Session Program

October 31, 2025 to November 1, 2025

SPARK 2025 (Symposium on Physics: Advances in Research and Knowledge)

Oral Presentations

North Lakhimpur University, Physics Gallery, Conference Hall, Digital Classroom, and Ranghar Auditorium
Khelmati, Lakhimpur, Assam-787031, India

Sat, November 1

2:15 PM

Oral Presentations: Track 01

Session | **Location:** Ranghar Auditorium, NLU | **Conveners:** Dr Prabwal Jyoti Phukon, Dr Abinash Das

2:15 – 2:28 PM **Neutrino Mass Matrix with unique Correlations**

Speaker
Mr Pralay Chakraborty

2:28 – 2:41 PM

Effect of Inner Horizon in Hawking Temperature of 5D Myers Perry Black Hole

Speaker
Sraban Kumar Upadhyaya

2:41 – 2:54 PM

A Minimal and Predictive Hybrid Seesaw Model for Majorana Neutrinos

Speaker
Sagar Tirtha Goswami

2:54 – 3:07 PM **Bifurcation and Critical Phenomena in Black Hole Thermodynamics**

Speaker
Bidyut Hazarika

3:07 – 3:20 PM

Lyapunov Exponents, Phase Transitions, and Chaos Bound of ModMax AdS Black Holes

Speaker
Mozib Awal

3:20 – 3:33 PM

Neutrinoless double beta decay in the framework of D4 × Z2 Left-Right Symmetric Model

Speaker
Dr Happy Borgohain

3:33 – 3:46 PM

Convergence properties of Mellin moments under sine-cosine PDF parametrizations

Speaker
Gyati Gyuth

3:46 – 3:59 PM

Comparative Mellin moment evaluation using exponential and generalized polynomial parametrizations

Speaker
Hiinyo Antun

3:59 – 4:12 PM

Realisation of Two-Zero Texture of Neutrino Mass Matrix Using Γ_{3} Modular Group with Type II Seesaw Dominance in Left-Right Symmetric Model

Speaker
Bhabana Kumar

4:12 – 4:25 PM
A modular symmetric approach to neutrino mixing with Froggatt-Nielsen mechanism

Speaker
Gourab Pathak

4:25 – 4:38 PM
Thermodynamics of Flat 4D Einstein-Gauss-Bonnet Black Hole with Rényi Entropy: An RPST-like formalism

Speaker
Mr Amijit Bhattacharjee

4:38 – 4:51 PM
Common Origin of Asymmetric Self-interacting Dark Matter and Dirac Leptogenesis

Speaker
Dr Manoranjan Dutta

4:51 – 5:04 PM
Reconstruction of f(R) Gravity in Kaniadakis Holographic Dark Energy Model

Speaker
Kalyan Malakar

5:04 – 5:15 PM
Quantum Particle in a Parallelogram: Energy Spectrum and Eigenfunctions

Speaker
Abinash Das

5:15 PM

2:15 PM

Oral Presentations: Track 02

Session | **Location:** Conference Hall, NLU | **Conveners:** Dr Dipika Robidas, Prof. Pabitra Nath

2:15 – 2:30 PM
Performance Analysis of Satellite-Based Classical and Quantum Communication with Adaptive Optics

Speaker
Moushumi Barman

2:30 – 2:45 PM
Optimizing circuit implementation and analyzing the parameter dependency for the FitzHugh-Nagumo model

Speaker
Bandita Deka

2:45 – 3:00 PM
Analysis, Modeling and Hardware Emulation of Indoor Power Line Channels for Power Line Communication

Speaker
Kangkan Medhi

3:00 – 3:15 PM

A Bio-inspired Dual-Parameter Sensor-Based Microstrip Patch Antenna for Soil Moisture and Salinity Detection

Speaker
MUHIM KULI

3:15 – 3:30 PM

Smartphone-Integrated Paper-based Fluorescence Optode for Point-of-Care Monitoring of Na+/K+ Ratio

Speaker
Chunuranjan Dutta

3:30 – 3:45 PM

An Integrated Modeling Framework for Ion Transport and Electrochemical Responses in Paper-Based Microfluidic Sensors

Speaker
Rimjim Shibam

3:45 – 4:00 PM

Ultra Thin Polarization Insensitive Band-Pass Frequency Selective Surface For Ku Band Applications

