

Nikita Ustimenko

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[Google Scholar](#)
[ResearchGate](#)
(updated: July 30, 2022)

BASIC INFO

Master student in Theoretical Nanophotonics, [Faculty of Physics @ ITMO University](#). Supervised by [Prof. Mihail Petrov](#).

RESEARCH INTERESTS

All-dielectric Nanophotonics, Metalenses, Mie Theory, Multipole Decomposition, Coupled Multipole Model, Multiple-Scattering Theory, Born Approximation, Quantum Optics, Subradiance, Atomic Arrays, High-Q States, Two-Photon States.

SCIENTIFIC TOOLS

- Pen and paper
- Programming (Matlab, Python)

LANGUAGES

- **Human:** Russian (native), English (B2)
- **Machine:** Matlab, Comsol Multiphysics, CST Microwave Studio, Latex, Python, Java 8

EDUCATION

Faculty of Physics, School of Physics and Engineering, ITMO University St. Petersburg, Russia
M.Sc. in Nanophotonics and Metamaterials 2021 –Present

- Thesis: “Subradiant optical states in two-dimensional finite ensembles of quantum emitters”
- Supervisor: [Prof. Mihail Petrov](#)

Faculty of Physics, School of Physics and Engineering, ITMO University St. Petersburg, Russia
B.Sc. in Nanophotonics and Quantum Optics (with honors), GPA: 4.98/5.00 2017–2021

- Thesis: “Multiple scattering in problems on modeling and optimizing the optical response of nanostructure ensembles with induced multipole moments”
- Supervisor: [Dr. Kseniia Baryshnikova](#)

WORK EXPERIENCE

Faculty of Physics, School of Physics and Engineering, ITMO University St. Petersburg, Russia
Engineer June 2019–Present

TEACHING

Quantum Optics

Master Course at ITMO University. Lecture notes

September 2021–Present

Optics of Waveguides and Resonators

Bachelor Course at ITMO University. Lectures & Lecture notes

February 2021–Present

Nanophotonics

Master Course at ITMO University. Lectures & Lecture notes

September 2020–Present

ACADEMIC AWARDS & HONORS

- Award (2-nd prize) in the Competition of Research Theses of ITMO University 2021
- Best oral talk award in the X All-Russian Congress of Young Scientists KMU-2021 2021
- Award for the 3-rd place in the team competition in the St. Petersburg Olympiad in Theoretical Foundations of Electrical Engineering 2021

GRANTS & SCHOLARSHIPS

- [Scholarship of the President of the Russian Federation in priority areas](#), [individual](#) 2022-2023
- [Vladimir Potanin Scholarship](#), [individual](#) 2022-2023
- Merit State Academic Scholarship for research activity, [individual](#) spring 2022
- [Grant of the President of the Russian Federation for Master students](#), [individual](#) 2022
- Grant of Russian Science Foundation No. 21-72-00096, [employee](#) 2021
- [Scholarship Competition for Undergraduates, Faculty of Physics, ITMO University](#), [individual \(2-nd prize\)](#) fall 2021
- Merit State Academic Scholarship for research activity, [individual](#) spring 2021
- Grant of Russian Foundation of Basic Research No. 19-12-50348, [employee](#) 2019
- Merit State Academic Scholarship for educational activity, [individual](#) spring 2018

PROFESSIONAL MEMBERSHIPS

- SPIE Student Membership 2022 – present

PUBLICATIONS

1. Kseniia V. Baryshnikova, Sergey S. Kharintsev, Pavel A. Belov, **Nikita A. Ustimenko**, Sergey A. Tretyakov, Constantin R. Simovskii, “Metalenses for subwavelength imaging”, **Physics-Uspexhi**, 2022; [DOI:10.3367/UFNe.2021.03.038952](https://doi.org/10.3367/UFNe.2021.03.038952) [**IF: 3.361, Q2**].
2. **Nikita A. Ustimenko**, Danil F. Kornovan, Kseniia V. Baryshnikova, Andrey B. Evlyukhin, Mihail I. Petrov, “Multipole Born series approach to light scattering by Mie-resonant nanoparticle structures”, **Journal of Optics** **24**, p. 035603, 2022; [DOI:10.1088/2040-8986/ac4a21](https://doi.org/10.1088/2040-8986/ac4a21) [**IF: 2.516, Q1**].
3. **Nikita Ustimenko**, Kseniia V. Baryshnikova, Roman Melnikov, Danil Kornovan, Vladimir Ulyantsev, Boris N. Chichkov, Andrey B. Evlyukhin, “Multipole optimization of light focusing by silicon nanosphere structures”, **Journal of the Optical Society of America B** **38**, pp. 3009-3019, 2021; [DOI:10.1364/JOSAB.436139](https://doi.org/10.1364/JOSAB.436139) [**IF: 2.106, Q2**].

