out of which following three students accepted the offer:

Name	Affiliation
Mayank Kumar	ISI, Bengaluru
Vishal Neeraje	ISI, Bengaluru
Sudeshna Bhattacharjee	ISI, Bengaluru

- **Online interviews for Graduate Studies in the Physical Sciences Program 2021** were conducted via TIFR GS stream on 6 August. 23 candidates were interviewed based on the TIFR GS cutoff and screening of applications. The following students were selected:

Name	Affiliation
Bikram Pain	Midnapore College, West Bengal
Muhammed Irshad P	Hindu College, Delhi
Ankur Barsode	Birla Institute of Technology and Science, Pilani
Hrithik Dagar	Kirori Mal college, Delhi
Pooja Rani	Ramjas College, Delhi University
Shasvat Vudumula	Indian Institute of Technology, Madras
Vinay Kumar	Jamia Millia Islamia, Delhi
Kaustubh Singhi	Harish-Chandra Research Institute, Uttar Pradesh
Panya Jain	St. Stephens College, University of Delhi
Sandip Sahoo	Ramakrishna Mission Vivekananda Centenary College, West Bengal
Manishankar Ailiga	Delhi University

- Applications are invited for the Graduate Studies in Physical Sciences Program 2021 via JEST/GATE/CSIR stream:
<https://www.icts.res.in/graduate-studies/physical-sciences>.

POSTDOCTORAL PROGRAM

1. Applications were invited for the August hiring cycle:
<https://www.icts.res.in/academic/postdoctoral-fellowships>
The following offer was made. The selection process is still going on.

Name	Research Group	Current Affiliation	Current Designation
Vandita Sharma	Fluid Dynamics and Turbulence	IIT Ropar	Research Associate

VISITING STUDENTS PROGRAM

1. Applications were invited for the ICTS Long Term Visiting Students Program 2021. <https://www.icts.res.in/academic/long-term-visiting-student-program>.
The following students were selected. They have joined the program.

Name	Current Affiliation	Faculty Advisor
Kishore Iyer	IISER, Thiruvananthapuram	Sumathi Rao
Ananya Janarshanan	IISER, Bhopal	Sumathi Rao
Krishna Prahladh R.	IISER, Bhopal	Sumathi Rao
Ivin Babu	Sahrdaya College of Advanced Studies, Calicut University	Rukmini Dey
Shreya Dwivedi	IISER, Berhampur	Pallavi Bhat
Estuti Shukla	IISER, Kolkata	Prayush Kumar
Akash Trivedi	IISER, Pune	Abhishek Dhar

PUBLIC LECTURES

Technology & Cosmic Frontiers

Kip S. Thorne (Richard P. Feynman Professor of Theoretical Physics (Emeritus), Caltech; Nobel Laureate in Physics, 2017) and Rana Adhikari (Professor of Physics, Caltech) | 19 August 2021



KAAPI WITH KURIOSITY

The lecture series has been temporarily renamed Kuriosity During Kuarantine. All the lectures are being livestreamed on the ICTS YouTube channel.

Quantum Matters

Speaker: Arindam Ghosh (Indian Institute of Science, Bengaluru) | 29 August 2021

Metallurgical Heritage of India

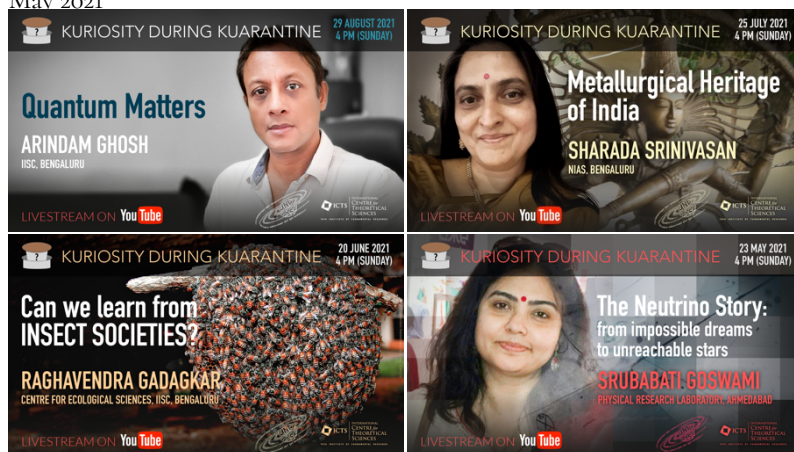
Speaker: Sharada Srinivasan (National Institute of Advanced Studies, Bengaluru) | 25 July 2021

Can We Learn from Insect Societies?

