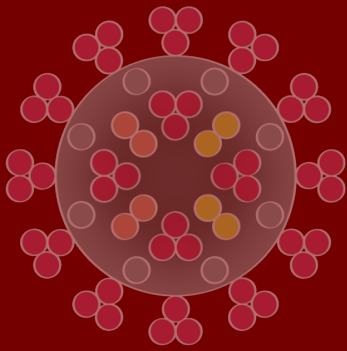


ACTIVITY REPORT

(January-April 2020)



ICTS academic activities, particularly of programs and discussion meetings, have been affected by the COVID-19 crisis and lockdown. However, a number of classes and seminars have now moved online. There are plans of reviving some of the program activities scheduled in May and beyond.

ICTS has been deeply involved in several initiatives concerned with analysing and understanding the debilitating global pandemic COVID-19. Several members have been actively working to bring together the best and accurate scientific facts and commentary related to the disease. Here are some of the initiatives:

- 1) ICTS members are an integral part of a multi-institutional and multi-lingual science communication initiative called CovidGyan. This is a collaborative effort between the Tata Institute of Fundamental Research (and its centres including ICTS), the Indian Institute of Science (IISc) and Tata Memorial Centre (TMC) and several other partners. The website <https://covid-gyan.in> is an outcome of this initiative and serves as a hub to bring together a collection of resources in response to the COVID-19 outbreak.
- 2) Another website has been developed by ICTS members that presents data analysis of the Covid-19 confirmed cases and deaths in a set of 15 countries, including India, as well as several Indian and US states.
<https://www.icts.res.in/COVID-data-commentary/>
- 3) A page that presents a collection of all Covid-19 related resources has also been set up. This includes the data analysis by ICTS scientists, the updates on the CovidGyan website as well as links to useful online material.
<https://www.icts.res.in/covid-19>

I | ICTS ACTIVITIES

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

Programs/Discussion Meetings held: 9

Academic visitors to ICTS-TIFR: 46

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

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

Papers published: 20

arXiv submissions: 11

NISHEETH VISHNOI, Professor of Computer Science at Yale and a former Associate of ICTS, has been named a Fellow of the Association for Computing Machinery (ACM), the world's largest educational and scientific computing society, 'for contributions with mathematics, sciences, and social sciences



SUJATA RAMDORAI, a Senior Faculty Associate at ICTS, has been awarded the Krieger-Nelson Prize for her exceptional contributions towards research in mathematics, by the Canadian Mathematical Society (CMS).



Ia. PROGRAMS

Fourth Bangalore School on Population Genetics and Evolution

Organisers: Deepa Agashe and Kavita Jain | 27 January- 7 February 2020

Workshop on Additive Combinatorics

Organisers: S. D. Adhikari and D. S. Ramana | 24 February-6 March 2020

Topics in Birational Geometry

Organisers: Indranil Biswas and Mahan Mj | 27-31 January 2020

The following Programs were cancelled due to the COVID-19 situation:

Zariski-Dense Subgroups and Number-Theoretic Techniques

Organisers: Gopal Prasad, Andrei Rapinchuk, B. Sury and Aleksy Tralle | 6-17 April

Trends in Knot Theory

Organisers: Rama Mishra, Madeti Prabhakar and Mahender Singh | 23 March-3 April 2020

Fluctuations in Nonequilibrium Systems: Theory and Applications

Organisers: Urna Basu and Anupam Kundu | 9-19 March 2020



Ib. DISCUSSION MEETINGS

7th Indian Statistical Physics Community Meeting

Organisers: Ranjini Bandyopadhyay, Abhishek Dhar, Kavita Jain, Rahul Pandit, Sanjib Sabhapandit, Samriddhi Sankar Ray and Prerna Sharma | 19-21 February 2020

Moduli of Bundles and Related Structures

Organisers: Rukmini Dey and Pranav Pandit | 10-14 February 2020

Geometric Phases in Optics and Topological Matter

Organisers: Subhro Bhattacharjee, Joseph Samuel and Supurna Sinha | 21-24 January 2020

