

Robert Grinshtein

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Education


2021 - 2027  **5th year undergraduate student, Lomonosov Moscow State University**
Quantum Optics Technologies (QOT) lab, Quantum Electronics Department, Faculty of Fundamental and Applied Physics
GPA: 4.97/5.00


Research Experience

2024 - ...  **Laboratory scientist.** Quantum Technologies Center of M.V. Lomonosov, Lomonosov Moscow State University. Quantum Optical Technologies (QOT) lab.


Teaching and Leadership

2022  **Teacher assistant.** Krasnoyarsk Summer School: the circuits of constant current.


2024 - ...  **Senior teacher.** Krasnoyarsk Summer School: computational physics, theoretical mechanics, mathematical analysis for beginner physicists, introduction to quantum computing.

2025 - ...  **Head of physical-mathematical tournament.** Krasnoyarsk Summer School.

Science Projects



2022 - 2023  **Programmable Interferometers using Spatial Light Modulators (SLM)**

- Modeled a new class of optical interferometers based on multimode planar waveguides.
- Integrated a programmable Spatial Light Modulator (SLM) into the design to enable dynamic control of the interference patterns.

2023 - 2024  **Mode Dynamics in Curved Multimode Waveguides**

- Investigated the influence of waveguide curvature on spatial mode propagation in multimode integrated optical structures.
- Formulated a new computational method for tracking field evolution in curved waveguides utilizing coupled mode theory.

Science Projects (continued)






2024 - 2025		Spatial Field Dynamics with Integrated Superconducting Planar Detector	<ul style="list-style-type: none">• Developed a theoretical model to simulate spatial field dynamics in multimode waveguides coupled with integrated extended superconducting detectors.• Quantified the impact of detector-induced losses on spatial field evolution to optimize detection efficiency.
2025 - present		Linear-Optical Unitary Designs and Parameter Optimization	<ul style="list-style-type: none">• Developing a novel method to construct linear-optical unitary designs, focusing on minimizing the number of programmable parameters required across various optical architectures.

Research Publications

Conference Proceedings







- 1
- R. Grinshtein** and M. Saygin, “The spatial modes dynamics in curved multimode integrated optical waveguides,” in *Proceedings of the 7th International School on Quantum Technologies (QTS’24)*, Miass, Russia, 2024, pp. 74–75.

Skills

Nationality		Israeli, Russian
Languages		English - Professional/Fluent; Russian - Native; Hebrew - beginner
Coding		Python (Qiskit, NumPy, Torch, etc.), C++, \LaTeX , Git
Software		ANSYS Lumerical
Hobbies		Bouldering (6b+ - 6c), judo (state champion), skiing, photography, chess


Miscellaneous Experience

Awards

2021		Silver medal , State Physics Olympiad
		Bronze medal , State Mathematics Olympiad
		Silver medal , All-Russian Physics and Mathematics Olympiad "Phystech"
2022		Silver medal , Physical Faculty Mathematical Analysis Olympiad
2024		Bronze cup , All-Russian Quantum Hackathon at QTS’24
2025		Silver cup , 3rd All-Russian Quantum Hackathon "QUANT-NN" 2025

Miscellaneous Experience (continued)

Scholarships

2024  **Scholarship** for talented students of the Faculty of Physics in the 4th to 6th year who specialize in theoretical physics, Theoretical Physics and Mathematics Advancement Foundation “BASIS”

References

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Prof Mikhail Zamkov

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