Victor-Ovidiu Șlupic

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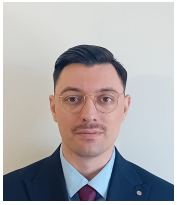

Research Interests

Noncommutative quantum mechanics and quantum field theory on noncommutative spaces, with focus on Bopp shift transformations and phase-space methods for Hamiltonian diagonalization. Hidden symmetries and dynamical algebras in coupled oscillator systems.

Education

2023–Present **Ph.D. in Theoretical Physics**, *University of Bucharest*, *Romania*.

Thesis Topic, *Quantum Field Theory on Noncommutative Spaces*, Supervisor: Ciprian Sorin Acatrinei.

2021–2023 **Master's Degree in Physics for Advanced Technologies**, *Alexandru Ioan Cuza University of Iasi*, *Romania*.

Thesis, *Motion of particles around black holes*, Studied particle dynamics near static black holes using numerical simulations.

2017–2023 **Master's Degree in Theoretical Physics**, *Stockholm University*, *Sweden*.

Thesis, *Multi-soliton solutions of the Cubic Szegö equation on the real line*.

2014–2017 **Bachelor's Degree in Physics**, *Alexandru Ioan Cuza University of Iasi*, *Romania*.

Thesis, *Spontaneous Symmetry Breaking Mechanism and Gauge Theories*.

Publications

Jul 2024 **E. M. Babalic, C. I. Lazaroiu, V. O. Slupic**, *Strong rapid turn inflation and contact Hamilton-Jacobi equations*, arXiv preprint arXiv:2407.19912 [hep-th].
DOI: `10.48550/arXiv.2407.19912`

Research Experience

2023–Present **Ph.D. Research**, *University of Bucharest*, Supervisor: Prof. Ciprian Sorin Acatrinei, *Romania*.

- Studying the Landau problem in noncommutative spaces and its generalization to coupled oscillator systems with momentum noncommutativity
- Developing Bopp shift methods for exact diagonalization of quadratic Hamiltonians
- Investigating solvable quadratic Hamiltonians in noncommutative phase space and their connections to quantum information

Nov 2023–Present **Scientific Research Assistant**, *IFIN-HH DFT (Horia Hulubei National Institute for R&D in Physics and Nuclear Engineering)*, *Romania*.

- Investigating quantum field theories on noncommutative spaces using analytical and numerical methods
- Analyzing mathematical frameworks for cosmological models with applications to inflation theory, contributing to the publication of *Strong rapid turn inflation and contact Hamilton-Jacobi equations* (2024)
- Developing computational tools for various Hamiltonian systems

Conferences, Workshops and Schools

Talks & Presentations

Nov 2022 **FarPhys Conference**, Iasi, *Romania*.
Presented research on: *Thermodynamic stability of Reissner-Nordström Black Holes with quintessence and solid angle deficit*

May 2022 **FTEM Conference**, Iasi, *Romania*.
Presented research on: *Particle trajectories around Kerr Black Holes*

Schools & Workshops

Apr 2026 **Les Houches – WE Heraeus Physics School: The Non-Perturbative Functional Renormalization Group and its Applications**, *École de Physique des Houches*, Les Houches, *France*.
Doctoral training school on the non-perturbative functional renormalization group, with applications to statistical physics, condensed matter, high-energy physics and quantum gravity

Apr 2026 **World Quantum Days in IFIN-HH (5th edition)**, *IFIN-HH, Department of Theoretical Physics*, Magurele, *Romania*.
Workshop on quantum information, quantum technologies, and related topics in theoretical physics (attended online)

Feb 2026 **CERN Winter School on Supergravity, Strings and Gauge Theory**, *CERN*, Geneva, *Switzerland*.
Advanced training in black holes, quantum field theory, and string field theory at CERN's annual doctoral school

Jul 2025 **Modern Methods in Quantum Gravity and Cosmology**, *IFIN-HH*, Bucharest, *Romania*.
Advanced Ph.D. school in theoretical physics

Jul 2025 **Pentagon of Physics Faculties**, *10th National Conference*, Oradea, *Romania*.
National physics conference featuring research presentations and academic collaboration

Feb 2025 **CERN Winter School on Supergravity, Strings and Gauge Theory**, *CERN*, Geneva, *Switzerland*.
Advanced training in supergravity, string theory, and gauge/gravity duality at Europe's premier particle physics laboratory

Jan 2025 **Strings 2025**, *NYU Abu Dhabi University*, Online, *UAE*.
International conference on string theory, quantum gravity, and related topics

Sep 2024 **18th National Conference of Biophysics**, Iasi, *Romania*.

Aug 2024 **Summer School on Cosmology – Petnica Summer Institute**, Petnica, *Serbia*.

Jun 2024 **2nd Training School COST Action COSMIC WISPers (CA21106)**, Ljubljana, *Slovenia*.

Apr 2024 **QFT and Nonlinear Dynamics: Dynamical Aspects of Multifield Cosmological Models**, Craiova, *Romania*.

Oct 2023 **ICTP Workshop on String Theory, Holography, and Black Holes**, *International Centre for Theoretical Physics*, Trieste, *Italy*.

Aug 2019 **Nordita Master Class**, *Nordic Institute for Theoretical Physics*, Stockholm, *Sweden*.
Intensive training in theoretical physics at Scandinavia's leading institute

Jun–Sep 2016 **Erasmus+ Student Mobility**, *University of Helsinki, Department of Physics*, *Finland*.
Semester-long academic exchange during bachelor's studies, focused on physics coursework

Jun–Jul 2015 **The Eighth Congress of Romanian Mathematicians**, Iasi, *Romania*.

Jul 2015 **XXXII International Conference on Phenomena in Ionized Gases**, Iasi, *Romania*.

Industry Experience

Jan 2021–Jan 2022 **Software Engineer I**, *Vitesco Technologies*, *Romania*.
- Developed embedded software for electric vehicle control systems using physics-based modeling
- Applied numerical methods and algorithm optimization to improve real-time control efficiency
- Implemented data analysis tools for system performance evaluation using statistical methods

Academic Service & Leadership

Aug 2022–Oct 2023 **President & Founding Member**, *Association of Physics Students (ASFIZ-UAIC)*, Alexandru Ioan Cuza University, *Romania*.
- Founded and led student organization growing to 80+ members (approx. 40% of the physics student body)
- Organized academic lectures, workshops, and community-building events
- Fostered interdisciplinary collaboration with other science departments
- Contributed to projects at the Geometry and Physics Group (GAP): `https://events.theory.nipne.ro/gap/index.php/student-homepage`

Skills

Languages

Native	Romanian
Fluent	English (C1, IELTS Academic: Band 7.5)
Advanced	Italian (C1)

Technical Skills

Programming	C (Advanced), Python (Advanced: NumPy, SciPy, SymPy), MATLAB (Intermediate)
Scientific Computing	Mathematica (Advanced), Maple (Intermediate), OriginPro (Advanced)
Specialized Knowledge	Quantum Field Theory, General Relativity, Black Hole Physics, Noncommutative Geometry
Soft Skills	Scientific Writing, Project Management, Team Collaboration, Technical Presentations

Personal Interests

Rare Physics Book Collection.

- Curated collection of over 200 historical physics textbooks and monographs
- Notable items include:
  - Third reprint of Maxwell's *Electricity and Magnetism* treatises
  - Second reprint of Hilbert and Courant's *Methods Of Mathematical Physics*
  - First edition of Morse and Feshbach's *Methods of Theoretical Physics*