

ACTIVITY REPORT

(September-December 2021)

Summary of Programming Activities *(For details see following pages)* Programs/Discussion Meetings held: 6

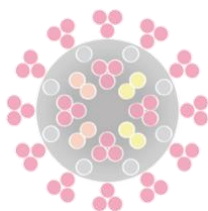
Academic visitors to ICTS-TIFR: 21

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

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

Papers published: 18

arXiv submissions: 17



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

ICTP-ICTS Winter School on Quantitative Systems Biology

Organisers: **Vijaykumar Krishnamurthy, Venkatesh N. Murthy, Sharad Ramanathan, Sanjay Sane and Vatsala Thirumalai** | 6-17 December 2021



Ib. DISCUSSION MEETINGS

Celebrating the Science of Giorgio Parisi

Organisers: **Chandan Dasgupta, Abhishek Dhar, Smarajit Karmakar and Samriddhi Sankar Ray** | 15-17 December 2021

Hunting SUSY @ HL-LHC

Organisers: **Satyaki Bhattacharya, Rohini Godbole, Kajari Majumdar, Prolay Mal, Seema Sharma, Ritesh K. Singh and Sanjay Kumar Swain** | 22-26 November 2021

Workshop on Inverse Problems and Related Topics

Organizers: **Rakesh and Venkateswaran P Krishnan** | 25-29 October 2021

Topological Aspects of Strong Correlations and Gauge Theories

Organizers: **Rob Pisarski, Sumathi Rao, Soeren Schlichting and Sayantan Sharma** | 6-10 September 2021

Hydrodynamics and Fluctuations - Microscopic Approaches in Condensed Matter Systems

Organizers: **Abhishek Dhar, Keiji Saito and Tomohiro Sasamoto** | 6-10 September 2021



1c. LECTURE SERIES

DISTINGUISHED LECTURES

Putting Order into Disorder: An Application to the Chronology of my Works
Giorgio Parisi (Sapienza University, Rome, Italy) | Date: 16 December 2021

A Scientific Summary of the 2021 Nobel Prize in Physics
John Wettlaufer (Yale University, USA & Nordic Institute for Theoretical Physics, Sweden) | Date: 2 November 2021

FOUNDATION DAY LECTURES

The Future of Our Universe
Ashoke Sen (ICTS-TIFR, Bengaluru) | Date: 27 December 2021



1d. VISITS OF SCIENTISTS

Due to the COVID-19 situation, ICTS hosted fewer visitors. However, the following researchers joined ICTS remotely/in person during September-December 2021.

1. **Aswin Balasubramanian** (Rutgers University, USA)
2. **Veronika Riedl** (Friedrich Alexander University, Germany)
3. **Kausik Ghosh** (IISc, Bangalore)
4. **Madhusudan Raman** (TIFR, Mumbai)
5. **Arun Paramekanti** (University of Toronto, Canada)
6. **Faruk Abdulla** (Harish-Chandra Research Institute, Allahabad)
7. **Archak Purkayastha** (Trinity College, Ireland)
8. **Madhumita Saha** (IISER, Pune)
9. **Atharv Deokule** (TIFR, Mumbai)
10. **Subir Sachdev** (Harvard University, USA)
11. **Adhip Agarwala** (Max Planck Institute of Physics & Complex Systems, Dresden, Germany)
12. **Kabir Ramola** (TIFR, Hyderabad)
13. **Stephy Jose** (TIFR, Hyderabad)
14. **Roshan Kumar Maharana** (TIFR, Hyderabad)
15. **Sumit Birwa** (University of Cambridge, UK)
16. **Suman Jyoti De** (Harish-Chandra Research Institute, Allahabad)
17. **Katepalli Sreenivasan** (NYU Tandon School of Engineering, USA)
18. **M. A Sofi** (Kashmir University, Srinagar)
19. **Gautam Menon** (Institute for Mathematical Sciences, Chennai)
20. **Mandar Inamdar** (IIT, Bombay)
21. **Pramod Pullarkat** (Raman Research Institute, Bengaluru)

1e. NEWS ON GRANTS, AWARDS AND FELLOWSHIPS



ANIRBAN BASAK was awarded the **INSA Medal for Young Scientists (Mathematics)**, 2021.



RIDDHIPRATIM BASU received the 2021 **NASI Platinum Jubilee Young Scientist Award** for his contributions to probability theory.



