

Department of Theoretical Physics, National Research Academic University,  
Khlopina str., 8, Bldg. 3, 194021, St. Petersburg, Russia

## Contact Information

**Email** [vadim.art.shabashov@gmail.com](mailto:vadim.art.shabashov@gmail.com)  
**Cell** +7-911-918-99-24  
**Google Scholar** <https://scholar.google.com/citations?user=PAkhP1IAAAAJ>  
**ORCID** <https://orcid.org/0000-0002-7556-9395>  
**ResearchGate** [https://www.researchgate.net/profile/Vadim\\_Shabashov](https://www.researchgate.net/profile/Vadim_Shabashov)  
**GitHub** <https://github.com/VadimShabashov>

## Research Interests

Quantum mechanics, quantum computers, quantum algorithms, and quantum information theory.

## Education

- **2017 – present** *Saint-Petersburg National Research Academic University of The Russian Academy of Sciences*  
Department of Theoretical Physics, 4<sup>th</sup> year undergraduate student.  
GPA 3.73/4.00
- **2010 – 2017** *School 598 (with advanced study of mathematics, physics and biology)*  
Finished high school with honors.
- **2006 – 2010** *Lyceum 82 (with advanced study of mathematics)*

## Research Experience and Publications

### Ongoing Projects

- **Decoherence time**  
I explore the ways to increase the decoherence time of a three-level system (qutrit) in the non-Markovian limit. Particularly, I look a specific configuration of the coupling constants between the environment and the modes of our system, in which the decoherence time rises significantly.
- **Quantum codes**  
I participate in a project with [Professor Pryadko](#) and [Valerii Kozin](#). The goal is to apply topological quantum codes with nonlocality to quantum error correction.
- **Bachelor's thesis**  
Using the Wigner–Weisskopf approach and the new specific approximation, I reviewed the Purcell effect for a two-level system (qubit) in three spatial dimensions in the resonator, consisted of two parallel infinite plates. I obtained the same result for the Purcell factor as in [K. Kakazu and Y. S. Kim, Phys. Rev. A 50, 1830 \(1994\)](#), despite of the distinctive nature of the used approximation, which serve as a proof of the connection between the two different approaches. After that I examined the relaxation of a qubit using the Jaynes–Cummings model to obtain analytical results and then the Lindblad equation to simulate the relaxation process in an imperfect resonator. My code in Python, related to the problem, can be found here:  
[A visualization of a qubit relaxation.](#)

## Finished Projects

- **Anomalous exciton Hall effect:** [Phys. Rev. Lett. 126, 036801](#), [arXiv:2006.08717](#)

I examined and described a new type of the Hall effect for 2D excitons, which emerges due to the presence of a dipole moment perpendicular to both the magnetic field and the direction of propagation.

## Work Experience

- **2020, May – present** *Undergraduate Research Assistant*, ITMO University

## Seminars, Internships and Conferences

- **2020, October 12** Speaker *Low Dimensional Seminar, The Ioffe Physical-Technical Institute*  
🔊 [The presentation on Anomalous exciton Hall Effect.](#)
- **2020, September 14–21** Participant (online) *International School on Quantum Computing 2020, Sochi*

## Scientific Mentors

- **2019 – present** [Valerii Kozin](#)  
University of Iceland, ITMO University
- **2019 – present** [Ivan Shelykh](#)  
University of Iceland, ITMO University

## Awards, Fellowships and Scholarships

- **2017 – present** *Scholarship of Distinction*  
St. Petersburg National Research Academic University
- **2020, November 8–29** [Digital badge for successful completion](#)  
[IBM Quantum Challenge](#)

## Extra-curricular Courses

- **Qubit by Qubit's Introduction to Quantum Computing** [IBM Quantum & The Coding School](#)
- **Introduction to Quantum Computing and Quantum Hardware** [IBM Quantum](#)
- **Learn Quantum Computation using Qiskit** [Qiskit Community](#)
- **Programming in C++** Online course at the Computer Science Centre
- **Algorithms: methods and practice (Python)** Online course at the Computer Science Centre
- **Introduction to Linux** Online course at the Institute of BioInformatics

## Computer Skills

- **Python** (including Qiskit and QuTiP)
- **Wolfram Mathematica**
- **C++**
- **Linux** (bash)
- **MATLAB**
- **TeX**

## Interests

- **Volleyball, soccer, basketball**
- **Tourism and travelling**
- **Guitar**
- **Snowboard**
- **Board games**

## In media

- Popular Science magazines about my project "Anomalous Exciton Hall effect":

Physicists discover new physical effect, Ученые обнаружили новый физический эффект, Для экситонов описали новый физический эффект, Ученые ИТМО обнаружили новый физический эффект, Ученые ИТМО обнаружили новый физический эффект.