CONFERENCE PRESENTATIONS

1. (poster) [International Conference PhysicA.SPb/2021](#), Online, Dates 18.10.2021-22.10.2021
2. (two posters) [VI International Conference on Nanophotonics and Metamaterials METANANO 2021](#), Online, Dates 13.09.2021-17.09.2021
3. (oral) [XXXII A.P. Sukhorukov All-Russian School-Seminar "Wave Phenomena: Physics and Applications" \("Waves-2021"\)](#), Online, Dates 06.06.2021-11.06.2021
4. (oral) [X All-Russian Congress of Young Scientists KMU-2021](#), Online, Dates 14.04.2021-17.04.2021
5. (poster) [XVII A.P. Sukhorukov Russian School-Seminar "Wave phenomena in inhomogeneous media" \("Waves-2020"\)](#), Online, Dates 23.08.2020-28.08.2020

CONFERENCE PROCEEDINGS

▪ Included to Scopus / Web of Science:

1. **N.A. Ustimenko**, K.V. Baryshnikova, R.V. Melnikov, D.F. Kornovan, V.I. Ulyantsev, A.B. Evlyukhin, "Light focusing by silicon nanosphere structures under conditions of magnetic dipole and quadrupole resonances", *Journal of Physics: Conference Series* 2015, p. 012160, 2021; DOI:10.1088/1742-6596/2015/1/012160 [IF: 0.55].
2. **N. Ustimenko**, D.F. Kornovan, K.V. Baryshnikova, A.B. Evlyukhin, M. Petrov, "Application of Born series for modeling of Mie-resonant nanostructures", *Journal of Physics: Conference Series* 2015, p. 012161, 2021; DOI:10.1088/1742-6596/2015/1/012161 [IF: 0.55].
3. **N. Ustimenko**, K. Baryshnikova, D. Kornovan, M. Beliaikov, A.B. Evlyukhin, "Born series using for designing of all-dielectric metalenses", *AIP Conference Proceedings* 2300 (1), p. 020007, 2020; DOI:10.1063/5.0031976 [IF: 0.4].

▪ Others:

1. **N. Ustimenko**, K.V. Baryshnikova, R. Melnikov, D. Kornovan, V. Ulyantsev, A.B. Evlyukhin, "Optimization of silicon nanosphere structures for light focusing", *PhysicA.SPb: proceedings of international conference October 18-22, 2021*, pp. 228-229 (no DOI, in Russian).
2. **N.A. Ustimenko**, "Optimization and modeling of metalens in the Born approximation", *Proceedings of X All-Russian Congress of Young Scientists KMU-2021*, 2021 (no DOI, in Russian). 2020
3. **N.A. Ustimenko**, D.F. Kornovan, K.V. Baryshnikova, A.B. Evlyukhin, M.I. Petrov, "Multipole Born series for modeling Mie-resonant nanostructures", *Proceedings of XXXII A.P. Sukhorukov Russian School-Seminar "Wave Phenomena: Physics and Applications" ("Waves-2021")*, Vol. Nanophotonics and Plasmonics, pp. 17-19, 2021 (no DOI, in Russian).
4. **N.A. Ustimenko**, K.V. Baryshnikova, D.F. Kornovan, A.B. Evlyukhin, "Born expansion for problem of metalens modeling", *Proceedings of XVII A.P. Sukhorukov Russian School-Seminar "Wave Phenomena in Inhomogeneous Media" ("Waves-2020")*, pp. 13-16, 2020 (no DOI, in Russian).

SEMINARS

03/18/2020 ITMO University, talk "All-dielectric metalenses: properties and prospects" 2020

SCHOOLS & INTERNSHIPS

1. [Summer School on Photonics of 2D Materials METANANO SCHOOL 2021](#), Online, Dates 19.07-23.07 2021
2. [Summer School on Metamaterials and Nanophotonics METANANO SCHOOL 2020](#), Online, Dates 06.07-10.07 2020
3. [International Winter School on Physics of Semiconductors 2020](#), St. Petersburg, Russia, Dates 27.02-02.03 2020

OTHER ACTIVITIES

- Summer School on Photonics of 2D Materials METANANO SCHOOL 2021, technical moderator 2021
- VI International Conference on Nanophotonics and Metamaterials METANANO 2021, technical moderator 2021
- V International Conference on Nanophotonics and Metamaterials METANANO 2020, technical moderator 2020