SUBHRO BHATTACHARJEE received the prestigious **Swarnajayanti Fellowship** of the Department of Science and Technology, Govt. of India, in the physical sciences category. He also received a **VAJRA grant** of SERB as co-PI with Tanusri Saha-Dasgupta of SN Bose National Centre for Basic Sciences, Kolkata. Their proposed work is titled '*Tuning Quantum Materials with Strain.*'



RAMA GOVINDARAJAN was elected **Fellow of the Indian National Science Academy (INSA)**. She was also selected for the prestigious **Kirk Distinguished Fellowship** of the Isaac Newton Institute, Cambridge. She will be participating in their semester long program on the "*Mathematical Aspects of Turbulence*" in ২০২২



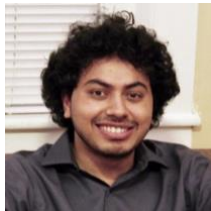
MANAS KULKARNI received one of the exclusive **VAJRA grants**, as co-PI with ABHISHEK DHAR, given by the Science and Engineering Research Board (SERB) of the Department of Science and Technology, Govt. of India.



VIJAY KUMAR KIRSHNAMURTHY was part of a global cohort of interdisciplinary researchers who have been awarded a prestigious **Templeton Foundation Grant** to investigate new conceptual frameworks for understanding '*Agency, Directionality and Function*' in living systems.'



SAMRIDDHI SANKAR RAY was awarded the new prestigious **SERB-Science and Technology Award for Research (SERB-STAR)** projects. Samriddhi was also elected **member of the National Academy of Sciences, India (NASI)**. Samriddhi's publication, with ICTS postdoctoral fellow Siddhartha Mukherjee and PhD student Rahul K. Singh (in collaboration with Mart, titled *Anomalous Diffusion and Levy Walks Distinguish Active from Inertial Turbulence* was highlighted as **Editors' Suggestion in Physical Review Letters**. The work was also featured in the APS Physics Magazine.



Former ICTS graduate student RAHUL CHAJWA received the **TAA-Geeta Udgaonkar Award (2021)** for the best thesis in physical sciences within TIFR. Rahul's thesis, titled '*Driven Stokesian Suspensions: Particle Anisotropy, Effective Inertia and Transient Growth*' is based on experimental and theoretical work under the supervision of Rama Govindarajan (ICTS), Naraynan Menon (University of Massachusetts, Amherst) and Sriram Ramaswamy (IISc).



First year I-PhD student BIKRAM PAIN was awarded the **gold medal by the Indian Association of Physics Teachers (IAPT)** for his stellar performance in the National Graduate Physics Examination (NGPE-21).

Ila FACULTY

1. Ashoke Sen joined ICTS-TIFR as ICTS-Infosys Madhava Chair Professor. He works in string theory and quantum gravity.
2. Stithadi Roy (University of Oxford) has accepted the ICTS offer for the position of Reader. His research interests are the out-of-equilibrium dynamics of interacting quantum many body systems in the presence and absence of disorder.
3. Jim Thomas (University of North Carolina, Chapel Hill) has accepted the offer as joint faculty with ICTS-TIFR and TIFR-CAM. His research interests are in the mathematics of geophysical fluid flows, especially in oceans.
4. Herbert Spohn (Technical University of Munich, Germany) joined ICTS-TIFR as a Senior Faculty Associate.

Ilb STUDENTS**GRADUATE PROGRAM**

1. The Fall 2021 semester for Physical Sciences started from 13 September 2021. Classes continue to be conducted online via Zoom and Moodle. A few of the classes were conducted in the hybrid mode according to all COVID guidelines.
2. Apart from the ICTS courses, students have registered for the various courses from IISc, TIFR Colaba, TIFR CAM, TIFR Hyderabad and NCBS.
3. Subir Sachdev's joint TIFR-IAS(Princeton) course, **The Quantum Phases of Matter** (29 November-11 December 2021) was conducted from the ICTS-TIFR campus.
4. **Final year students**
 - Pabitra Ray, student of Joseph Samuel, successfully completed his M.Sc. project on 25 August 2021.
 - Praneet Kumar Singh, student of Vijaykumar Krishnamurthy, successfully completed his M.Sc. project on 30 November 2021.
 - Chandan Kumar Jana, student of R. Loganayagam, successfully defended his thesis on 10 September 2021.
 - Kasi Jaswin, student of R. Loganayagam and Pallab Basu, successfully defended his thesis on 17 September 2021.
 - Avijit Das, a student of Abhishek Dhar, submitted his thesis and is in the process of defending it.
5. **Graduate Studies Admissions 2021**