Fluids Day

Organisers: Rama Govindarajan, Samriddhi Sankar Ray and Gaurav Tomar | 20 January 2020

Foundational Aspects of Blockchain Technology

Organisers: Pandu Rangan Chandrasekaran | 15-17 January 2020

Statistical Physics of Machine Learning

Organisers: Chandan Dasgupta, Abhishek Dhar and Satya Majumdar | 6-10 January 2020

The following Discussion Meeting was cancelled due to the COVID-19 situation:

Hunting Susy@HL-LHC

Organisers: Satyaki Bhattacharya, Rohini Godbole, Kajari Majumdar, Prolay Mal, Seema Sharma, Ritesh K. Singh and Sanjay Kumar Swain | 20-24 April 2020



1c. LECTURE SERIES

INFOSYS-ICTS TURING LECTURES

Artificial Intelligence: Success, Limits, Myths and Threats

Speaker: Marc Mézard (Director of Ecole Normale Supérieure - PSL University) | 6 January 2020

INFOSYS-ICTS RAMANUJAN LECTURES

Exploring Moduli

Speaker: Carlos Simpson (Université Nice-Sophia Antipolis, France) | 10-14 February 2020

INFOSYS-ICTS STRING THEORY LECTURES

Modular Theory and QFT

Speaker: Nima Lashkari (Purdue University) | 3-5 February 2020

DD KOSAMBI LECTURES

Emperor Ashoka – History, Memory, Memorialization

Speaker: Nayanjot Lahiri (Ashoka University) | 16 January 2020

MADHAVA LECTURES

A new lecture series named after Madhava, the 14th century Indian mathematician and astronomer, was introduced. Madhava made pioneering contributions to the study of infinite series, calculus, trigonometry, geometry and algebra. He is considered the founder of the Kerala School of Astronomy and Mathematics. The ICTS Madhava lectures will be delivered by eminent scholars of the history of mathematics, science and technology.

The Man Who Invented Calculus: The Life and Work of Madhava

Speaker: P. P Divakaran (Formerly Professor of Physics at TIFR, Mumbai) |

14 February 2020

The following Lecture Series was cancelled due to the COVID-19 situation:

INFOSYS-ICTS CHANDRASEKHAR LECTURES

Speaker: Christopher Jarzynski (University of Maryland, USA)



Id. VISITS OF SCIENTISTS

The following researchers from institutions in India and around the world visited the ICTS for different periods of time during January-April 2020.

