


PROGRAM

3rd International Conference on

Physics and its Applications

October 21-24, 2024 | Boston, MA | Hybrid


Boston Marriott Newton Hotel
2345 Commonwealth Avenue
Newton, MA



Time Zone:

GMT-4 Eastern Daylight Time (EDT)

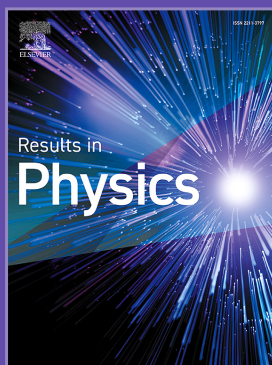


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Meeting Link for Live Streaming on Zoom

Time Zone: GMT-4 Eastern Daylight Time (EDT)

As the conference will be held in a hybrid format, the virtual attendees can access the in-person presentations and queries can be asked through zoom chat box.

Registered participants can join the meeting any time using the link below.

October 21-24, 2024 | In-Person/Virtual

Join Zoom Meeting

<https://zoom.us/j/95909770466?pwd=eryuUOjyU4dalWEJzY5xY6PnBJQsz1.1>

Meeting ID: 959 0977 0466

Passcode: 053770

08:30-08:50 Registrations & Badge Pickup
 08:50-09:00 Opening Remarks & Introduction

Keynote Presentations (30 Minutes)

@Salons AB

Moderators: Raj K. Vinnakota, Troy University Troy, AL
 Ching-Fuh Lin, National Taiwan University, Taiwan

09:00-09:30



The Mars Oxygen ISRU Experiment (MOXIE)
 Michael Hecht, MIT Haystack Observatory, Westford, MA

09:30-10:00



Recent Surprises in Topological and Non-Topological Materials
 Arun Bansil, Northeastern University, Boston, MA

10:00-10:30



R&D in the Early Cold War
 Thomas Ramos, Lawrence Livermore National Laboratory, Livermore, CA

10:30-11:00 **Coffee Break & Group Photo** @ Salon D Grand Ballroom Foyer

Oral Presentations (20 Minutes)

@Salons AB

Scientific Session-I

Lasers, Optics & Photonics | Fluid Physics | Computational Physics | Plasma Physics
 Nano-Physics | Quantum Physics | Biophysics | Mathematical & Statistical Physics | Electronics

11:00-11:20 Improved Mid-Infrared Responsivity and Dynamics of Hot Carriers at the Metal Silicon Interface
 Ching-Fuh Lin, National Taiwan University, Taiwan

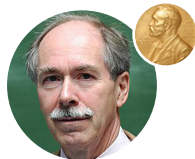
11:20-11:40 Emerging Hybrid Organic/Inorganic Semiconductors for Advanced Optics and Optoelectronic
 Afaf El-sayed, CFM-Materials Physics Center, Spain

11:40-12:00 Thermal-Assisted All-Plasmonic Control of Electron Density Waves at Metal-Doped Semiconductor Interfaces
 Raj K. Vinnakota, Troy University Troy, AL

Plenary Presentation Online (40 Minutes)

@Salons AB

12:00-12:40



Preservation of Information on the Black Hole Horizon, and How it Affects the Hawking Radiation Temperature

Gerard 't Hooft, Utrecht University, The Netherlands

12:40-13:40

Lunch Break

@ Commonwealth ~ 2nd Floor

Oral Presentations (20 Minutes)

@Salons AB

Scientific Session-I

Chair: Fischer Stefan Meira, Skema Business School, Brazil

13:40-14:00

Generative Adversarial Networks-Based Aerodynamic Analysis and Optimization

Xiaosong Du, Missouri S&T, Rolla, MO

14:00-14:20

A New Method of Rational Approximation by the Fourier Transform

Sanjar Abrarov, Epic Climate Green, Canada

14:20-14:40

Optimizing Gossiping for Asynchronous Fault-Prone IoT Networks with Memory and Battery Constraints

Ramon Xulvi-Brunet, National Polytechnic School, Ecuador

14:40-15:00

From the Failure of the Tokamak Fusion with the Breakeven Milestone Toward Toga Devices with Plasma Insulation from the Walls

Leonid Zakharov, LiWFusion, Princeton, NJ

15:00-15:20

On the Effect of Simulated Annealing on Structural and Energetic Properties of Some Silicon Nanoparticles: A Molecular Dynamics Survey