Online interviews for the Graduate Studies in Physical Sciences Program 2021 via JEST/GATE/CSIR stream were conducted on 2 and 3 September 2021. Forty candidates were interviewed based on the cutoff and

screening of the applications. Following students were selected and have joined physically:

Name	Affiliation
Mrinal Jyoti Powdel	Tezpur University, Assam
Ashik H	University of Hyderabad, Telangana
Avi Wadhwa	BITS, Pilani
Rashmi Ranjan Sahu	UM-DAE CEBS, Mumbai
Ritwik Mukherjee	Jadavpur University, Kolkata
Sridhar Vinayak	IISER, Mohali

6. Graduate Studies Management Software: The in-house software has been developed to track the progress of pre-registered students on a monthly basis related to course work, thesis advisor selection and other academic or non-academic matters.
7. Global Young Scientists Summit 2022: Following students were selected to attend the summit:
 - Srashti Goyal
 - Aditya Singh Rajput
 - Saumav Kapoor
 - Subhadip Chakraborti
 - Junaid Bhat
 - Siddhartha Mukherjee
 - Rahul Kumar Singh
 - Pinak Mandal

POSTDOCTORAL PROGRAM

1. Applications are invited for the Fall 2022 hiring cycle: <https://www.icts.res.in/academic/postdoctoral-fellowships>. The following offers were made from the Summer 2021 hiring cycle:

Name	Research Group	Current Affiliation	Current Designation
Akshay Goel	Mathematics	ISI, Bengaluru	Visiting Scientist
Anantadulal Paul	Mathematics	NISER, Bhubaneswar	PhD Research Scholar

VISITING STUDENTS PROGRAM

1. Applications are invited for the ICTS Long Term Visiting Students Program 2022: <https://www.icts.res.in/academic/long-term-visiting-student-program>

2. The LTVSP 2021 batch students have joined physically.
3. Applications are invited for the ICTS S.N. Bhatt Memorial Excellence Fellowship Program 2022: <https://www.icts.res.in/academic/summer-research-program>

KAAPI WITH KURIOSITY

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

To Paint the Lily, Mathematically

Speaker: **L. Mahadevan** (Harvard University) | 12 December 2021

Autism and “Astro”logy: New Insights From Recordings in Human Brain Cells

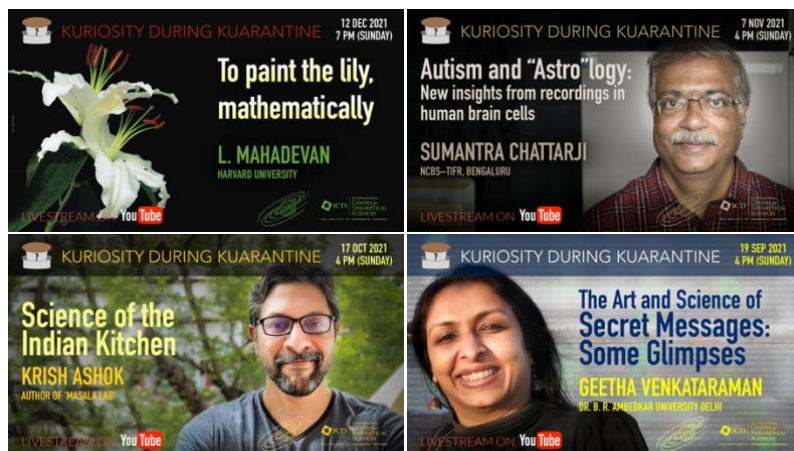
Speaker: **Sumantra Chattarji** (University of Edinburgh, UK) | 7 November 2021

Science of the Indian Kitchen

Speaker: **Krish Ashok** (Author of ‘Masala Lab’) | 17 October 2021

The Art and Science of Secret Messages: Some Glimpses

Speaker: **Geetha Venkataraman** (Dr. B. R. Ambedkar University Delhi, Delhi)
| 19 September 2021



VIGYAN ADDA

The Finite Part of Infinity

Speaker: **Joseph Samuel** (RRI & ICTS-TIFR, Bengaluru) | 24 October 2021

Steven Weinberg: The Physicist and his Physics

Speaker: **Rohini M. Godbole** (Indian Institute of Science, Bengaluru) |
2 September 2021



SCIENCE OUTREACH IN SCHOOLS

As part of our Science Outreach in Schools, ICTS has selected 21 government schools in the vicinity of Hesarghatta (where ICTS is located) to distribute library and experiment kits. We have received a formal consent from the Block Education Officer, North Bengaluru for this initiative. On November 13, 2021, ICTS conducted a day-long hands-on in person teacher training session for science teachers from these 21 schools and introduced them to the kits. The distribution of the kits was completed in November 2021. The aim is to follow up with more teacher training sessions and feedback from students.