Satya N. Majumdar, CNRS, LPTMS, France

Surendra Padamata, Penn State University, USA

Arka Banerjee, Stanford University, USA

Connor Morency, Vanderbilt University, USA

Mritunjay Verma, National Institute for Nuclear Physics, Italy

Gianluca Faraco, TIFR, Mumbai

Vidyanand Nanjundiah, Centre for Human Genetics, Bangalore

Swarnendu Sil, ETH Zurich, Switzerland

Debapratim Banerjee, ISI, Kolkata

Sergey Galkin, PUC Rio de Janeiro and HSE Moscow

Shobhana Narasimhan, JNCASR, Bangalore

D. Harikrishnan, Plaksha University, Mohali

Dwight Barkley, University of Warwick, UK

Laurette Tuckerman, Sorbonne University, France

Debasish Chaudhuri, Institute of Physics, Bhubaneswar

Onkar Parrikar, Stanford University, USA

Diptarka Das, Indian Institute of Technology, Kanpur

Ananyo Maitra, Laboratoire Jean Perrin, Sorbonne Universite, Paris, France

Rajaraman Nityananda, Azim Premji University, Bangalore

Sudeep Kumar Ghosh, University of Kent, UK

T. Jayaraman, M. S. Swaminathan Research Foundation, Chennai

P.P. Divakaran, Formerly Professor of Physics at TIFR-Mumbai

Prasanta Bera, University of Southampton, UK

K. Narayan, Chennai Mathematical Institute, Chennai

Nima Lashkari, Purdue University, USA
Jitesh Gajjar, University of Manchester, UK
Mohd Suhail Rizvi, CNRS & Laboratoire Interdisciplinaire de Physique, France
Deep Chatterjee, University of Wisconsin-Milwaukee, USA
Sabana Shabnam, NISER, Bhubaneswar
Mrunmay Jagadale, Chennai Mathematical Institute, Chennai
Amala Mahadevan, Woods Hole Oceanographic Institution, USA
Emily Shroyer, Oregon State University, USA
Nayanjot Lahiri, Ashoka University, Sonapat
Sthitadhi Roy, University of Oxford, UK
Pallavi Bhat, University of Leeds, UK
Venkatesh Murthy, Harvard University, USA
Laura Cadonati, Georgia Institute of Technology, USA
Peter F Couvares, LIGO Laboratory, California Institute of Technology, USA
Mehraj Ahmad Lone, National Institute of Technology, Srinagar
Hriddesh Kedia, Massachusetts Institute of Technology, USA
Aditya Chaudhuri, IISER, Thiruvananthapuram
Niladri Sarkar, Universiteit Leiden, Germany
Shouvik Datta, University of California, Los Angeles, USA
Roderich Moessner, MPI for the Physics of Complex Systems, Germany
Ramachandran Shankar, Institute of Mathematical Sciences, Chennai
Varun Thakre, IISER, Pune

The following researchers had to cancel their visits due to the COVID-19 situation:

Sumantra Sarkar, Center for Nonlinear Studies at Los Alamos National Laboratory, USA
Asaf Miron, Weizmann Institute of Science, Israel
Athira, Chennai Mathematical Institute, Chennai
Jason Picardo, IIT Bombay
Pulapre Balakrishnan, Ashoka University, Haryana
Shamik Banerjee, Institute of Physics, Bhubaneswar
Narsing Jha, Weizmann Institute of Science, Israel
Sujay Ashok, Institute of Mathematical Science, Chennai
Dileep Jatkar, Harish-Chandra Research Institute

Ie. NEWS ON GRANTS, AWARDS AND FELLOWSHIPS



ANIRBAN BASAK received the Feinberg Graduate School Postdoc Prize from the Weizmann Institute, Israel, for his postdoctoral research on Random Matrices. Basak has also received an honourable mention in the Bernoulli Society New Researcher Award, of the Bernoulli Society for Mathematical Statistics and Probability, in recognition of his outstanding work in the fields of Mathematical Statistics and Probability. In addition to the above two honours, Basak is also the recipient of the Department of Science and Technology, Government of India's SERB MATRICS grant and the SERB Start-up Research Grant, for 2019.



MANAS KULKARNI received the SERB MATRICS Grant. The grant will support Kulkarni's new project titled 'Dynamics and spatio-temporal spread of perturbations in integrable models', which will investigate the nonlinear dynamics, spatial spread and temporal growth (or decay) of perturbations in integrable models and the effect of breaking integrability. Kulkarni was also named the Prajawani Young Achiever for 2020, in the field of science.



SAMRIDDHI SANKAR RAY also received the SERB MATRICS Grant. Ray's work titled 'Understanding the Origins of Intermittency in Turbulent Flows', which will look at to examine the role of triadic interactions in the observed non-Gaussian statistics of small-scale structures in turbulent flows, will be supported by the grant.



The SERB MATRICS grant was also received by **VISHAL VASANI**. It will support Vasani's new project titled '*Spectra of differential operators and the unified transform method*'. The goal of this project is to develop mathematical tools to reliably obtain spectra of variable-coefficient differential operators, using recent developments in the analysis of PDEs, eventually leading to a numerical method which will benefit researchers in a wide range of mathematical sciences.

IIa FACULTY

1. Mythily Ramaswamy (CAM-TIFR) joined the ICTS Faculty under the NASI-Senior Scientist Platinum Jubilee Fellowship (2020).
2. R. Shankar (Institute of Mathematical Sciences) and Shailesh Chandrasekharan (Duke University) became Faculty Associates at ICTS-TIFR.

