



»» My research interests are in finding efficient ways to control electromagnetic fields with complex structures

»»» STATUS

31 years old, PhD Student, The International Research Center for Nanophotonics and Metamaterials, ITMO University, St. Petersburg, Russia

»»» EXPERIENCE

PhD Student ITMO University, 2016/04 - now

- » Research: experimental investigation of metamaterials
- » Measurement, mathematical modeling, Computation

Junior Researcher / Electromagnetics Scientific Center of Applied Electroynamics, 2013-2016

- » Antennas and RF Simulations, Arrays, Reflectors
- » Mathematical modeling, Software development, Computation

Account manager SWD Software, 2012/02 - 2013/03

- » meetings with heads of partner companies, agreements and documentation development, providing planned commercial plans, business correspondence
- » Interact and coordinate with the sales team and other staff members in other departments working on the same account

Engineer JSC VNIIRA, 2010/06 - 2012/02

- » Antennas and HF-devices development, optimization and miniaturization.
- » Computer design, documentation development (operating manuals, technical requirements), testing operations for prototypes and devices; adaptation for manufacturing.

CONTACT

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FIELDS

Antenna theory

Microwave measurements

Computational electromagnetics

Metamaterials

INDICATORS

Scopus: h-index 3, 22 citations

Google Scholar: h-index 4, 56 citations

TECHNOLOGIES

PCB, VNA, Anechoic chamber

CAD, EM Simulation, Programming

HPC, Cluster, GPU

3D printing, programmable machines

TOOLS

</> CST Studio Suite, HFSS, FEKO

</> Matlab, Delphi

🖱 Inkscape, CorelDraw, Photoshop

🖱 LaTeX, Office, Windows

ACTIVITIES

Mountain ski, water sports, hockey

Travel, swimming

LANGUAGE

Russian - mother Tongue

English - intermediate

PROJECTS

Multifunctional all-dielectric metasurfaces

Russian Science Foundation, 2017/01 - now

- › Role: research member
- › Research on all-dielectric metasurfaces for controlling RF fields

Metamaterial-based microwave Luneburg lenses

Russian Foundation for Basic Research, 2016/01 - 2017/12

- › Role: principal research member
- › R&D on microwave Luneburg lenses based on artificial dielectrics

Developments of metamaterial-based structure for suppression of surface waves and improvement of cross-polarization ratio of L-band antennas

Fraunhofer Institute for Integrated Circuits, 2016/08 - 2017/01

- › Role: research member
- › R&D on low-profile metamaterial-based structure for improvement of metal-mounted circularly polarized antennas

Metasurfaces for efficient controlling electromagnetic waves

Russian Foundation for Basic Research, 2016/04 - 2016/12

- › Role: research member
- › Research on metasurfaces for polarization conversion and routing surface waves

EDUCATION

PhD Student

ITMO University, 2016 - now

- › Thesis: Experimental and theoretical study of multifunctional metasurfaces
- › Development of numerical models, experimental investigation

Received M.Sc. degree

Peter the Great St. Petersburg Polytechnic University, 2010/06

- › Thesis: On the radiation properties of Dipole antenna located over the system mesh screen – ground
- › Made analytical investigation of the radiation properties of the dipole antennas in presence of isotropic and anisotropic wire-mesh screens above the ground

Received B.Sc. degree

Peter the Great St. Petersburg Polytechnic University, 2008/06

- › Thesis: Analyze and design microstrip patch antennas
- › Design and experimental investigation of the microstrip patch antenna

Received secondary education diploma

40th Public school, 2004/06

- › Specialization: mathematics
- › Specialization: programming

- [1] Anton S. Kupriianov, Yi Xu, Andrey Sayanskiy, Victor Dmitriev, Yuri S. Kivshar, and Vladimir R. Tuz. Metasurface engineering through bound states in the continuum. *Phys. Rev. Applied*, 12:014024, Jul 2019.
- [2] Volodymyr I. Fesenko, Anton S. Kupriianov, Andrey Sayanskiy, Vitalii I. Shcherbinin, Alexander Trubin, and Vladimir R. Tuz. Approach to analysis of all-dielectric free-form antenna systems. *Opt. Express*, 27(16):22363–22374, Aug 2019.
- [3] Hadi K. Shamkhi, Kseniia V. Baryshnikova, Andrey Sayanskiy, Polina Kapitanova, Pavel D. Terekhov, Pavel Belov, Alina Karabchevsky, Andrey B. Evlyukhin, Yuri Kivshar, and Alexander S. Shalin. Transverse scattering and generalized kerker effects in all-dielectric mie-resonant metaoptics. *Phys. Rev. Lett.*, 122:193905, May 2019.
- [4] Andrey Sayanskiy, Anton S. Kupriianov, Su Xu, Polina Kapitanova, Victor Dmitriev, Vyacheslav V. Khardikov, and Vladimir R. Tuz. Controlling high-q trapped modes in polarization-insensitive all-dielectric metasurfaces. *Physical Review B*, 99:085306, 2019.
- [5] Su Xu, Andrey Sayanskiy, Anton S. Kupriianov, Vladimir R. Tuz, Polina Kapitanova, Hong-Bo Sun, Wei Han, and Yuri S. Kivshar. Experimental observation of toroidal dipole modes in all-dielectric metasurfaces. *Advanced Optical Materials*, 7(4):1801166.
- [6] A. Sayanskiy, M. Danaeifar, P. Kapitanova, and A.E. Miroschnichenko. All-dielectric metalattice with enhanced toroidal dipole response. *Advanced Optical Materials*, 6(19), 2018.
- [7] M. Londoño, A. Sayanskiy, J.L. Araque-Quijano, S.B. Glybovski, and J.D. Baena. Broadband huygens' metasurface based on hybrid resonances. *Physical Review Applied*, 10(3), 2018.
- [8] I. Khromova, A. Sayanskiy, A. Uryutin, and A.B. Evlyukhin. Polarity of the fano resonance in the near-field magnetic-dipole response of a dielectric particle near a conductive surface. *Laser and Photonics Reviews*, 12(9), 2018.
- [9] A. Sayanskiy, S. Glybovski, V.P. Akimov, D. Filonov, P. Belov, and I. Meshkovskiy. Broadband 3-d luneburg lenses based on metamaterials of radially diverging dielectric rods. *IEEE Antennas and Wireless Propagation Letters*, 16:1520–1523, 2017.