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 four online Maths Circle India sessions since October 29, 2021. Three of the interactive sessions were conducted by Pranav Pandit, Divya Jaganathan, Abhishodh Prakash and Srikanth Pai. One was conducted by Ashutosh Roy Choudhury, Biswajit Nag, Niladri Patra, Arkamouli Debnath, Roktim Mascharak and Amitava Bhattacharya.

ANNEXURE - A

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

Non-Abelian T-dual of Klebanov-Tseytlin Background and its Penrose Limits |

Sourav Roychowdhury (Chennai Mathematical Institute) | 22 December 2021

Active Random Walks in One and Two Dimensions | Stephy Jose (TIFR, Hyderabad) | 9 December 2021

MHV Graviton Scattering Amplitudes from Celestial Current Algebras |

Shamik Banerjee (Institute of Physics, Bhubaneswar) | 8 December 2021, 15:00

A Puncture in the Euclidean Black Hole | Nissan Itzhaki (Tel Aviv University, Israel) | 1 December 2021

A Computational Study of Active Surfaces | Praneet Kumar Singh (ICTS-TIFR, Bengaluru) | 30 November 2021

JTbar-Deformed CFTs as Non-Local CFTs | Monica Guica (Institut de Physique Théorique, France) | 24 November 2021

On the Black Hole/String Transition | Juan Maldacena (Institute for Advanced Study, USA) | 17 November 2021

Lagrangian Manifestations of Anomalies in Active Turbulence | Rahul Kumar Singh (ICTS-TIFR, Bengaluru) | 11 November 2021

Quantum Gravity meets Statistical Physics | Alexandre Belin (CERN) | 10 November 2021

Sub-Diffusive Phases in Open Clean Long-Range Systems | Madhumita Saha (IISER, Pune) | 9 November 2021

A Perturbative CFT Dual for Pure NS-NS AdS3 Strings | Lorenz Eberhardt (Institute for Advanced Study, USA) | 3 November 2021

Machine Learning and Theoretical Physics: Some Applications | Miranda Cheng (University of Amsterdam, Netherlands) | 27 October 2021

A Derivation of AdS/CFT for Vector Models | Ofer Aharony (Weizmann Institute, Israel) | 19 October 2021

No Page Curves for the de Sitter Horizon | Evita Verheijden (University of Amsterdam, Netherlands) | 13 October 2021

Field Theories for Non-Markovian Stochastic Processes: Extreme Values and Beyond | Walter Benjamin (Scuola Internazionale Superiore di Studi Avanzati, Italy) | 7 October 2021

Towards a Positive Geometry for the Massive S-Matrix | Alok Laddha (Chennai Mathematical Institute) | 6 October 2021

Decoding and Bootstrapping Cosmological Fluctuations | Gui Pimentel (University of Amsterdam, Netherlands) | 29 September 2021

Terahertz Probes for Quasiparticle Electrodynamics in Complex Oxides | Dhanvir Singh Rana (IISER, Bhopal) | 28 September 2021

Modeling the Merger in Beyond-GR Waveforms | Gabriel Bonilla (California State University, Fullerton, USA) | 24 September 2021

Convexity of Charged Operators in CFTs and the Weak Gravity Conjecture | Eran Palti (Ben Gurion University, Israel) | 22 September 2020

New Frontiers for Interaction-Induced States | Ipsita Mandal (The Henryka Niewodniczanski Institute of Nuclear Physics Polish Academy of Sciences, Poland) | 21 September 2021

Aspects of Thermal and Conformal Field Theories | Kasi Jaswin (ICTS-TIFR, Bengaluru) | 17 September 2021

