

Curriculum Vitae: Alexander Dikopoltsev

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Education

2016-2022: “Special PhD”* in Prof. Mordechai Segev’s Nonlinear optics group, Physics Dep., Technion (passed PhD exam).

* Skipped MSc. The special PhD program is a direct PhD degree from a BSc, without a master.

2010-2015: Combined BSc in Physics and BSc in Electrical Engineering (Cum Laude), Technion.

Professional Experience and Appointments

2022-now : Postdoctoral Researcher, Quantum Optoelectronics group, ETH Zurich.

2014-2016 : Electro-Optical Engineer, R&D group, Mellanox (now NVIDIA). Experiment design and research of high speed interconnect photonic links at the highest commercial rates available then, 25-50 GigaBauds, focusing on the physical bottleneck - the high speed laser source.

2012-2014 : Chip Design Student, Mellanox (now NVIDIA).

2011-2012 : Science youth instructor, Technion.

Teaching

2016-now: Teaching assistant in the courses: Physics 1, Waves, Optics, Laser physics and quantum optics.

Honors and Awards:

2022 – Scholarship program for outstanding postdoctoral students in quantum sciences and technology of the council for higher education in Israel (CHE).

2022 – Helen Diller Postdoctoral Fellowship in Quantum Sciences and Technology

2022 – ETH Zurich Postdoctoral fellowship

2022 – Helen Diller Postdoctoral Fellowship in Quantum

2022 – Hershel Rich Technion innovation award

2022 – Jacobs Prize for excellent publication

2022 – Israeli Gemunder prize for technological innovation

2021 – Israeli physics society best poster award

2021 – Faculty excellence scholarship

2021 – Work appears in 10 top nominations for „Breakthrough of the Year“ in Physics world news.

2021 – Invited talk in CLEO 2021 on the topic of “Topological VCSEL arrays”.

2020 – The Hellen Diller quantum center excellence scholarship

2019 – Jacobs Scholarship in the Technion

2018 – Work accepted as Invited talk in CLEO 2018: “DL reconstruction of ultrashort pulses”.

2014 – “Best Demo” award in ICASSP2014, a signal processing conference

2014 – Ariel Finzi Prize, in the EE faculty, Technion

2013 – Intel Prize

Publications (applicant in bold):

- Mark Lyubarov, Yaakov Lumer, **Alex Dikopoltsev**, Eran Lustig, Yonatan Sharabi and Mordechai Segev, “Amplified Emission by Atoms and Lasing in Photonic Time Crystals”, Science, eabo3324 (2022)
- Yonatan Sharabi, **Alex Dikopoltsev**, Eran Lustig, Yaakov Lumer and Mordechai Segev, “Spatio-Temporal Photonic Crystals”, Optica 9, no. 6 (2022).
- **Alex Dikopoltsev***, Sebastian Weidmann*, Mark Kremer*, Hanan Herzig Sheinfux, Sebastian Weidmann, Alexander Szameit and Mordechai Segev. “Observation of Anderson Localization by Virtual Transitions”, Science Advances 8, no. 21 (2022).

- **Alex Dikopoltsev***, Yonatan Sharabi*, Mark Lyubarov, Shai Tsesses, Eran Lustig, Ido Kaminer, and Mordechai Segev. "Light emission by free electrons in photonic time-crystals", *Proceedings of the National Academy of Sciences* 119.6 (2022).
- **Alex Dikopoltsev***, Tristan H. Harder*, Eran Lustig, Oleg A. Egorov, Johannes Beierlein, Adriana Wolf, Monika Emmerling, Christian Schneider, Sven Höfling, Mordechai Segev, and Sebastian Klemmt "Topological insulator vertical-cavity laser array", *Science* 373, no. 6562 (2021).
- Ziv Ron, **Alex Dikopoltsev**, Tom Zahavy, Ittai Rubinstein, Pavel Sidorenko, Oren Cohen, and Mordechai Segev. "Deep learning reconstruction of ultrashort pulses from 2D spatial intensity patterns recorded by an all-in-line system in a single-shot." *Optics express* 28, no. 5 (2020).
- **Alex Dikopoltsev**, Hanan Herzig Sheinfux, and Mordechai Segev. "Localization by virtual transitions in correlated disorder." *Physical Review B, Rapid Comm.* 100(14), (2019)
- Pavel Sidorenko*, **Alex Dikopoltsev***, Tom Zahavy*, Oren Lahav, Snir Gazit, Yoav Shechtman, Alexander Szameit, David Tannor, Yonina C. Eldar, Mordechai Segev, and Oren Cohen. "Improving techniques for diagnostics of laser pulses by compact representations" *Optics Express* 27(6) (2019)
- Tom Zahavy*, **Alex Dikopoltsev***, Daniel Moss, Gil Ilan Haham, Oren Cohen, Shie Mannor, and Mordechai Segev. "Deep learning reconstruction of ultrashort pulses." *Optica* 5, no. 5 (2018)

