

# *Curriculum Vitae*

*Dmitry V. Zhirihin (27.02.1995)*

*3<sup>rd</sup> year PhD student*



## **Personal data**

*Work Address:* ITMO University, 197101, 49 Kronverksky Pr., St. Petersburg, Russia.

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*Languages:* Russian (native speaker), English (fluently)

*Google Scholar:* <https://scholar.google.com/citations?hl=ru&user=-6S0yekAAAAJ>

## **Education**

- ITMO University**, Nanophotonics and Metamaterials Department  
*Title of qualification:* PhD in Physics  
*Thesis title:* Development of photonic topological insulators based on all-dielectric metamaterials  
*Supervisor:* Dr. Alexey P. Slobozhanyuk  
*Expected graduation date:* 12.2021
- Sep. 2017 – present
- ITMO University**, Nanophotonics and Metamaterials Department  
*Title of qualification:* Master of Science, *cum laude*  
*Thesis title:* Investigation of absorbers and polarizers based on metasurfaces for wide incident angle range  
*Supervisor:* Dr. Stanislav B. Glybovski
- Sep. 2015 – Jul.2017
- Peter the Great Saint Petersburg Polytechnic University**, Institute of Physics, Nanotechnology and Telecommunications, Quantum Electronics Department  
*Title of qualification:* Bachelor of Applied Science  
*Thesis title:* Research of different types of absorbing metasurfaces  
*Supervisor:* Dr. Vadim V. Davydov
- Sep. 2011 – Jul. 2015

## **Work Experience**

- Jul. 2017 – present  
**Center of Nanophotonics and Metamaterials, ITMO University**  
*Research Engineer; supervisor: Dr. A.P. Slobozhanyuk*  
*Main activities: Experimental realization of novel electromagnetic devices based on the concept of topological metamaterials*
- March – August 2019  
**The City College of New York, The City University of New York**  
*Research internship; group of prof. A.B. Khanikaev (<https://www.cuny.edu/profiles/alexander-khanikaev>),*  
*Main activities: Theoretical studying and experimental realization of high-order photonic topological insulators*
- June – July 2018  
**The City College of New York, The City University of New York**  
*Visiting student; group of prof. A.B. Khanikaev (<https://www.cuny.edu/profiles/alexander-khanikaev>),*  
*Main activities: Theoretical studying photonic topological insulators*
- Nov. 2015 – Jun. 2017  
**Center of Nanophotonics and Metamaterials, ITMO University**  
*Laboratory assistant; supervisor: Dr. S. B. Glybovski*  
*Main activities: theoretical and numerical studies of metamaterials*
- Dec. 2014 – Oct. 2015  
**Metamaterials laboratory, ITMO University**  
*Trainee; supervisor: Dr. S. B. Glybovski*

## **Teaching**

- Sept. 2017 – present  
**Faculty of Physics and Techniques, ITMO University**  
Teaching assistant for master course “*Radio Engineering systems and signals*”

## **Volunteer activity**

- 17 – 21 Sept. 2018  
**Sirius Art & Science Park Sochi, Sochi, Russia**  
Member of committee group of scientific conference *METANANO - 2018*
- 4 – 8 June 2018  
**ITMO University, Saint Petersburg, Russia**  
Member of committee group of scientific conference *Days on Diffraction 2018*
- Sept. 2010 – May 2013  
**High school №344, Saint Petersburg, Russia**  
Teacher for training high school students for Physics competitions

## **Scholarships, grants, honors, awards**

1. IEEE MTT-S Graduate Fellowship 2020
2. Discovery of the Year (Russia, 2019) indicator.ru
3. Russian Foundation of Basic Research 2019 code A (Russia, 2019-2020).
4. Russian Federation President Scholarship for studying abroad (Russia, 2018).
5. State PhD Scholarship (Russia, 2017 – present).
6. State Academic Scholarship (Russia, 2011 – 2017).