Lynda Amirouche, University of Science and Technology Houari Boumediene, Algeria

15:20-15:40

The Role of Quantum Cryptography in Shaping the Post-Quantum Era

Arit Kumar Bishwas, PricewaterhouseCoopers, Fremont, CA

15:40-16:00

Coffee Break

@ Salon D Grand Ballroom Foyer

16:00-16:20

Chromatin Structure and Dynamics at Nanoscale

Yuri Lyubchenko, University of Nebraska Medical Center, Omaha, NE

16:20-16:40

Existophysics: The World Without Boundaries - Affecting Everything We Do

Onoja Yakubu Akoh, Independent Research Scientist, United States

16:40-18:00

Poster Presentations & Drinks

@ Grand Ballroom Foyer

P-01

Sensitivities and Network Topology in Biochemical Reaction Systems

Takashi Okada, Kyoto University, Japan

P-02

Near Horizon Symmetries of Distorted Black Holes

Sai Madhav Modumudi, University of Texas at Dallas, Richardson, TX

P-03

Recent Progress and Future Prospect of THz Quantum-Cascade Lasers Based on GaAs, GaN and ZnO

Hideki Hirayama, RIKEN, Japan

P-04

Existophysics: The Frontier of Physics

Onoja Yakubu Akoh, Independent Research Scientist, United States

End of Day-1

Keynote Presentations (30 Minutes)

@Salons AB

Moderator: Lynda Amirouche, University of Science and Technology Houari Boumediene, Algeria

09:00-09:30



Feynman Operator Calculus, Dyson's Conjectures and the Symmetric Big Bang
Tepper L. Gill, Howard University, Washington, D.C

09:30-10:00



A Precise Analytic Approximation for the Bessel function $J_\nu(x)$ with ν in the Interval $(0,2)$, by Means of a New Technique
Pablo Martin, University of Antofagasta, Chile

10:00-10:30



Cleanroom Clean Without a Cleanroom: Metrology on Peelable Polymer Coatings Atomically Clean Surfaces for LIGO, NASA and 10 Meter Telescopes
James P. Hamilton, University of Wisconsin-Platteville, Platteville, WI

10:30-10:50

Coffee Break

@ Salon D Grand Ballroom Foyer

Oral Presentations (20 Minutes)

@Salons AB

Scientific Session-II

Astroparticle Physics | Quantum Physics | Particle Physics | Condensed Matter Physics

10:50-11:10

Why are Black Holes Stable Against their Own Gravity?
Peter Morley, Blue Ridge Scientific LLC, Front Royal, VA

11:10-11:30

Strain and Piezo-Electrical Effects in InAs/GaAs Quantum Dot
Tanja Zatezalo, North Carolina Central University, Durham, NC

11:30-11:50

Literal Interpretation of $i\epsilon$ term in QFT Propagator
Roman Sverdlov, Independent Research Scientist, United States

11:50-12:10

Strong Interactions Among Protons Using Lorentz-Transformation of Rotational Frames
Wang Yang, Beihang University, China

12:10-12:30

How Does Strong Interaction Create (H) --- Investigating Nucleon Structure and Strong Interactions with a New Quark Model
Yin Rui, Beihang University, China (Online)

12:30-12:50 **The Family That Gravitation Belongs to**
Debabrata Saha, Independent Research Scientist, India

12:50-13:40 **Lunch Break** @ Commonwealth ~ 2nd Floor

Scientific Session-III

Condensed Matter Physics | Atomic & Molecular Physics | Material Physics | Nano-Physics

Chair: **Dorcas I. Torres -Padilla**, Inter American University of Puerto Rico, Bayamon, PR

13:40-14:00 **Metallization of the Hydrogen Isotopes; Results and Applications**
Isaac Silvera, Harvard University, Cambridge, MA

14:00-14:20 **Room Temperature Ambient Pressure Superconductor, CES-2023, and its Applications**
Yong-Jihn Kim, University of Puerto Rico, Mayaguez, PR

14:20-14:40 **A Comparison Between Compton Profiles Obtained from a Full QED S-Matrix Based Doubly Differential Cross Section Spectrum to Those Obtained from a Relativistic Electron Momentum Distribution Function**
Larry LaJohn, University of Pittsburgh, Pittsburgh, PA

14:40-15:00 **MaHfAl-N Films and its Application**
Hiroki Kuwano, Tohoku University, Japan

15:00-15:20 **Photoluminescence Characterization of Semiconductor Micro- and Nanoparticles Obtained by Biosynthesis and Vapor-Solid Methods**
Dorcas I. Torres -Padilla, Inter American University of Puerto Rico, Bayamon, PR