Speaker: Raghavendra Gadagkar (Indian Institute of Science, Bengaluru) | 20 June 2021

The Neutrino Story: From Impossible Dreams to Unreachable Stars

Speaker: Srubabati Goswami (Physical Research Laboratory, Ahmedabad) | 23 May 2021



VIGYAN ADDA

Heading Towards Turbulence

Speaker: Rama Govindarajan (ICTS-TIFR, Bengaluru) | 15 July 2021

Phases of (Quantum) Matter

Speaker: Subhro Bhattacharjee (ICTS-TIFR, Bengaluru) | 15 June 2021



ANNEXURE - A

The following are the details of seminars and colloquia during the period May-August 2021. All seminars and colloquia were held online.

Topology of Random Čech Complexes in Thermodynamic Regime | Akshay Goel (Kyushu University, Japan) | 26 August 2021

Dulmage-Mendelsohn Percolation | Kedar Damle (TIFR, Mumbai) | 17 August 2021

Multi-messenger Astronomy: Progress and Problems | Nayantara Gupta (Raman Research Institute, Bengaluru) | 11 August 2021

A Family of Homogeneous Operators in the Cowen-Douglas Class Over the Poly-Disc | Somnath Hazra (Indian Institute of Science Education and Research, Kolkata) | 11 August 2021

Equilibration of Fractional Quantum Hall Edge Modes | Biswajit Karmakar (Saha Institute of Nuclear Physics, Kolkata) | 10 August 2021

Horizontal Immersions in Fat Distributions | Aritra Bhowmick (Indian Statistical Institute, Kolkata) | 6 August 2021

Quantized Bubble Nucleations | Aritra Sinha (Jagiellonian University, Poland) | 5 August 2021

Enumerative Geometry of Singular Curves with Tangencies | Anantadulal Paul (NISER, Bhubaneswar) | 5 August 2021

S-type Operations, Line Defects and 3D Mirror Symmetry beyond ADE quivers | Anindya Dey (Johns Hopkins University, USA) | 4 August 2021

Towards a Unified Description of the Quantum Hall Effects | Ajit C. Balram (Institute of Mathematical Sciences, Chennai) | 3 August 2021

Looking for a New Kind of Lie Algebra Using a Clue from Counting Dyon Degeneracies | Suresh Govindarajan (IIT, Madras) | 28 July 2021

Radiation Magnetohydrodynamics with Non-Equilibrium Equation-of-State in the Solar Atmosphere | Anusha LS Bhasari (Max Planck Institute for Solar System Research, Goettingen, Germany) | 22 July 2021

Zero-Point Fluctuation of Vortices in a Very Weakly Pinned Amorphous MoGe Thin Film | Pratap Raychaudhuri (TIFR, Mumbai) | 20 July 2021

The p-Spin Glass Model: A Holographer's Point of View | Felix Hachl (Institute for Advanced Study, USA) | 14 July 2021

Spin-Orbit Coupling and the Consequent Novel phases in Correlated Iridates | Sugata Ray (Indian Association for the Cultivation of Science, Kolkata) | 13 July 2021

(SL(2,R) X U(1))/U(1) CFT, NS5+F1 System & Single Trace TTbar | Soumangsu Chakraborty (TIFR, Mumbai) | 7 July 2021

Renormalization Group Study of Systems with Quadratic Band Touching | Subroto Mukerjee (Indian Institute of Science, Bengaluru) | 7 July 2021

