



**ICTS Discussion Meeting : Indian Statistical Physics Community Meeting
1 – 3 February 2014**

Venue: Department of Physics, Indian Institute of Science

List of topics

1. General and mathematical aspects of statistical physics thermodynamics, rigorous results, exact solutions, random matrices, stochastic field theory, information theory, optimizations, etc.
2. Phase transitions and critical phenomena equilibrium and nonequilibrium.
3. Nonequilibrium processes driven systems, transport theory, relaxation and response dynamics, random processes, anomalous diffusion, fluctuation theorems, large deviations, etc.
4. Soft matter polymers, gels, liquid crystals, microemulsions, foams, membranes, colloids, granular materials, etc.
5. Fluids and interfacial phenomena molecular and ionic fluids, metastable liquids, hydrodynamic instabilities, turbulence, growth processes, wetting, surface effects, films, crystals, confined systems, etc.
6. Nonlinear dynamics dynamical systems, chaos (classical and quantum), pattern formation, chemical reactions, etc.
7. Quantum systems strongly correlated electrons, cold atoms, graphene, soft quantum matter, mesoscopic quantum phenomena, fractional quantum Hall effect, low dimensional quantum field theory, quantum phase transitions, quantum information and entanglement, etc.
8. Disordered and glassy systems percolation, spin glasses, structural glasses, jamming, glass transition, algorithmic problems, SAT, etc.
9. Biophysics and biologically motivated problems molecular motors, dynamics at the scale of the cell, spatio-temporal organization in biological systems, biological membranes, biopolymer folding, genomics, biological networks, evolution models, evolutionary game theory, etc.
10. Interdisciplinary topics in statistical physics networks and graphs, applied networks, econophysics, social phenomena, traffic flow, etc.

Saturday 1 February

7:30 am – 8:30 am	BREAKFAST
8:30 am – 8:55 am	REGISTRATION
8:55 am – 9:00 am	WELCOME
Topics 1 & 2	Chair : T. V. Ramakrishnan
9:00 am – 9:15 am	Arijit Bhattacharyay (IISER, Pune) <i>An alternative approach to equilibrium of a mesoscopic system with spatial inhomogeneity</i>
9:15 am – 9:30 am	Arul Lakshminarayan (IIT, Madras) <i>Number of real eigenvalues of products of random matrices</i>
9:30 am – 9:45 am	Arvind Ayyer (IISc, Bangalore) <i>Exact results for a monomer-dimer model</i>
9:45 am – 10:00 am	Prabodh Shukla (NEHU, Shillong) <i>Non-equilibrium random-field Ising model on a diluted triangular lattice</i>
10:00 am – 10:15 am	Purusattam Ray (IMSc, Chennai) <i>Intermediate Phases in three dimensional Z_N spin models</i>
10:15 am – 10:30 am	R Rajesh (IMSc, Chennai) <i>Phase transitions in extended hard core lattice gas models</i>
10:30 am – 11:00 am	TEA/COFFEE
Topic 7	Chair : Mustansir Barma
11:00 am – 11:15 am	Satyajit Banerjee (IIT, Kanpur) <i>Dynamic phases of the driven vortex state in superconductors: Jamming phenomena</i>
11:15 am – 11:30 am	Subroto Mukerjee (IISc, Bangalore) <i>Size-dependent crossover scales in the thermalization on quantum systems</i>
11:30 am – 11:45 am	Deepak Kumar (JNU, Delhi) <i>Dynamics and growth of stripe patterns</i>
11:45 am – 12:30 pm	Poster Introduction
12:30 pm – 2:00 pm	LUNCH
2:00 pm – 3:00 pm	POSTER SESSION
3:00 pm – 3:30 pm	TEA/COFFEE
Topic 4	Chair : Ajay K. Sood
3:30 pm – 3:45 pm	Apratim Chatterji (IISER, Pune) <i>Self-assembly of ordered cylindrical nano-structures: A theoretical investigation of experimental results</i>
3:45 pm – 4:00 pm	B. V. R. Tata (IGCAR, Kalpakkam) <i>Entanglement effects on dynamics of dense thermo-responsive microgel suspensions</i>
4:00 pm – 4:15 pm	Biswaroop Mukherjee (SNBNCBS, Kolkata) <i>Dual translocation pathways in smectic liquid crystals facilitated by molecular flexibility</i>
4:15 pm – 4:30 pm	Narayanan Menon (TCIS, Hyderabad) <i>Structure of a crumpled object</i>
4:30 pm – 4:45 pm	Ranjini Bandyopadhyay (RRI, Bangalore) <i>An ultrasound attenuation spectroscopy study of the aging behavior of soft glassy colloidal suspensions</i>
4:45 pm – 5:00 pm	V Kumaran (IISc, Bangalore) <i>The hard-particle model for dense granular flows</i>
5:00 pm – 5:15 pm	Yashodhan Hatwalne (RRI, Bangalore) <i>Morphologies of polymer crystallites</i>