## Publications

### Journal papers

1. M. Li , **D. Zhirihin** , M. Gorlach , X. Ni , D. Filonov , A. Slobozhanyuk , A. Alu, A.B. Khanikaev “Higher-order topological states in photonic Kagome crystals with long range interactions,” *Nature Photonics*, 14, pp. 89–94, 2020.
2. A.A. Gorlach\*, **D.V. Zhirihin**\*, A.P. Slobozhanyuk, M.A. Gorlach, A.B. Khanikaev, “Photonic Jackiw-Rebbi states in all-dielectric structures controlled by bianisotropy,” *Physical Review B*, 99, 205122, 2019. (\* - equal contribution)
3. **D.V. Zhirihin**, S.V. Li, D.Y. Sokolov, A.P. Slobozhanyuk, M.A. Gorlach, A.B. Khanikaev, “Photonic spin Hall effect mediated by bianisotropy,” *Optics Letters*, vol. 44, pp. 1694-1697, 2019.
4. M.A. Gorlach, X. Ni, D.A. Smirnova, D. Korobkin, **D.V. Zhirihin**, A.P. Slobozhanyuk, P.A. Belov, A. Alù & A.B. Khanikaev, “Far-field probing of topological states in all-dielectric metasurfaces”, *Nature Communications*, vol. 9, pp. 909, 2018.
5. **D.V. Zhirihin**, C.R. Simovski, P.A. Belov and S.B. Glybovski, “Mushroom High-Impedance Metasurfaces for Perfect Absorption at Two Angles of Incidence,” *IEEE Antennas and Wireless Propagation Letters*, vol. 16, pp. 2626 - 2629, 2017.

### Conference papers

1. **D.V. Zhirihin**, A. Gorlach, A.P. Slobozhanyuk, A. Khanikaev, M. Gorlach, ”Observation of photonic Jackiw-Rebbi states in chains of all-dielectric bianisotropic particles,” *2019 IEEE International Conference on Microwaves, Antennas, Communications and Electronic Systems (COMCAS)*, pp.1-2, 2019.
2. **D. Zhirihin**, M. Li, D. Filonov, X. Ni, A. Slobozhanyuk, A. Alu, & A.B. Khanikaev, ”Experimental observation of high-order topological corner states in 2D photonic Kagome lattice,” *2019 Thirteenth International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials)*, pp.492-494, 2019.
3. **D.V. Zhirihin**, D.S. Filonov, M.A. Gorlach, A.P. Slobozhanyuk, Y.S. Kivshar, A.B. Khanikaev, “Experimental realization of three-dimensional all-dielectric photonic topological insulators,” *2018 IEEE International Symposium on Antennas and Propagation and USNC-URSI Radio Science Meeting*, pp.3-4, 2019.
4. 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” *12th International Congress on Artificial Materials for Novel Wave Phenomena (Metamaterials)*, pp. 31–33, 2018.
5. **D.V. Zhirihin**, M.A. Gorlach, X. Ni, D.A. Smirnova, D. Korobkin, A.P. Slobozhanyuk, P.A. Belov, A. Alù, A. B. Khanikaev, ”Experimental observation of spin-locked propagation of topological edge states in an open non-Hermitian metasurface,” *Journal of Physics: Conference Series*, vol. 1092, 2018.
6. **D.V. Zhirihin**, C.R. Simovski, P.A. Belov and S.B. Glybovski, “Mushroom-type HIS as a perfect absorber for two angles of incidence,” *11th International Congress on Engineered Materials Platforms for Novel Wave Phenomena (Metamaterials)*, pp. 397-399, 2017.

## Cover

1. The paper “Higher-order topological states in photonic Kagome crystals with long range interactions” is on the cover of Nature Photonics (Volume 14 Issue 2, February 2020) (<https://www.nature.com/nphoton/volumes/14/issues/2>)

## **Membership in professional societies**

1. SPIE student member (ID: 4172046).
2. IEEE AP-S, Photonics-S., MTTS student member (ID: 94091160).

## **References**

1. Dr. Alexey Slobozhanyuk, PhD, ITMO University, St. Petersburg, Russia.  
e-mail: [a.slobozhanyuk@metalab.ifmo.ru](mailto:a.slobozhanyuk@metalab.ifmo.ru)
2. Dr. Stanislav Glybovski, PhD, assistant professor, ITMO University, St. Petersburg, Russia. e-mail: [s.glybovski@metalab.ifmo.ru](mailto:s.glybovski@metalab.ifmo.ru)