

In-House Symposium, Department of Physics, IIT Palakkad

April 21-22, 2023, Nila Campus

Day 1 (April 21st 2023, Friday, East Side Foyer)

Time	Speaker	Talk Title
09:15 Commencement		
09:30-10:30	Prof. Rupamanjari Ghosh Department of Physics, Shiv Nadar University	The Second Quantum Revolution
10:30 to 11:30 Break and Interaction with the Colloquium Speaker		
Session 1 : Chairperson - Chandrima B Pushpan		
11:30 - 12:00	Jithin G. Krishnan	Localizing entanglement in multiparty systems
12:00 - 12:30	Vishwas V.	Probing inherent length scales in sheared amorphous solids and equilibrium supercooled liquids
12:30 to 13:00 Poster Session		
13:00 to 14:00 Lunch		
Session 2 : Chairperson - Harikrishnan K.J.		
14:00 - 14:15	Swathi T.S.	Excursions in SYK model
14:15 - 14:45	Ranjuna M.K.	High temperature anomalous Raman and photoluminescence response of molybdenum disulfide with sulfur vacancies
14:45 - 15:00	Asha Ann Abraham	Magnetic ground state of Mott Insulator $A_2\text{LaRuO}_6$ ($A = \text{Ca}, \text{Ba}$)
15:00 to 15:30 Break/Poster		
Session 3 : Chairperson - Sivadas P.		
15:30 - 15:45	Olivia Vincent	An active particle near a soft boundary
15:45 - 16:15	Debarati Chatterjee	Probing the Modulation in Facilitated Diffusion Guided by DNA-Protein Interactions in Target Search Processes
16:15 - 16:30	Mayarani M.	Colloidal self-assembly: harvesting nature for applications

Day 2 (April 22st 2023, Saturday, Room 203)

Time	Speaker	Talk Title
<i>09:15 Commencement</i>		
09:30-10:30	Prof. Sai Vinjanampathy Department of Physics, IIT Bombay	From Diagonalizing Matrices to Time Crystals
<i>10:30 to 11:30 Break and Interaction with the Colloquium Speaker</i>		
Session 1 : Chairperson - Olivia Vincent		
11:30 - 12:00	Jeena S.K.	Rapidly Rotating Massive Pop III Stars : A Solution for High Carbon Enrichment in the Early Galaxy
12:00 - 12:30	Revathy B.S.	Free evolution technique in quantum heat engines
<i>12:30 to 13:00 Poster Session</i>		
<i>13:00 to 14:00 Lunch</i>		
Session 2 : Chairperson - Athul Krishna P.V.		
14:00 - 14:15	Shyam Sundar Pati	Artificially Engineered Metasurfaces for Satellite Communications, EMI Shielding and Concurrent Reduction of RCS and Mutual Coupling in MIMO antennas
14:15 - 14:30	Moumita Nandi	Magnetic and transport properties of Co intercalated TaS ₂
14:30 - 14:45	Akshay Bhatnagar	Microswimmers in Turbulence
End Of The Symposium		

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Posters

Board No.	Presenter	Poster Title
1.	Vishwas V.	Self-Propelled Particle at Soft Interfaces
2.	Pankaj Singh Parihar	Stokes-Einstein Breakdown in Supercooled Silicon
3.	Harikrishnan K. J.	Localizing genuine multiparty entanglement in noisy stabilizer states
4.	Sivadas P	Investigation of Interaction between Sequence-Defined Macromolecules and Giant Unilamellar Vesicle
5.	Nikhil Joseph Joy	Thermal Conductivity at the Edges of Graphene
6.	Reshna Elsa Philip	Structural, Magnetic and Electrical Properties of Heusler Alloys Cr ₃ Al and Cr ₂ CoAl
8.	Abinash Das	Single Crystal Growth and Characterization of LaIn ₃
9.	Indrajit Bhattacharjee	Preparation of Substrates with well-defined Stiffness Gradient to Study cellular Mechanosensing.

Colloquium Talk Abstracts

21/04/2023

The Second Quantum Revolution by Prof. Rupamanjari Ghosh, Department of Physics, Shiv Nadar University

Abstract

The so-called 'first quantum revolution' enabled lasers and transistors based on rules of quantum mechanics. What is called the 'second quantum revolution' aims to control quantum systems -- quantum technologies today seek to use quantum phenomena in computing, communication, sensing and metrology to go beyond what classical systems can do. It has been a challenge to make practical use of some of the wonderfully counterintuitive and immensely powerful features of the quantum world. In this lecture, I will give a flavor of these quantum features, with varied examples of nonclassical states of light and quantum correlations produced in nonlinear light+matter systems, with particular reference to the 2022 Nobel Prize in Physics. How close are we to realizing the dream of quantum information processing?

22/04/2023

From Diagonalizing Matrices to Time Crystals by Prof. Sai Vinjanampathy, Department of Physics, IIT Bombay

Abstract

We all know crystals to be a periodic arrangement of the component atoms in space. Following a suggestion by Wilczek, there has been recent interest in whether there exists crystals in time, wherein a physical system with appropriate caveats (stabilisation due to many-body effects, no fine tuning, subharmonics etc) oscillates in time. In this pedagogical talk, I will briefly review continuous time crystals, which are a variation of the aforementioned time crystals and discuss how we think about them, starting from simple examples of damped harmonic oscillators. I will then present some work in our group about synchronising time crystals and controlling them using the quantum Zeno effect.