7:00pm	Conference Dinner
---------------	--------------------------

Sunday 2 February

7:30 am – 8:50 am	BREAKFAST
Topics 1 & 2	Chair : Diptiman Sen
9:00 am – 9:15 am	Nivedita Deo (Delhi University, Delhi) <i>Matrix model with Penner interaction inspired by interacting RNA</i>
9:15 am – 9:30 am	Punyabrata Pradhan (SNBNCBS, Kolkata) <i>Mass fluctuations in conserved-mass transport processes and gamma-like distributions</i>
9:30 am – 9:45 am	Muktish Acharyya (Presidency University, Kolkata) <i>Dynamic-symmetry-breaking breathing and spreading transitions in ferromagnetic film irradiated by spherical electromagnetic wave</i>
9:45 am – 10:00 am	Pragya Shukla (IIT, Kharagpur) <i>Complex Systems with Goldstone condition: a statistical view-point</i>
10:00 am – 10:15 am	Subir K. Das (JNCASR, Bangalore) <i>Hydrodynamic effects in kinetics of phase separation</i>
10:15 am – 10:30 am	Debasish Chaudhuri (IIT, Hyderabad) <i>Stochastic thermodynamics of active Brownian particles</i>
10:30 am – 11:00 am	TEA/COFFEE
Topic 9	Chair : V. A. Raghunathan
11:00 am – 11:15 am	Anirban Sain (IIT, Bombay) <i>Mechanics of cell division</i>
11:15 am – 11:30 am	Apoorva Nagar (IISST, Thiruvananthapuram) <i>mRNA translation: Traffic on decaying roads</i>
11:30 am – 11:45 am	Dibyendu Das (IIT, Bombay) <i>Collective force generated by multiple biofilaments can exceed the sum of forces due to individual ones</i>
11:45 am – 12:00 noon	Mandar Inamdar (IIT, Bombay) <i>Force generation by growing filaments and collectively migrating motors</i>
12:00 noon – 12:15 pm	Kavita Jain (JNCASR, Bangalore) <i>Adaptation and extreme value theory</i>
12:30 pm – 2:00pm	LUNCH
Topic 5 & 8	Chair : Chandan Dasgupta
2:00 pm – 2:15 pm	Ravindra E. Amritkar (IITRAM, Ahmedabad) <i>Synchronization of nearly identical systems on complex networks</i>
2:15 pm – 2:30 pm	Rahul Pandit (IISc, Bangalore) <i>New exponents for heavy-particle trajectories in turbulent flows</i>
2:30 pm – 2:45 pm	Samridhi Sankar Ray (ICTS, Bangalore) <i>Turbulence in fractal dimensions</i>
2:45 pm – 3:00 pm	Smarajit Karmakar (TCIS, Hyderabad) <i>Static length scale in glass transition</i>
3:00 pm – 3:15 pm	Sumedha (NISER, Bhubaneswar) <i>On the behaviour of K-SAT on trees</i>
3:15 pm – 3:30 pm	Varsha Banerjee (IIT, Delhi) <i>Ground states of some complex spin systems using graph cuts</i>
3:30 pm – 4:15 pm	TEA/COFFEE
4:15 pm – 6:00 pm	Panel Discussion : Statistical Physics: New Frontiers Chandan Dasgupta Neelima M. Gupte H. R. Krishnamurthy Murugappan Muthukumar Rahul Pandit V. A. Raghunathan Madan Rao

Monday 3 February

7:30 am – 8:50 am	BREAKFAST
Topics 1 & 3	Chair : Manish Jain
9:00 am – 9:15 am	Goutam Tripathy (IOP, Bhubaneswar) <i>Collective motion in disordered flashing ratchets</i>
9:15 am – 9:30 am	K. L. Sebastian (IISc, Bangalore) <i>Path integrals for anomalous diffusion</i>
9:30 am – 9:45 am	Rajeev Kapri (IISER, Mohali) <i>Hysteresis and nonequilibrium work theorem for DNA unzipping</i>
9:45 am – 10:00 am	Sanjib Sabhapandit (RRI, Bangalore) <i>High energy tail of the velocity distribution of driven inelastic gases</i>
10:00 am – 10:15 am	Sudipto Muhuri (Pune University, Pune) <i>Phase segregation and transport in two species multi-lane system</i>
10:15 am – 10:30 am	Pallab Basu (ICTS, Bangalore) <i>Stochastic resetting, regime shifts and fat tailed distribution</i>
10:30 am - 11:00 am	TEA/COFFEE
Topic 6 & 9	Chair : Pramod A. Pullarkat
11:00 am – 11:15 am	Manoj Gopalakrishnan (IIT, Madras) <i>Memory and correlations in a random walk model with internal states</i>
11:15 am – 11:30 am	Mithun Mitra (IIT, Bombay) <i>Role of delays in epigenetic landscapes</i>
11:30 am – 11:45 am	P. K. Mohanty (SINP, Kolkata) <i>Biological networks : complexity and disease</i>
11:45 am – 12:00 noon	Neelima M. Gupte (IIT, Madras) <i>Synchronization on hierarchical lattices</i>
12:00 noon – 12:15 pm	Ranjith Padinhateeri (IIT, Bombay) <i>Statistical positioning of nucleosomes</i>
12:15 pm – 12:30 pm	Sanjay Kumar (BHU, Varanasi) <i>Dynamical transition: hysteresis and scaling</i>
12:30 pm – 2:00 pm	LUNCH
Topics 6 & 9	Chair : N. V. Madhusudana
2:00 pm – 2:15 pm	Mangal Chandra Mahato (NEHU, Shillong) <i>Particle motion in driven sinusoidal potentials</i>
2:15 pm – 2:30 pm	Prabal Maiti (IISc, Bangalore) <i>Elasticity of DNA and various DNA nanostructures</i>
2:30 pm – 2:45 pm	Supurna Sinha (RRI, Bangalore) <i>Statistical mechanics of bent twisted ribbons</i>
2:45 pm – 3:30 pm	Concluding remarks
3:30 pm – 4:15 pm	TEA/COFFEE