IIb STUDENTS**GRADUATE PROGRAM**

1. Sakshi Pahujani (S.N. Bhatt 2019 batch) has accepted the early Integrated PhD offer for 2020.
2. Aditya Singh Rajput (GS - 2019) was transferred from NCBS to ICTS with effect from April 2020.
3. 8 PhD and 4 Integrated PhD in Physics and 1 in PhD Biology offers were made through the GS 2020 admission process.
4. Online applications were invited for graduated studies in Mathematics through CSIR/GATE entrance tests <https://www.icts.res.in/graduate-studies/mathematics>. 10 candidates are shortlisted for the further interview process.
5. Online applications are invited for graduated studies in Physics through JEST/CSIR/GATE/GRE entrance tests <https://www.icts.res.in/graduate-studies/physical-sciences>

POSTDOCTORAL PROGRAM

1. 10 candidates have accepted the postdoc offer from the December 2019 cycle. They are expected to join by September 2020.

VISITING STUDENTS PROGRAM

1. Online applications were invited for Long Term Visiting Program for 2020 <https://www.icts.res.in/academic/ltvsp>. Following is the list of selected students:

Name	Affiliation	Mentor
Rithwik S V	IISER, Pune	Rukmini Dey
Arka Ghosh	IISc, Bengaluru	Pranav Pandit
Sridhar Vinayak	IISER, Mohali	Spenta Wadia
Nachiket Karve	IIT Kanpur	R. Loganayagam

Name	Affiliation	Mentor
Bharathkumar Radhakrishnan	IISER, Mohali	Rajesh Gopakumar
Aditya Pujari	BITS Pilani, Goa	Rama Govindarajan
Vinayak Vinayak	IISc, Bengaluru	Rama Govindarajan
Abhratanu Saha	IISc, Bengaluru	Vijay Kumar Krishnamurthy
Ruchira Mishra	IISER, Mohali	Suvrat Raju
Sudhi Mathur	California Institute of Technology, USA	P. Ajith
Narola Harsh	IISER, Tirupati	P. Ajith
Surendra Padmata	BITS Pilani, Goa	P. Ajith
Rithwik S V	IISER, Pune	Rukmini Dey
Arka Ghosh	IISc, Bengaluru	Pranav Pandit

The ICTS-S.N. Bhatt Memorial Excellence Fellowship Program 2020 was cancelled due to the COVID-19 situation.

EINSTEIN LECTURES

Order and Patterns in Randomness

Speaker: Abhishek Dhar (ICTS-TIFR, Bangalore) | 28 February 2020

The following Einstein lectures were cancelled due to the COVID-19 situation:

Introduction to Gravitational Waves

Speaker: Shasvath Kapadia (ICTS-TIFR, Bangalore) | 26 March 2020

Title to be decided

Speaker: R. Loganayagam (ICTS-TIFR Bangalore) | 5 April 2020

KAAPI WITH KURIOSITY

Global Warming in an Unequal World – the Economics and Politics of Climate Action

Speaker: T. Jayaraman (M. S. Swaminathan Research Foundation, Chennai) | 9 February 2020

Of Spooky Actions and Other Quantum Conundrums

Speaker: Smitha Vishveshwara (University of Illinois at Urbana-Champaign USA) | 12 January 2020

The following Kaapi with Kuriosity lectures were cancelled due to the COVID-19 situation:

The Hidden Life of Plants

Speaker: K. Ganeshiah (School of Ecology and Conservation, UAS, Bangalore) | 26 April 2020

Automating Mathematics?

Speaker: Siddhartha Gadgil (Indian Institute of Science, Bangalore) | 15 March 2020

PI DAY

All the talks and demonstrations organised to celebrate Pi Day on 14 March 2020 had to be cancelled due to the global COVID-19 situation.



ANNEXURE - A

The following are the details of seminars and colloquia given by visitors during the period January-April 2020.