Far from Equilibrium | Christian Maes (KU Leuven, Belgium) | 16 September 2021

Schwinger-Boson Mean-Field Study of Spin-1/2 J1-J2-Jx Model in Honeycomb Lattice: Thermal Hall Signature | Arijit Kundu (IIT Kanpur) | 14 September 2021

Aspects of Open Quantum Field Theory | Chandan Kumar Jana (ICTS-TIFR, Bengaluru) | 10 September 2021

Rejection Free Cluster Wang Landau Algorithm for Hard Core Lattice Gases | R. Rajesh (IMSc, Chennai) | 2 September 2021

COLLOQUIA

Special Colloquium

Many Nodal Domains in Random Regular Graphs | Nikhil Srivastava (University of California, Berkeley) | 21 December 2021

Connections between Microscopic and Macroscopic Laws | Abhishek Dhar (ICTS-TIFR, Bengaluru) | 20 December 2021

In Search of Quantum Geometry | Pranav Pandit (ICTS-TIFR, Bengaluru) | 29 November 2021

Topological Phases and their Electromagnetic Responses | Joel Moore (UC Berkeley and LBNL) | 11 October 2021

From Microscopics to Phenomenology: Geometric Models for Cell Fate Specification | Archishman Raju (NCBS-TIFR, Bengaluru) | 27 September 2021

ANNEXURE - B

PAPERS PUBLISHED – 51

In Journals – 18

1. *The Science Case for LIGO-India*, M. Saleem, Javed Rana, V. Gayathri, Aditya Vijaykumar, Srashti Goyal, Surabhi Sachdev, Jishnu Suresh, S. Sudhagar, Arunava Mukherjee, Gurudatt Gaur, Bangalore Sathyaprakash, Archana Pai, Rana X Adhikari, **P. Ajith**, Sukanta Bose. *Classical and Quantum Gravity* 39 (2) 025004 (2021) (2021)
2. *Non-existence of Bigeodesics in Integrable Models of Last Passage Percolation*. **Riddhipratim Basu**, Christopher Hoffman and Allan Sly. *Commun. Math. Phys.* (2021) <https://doi.org/10.1007/s00220-021-04246-0>
3. *Saturation of Large-Scale Dynamo in Anisotropically Forced Turbulence*, **Pallavi Bhat**. *Monthly Notices of the Royal Astronomical Society*, 509 (2), 2249–2257 (2022)
4. *Many-Body Chaos in a Thermalised Fluid*, S. D. Murugan, D. Kumar, **Subhro Bhattacharjee**, **Samriddhi Sankar Ray**. *Physical Review Letters*, 127 (12), 124501 (2021)
5. *Probing Signatures of Fractionalisation in Candidate Quantum Spin Liquid Cu_2IrO_3 via Anomalous Raman Scattering*, Srishti Pal, Arnab Seth, Piyush Sakrikar, Anzar Ali, **Subhro Bhattacharjee**, D. V. S. Muthu, Yogesh Singh, A. K. Sood. *Phys. Rev. B* 104 (18), 184420 (2021)
6. *Phases and Quantum Phase Transitions in Anisotropic Antiferromagnetic Kitaev-Heisenberg- Γ Magnet*, Animesh Nanda, Adhip Agarwala, **Subhro Bhattacharjee**. *Phys. Rev. B* 104 (19), 195115 (2021)
7. *Localization Effects Due to a Random Magnetic Field on Heat Transport in a Harmonic Chain*, Gaëtan Cane, Junaid Majeed Bhat, **Abhishek Dhar**, Cédric Bernardin. *Journal of Statistical Mechanics: Theory and Experiment*, 113204 (2021)
8. *The String Dual to Free $N=4$ Super Yang-Mills*, Matthias R. Gaberdiel, **Rajesh Gopakumar**. *Phys. Rev. Lett.* 127 (13), 131601 (2021)
9. *The Worldsheet Dual of Free Super Yang-Mills in 4D*, Matthias R. Gaberdiel, **Rajesh Gopakumar**. *Journal of High Energy Physics* 2021 (11), 129 (2021)
10. *Boundary Layer Stability and Transition to Turbulence*, **Rama Govindarajan**. *Resonance* 26, 1403–1415 (2021)
11. *Dynamics of a Randomly Kicked Particle*, Santanu Das, **Anupam Kundu**, *Journal of Physics A: Mathematical and Theoretical*, 54 (42) 425002 (2021)
12. *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. *Journal of Statistical Mechanics: Theory and Experiment*, 2021, 103209 (2021)