- [10] J.D. Mateus, J.P. Del Risco, A. Sayanskiy, S.B. Glybovski, and J.D. Baena. The physics of self-complementary metasurfaces. In *Proceedings of the 2018 20th International Conference on Electromagnetics in Advanced Applications, ICEAA 2018*, pages 515–517, 2018.
- [11] J.L. Araque-Quijano, J.P. Del Risco, M.A. Londono, A. Sayanskiy, S.B. Glybovski, and J.D. Baena. Huygens' metasurfaces covering from waveplates to perfect absorbers. In *Proceedings of the 2018 20th International Conference on Electromagnetics in Advanced Applications, ICEAA 2018*, pages 511–514, 2018.
- [12] A. Sayanskiy, S. Glybovski, and J. D. Baena. A linear-to-circular polarization converter with broadband transparency based on huygens' metasurface. In *2018 12th International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials)*, pages 343–345, Aug 2018.
- [13] S. B. Glybovski, A. D. Sayanskiy, S. A. Kuznetsov, J. P. del Risco, A. P. Slobozhanyuk, P. A. Belov, and J. D. Baena. Self-complementary tessellations as universal design approach for lp-to-cp transforming frequency selective surfaces. In *2018 12th International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials)*, pages 155–157, Aug 2018.
- [14] J. A. Parra, A. Sayanskiy, D. Zhirihin, S. B. Glybovski, and J. D. Baena. Validity of homogenization for artificial plasmas: Straight strips versus zigzag strips. In *2018 12th International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials)*, pages 031–033, Aug 2018.
- [15] J. D. Mateus, J. P. del Risco, A. Sayanskiy, S. B. Glybovski, and J. D. Baena. The physics of self-complementary metasurfaces under circularly polarized waves. In *2018 12th International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials)*, pages 37–39, Aug 2018.
- [16] J. P. Del Risco, M. A. Londono, A. Sayanskiy, S. B. Glybovski, and J. D. Baena. Broadband-reflectionless perfect absorber made of planar resonators. In *2018 12th International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials)*, pages 34–36, Aug 2018.
- [17] A. Sayanskiy, M. Odit, A. Miroshnichenko, A. Lavrinenko, and P. Belov. All-dielectric metasurfaces as an efficient tool for electromagnetic waves manipulation. In *2018 20th International Conference on Transparent Optical Networks (ICTON)*, pages 1–3, July 2018.
- [18] A. Sayanskiy, M. Odit, V. Asadchy, P. Kapitanova, and P. Belov. Reflecting focusing dielectric metasurface. In *IET Conference Proceedings*, pages 301–304, 2018.
- [19] P. Kapitanova, M. Odit, M. Danaeifar, A. Sayanskiy, P. Belov, A. Miroshnichenko, and Y. Kivshar. All-dielectric bianisotropic and multimode unidirectional microwave metasurfaces. In *European Microwave Week 2017: "A Prime Year for a Prime Event", EuMW 2017 - Conference Proceedings; 47th European Microwave Conference, EuMC 2017*, volume 2017-January, pages 476–479, 2017.
- [20] P. Kapitanova, A. Sayanskiy, P. Belov, and A. Miroshnichenko. Generalized huygens' metasurface based on higher order magnetic dipolar resonances. In *2017 11th International Congress on Engineered Material Platforms for Novel Wave Phenomena, Metamaterials 2017*, pages 172–174, 2017.
- [21] A. Sayanskiy, V. Akimov, and S. Glybovski. Focusing performance of luneburg lenses based on a broadband artificial dielectric metamaterial. In *2017 11th International Congress on Engineered Material Platforms for Novel Wave Phenomena, Metamaterials 2017*, pages 304–306, 2017.