

Nina Voronova

Curriculum Vitae

CONTACT INFORMATION

Name: Nina Voronova
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PERSONAL INFORMATION

Date of Birth: January 19, 1984
Place of Birth: Moscow
Citizenship: Russian Federation
Marital status: Married, 1 son

ResearcherID: N-8144-2015

ORCID ID: 0000-0001-7419-8820



EDUCATION

2000 – 2006: Master of Sc. in Moscow Physical Engineering Institute (State University), Department of Theoretical Physics; thesis subject “Excitons in low-dimensional systems”.
2006 – 2009 (post graduate): Institute of Spectroscopy, Russian Academy of Sciences
Thesis subject: “Collective excitations in low-dimensional systems” under supervision of Prof. Yu.E. Lozovik, chief of the Laboratory of Nanostructures Spectroscopy.
2012: PhD thesis defense.

EMPLOYMENT

(Oct. 2009 – Oct. 2014) Senior Lecturer, followed by

(Oct. 2014 – present) Associate Professor at National Research Nuclear University MEPhI (Moscow Engineering Physics Institute), Theoretical Physics Dept.

Address: 31 Kashirskoe shosse, 115409 Moscow, Russia

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(Oct. 2015 – present) Senior Researcher (permanent) at Russian Quantum Center, Quantum Polaritonics group

Address: Skolkovo innovation city, Bolshoi boulevard 30 bld.1, 121205 Moscow, Russia

Web: <https://rqc.ru/team/quantum-polaritonics>

(Jan. – July 2019) Senior Researcher at Skolkovo Institute of Science and Technology

Address: 3 Nobelya street, Skolkovo, Moscow, 121205 Russia

Field of scientific interest:

Exciton-polaritons, multi-component Bose condensates, topological defects, low-temperature physics, bosonic Josephson phenomena, superfluidity, superconductivity.

GRANTS, HONORS AND AWARDS:

Golden Medal for success in studies (High School certificate), 2000.
Individual Scholarship for senior university students, the Dynasty Foundation, 2004-2006.
Diploma with honors (Master's degree), 2006.
Personal research grant from Russian Foundation of Basic Research (RFBR) "My first grant", 2012-2013, 700kRub.
Personal grant "Young teacher of the NRNU MEPhI", 2011, 2013, 2014.
"Best teacher of the NRNU MEPhI" award 2014.
Personal research grant from RFBR for young Ph.D's, 2016-2018, 5.1MRub.
Research grant of the President of the Russian Federation for Young PhD's (principal investigator) 2017-2018, 1.2MRub.
RFBR research grant for the best scientific projects carried out by leading young teams "Stability" (principal investigator), 2018-2020, 6MRub.
RFBR research grant for fundamental scientific projects (principal investigator), 2019-2021, 3MRub.
RFBR-DFG (German Research Foundation) joint research grant for fundamental scientific projects (Co-investigator), 2021-2023, 15MRub.
RFBR-CNR (Italian National Research Council) joint research grant for fundamental scientific projects (principal investigator), 2021-2023, 10.5MRub.

MAIN PUBLICATIONS

1. M. Willander, Yu E. Lozovik, A. Wadeasa, O. Nur, A.G. Semenov and N.S. Voronova, Light emission from different ZnO junctions and nano-structures, *Phys. stat. sol. (a)* **206**(5), 853-859 (2009).
2. N.S. Voronova, A.A. Elistratov, Yu.E. Lozovik, Bose–einstein condensate of cavity exciton polaritons in a trap, *JETP Lett.* **93**(10), 580–584 (2011).
3. Alexei Deinega, Nina Voronova and Yurii Lozovik, Coulomb problem on single- and double-wall cylinders, *J. Phys.: Condens. Matter* **24**, 255301 (2012).
4. N.S. Voronova, A.A. Elistratov and Yu.E. Lozovik, Coupled condensates of excitons and photons in the trap, *J. Nanophoton.* **6**(1), 061802 (2012).
5. Nina S. Voronova and Yurii E. Lozovik, Excitons in cores of exciton-polariton vortices, *Phys. Rev. B* **86**, 195305 (2012).
6. N.S. Voronova, Y.E. Lozovik, Internal Josephson phenomena in a coupled two-component Bose condensate, *Superlattices Microstruct.* **87**, 12–18 (2015).
7. N. S. Voronova, A. A. Elistratov, and Yu. E. Lozovik, Detuning-controlled internal oscillations in an exciton-polariton condensate, *Phys. Rev. Lett.* **115**, 186402 (2015).
8. N. S. Voronova, A. A. Elistratov, and Yu. E. Lozovik, Inverted pendulum state of a polariton Rabi oscillator, *Phys. Rev. B* **94**, 045413 (2016).
9. N. S. Voronova, M. A. Posazhenkov, and Yu. E. Lozovik, Internal Structure of Vortices in a Two-Component Exciton-Polariton Condensate, *JETP Lett.* **106**(11), 754–759 (2017).
10. N. S. Voronova, I. L. Kurbakov, and Yu. E. Lozovik, Bose Condensation of Long-Living Direct Excitons in an Off-Resonant Cavity, *Phys. Rev. Lett.* **121**, 235702 (2018).