Recent Developments in the Mathematics of Neural Nets | Anirbit Mukherjee (University of Pennsylvania, USA) | 1 July 2021

UV-Complete Descriptions of Early Universe Cosmology | Suddhasattwa Brahma (McGill University, Canada) | 29 June 2021

Dynamical Regimes of Finite Temperature Discrete Nonlinear Schrödinger Chain | Amit Kumar Chatterjee (ICTS-TIFR, Bengaluru) | 25 June 2021

Non-Gaussian Statistics in Soft and Bio Matter | Ralf Metzler (University of Potsdam, Germany) | 17 June 2021

Investigating Correlations in the Parameter Estimation of Low Mass Eccentric Binaries | Eamonn O'Shea (Cornell University, USA) | 16 June 2021

The 3d Black String and its Dual | Stephane Detournay (University of Brussels, Belgium) | 16 June 2021

An Exactly Solvable Model of Interacting Electrons in a Magnetic Field | Sreejith GJ (IISER, Pune) | 16 June 2021

Detecting Nonequilibrium Dynamics via Extreme Value Statistics | Francesco Mori (LPTMS, France) | 10 June 2021

Random t-J Model Theory of the Cuprate Phase Diagram | Subir Sachdev (Harvard University, USA) | 9 June 2021

Imprints of the Internal Composition of Neutron Stars on Gravitational Wave Emission | Debarati Chatterjee (IUCAA, Pune) | 9 June 2021

Many-Body Chaos in a Glass: Classical to Quantum and Back Again | Sumilan Banerjee (Indian Institute of Science, Bengaluru) | 8 June 2021

Large Deviation Theory on Diluted Random Matrix Ensembles | Isaac Pérez Castillo (Universidad Autónoma Metropolitana, Iztapalapa) | 3 June 2021

Classical Soft Graviton Theorem and Gravitational Memory | Biswajit Sahoo (École polytechnique fédérale de Lausanne, Switzerland) | 2 June 2021

The Fock-Space Landscape Across the Many-Body Localisation Transition | Sthitadhi Roy (University of Oxford, UK) | 1 June 2021

Black Holes and Holography | Pushkal Shrivastava (ICTS-TIFR, Bengaluru) | 28 May 2021