13. *Spatio-Temporal Spread of Perturbations in Power-Law Models at Low Temperatures: Exact Results for OTOC*, B. Kiran, D. A. Huse, **Manas Kulkarni**, *Phys. Rev. E* 104, 044117 (2021)
14. *Dynamical Regimes of Finite Temperature Discrete Nonlinear Schrödinger Chain*, Amit Kumar Chatterjee, **Manas Kulkarni**, **Anupam Kundu**. *Phys. Rev. E* 104 (4), 044136 (2021)
15. *Quasiparticle Kinetic Theory of Calogero Particles*, Vir B. Bulchandani, **Manas Kulkarni**, Joel E. Moore, Xiangyu Cao. *J. Phys. A: Math. Theor.* 54 (47) 474001 (2021)
16. *Soliton-Like Behaviour in Non-Integrable Systems*, Raghavendra Nimiwal, Urbashi Satpathi, **Vishal Vasan**, **Manas Kulkarni**. *Journal of Physics A: Mathematical and Theoretical*, 54 (42) 425701 (2021)
17. *Anomalous Diffusion and Lévy Walks Distinguish Active from Inertial Turbulence*, Siddhartha Mukherjee, Rahul K. Singh, Martin James, **Samridhi Sankar Ray**. *Phys. Rev. Lett.* 127 (11), 118001 (2021). **This publication was selected as Editor's Suggestion and also featured in APS Physics Magazine**
18. *Ocean-Depth Measurement using Shallow-Water Wave Models*, **Vishal Vasan**, Manisha, Didier Auroux. Special Issue in Honor of Harvey Segur, *Studies in Applied Mathematics* 147 (4) 1481–1518 (2021)

In arXiv - 17

1. *Constraints on Compact Dark Matter from Gravitational Wave Microlensing*, S. Basak, A. Ganguly, K. Haris, S. Kapadia, A. K. Mehta, **P. Ajith**. arXiv:2109.06456
2. *Upper Tail of the Spectral Radius of Sparse Erdős-Rényi Graphs*, **Anirban Basak**. arXiv:2109.06242
3. *Entropy Growth During Free Expansion of an Ideal Gas*, **Subhadip Chakraborti**, **Abhishek Dhar**, Sheldon Goldstein, **Anupam Kundu**, Joel L. Lebowitz. arXiv:2109.07742
4. *Simulating Magnetized Neutron Stars with Discontinuous Galerkin Methods*, Nils Deppe, François Hébert, Lawrence E. Kidder, William Thrope, Isha Anantpurkar, Cristóbal Armaza, Gabriel S. Bonilla, Michael Boyle, Himanshu Chaudhary, Matthew D. Duez, Nils L. Fischer, Francois Foucart, Matthew Giesler, Jason S. Guo, Yoonsoo Kim, **Prayush Kumar**, Isaac Legred, Dongjun Li, Geoffrey Lovelace, Sizheng Ma, Alexandra Macedo, Denyz Melchor, Marlo Morales, Jordan Moxon, Kyle C. Nelli, et al. arXiv:2109.12033
5. *Dipole Alignment of Water Molecules Flowing Through a Carbon Nanotube*, Hemant Kumar, Saheb Bera, Subhadeep Dasgupta, A. K. Sood, **Chandan Dasgupta**, Prabal K. Maiti. arXiv:2109.12793