List of Posters

Name	Poster Title
Ashwin TRIPATHI (JNU)	<i>Dynamics and growth of periodic patterns</i>
Arnab PAL (RRI)	<i>Work fluctuations for a Brownian particle in a harmonic trap with fluctuating locations</i>
Sudhir N PATHAK (IMSc)	<i>Energy decay in three-dimensional freely cooling granular gas</i>
Samim ALI (RRI)	<i>Jamming transition in charged colloidal suspensions</i>
Suman DAS (RRI)	<i>The question of diffusive heat conduction in the $\alpha - \beta$ Fermi-Pasta-Ulam chain</i>
Deepak BHAT (IIT Madras)	<i>Memory and correlations in a random walk with internal states: Bidirectional transport of molecular motor-driven Cargoes</i>
Ushasi ROY (IIT Madras)	<i>Zero-Order Ultrasensitivity : A deeper understanding of the underlying stochasticity</i>
Abdul KHALEQUE (CU)	<i>Damage spreading transition in an opinion dynamics model</i>
Priyanka SINGH (JNCASR)	<i>Slow quenching dynamics of nonequilibrium system</i>
Prasad V. V. (RRI)	<i>High energy tail of the velocity distribution of driven inelastic Maxwell gases</i>
Trisha NATH (IMSc)	<i>Phase transitions in general k-NN exclusion models</i>
Jemseena V. (IIT Madras)	<i>Microtubule catastrophe from protofilament dynamics</i>
Ashok GARAI (IISc)	<i>Force induced biomolecular transition through an intermediate</i>
Soumya S. S. (IIT Bombay)	<i>Trypsin assisted de-adhesion dynamics : How much of cell mechanics can we learn?</i>
Anjan ROY (RRI)	<i>Tagged particle diffusion in one-dimensional systems with Hamiltonian dynamics</i>
Joyjit KUNDU (IMSc)	<i>Multiple phase transitions in a system of hard rectangles on a square lattice</i>
Saikat CHAKRABORTY (JNCASR)	<i>Dependence of kinetics of phase separation on initial state</i>
Subhajit PAUL (JNCASR)	<i>Clustering in freely cooling granular gases</i>
Rahul DANDEKAR (TIFR)	<i>Proportionate growth in the rotor-router Model</i>
Rituparno MANDAL (IISc)	<i>Complex dynamics of sheared nematic fluid: Connection to elastic turbulence</i>
Sananda BISWAS (JNCASR)	<i>Tuning patterning conditions by co-adsorption of gases: Br₂ and H₂ on Si(001)</i>
Jiarul MIDYA (JNCASR)	<i>Critical dynamics in vapor-liquid transition</i>
Pranab Jyoti BHUYAN (IISc)	<i>Short-time dynamics of glass-forming liquids in metabasins of the energy landscape</i>
Raja PAUL (IACS)	<i>Positioning kinetochore proteins in budding yeast</i>
Sanjiv Kumar DWIVEDI (IIT Indore)	<i>Statistics of extreme events in brain networks</i>
Soumyadeep BHATTACHARYA (IMSc)	<i>Intermediate Phases in three dimensional Z_N spin models</i>
Somdeb GHOSE (IMSc)	<i>Deconstructing complex microswimmer motion : Irreducible representations of oscillatory and swirling flows in active soft matter</i>
Deb Sankar BANERJEE (RRI)	<i>Active pulsation and symmetry breaking flow in an acto-myosin mesh confined within cell boundaries</i>
Tarun CHOUDHARI (DU)	<i>Effect of conical singularity in graphene based topological insulator with intrinsic and Rashba spin orbit coupling</i>
Arunkumar BUPATHY (IIT Delhi)	
Rajarshi BASAK (RRI)	<i>Effects of biochemical fluctuations on cell motility in a model based on Escherichia coli</i>
Akshay BHATNAGAR (IISc)	<i>Residence times statistics for particles in vortical and extensional regions in three-dimensional turbulence</i>
Nairita PAL (IISc)	<i>Two-phase turbulent flows : Systematic numerical simulations in two dimensions</i>