

Nikita Ustimenko

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(updated: September 26, 2021)

BASIC INFO

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

RESEARCH INTERESTS

All-dielectric Nanophotonics, Quantum Optics, Metalenses, Mie Theory, Multipole Decomposition, Coupled Multipole Model, Multiple-Scattering Theory, Born Approximation (Scattering) Orders Formalism.

SCIENTIFIC TOOLS

- Pen and paper
- Programming (Matlab)
- COMSOL Multiphysics

LANGUAGES

- **Human:** Russian (native), English (fluent)
- **Machine:** Matlab, Latex

EDUCATION

- Faculty of Physics, School of Physics and Engineering, ITMO University** St. Petersburg, Russia
M.S. in Nanophotonics and Metamaterials June 2021 –Current
– Advisor: [Mihail Petrov](#)
- Faculty of Physics, School of Physics and Engineering, ITMO University** St. Petersburg, Russia
B.S. in Nanooptics and Optoelectronics, GPA: 4.98/5.00 September 2017–June 2021
– Thesis: “Multiple scattering in problems on modeling and optimization of optical response of nanostructure ensembles with induced multipole moments”
– Advisor: [Kseniia Baryshnikova](#)

WORK EXPERIENCE

Faculty of Physics, School of Physics and Engineering, ITMO University

Educational Course Assistant

St. Petersburg, Russia

September 2020–Current

Faculty of Physics, School of Physics and Engineering, ITMO University

Student Researcher

St. Petersburg, Russia

June 2019–Current

PUBLICATIONS & CONFERENCES

▪ Papers

1. [K.V. Baryshnikova, S.S. Kharintsev, P.A. Belov, N.A. Ustimenko, S.A. Tretyakov, C.R. Simovskii. Metalenses for subwavelength imaging // Physics-Uspekhi. – 2022; DOI:10.3367/UFNe.2021.03.038952.](#)
2. [N. Ustimenko, K.V. Baryshnikova, R. Melnikov, D. Kornovan, V. Ulyantsev, B.N. Chichkov, A.B. Evlyukhin. Multipole optimization of light focusing by silicon nanosphere structures // J. Opt. Soc. Am. B. – Vol. 38 – pp. 3009-3019 – 2021; DOI:10.1364/JOSAB.436139.](#)

▪ Proceedings

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 // J. Phys. Conf. Ser. – 2021 \(accepted\).](#)
2. [N. Ustimenko, D.F. Kornovan, K.V. Baryshnikova, A.B. Evlyukhin, M. Petrov. Application of Born series for modeling of Mie-resonant nanostructures // J. Phys. Conf. Ser. – 2021 \(accepted\).](#)
3. [N.A. Ustimenko. Optimization and modeling of metalens in the Born approximation. Proceedings of X All-Russian Congress of Young Scientists KMU-2021 – 2021 \(no DOI, in Russian\).](#)
4. [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” \(“Waves-2021”\) – 2020. – Vol. Nanophotonics and Plasmonics. – pp. 17-19 \(no DOI, in Russian\).](#)
5. [N. Ustimenko, K. Baryshnikova, D. Kornovan, M. Beliaikov, A.B. Evlyukhin. Born series using for designing of all-dielectric metalenses // AIP Conference Proceedings. – AIP Publishing LLC, 2020. – Vol. 2300. – No. 1. – p. 020007; DOI:10.1063/5.0031976.](#)
6. [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 Mediums” \(“Waves-2020”\) – 2020. – pp. 13-16 \(no DOI, in Russian\).](#)

▪ Conferences & Schools

2021

1. [VI International Conference on Nanophotonics and Metamaterials METANANO 2021](#) (two posters).
2. [Summer School on Photonics of 2D Materials METANANO SCHOOL 2021.](#)
3. [XXXII A.P. Sukhorukov All-Russian School-Seminar “Wave Phenomena: Physics and Applications” \(“Waves-2021”\)](#) (oral)
4. [X All-Russian Congress of Young Scientists KMU-2021](#) (best oral).

2020

1. [XVII A.P. Sukhorukov Russian School-Seminar “Wave phenomena in inhomogeneous media” \(“Waves-2020”\)](#) (poster).
2. [Summer School on Metamaterials and Nanophotonics METANANO SCHOOL 2020.](#)
3. [International Winter School on Physics of Semiconductors 2020.](#)

AWARDS, GRANTS & HONOURS

- Competition of Research Theses of ITMO University (2-nd degree) 2021
- Graduate Scholarship of Faculty of Physics fall 2021
- Merit State Academic Scholarship for research activity spring 2021
- Grant of Russian Foundation of Basic Research 19-12-50348, employee 2019
- Merit State Academic Scholarship for educational activity spring 2018

TEACHING

Quantum Optics

Master Course at ITMO University. Lecture notes

September 2021–Current

Optics of Waveguides and Resonators

Bachelor Course at ITMO University. Practical classes

February 2021–Current

Photonics

Master Course at ITMO University. Practical classes

September 2020–Current

OTHER ACTIVITIES

- VI International Conference on Nanophotonics and Metamaterials METANANO 2021, volunteer 2021
- V International Conference on Nanophotonics and Metamaterials METANANO 2020, volunteer 2020
- Saint-Petersburg Olympiad in Theoretical Foundations of Electrical Engineering, 3rd place 2017