No Global Symmetries, with Applications to Axions and Cosmic Strings |

Matthew Reece (Harvard University, USA) | 27 May 2021

Large Deviations of Currents in Diffusions with Reflective Boundaries |

Emil Mallmin (University of Edinburgh, UK) | 27 May 2021

Charting the Landscape of 3d CFTs |

David Poland (Yale University, USA) | 20 May 2021

Ringdown Properties of Compact Objects |

Mostafizur Rahman (Indian Institute of Technology, Gandhinagar) | 14 May 2021

Collective Description of Trapped Fermions: Exact Results |

Manas Kulkarni (ICTS-TIFR, Bengaluru) | 13 May 2021

Wormholes and Black Hole Microstates in AdS/CFT |

Kristan Jensen (University of Victoria, Canada) | 12 May 2021

Comments on the Information Paradox |

Chethan Krishnan (Indian Institute of Science, Bengaluru) | 5 May 2021

COLLOQUIA

Ergodicity Breaking in Quantum Many-Body Systems |

Sthitadhi Roy (University of Oxford, UK) | 31 May 2021

Personality and Social Influence in Strategic Decision-Making |

Rebecca Hoyle (University of Southampton, UK) | 10 May 2021

ANNEXURE - B

PAPERS PUBLISHED – 55

In Journals – 16

1. *Upper Tail Large Deviations in First Passage Percolation* **Riddhipratim Basu**, Shirshendu Ganguly and Allan Sly. Comm. Pure Appl. Math, to appear (Accepted: 2021)
2. *Classical Many-Body Chaos With and Without Quasiparticles*, Thomas Bilitewski, **Subhro Bhattacharjee**, Roderich Moessner Phys. Rev. B 103 (17), 174302 (2021)
3. *Statistics Tuned Entanglement of the Boundary Modes in Coupled Su-Schrieffer-Heeger Chains*, Saikat Santra, **Adhip Agarwala**, **Subhro Bhattacharjee** Physical Review B, 103 (19), 195134 (2021)
4. *Microscopic Theory of the Fluctuating Hydrodynamics in Nonlinear Lattices*, Keiji Saito, Masaru Hongo, **Abhishek Dhar**, Shin-ichi Sasa Physical Review Letters 127 (1), 010601 (2021)
5. *Blast in a One-Dimensional Cold Gas: From Newtonian Dynamics to Hydrodynamics*, **Subhadip Chakraborti**, **Santhosh Ganapa**, P. L. Krapivsky, **Abhishek Dhar**, Phys. Rev. Lett. 126 (24), 244503 (2021)
6. *Microscopic Theory of the Fluctuating Hydrodynamics in Nonlinear Lattices*, Keiji Saito, Masaru Hongo, **Abhishek Dhar**, Shin-ichi Sasa Physical Review Letters 127 (1), 010601 (2021)
7. *Blast in the One-Dimensional Cold Gas: Comparison of Microscopic Simulations with Hydrodynamic Predictions*, **Santhosh Ganapa**, **Subhadip Chakraborti**, P. L. Krapivsky, and **Abhishek Dhar**, Phys. of Fluids 33 (8), 087113 (2021)
8. *Crossing Symmetric Dispersion Relations for Mellin Amplitudes*, **Rajesh Gopakumar**, Aninda Sinha, Ahmadullah Zahed, Physical Review Letters 126, 211602, (2021)
9. *From Symmetric Product CFTs to AdS₂*, Matthias R. Gaberdiel, **Rajesh Gopakumar**, Bob Knighton, **Pronobesh Maity** JHEP 05, 073, (2021)
10. *Early Evolution of Optimal Perturbations in a Viscosity-Stratified Channel*. **Ritabrata Thakur**, Arjun Sharma & **Rama Govindarajan**, Journal of Fluid Mechanics, Special Volume in Celebration of the GK Batchelor Centenary, 2021, 914, A10 (2021)
11. *Information Transfer with a Gravitating Bath*, Hao Geng, Andreas Karch, Carlos Perez-Pardavila, **Suvrat Raju**, Lisa Randall, Marcos Riojas, Sanjit Shashi, SciPost Phys. 10 (5), 103 (2021)
12. *Population Imbalance for a Family of One-Dimensional Incommensurate Models with Mobility Edges*, Sayantan Roy, Subroto Mukerjee, **Manas Kulkarni** Phys. Rev. B 103 (18), 184203 (2021)
13. *Crossover Behaviours Exhibited by Fluctuations and Correlations in a Chain of Active Particles*, **Prashant Singh**, **Anupam Kundu** accepted in Journal of Physics A: Mathematical and Theoretical 54 (30), 305001 (2021)

14. *Effective field theory of stochastic diffusion from gravity*, **Jewel K. Ghosh, R. Loganayagam, Siddharth G. Prabhu**, Mukund Rangamani, Akhil Sivakumar, V. Vishal JHEP 05, 130 (2021)
15. *Anomalous diffusion and Lévy walks distinguish active from inertial turbulence*, **Siddhartha Mukherjee, Rahul K. Singh**, Martin James, **Samriddhi Sankar Ray** accepted to appear in Phys. Rev. Lett. (2021). **This publication was selected as Editor's Choice.**
16. *Many-body Chaos in a Thermalised Fluid*, S. D. Murugan, D. Kumar, S. **Bhattacharjee, Samriddhi Sankar Ray**. Physical Review Letters, in press (Aug. 2021)