Seminars

Asymptotic Properties of Non-linear Filters | Anugu Sumith Reddy (ICTS-TIFR, Bangalore) | 20 April 2020

Neutrino Mass and the Large Scale Structure (LSS) of the Universe | Arka Banerjee (Stanford University) | 13 March 2020

Understanding the Motion of Single Active Particles | Abhishek Dhar (ICTS-TIFR, Bangalore) | 6 March 2020

Compactification and Soft Behavior | Mritunjay Kumar (National Institute for Nuclear Physics, Italy) | 5 March 2020

Mirror Symmetry for Character Varieties and Field Theory | Sergey Galkin (PUC Rio de Janeiro and HSE Moscow) | 4 March 2020

Mirror Symmetry for Complex Projective Space and Optimal Towers of Algebraic Curves | Sergey Galkin (PUC Rio de Janeiro and HSE Moscow) | 2 March 2020

Fluctuation of the Free Energy of Sherrington-Kirkpatrick Model with Curie-Weiss Interaction: The Paramagnetic regime | Debapratim Banerjee (Indian Statistical Institute, Kolkata) | 2 March 2020

Crossing symmetry, Transcendentality and Regge behaviour of 1d CFTs | Kausik Ghosh (Indian Institute of Science, Bangalore) | 27 February 2020

Why It Is (Still) Difficult to Be a Woman in Science | Shobhana Narasimhan (Jawaharlal Nehru Centre for Advanced Scientific Research) | 26 February 2020

Gravity from Quantum Entanglement in the AdS/CFT Correspondence | Onkar Parrikar (Stanford University) | 20 February 2020

Emergent Patterns of Activity in Heterogeneous Biological Excitable Media | Ria Ghosh (Institute of Mathematical Science, Chennai) | 19 February 2020

Symmetry Restoration via Quantum Quench | Diptarka Das (Indian Institute of Technology Kanpur) | 13 February 2020

Unusual Stability of Active Liquid Crystals on Substrates | Ananyo Maitra (Sorbonne Universite, France) | 12 February 2020

Time-Reversal Symmetry Breaking in Superconductors | Sudeep Kumar Ghosh (University of Kent, Canterbury, UK) | 11 February 2020

Perturbation to a Magnetic Neutron Star with Shear Modulus | Prasanta Bera (University of Southampton, UK) | 7 February 2020, 14:00

Extremal Surfaces, De Sitter Entropy and Entanglement in Ghost Theories | K. Narayan (Chennai Mathematical Institute) | 6 February 2020

Finite Type of Submanifolds and Curvature Inequalities for Statistical Manifolds | Mohamd Saleem Lone (ICTS-TIFR, Bangalore) | 5 February 2020

Certain Curves, Minimal Surfaces, Statistical and Finite Type of Submanifolds | Mohamd Saleem Lone (International Centre for Theoretical Sciences, Bangalore) | 4 February 2020

On Certain Special Vector Bundles on Projective Varieties | Poornapushkala Narayanan (TIFR Mumbai) | 3 February 2020

Constraining the Fraction of Compact Dark Matter from Lensing of Gravitational Waves | Apratim Ganguly (ICTS-TIFR, Bangalore) | 31 January 2020

Eigenstate Thermalization and Virasoro Symmetry | Shouvik Datta (University of California, Los Angeles & ICTS-TIFR, Bangalore) | 30 January 2020

Theoretical Models of Cell Swimming and Crawling | Mohd Suhail Rizvi (Centre national de la Recherche Scientifique (CNRS) and Laboratoire Interdisciplinaire de Physique) | 29 January 2020

Instability of Flow over Localised Heating Elements in Boundary Layers | Jitesh Gajjar (University of Manchester) | 29 January 2020

The LIGO-Virgo Low-Latency Campaign & Public Alerts in the Third Observing Run | Deep Chatterjee (University of Wisconsin-Milwaukee, USA) | 28 January 2020

Understanding Stability of Earth's Biosphere | Kartik K. Murthy (Indian Institute of Science, Bangalore) | 27 January 2020

How to Systematically Mix Symmetry and Topology in a Condensed Matter System | Naren Manjunath (University of Maryland College Park) | 24 January 2020

Scattering Amplitudes, Polytopes and CHY | Mrunmay Jagadale (Chennai Mathematical Institute) | 23 January 2020