Speaker
DEBASISH DAS

4:00 – 4:15 PM

A DFT Study on influence of solvent media on electronic, optical and vibrational properties of TiO2 Nanoparticle

Speaker
PRAKASH NANDI

4:15 – 4:30 PM

A Comparative Study of Hidden Layer Configurations in Multi-Layer Perceptrons (MLP) for Liver Cirrhosis Prediction

Speaker
Mr Nyakum Nyayu

4:30 – 4:45 PM

Backaction-Free Weak Force Sensing in a Quantum-Well Equipped Optomechanical System Beyond the Standard Quantum Limit

Speaker
Alolika Roy

4:45 – 5:00 PM

Portable Low-Cost Smartphone Microspectrophotometer for Simultaneous Imaging and Spectral Analysis

Speaker
Mr Biprav Chetry

5:15 PM

2:15 PM

Oral Presentations: Track 03

Session | **Location:** Digital Classroom, NLU | **Conveners:** Prof. S. N. Pandey, Dr Kakali Bhuyan

2:15 – 2:30 PM

Tuning the Neel Temperature of Antiferromagnetic Film: Thickness and Stoichiometry Dependence

Speaker
Jayanta Das

2:30 – 2:45 PM

Berry Curvature Driven Anomalous and Spin Hall Effect in Ferromagnetic Janus Material

Speaker
Deepshekhar Roy

2:45 – 3:00 PM

Momentum-Resolved Spin Splitting in 3D Altermagnets: Interplay of Ferromagnetic and Antiferromagnetic orders

Speaker
ROTISH SARKAR

3:00 – 3:15 PM

An Analysis of Performance for n-Type Polycrystalline Silicon Cantilever-based Piezoresistive Pressure Sensors with Different Doping Concentrations

Speaker
Mr Lukram Bobinson Singha

3:15 – 3:30 PM

Metal-Incorporated CdS Nanostructures for Improved UV Photodetection: A Study for Solar Energy Applications

Speaker
Dilip Saikia

3:30 – 3:45 PM

Effect of Polyvinylpyrrolidone (PVP) concentration upon YBCO nanoparticles synthesized by sol-gel technique

Speaker
Dr Suparna Bhattacharjee

3:45 – 4:00 PM

Ag-Au bimetallic nanoparticles deposited on filter paper as a simple SERS substrate for the quantitative analysis of Carbofuran and 2,4-dinitrophenol

Speaker
Nituraj changmai

4:00 – 4:15 PM

Enhanced Blue Luminescence in Y_2O_3:Ce^{3+}, Eu^{2+} Phosphor Mediated by Ce^{3+}→Eu^{2+} Energy Transfer

Speaker
Manashree Dutta

4:15 – 4:30 PM

Green Chemistry Principle Mediated Synthesis of Biocompatible ZnS Quantum Dots: Potential Antibacterial Agent and Photo Catalyst

Speaker
Dr Jejiron Maheswari Baruah

4:30 – 4:45 PM

Revolutionizing Aqueous Aluminum-Ion Batteries: Manganese Carbonate as a Cathode Material.

Speaker
Padmini Priyanka

5:15 PM

2:15 PM

Oral Presentations: Track 04

Session | **Location:** Physics Gallery, NLU | **Convener:** Dr Litul Bokatial

2:15 – 2:35 PM

Calibration of Organic Liquid Scintillator EJ-315 and Unfolding of Gamma Spectra

Speaker
Mr Trinayan Saikia

2:35 – 2:55 PM

Nonlinear structures in a plasma with charged debris and nonthermal electrons

Speaker
Bikramjit Joardar

2:55 – 3:15 PM

Estimation of refractivity turbulence structure constant (Cn2) and atmospheric boundary layer height through ST Radar of Gauhati University

Speakers
Nilotpal Nath, Pankaj Mili

3:15 – 3:35 PM **Statistical Characterization of Flux Variability in X-ray Binaries**

Speaker
Dr Kabita Deka

3:35 – 3:55 PM **Time delayed analysis of a firefly flash model**

Speaker
Dr Debashis Saikia

3:55 – 4:15 PM

Evidence for collective radial flow in high-multiplicity pp collisions via long-range transverse momentum correlation at Run 3 LHC energy

Speaker
Mr Rohit Agarwala

5:15 PM