15:20-15:40 **Progress in 220-230nm AlGaN far-UVC LEDs for Application to Human-Safe Virus Inactivation**
Hideki Hirayama, RIKEN, Japan

15:40-16:00 **Measuring Temperature at the Nanoscale: Experimental Verification of Ergodicity**
Igor Sokolov, Tufts University, Medford, MA

16:00 **Coffee Break** @ Salon D Grand Ballroom Foyer

End of Day-2

Oral Presentations (20 Minutes)

@Salons AB

Scientific Session-IV

Material Physics | Mathematical & Statistical Physics

Chair: Emanuel Indrei, Kennesaw State University, Kennesaw, GA

09:30-09:50	The Polya-Szego Conjecture Emanuel Indrei, Kennesaw State University, Kennesaw, GA
09:50-10:10	The p-Adic Schrödinger Equation and the Two-Slit Experiment in Quantum Mechanics Wilson Zuniga-Galindo, University of Texas Rio Grande Valley, Brownsville, TX
10:10-10:30	Reflection Positivity Palle Jorgensen, University of Iowa, Iowa City, IA (Online)
10:30-10:50	Coffee Break @ Salon D Grand Ballroom Foyer
10:50-11:10	Orthogonal Functions, Hybrid Approximations, and Fractional Calculus in Science and Engineering Mohsen Razzaghi, Mississippi State University, Starkville, MS
11:10-11:30	Zeeman Manifolds and Zeeman Spacetimes: A New Framework for Exploring a Unified Quantum Theory Zoltan Imre Szabo, City University of New York, New York, NY
11:30-11:50	The Wealth-Building Potential of Agents Through a Complex Network Supporting Socially Responsible Companies: An Agent-Based Modeling Explanatory Analysis Fischer Stefan Meira, Skema Business School, Brazil
11:50-12:10	Tuning the Electronic Bandgap of Penta-Graphene from Insulator to Metal Through Functionalization: A First-Principles Calculation Jorge Morales, University of Mayor, Chile
12:10	Lunch & Departures @ Commonwealth ~ 2 nd Floor

End of Day-3

07:50-08:00 Opening Remarks & Introduction

Keynote Presentations

Moderator: Milind N. Kunchur, University of South Carolina, Columbia, SC

08:00-08:30



Peakons and Their Interactions

Zhijun Qiao, University of Texas Rio Grande Valley, Edinburg, TX

08:30-09:00



Violation of the Fourier Uncertainty Principle in Human Hearing

Milind N. Kunchur, University of South Carolina, Columbia, SC

09:00-09:30



Shape Memory Phenomena and Crystallographic Transformations in Shape Memory Alloys

Osman Adiguzel, Firat University, Turkey

Oral Presentations

Scientific Session-V

Fluid Physics | Lasers, Optics & Photonics | Particle Physics | Radiation Physics | Computational Physics | Instruments & Instrumentation | Mathematical & Statistical Physics | Material Physics | Quantum Physics | Condensed Matter Physics | Astrophysics | Acoustics

09:30-09:50 Effects of Geometrical Complexity and the Magnetic Response of Materials on the NMR Observables in Porous Media

Ivan S. Oliveira, Brazilian Center for Research in Physics, Brazil

09:50-10:10 Control of High-Speed Flows, Aerodynamic Characteristics of Models and Sonic Boom on the Ground Using Thermally Stratified Energy Deposition

Olga Azarova, Russian Academy of Sciences, Russia

10:10-10:30 The Laser Induced Shock Wave effects within the Ultra-Short Pulse Regime at High Repetition Frequency and its Impacts on Soft Ferromagnetic Materials

Olivier Maloberti, UniLaSalle Amiens, France

10:30-10:50 Detector and Physics Simulation Using Heavy Ion Collisions at NICA-SPD