6. *Gap Statistics for Confined Particles with Power-Law Interactions*, **Saikat Santra, Jitendra Kethepalli**, Sanaa Agarwal, **Abhishek Dhar, Manas Kulkarni, Anupam Kundu**. arXiv:2109.15026
7. *Estimation of Constrained Mean-Covariance of Normal Distributions*, **Anupam Kundu**, Mohsen Pourahmadi. arXiv:2110.03819
8. *Failure of the Split Property in Gravity and the Information Paradox*, **Suvrat Raju**. arXiv:2110.05470
9. *Transport of Condensing Droplets in Taylor-Green Vortex Flow in the Presence of Thermal Noise*, Anu V. S. Nath, Anubhab Roy, **Rama Govindarajan**, S. Ravichandran. arXiv:2111.04102
10. *Single-Molecule Imaging of Cytoplasmic Dynein in Cellulo Reveals the Mechanism of Motor Activation and Cargo Capture*, Nireekshit Addanki Tirumala, Gregory Redpath, Pritha Dolai, Natasha Kapoor-Kaushik, Nicholas Ariotti, **K Vijay Kumar**, Vaishnavi Ananthanarayanan. [bioRxiv: 10.1101/2021.04.05.438428v2] submitted in PNAS
11. *Twistor Coverings and Feynman Diagrams*, Faizan Bhat, **Rajesh Gopakumar**, Pronobesh Maity, Bharathkumar Radhakrishnan arXiv:2112.05115 Submitted to JHEP
12. *Edge Fluctuations and Third-Order Phase Transition in Harmonically Confined Long-Range Systems*, Jitendra Kethepalli, **Manas Kulkarni, Anupam Kundu**, Satya N. Majumdar, David Mukamel, Gregory Schehr arXiv:2112.00700
13. *Lagrangian Manifestation of Anomalies in Active Turbulence*, Rahul K. Singh, Siddhartha Mukherjee, **Samriddhi Sankar Ray** arXiv:2112.00667
14. *Dynamic Scaling in Rotating Turbulence: A Shell Model Study*, S. K. Rathor, S. Chakraborty and **Samriddhi Sankar Ray**. arXiv: 2112.06475
15. *Dissipative Quantum Dynamics, Phase Transitions and Non-Hermitian Random Matrices*, Mahaveer Prasad, Hari Kumar Yadalam, Camille Aron, **Manas Kulkarni**. arXiv:2112.05765
16. *Mean Area of the Convex Hull of a Run and Tumble Particle in Two Dimensions*, Prashant Singh, **Anupam Kundu**, Satya N. Majumdar, Hendrik Schawe. arXiv:2112.08752
17. *Entanglement Phase Structure of a Holographic BCFT in a Black Hole Background*, Hao Geng, Andreas Karch, Carlos Perez-Pardavila, **Suvrat Raju**, Lisa Randall, Marcos Riojas, Sanjit Shashi. arXiv:2112.09132

Consortium - 16

1. *Search for Subsolar-Mass Binaries in the First Half of Advanced LIGO and Virgo's Third Observing Run*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, D. Jeong and S. Shandera R. Abbott, et.al, submitted to Phys. Rev. Lett arXiv:2109.12197 (Add details)
2. *Search for Continuous Gravitational Waves from 20 Accreting Millisecond X-Ray Pulsars in O3 LIGO Data*, (by LSC, Virgo, KAGRA). Submitted to Phys. Rev. D Sept 20) arXiv: 2109.09255

3. *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. Phys. Rev. D 104 (8), 082004 (2021) Oct. 2021 arXiv:2107.00600
4. *All-Sky, All-Frequency Directional Search for Persistent Gravitational Waves from Advanced LIGO's and Advanced Virgo's First Three Observing Runs* (LSC, Virgo, Kagra). arXiv: 2110.09834
5. *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. Astrophys. J. 923 (1), 14 (2021)
6. *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., Ap. J. 921 (1), 80 (2021) arXiv:2105.11641
7. *Constraints on the Cosmic Expansion History from GWTC-3*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. arXiv:2111.03604
8. *GWTC-3: Compact Binary Coalescences Observed by LIGO and Virgo During the Second Part of the Third Observing Run*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. arXiv:2111.03606
9. *Search for Gravitational Waves Associated with Gamma-Ray Bursts Detected by Fermi and Swift During the LIGO-Virgo Run O3b*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et.al, arXiv:2111.03608
10. *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. Phys. Rev. D. 104 (10), 102001 (2021)
11. *The population of merging compact binaries inferred using gravitational waves through GWTC-3*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et.al.arXiv:2111.03634
12. *Searches for Gravitational Waves from Known Pulsars at Two Harmonics in the Second and Third LIGO-Virgo Observing Runs*, The LIGO Scientific Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. arXiv:2111.13106
13. *Search of the Early O3 LIGO Data for Continuous Gravitational Waves from the Cassiopeia A and Vela Jr. Supernova Remnants*, The LIGO Scientific Collaboration, the Virgo Collaboration, R. Abbott, et.al. arXiv:2111.15116
14. *All-Sky Search for Gravitational Wave Emission from Scalar Boson Clouds around Spinning Black Holes in LIGO O3 Data*, The LIGO Scientific

Collaboration, the Virgo Collaboration, the KAGRA Collaboration, R. Abbott, et. al. arXiv:2111.15507

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