In arXiv - 26

1. *Saturation of large-scale dynamo in anisotropically forced turbulence*, **Pallavi Bhat** arXiv:2108.08740
2. *Invariants in Polarimetric Interferometry: a non-Abelian Gauge Theory*, **Joseph Samuel**, Rajaram Nityananda, Nithyanandan Thyagarajan arXiv:2108.11400
3. *Invariants in Co-polar Interferometry: an Abelian Gauge Theory*, Nithyanandan Thyagarajan, Rajaram Nityananda, **Joseph Samuel** arXiv:2108.11399
4. *The Science Case for LIGO-India*, M. Saleem, Javed Rana, V. Gayathri, **Aditya Vijaykumar, Srashthi Goyal**, Surabhi Sachdev, Jishnu Suresh, S. Sudhagar, Arunava Mukherjee, Gurudatt Gaur, Bangalore Sathyaprakash, Archana Pai, Rana X Adhikari, **P. Ajith**, Sukanta Bose. arXiv:2105.01716
5. *The Worldsheet Dual of Free Super Yang-Mills in 4D*, Matthias R. Gaberdiel, **Rajesh Gopakumar**. arXiv:2105.10496
6. *Fundamental Pathologies in Lindblad Descriptions of Systems Weakly Coupled to Baths*, D. Tupkary, **A. Dhar, M. Kulkarni**, A. Purkayastha. arXiv:2105.12091
7. *Coherent States as Kähler Embeddings in CP^∞* , **Rukmini Dey, Joseph Samuel**, Rithwik S. Vidyarthi. arXiv:2105.14283
8. *Dynamical Regimes of Finite Temperature Discrete Nonlinear Schrödinger Chain*, **Amit Kumar Chatterjee, Manas Kulkarni, Anupam Kundu**. arXiv:2106.01267
9. *Ocean-depth Measurement Using Shallow-water Wave Models*, **Vishal Vasan, Manisha**, Didier Auroux. arXiv:2106.00964
10. *A Dynamical Model of Black Hole Evaporation in the SYK Model coupled to a CFT*, A. Gaikwad, A. Kaushal, G. Mandal and **S. R. Wadia**.
11. *Some Large Deviations Asymptotics in Small Noise Filtering Problems*, **Anugu Sumith Reddy**, Amarjit Budhiraja, **Amit Apté**. arXiv:2106.05512
12. *Strongly Lensed Gravitational-Wave Events with Machine Learning*, **Srashthi Goyal, Harikrishnan D., Shasvath J. Kapadia, Parameswaran Ajith**, Rapid Identification of Submitted to Phys. Rev. D. arXiv:2106.12466

13. *Heat Transport in an Ordered Harmonic Chain in Presence of a Uniform Magnetic Field*, **Junaid Bhat**, Gaëtan Cane, Cédric Bernardin, **Abhishek Dhar**. arXiv:2106.12069
14. *Rapid Identification of Strongly Lensed Gravitational-Wave Events with Machine Learning*, **Srashti Goyal**, Harikrishnan D., **Shasvath J. Kapadia**, **Parameswaran Ajith**. arXiv:2106.12466
15. *Inconsistency of Islands in Theories with Long-Range Gravity*, Hao Geng, Andreas Karch, Carlos Perez-Pardavila, **Suvrat Raju**, Lisa Randall, Marcos Riojas, Sanjit Shashi. arXiv:2107.03390
16. *Harmonically Confined Long-Ranged Interacting Gas in the Presence of a Hard Wall*, Jitendra Kethepalli, **Manas Kulkarni**, **Anupam Kundu**, Satya N. Majumdar, David Mukamel, Gregory Schehr. arXiv:2107.00524
17. *Localization Effects Due to a Random Magnetic Field on Heat Transport in a Harmonic Chain*, Gaëtan Cane, **Junaid Majeed Bhat**, **Abhishek Dhar**, Cédric Bernardin. arXiv:2107.06827
18. *Kinetic Theory of Calogero Particles*, Vir B. Bulchandani, **Manas Kulkarni**, Joel E. Moore, Xiangyu Cao. arXiv:2107.06157
19. *Phases and Quantum Phase Transitions in Anisotropic Antiferromagnetic Kitaev-Heisenberg-Magnet*, **Animesh Nanda**, **Adhip Agarwala**, **Subhro Bhattacharjee**. arXiv:2107.09697
20. *Correlations in Parameter Estimation of Low-Mass Eccentric Binaries: GW151226 & GW170608*, Eamonn O'Shea, **Prayush Kumar**. arXiv:2107.07981
21. *Environment Seen from Infinite Geodesics in Liouville Quantum Gravity*, **Riddhipratim Basu**, Manan Bhatia, Shirshendu Ganguly. arXiv:2107.12363
22. *Holography from the Wheeler-DeWitt equation*, **Chandramouli Chowdhury**, **Victor Godet**, Olga Papadoulaki, **Suvrat Raju** arXiv:2107.14802
23. *An Effective Description of Momentum Diffusion in a Charged Plasma from Holography*, Temple He, **R. Loganayagam**, Mukund Rangamani, Julio Virrueta. arXiv:2108.03244
24. *Thermodynamics and its Correlation with Dynamics in a Mean-Field Model and Pinned Systems: A Comparative Study Using Two Different Methods of Entropy Calculation*, Ujjwal Kumar Nandi, Palak Patel, Mohd Moid, Manoj Kumar Nandi, Shiladitya Sengupta, Smarajit Karmakar, Prabal K Maiti, **Chandan Dasgupta**, Sarika Maitra Bhattacharyya. arXiv:2108.00617
25. *Instability Driven by Settling and Evaporation in a Shear Flow: A Model for Asperitas Clouds*, S. Ravichandran, **Rama Govindarajan**. arXiv:2108.04930
26. *Pullback Coherent and Squeezed States and Quantization*, **Rukmini Dey**, **Kohinoor Ghosh**. arXiv:2108.08082