A Simple Proof of 1D LSM Theorems | Abhishodh Prakash (ICTS-TIFR, Bangalore) | 22 January 2020

Magnetic Reconnection: Plasmoid Instability in an Experimentally Accessible Regime | Pallavi Bhat (University of Leeds) | 17 January 2020

Many-Body Localisation: A Tale of Correlations and Constraints on Fock Space | Sthitadhi Roy (University of Oxford) | 16 January 2020

Introducing GW190425: A 3.4 M_{Sol} Compact Binary Coalescence in the LIGO-Virgo Network | Laura Cadonati (Georgia Institute of Technology) | 14 January 2020

Elastic Turbulence: Chaotic Dynamics at Small Reynolds Number | Dario Vincenzi (Universite Nice Sophia Antipolis, France) | 10 January 2020

Drive-Specific Adaptation in Disordered Mechanical Networks of Bistable Springs | Hridesh Kedia (Massachusetts Institute of Technology, USA) | 9 January 2020

Electrohydrodynamics of Epithelial Tissues | Niladri Sarkar (Lorentz Institute for Theoretical Physics, Universiteit Leiden) | 7 January 2020

Introduction to Topological Data Analysis (TDA) | Varun Thakre (ICTS-TIFR, Bangalore) | 3 January 2020

Geometry of Varieties of General Type with Application to Calabi-Yau Manifolds | Bangere P Purnaprajna (University of Kansas, Lawrence) | 1 January 2020

The following seminar was cancelled due to the COVID-19 situation:

Turbulence in Elastic, Two-Phase and Stratified Flows | Narsing Jha (Weizmann Institute of Science, Israel) | 15 April 2020

Colloquia

The Route to Turbulence | Dwight Barkley (University of Warwick, UK) | 20 February 2020

Exotic Patterns in Faraday Waves | Laurette Tuckerman (Sorbonne University, France) | 20 February 2020

Gravity from Quantum Entanglement in the AdS/CFT Correspondence | Onkar Parrikar (Stanford University, USA) | 19 February 2020

The Science-Policy Nexus in Global Warming | T. Jayaraman (M. S. Swaminathan Research Foundation, Chennai) | 10 February 2020

Doing QED with $\alpha=10$: Why Does Graphene Behave as a Weak-Coupling System? | Sankar Das Sarma (University of Maryland, USA) | 31 January 2020

Mechanics of Cell Motility | Mohd Suhail Rizvi (CNRS, France) | 27 January 2020

A Tale of Two Dynamos: Turbulent Large-Scale and Small-Scale Dynamos | Pallavi Bhat (University of Leeds, UK) | 16 January 2020

Algorithms and Neural Circuits in Olfaction | Venkatesh N. Murthy (Harvard University, USA) | 13 January 2020

Intermediate Energy Spin Dynamics | Roderich Moessner (Max Planck Institute for the Physics of Complex Systems, Germany) | 7 January 2020

The following colloquium was cancelled due to the COVID-19 situation:

After Reversing the slowdown: building a valuable economy | Speaker: Pulapre Balakrishnan (Ashoka University) | 30 March 2020