Rishav Pandey, Larsen and Toubro Limited, India

10:50-11:00 Break

Chair: Carlos Alberto Stechhahn, Criminalistic Institute of Sao Paulo, Brazil

- 11:00-11:20 **Nonlinear Optics of Viruses: On the Possibility of Highly Selective *In Vivo* Excitation of Given Virus**
Vadim Oshurko, Moscow State Technological University Stankin, Russia
- 11:20-11:40 **Indoor Air Quality and the Analysis of Thermal Comfort of Basement Bank Vault in Three Cities in Nigeria**
Benjamin Anyaegbuna, Pan-Atlantic University, Nigeria
- 11:40-12:00 **The Guiding Effect on a Macroscopic Flat Borosilicate Plate**
Esteban Irribarra, National Polytechnic School, Ecuador
- 12:00-12:20 **Three-Dimensional Boundary Element Modeling for Thermo-Elastoplastic Stress Sensitivities in Anisotropic Fibrous Polymer Composites**
Mohamed Abdelsabour Fahmy, Adham University College, Umm Al-Qura University Saudi Arabia
- 12:20-12:40 **Tackling an Innovation Challenge in Lower-Limb Prosthetics**
Joan Sanders, University of Washington, Seattle, WA
- 12:40-13:00 **Study and Suppression of Frequency-Pull Instability in HPM Network with a Resonant Load**
Alexei V. Smirnov, Advanced Energy Industries, Mountain View, CA
- 13:00-13:20 **Recent Advances on the Geometry of Generalized Kadomtsev-Petviashvili Hierarchies**
Jean Pierre Magnot, University of Angers, France
- 13:20-13:40 **Deposition of Hydroxyapatite Ceramic Coatings on Different Substrates by Low Pressure Cold Spray**
John Dairo Henao Penenrey, CONACYT-CIATEQ AC, Mexico
- 13:40-14:00 **Spin Noncommutative Space and Stark Effect**
Carlos Alberto Stechhahn, Criminalistic Institute of Sao Paulo, Brazil
- 14:00-14:20 **Quantum Hypercomputation by Coherent Water**
Diego Tomassone, Holos Medical Clinical Research, Italy

14:20-14:30 Break

Chairs: Inge S. Helland, University of Oslo, Norway
Rahmani Yassine, CRAAG, Algeria

- 14:30-14:50 **Effect of Cs Doping on the Magnetic and Magnetocaloric Properties of LaMnO₃ Manganites**
Cecile Autret-Lambert, GREMAN laboratory, France
- 14:50-15:10 **Causality, Legendrian and Virtual Legendrian Knots**
Vladimir Chernov, Dartmouth, Hanover, NH
- 15:10-15:30 **Multiband Fitting Approach of Gamma-Ray Burst Afterglow Light Curves with the Synchrotron External Forward Shock Model**
Rahmani Yassine, CRAAG, Algeria

- 15:30-15:50 **The Existence of a Universal Frame of Reference, in which it Propagates Light, is Still an Unresolved Problem of Physics**
Roman Szostek, Rzeszow University of Technology, Poland
Karol Szostek, Rzeszow University of Technology, Poland
- 15:50-16:10 **Principle of Stability in Physics**
Timur Kamalov, State University of Education, RF, Russia
- 16:10-16:30 **On Quantum Foundation, As Seen by a Statistician**
Inge S. Helland, University of Oslo, Norway
- 16:30-16:50 **Conveyor-Mode Electron Shuttling for Scalable Spin-Qubit Quantum Computers**
Lars R. Schreiber, RWTH Aachen University, Germany
- 16:50-17:10 **Design of Strongly Nonlinear Graphene Nanoelectromechanical Systems in Quantum Regime**
Jaesung Lee, University of Central Florida, Orlando, FL
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- 17:10-17:30 **Break**
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- Chair: Yusuke Shibasaki**, Nihon University, Japan
- 17:30-17:50 **Loewner Transformation from an Ergodic Point of View and its Relation to Biological System Theory**
Yusuke Shibasaki, Nihon University, Japan
- 17:50-18:10 **Zero-Temperature Phase Transition of Solid ³He**
Kazuyuki Matsumoto, Hokkaido University of Education, Japan
- 18:10-18:30 **Nucleon Charge Distribution and Topology in Hypersphere Soliton Model**
Soon-Tae Hong, Sogang University, South Korea
- 18:30-18:50 **Valley-Spin-Polarization of MoS₂ Monolayer Induced by Ferromagnetic Order in an Antiferromagnet**
Chao-Yao Yang, National Yang Ming Chiao Tung University, Taiwan
- 18:50-19:10 **Distribution Regulation in Chaotic Systems Based on Offset Boosting**
Chunbiao Li, Nanjing University of Information Science and Technology, China
- 19:10-19:30 **Resolution Enhancement by Phase Information in Ultrasound Imaging with Single Transmitter/Receiver System**
Norio Tagawa, Tokyo Metropolitan University, Japan

End of Day-4

We wish to see you at
Physics-2025

July 07-09, 2025 | Orlando, FL

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