Consortium - 13

1. *Search for lensing signatures in the gravitational-wave observations from the first half of LIGO-Virgo's third observing run* The LIGO Scientific Collaboration, the Virgo Collaboration, R. Abbott, et al. Submitted to Ap. J, (2021) arXiv:2105.06384.

2. *Searches for continuous gravitational waves from young supernova remnants in the early third observing run of Advanced LIGO and Virgo*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. arXiv:2105.11641
3. *Constraints on dark photon dark matter using data from LIGO's and Virgo's third observing run*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. arXiv:2105.13085
4. *Constraints on cosmic strings using data from the third Advanced LIGO-Virgo observing run*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. Phys. Rev. Lett. 126, 241102 (2021)
5. *Tests of General Relativity with Binary Black Holes from the second LIGO-Virgo Gravitational-Wave Transient Catalog* The LIGO Scientific Collaboration, the Virgo Collaboration, R. Abbott, et. al. Phys. Rev. D, 103, 122002 (2021)
6. *GWTC-2: Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run* (The LIGO Scientific Collaboration, the Virgo Collaboration), R. Abbott, et al, Phys. Rev. X 11, 021053 (2021)
7. *Observation of gravitational waves from two neutron star-black hole coalescences*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. Astrophys. J. Lett., 915 (1), L5 (2021)
8. *Upper Limits on the Isotropic Gravitational-Wave Background from Advanced LIGO's and Advanced Virgo's First Three Observing Runs*, The LIGO Scientific Collaboration, the Virgo collaboration, the KAGRA collaboration, Phys. Rev. D., 104 (2), 022004 (2021)
9. *Search for anisotropic gravitational-wave backgrounds using data from Advanced LIGO's and Advanced Virgo's first three observing runs*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott et. al. Phys. Rev. D 104 (2), 022005 (2021)
10. *All-sky Search for Continuous Gravitational Waves from Isolated Neutron Stars in the Early O3 LIGO Data*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. arXiv:2107.00600
11. *All-sky search for short gravitational-wave bursts in the third Advanced LIGO and Advanced Virgo run*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. arXiv:2107.03701
12. *All-sky search for long-duration gravitational-wave bursts in the third Advanced LIGO and Advanced Virgo run*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. Submitted to Phys. Rev. D. (2021). arXiv:2107.13796
13. *GWTC-2.1: Deep Extended Catalog of Compact Binary Coalescences Observed by LIGO and Virgo During the First Half of the Third Observing Run*, LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. arXiv:2108.01045