ANNEXURE - B

PAPERS PUBLISHED – 31

In Journals - 20

1. *Testing the “No-Hair” Nature of Binary Black Holes Using the Consistency of Multipolar Gravitational Radiation*, T. Islam, **A. K. Mehta**, Ab. Ghosh, V. Varma, **P. Ajith**, B. S. Sathyaprakash, Phys. Rev. D101 (2020) no. 2, 024032 arXiv:1910.14259
2. *Topological and Conventional Phases of a Three Dimensional Electron Glass*, **Prateek Mukati, Adhip Agarwala, Subhro Bhattacharjee**, Physical Review B 101, 035102 (2020); arXiv:1907.10098
3. *On Euler-Ramanujan Formula, Dirichlet series and Minimal Surfaces*, **Rukmini Dey**, Rishabh Sarma, Rahul Kumar Singh, accepted in Proceedings of Indian Academy of Sciences arXiv:1812.01453
4. *Aging Effects on Thermal Conductivity of Glass-Forming Liquids*, Pranab Jyoti Bhuyan, Rituparno Mandal, Pinaki Chaudhuri, **Abhishek Dhar and Chandan Dasgupta** Phys. Rev. E 101, 022125, issue 02 (2020)
5. *Steady State of an Active Brownian Particle in a Two-Dimensional Harmonic Trap*, Kanaya Malakar, **Arghya Das, Anupam Kundu, K. Vijay Kumar, and Abhishek Dhar** Phys. Rev. E 101, issue 02, 022610 (2020) arXiv:1902.04171
6. *Deriving the AdS₃/CFT₂ Correspondence*, Lorenz Eberhardt, Matthias R. Gaberdiel, **Rajesh Gopakumar**. JHEP 2002 (2020) 136, arXiv:1911.00378
7. *Fluid Dynamics in Clouds: The Sum of its Parts*. S. Ravichandran, Jason Picardo, **Samriddhi Sankar Ray and Rama Govindarajan**. Encyclopedia of Complexity and Systems Science, Springer, to appear(2020).
8. *Localisation of Optimal Perturbations in Variable Viscosity Channel Flow*. Sharath Jose, Luca Brandt and **Rama Govindarajan**. International Journal of Heat and Fluid Flow, Invited paper, to appear (2020).
9. *Sinking Flux of Particulate Organic Matter in the Oceans: Sensitivity to Particle Characteristics*. Melissa M. Omand, **Rama Govindarajan**, Jing He, and Amala Mahadevan, Scientific Reports, 10:5582 <https://doi.org/10.1038/s41598-020-60424-5> (2020).
10. *Non-Normal Origin of Modal Instabilities in Rotating Plane Shear Flows*. Sharath Jose and **Rama Govindarajan**, Proceedings of the Royal Society A, 476:20190550, 2020. <http://dx.doi.org/10.1098/rspa.2019.0550>
11. *Effect of Viscosity and Density Ratios on Two Drops Rising Side-by-Side*. Mounika Balla, Sivanandan Kavuri, Manoj Kumar Tripathi, Kirti Chandra Sahu and **Rama Govindarajan**, Physical Review Fluids, 5,013601 (2020).
12. *Nonlinear Langevin Dynamics via Holography*, **Bidisha Chakrabarty, Joydeep Chakravarty, Soumyadeep Chaudhuri, Chandan Jana, R. Loganayagam, Akhil Sivakumar**. JHEP 2001, 165 arXiv:1906.07762
13. *Analytic Structure of Solutions of the One-Dimensional Burgers Equation with Modified Dissipation*, W. Pauls and **Samriddhi Sankar Ray**. Journal of Physics A: Mathematical and Theoretical 53, 115702 (2020). arXiv:1908.09579

14. *Lagrangian Irreversibility and Dissipation Statistics in Fully-Developed Turbulence*, J. R. Picardo, A. Bhatnagar, and **Samriddhi Sankar Ray**. Physical Review Fluids (Rapids), 5, 042601(R) (2020)
15. *Dynamics of a Long Chain in Turbulent Flows: Impact of Vortices*, **J. R. Picardo, R. Singh, Samriddhi Sankar Ray**, and D. Vincenzi. Philosophical Transactions of the Royal Society A (in press). arXiv: 1912.11431
16. *Elasto-inertial Chains in a Two-dimensional Turbulent Flow*, **R. Singh**, M. Gupta, J. R. Picardo, D. Vincenzi and **Samriddhi Sankar Ray**. Physical Review E (in press). arXiv: 1908.08776
17. *Engineering Indefinitely Long-Lived Localization in Cavity-QED Arrays*, A. Dey, **M. Kulkarni**, Phys. Rev. A 101, 043801 (2020) arXiv:1909.09392
18. *Multifaceted Nonlinear Dynamics in PT-Symmetric Coupled Liénard Oscillators*, J. P. Deka, A. K. Sarma, A. Govindarajan, **M. Kulkarni**, Nonlinear Dynamics (2020), <https://doi.org/10.1007/s11071-020-05585-8>
19. *Provable Bounds for the Korteweg–de Vries Reduction in Multi-Component Nonlinear Schrödinger Equation*, Swetlana Swarup, **Vishal Vasan** and **Manas Kulkarni**. Journal of Physics A: Mathematical and Theoretical, Volume 53, Number 13 (2020) arXiv:1908.02248
20. *Holographic Dual to Charged SYK from 3D Gravity and Chern-Simons*, Adwait Gaikwad, Lata Kh Joshi, Gautam Mandal, **Spenta R. Wadia**, JHEP 2002 (2020) 033 arXiv:1802.07746