11. N. S. Voronova, Yu. E. Lozovik, On the Position-Dependent Effective Mass in Bose Condensates of Photons and Polaritons in an Optical Microcavity Trap, *JETP Lett.* **108**(12) 791-795 (2018).
12. N. S. Voronova and Yu. E. Lozovik, "Anisotropic superfluidity in a weakly interacting condensate of quasi-two-dimensional photons", *Ann. Phys. (Berlin)*, 1800431 (2019).
13. L. Dominici, D. Colas, A. Gianfrate, A. Rahmani, V. Ardizzone, D. Ballarini, M. De Giorgi, G. Gigli, F. P. Laussy, D. Sanvitto, and N. Voronova, "Full-Bloch beams and ultrafast Rabi-rotating vortices", *Phys. Rev. Research* **3**, 013007 (2021).
14. A. M. Grudinina, I. L. Kurbakov, Yu. E. Lozovik, and N. S. Voronova, "Finite-temperature Hartree-Fock-Bogoliubov theory for exciton-polaritons", *Phys. Rev. B* **104**, 125301 (2021).
15. L. Dominici, N. Voronova, D. Colas, A. Gianfrate, A. Rahmani, V. Ardizzone, D. Ballarini, M. De Giorgi, G. Gigli, F. P. Laussy, and D. Sanvitto, "Shaping the topology of light with a moving Rabi-oscillating vortex", *Opt. Exp.* **29** (23), 37262 (2021).
16. A. Rahmani, D. Colas, N. Voronova, K. Jamshidi-Ghaleh, L. Dominici, and Fabrice P. Laussy, "Topologically driven Rabi-oscillating interference dislocation", *Nanoph.* **11**(12), 2909-2919 (2022).
17. A. M. Grudinina and N. S. Voronova, "Dark and thermal reservoir contributions to polariton sound velocity", *Phys. Rev. B* **106**, L121301 (2022).
18. A. Grudinina, M. Efthymiou-Tsironi, V. Ardizzone, F. Riminucci, M. De Giorgi, D. Trypogeorgos, K. Baldwin, L. Pfeiffer, D. Ballarini, D. Sanvitto and N. Voronova, "Collective excitations of a bound-in-the-continuum condensate", *Nat. Commun.* **14**, 3464 (2023).
19. A. S. Plyashechnik, A. A. Sokolik, N. S. Voronova, and Yu. E. Lozovik, "Coupled system of electrons and exciton-polaritons: Screening, dynamical effects, and superconductivity", *Phys. Rev. B* **108**, 024513 (2023).
20. L. Dominici, A. Rahmani, D. Colas, D. Ballarini, M. De Giorgi, G. Gigli, D. Sanvitto, F. P. Laussy & N. Voronova, "Coupled quantum vortex kinematics and Berry curvature in real space", *Commun. Phys.* **6**, 197 (2023).
21. T. V. Maximov, I. L. Kurbakov, N. S. Voronova, and Yu. E. Lozovik, "Tunable Bose-Einstein condensation and rotonlike excitation spectra with dipolar exciton-polaritons in crossed fields", *Phys. Rev. B* **108**, 195304 (2023).

INVITED TALKS

1. 1st MIFP Latin American Meeting, Campinas (Brazil), 2012.
2. Physics of Light-Matter Coupling in Nanostructures, Medellin (Colombia), 2015.
3. International Electromagnetic Congress (PIERS 2017), St. Petersburg (Russia), 2017.
4. International School on Polaritonics and Photovoltaics, Sicily (Italy), 2017.
5. International Conference on Metamaterials and Nanophotonics METANANO 2018, Sochi (Russia), 2018.
6. International School on Nanophotonics, Photovoltaics and Metamaterials (ISNP 2019), Varadero (Cuba), 2019.
7. International Conference on New Trends in Quantum Light and Nanophysics, (QLIN 2019), Aquafredda (Italy), July 8-13, 2019.
8. Condensates of Light 2020, December 9-11, 2020.
9. SPb Photonic, Optoelectronic, & Electronic Materials, St.Petersburg (Russia), 27-30 April 2021.

10. Hybrid Photonics and Materials (HPM 2022), Hydra (Greece), 3-7 October 2022.
11. 7th International Conference on Physics of Two-Dimensional Crystals (ICP2DC), Tirana (Albania), 18-22 September 2023.
12. Exciton-Polariton International Conference (EPIC 2023), Singapore (Singapore), 27 Nov.-02 Dec. 2023.