ARXIV - 11

1. *Constraints on the Time Variation of the Gravitational Constant Using Gravitational Wave Observations of Binary Neutron Stars*, A. Vijaykumar, S. J. Kapadia, **P. Ajith**. Submitted to Phys. Rev. Lett. arXiv:2003.12832v1
2. *Interplay of Magnetism and Topological Superconductivity in Bilayer Kagome Metals*, Santu Baidya, **Aabhaas Vineet Mallik, Subhro Bhattacharjee**, Tanusri Saha-Dasgupta, arXiv:2002.02953
3. *Emergent Elasticity in Amorphous Solids*, Jishnu N. Nampoothiri, Yinqiao Wang, Kabir Ramola, Jie Zhang, **Subhro Bhattacharjee**, Bulbul Chakraborty arXiv:2004.02230
4. *Universal Scaling in Active Single-File Dynamics*, **Pritha Dolai, Arghya Das, Anupam Kundu, Chandan Dasgupta, Abhishek Dhar, K. Vijay Kumar**. arXiv:2004.01150 (2020)
5. *Active Brownian Particles: Mapping to Equilibrium Polymers and Exact Computation of Moments*, Amir Shee, **Abhishek Dhar**, Debasish Chaudhuri arXiv:2002.01815
6. *Emergent PT Symmetry in a Double-Quantum-Dot Circuit QED Set-Up*, A. Purkayastha, **M. Kulkarni**, Y. N. Joglekar. arXiv:2004.07541 (2020)

7. *Spatio-Temporal Spread of Perturbations in a Driven Dissipative Duffing Chain: An OTOC Approach*, A. K. Chatterjee, **A. Kundu**, **M. Kulkarni**, arXiv:2002.05629 (2020)
8. *Run-and-Tumble Particle in Inhomogeneous Media in One Dimension*, Prashant Singh, Sanjib Sabhapandit, **Anupam Kundu**. arXiv:2004.11041 (2020)
9. *Stochastic Resetting with Stochastic Returns Using External Trap*, Deepak Gupta, Carlos A Plata, **Anupam Kundu**, Arnab Pal. arXiv:2004.11679 (2020)
10. *The Holographic Nature of Null Infinity*, Alok Laddha, **Siddharth G. Prabhu**, **Suvrat Raju**, **Pushkal Shrivastava**. e-Print: arXiv:2002.02448
11. *Constructing Weak Solutions by Tyger Purging in the Burgers Equation*, **Samriddhi Sankar Ray**, Sugan D. Murugan, U. Frisch, S. Nazarenko and N. Besse. arXiv: 2001.04819

Consortium - 4

1. *A Guide to LIGO-Virgo Detector Noise and Extraction of Transient Gravitational-Wave Signals*, B P Abbott et al 2020 Class. Quantum Grav. 37 055002 arXiv:1908.11170
2. GW190425: Observation of a Compact Binary Coalescence with Total Mass 3.4 Msun, B P Abbott et al 2020, Ap J Lett 892, L3 (2020)
3. *Model Comparison from LIGO-Virgo Data on GW170817's Binary Components and Consequences for the Merger Remnant*, LIGO Virgo Collaboration, Classical and Quantum Gravity, Vol. 37, No 4, p 045006 (2020)
4. *A Joint Fermi-GBM and LIGO/Virgo Analysis of Compact Binary Mergers from the First and Second Gravitational-Wave Observing Runs* (by Fermi-GBM instrument team, LSC and Virgo), Ap. J (accepted) arXiv:2001.00923