(* equally contributed)

Conference proceedings (including only those given by me as oral presentations)

- **Alex Dikopoltsev***, Sebastian Weidmann*, Mark Kremer*, Andrea Steinfurth, Hanan Herzig Sheinfux, Alexander Szameit and Mordechai Segev. "Observation of strong localization beyond the spectrum of the disorder", *Nanometa conference* 2022.
- **Alex Dikopoltsev***, Tristan H. Harder*, Eran Lustig, Oleg A. Egorov, Johannes Beierlein, Adriana Wolf, Monika Emmerling, Christian Schneider, Sven Höfling, Mordechai Segev, and Sebastian Klemmt. invited talk on "Topological insulator vertically-emitting laser array" in *Conference on Lasers and Electro-Optics*, 2021.
- **Alex Dikopoltsev**, Yonatan Sharabi, Mark Lyubarov, Shai Tsesses, Eran Lustig, Ido Kaminer, and Mordechai Segev. "Light emission by free electrons in photonic time crystals" in *Conference on Lasers and Electro-Optics*, 2021.
- **Alex Dikopoltsev**, Mark Kremer, Hanan Herzig Sheinfux, Sebastian Weidmann, Alexander Szameit and Mordechai Segev. "Observation of Anderson Localization by Virtual Transitions" in *Conference on Lasers and Electro-Optics*, 2020.
- **Alex Dikopoltsev**, Yonatan Sharabi, Shai Tsesses, Ido Kaminer, and Mordechai Segev. "Free-electron radiation in a photonic time crystal" in *Conference on Lasers and Electro-Optics*, 2020.
- **Alex Dikopoltsev***, Tristan H. Harder*, Eran Lustig, Oleg A. Egorov, Johannes Beierlein, Monika Emmerling, Christian Schneider, Sven Höfling, Mordechai Segev, and Sebastian Klemmt. "Topological insulator VCSEL array" in *Conference on Lasers and Electro-Optics*, 2020.
- **Alex Dikopoltsev**, Hanan Herzig Sheinfux, and Mordechai Segev. "Anderson Localization by Virtual Transitions Only" in *Frontiers in Optics and Laser Science*, OSA Technical Digest, paper FM4F. 4, 2019.
- **Alex Dikopoltsev**, Tom Zahavy, Ron Ziv, Ittai Rubinstein, Pavel Sidorenko, Shie Mannor, Oren Cohen, and Mordechai Segev, "Reconstruction of Ultrashort Pulses using Deep Neural Networks," in *URSI ATRASC 2018*, paper S-D06-18.
- Tom Zahavy*, **Alex Dikopoltsev***, Oren Cohen, Shie Mannor and Mordechai Segev, "Deep Learning Reconstruction of Ultrashort Pulses" in *Conference on Lasers and Electro-Optics: Science and Innovations*, pp. STh4N.1, Optical Society of America, 2018.
- **Alex Dikopoltsev**, Hanan Herzig Sheinfux, and Mordechai Segev. "Eradicated Coherent Backscattering of Anderson-Localized Modes." in *Conference on Lasers and Electro-Optics: QELS_Fundamental Science*, pp. FF2H-2. Optical Society of America, 2018.
- **Alex Dikopoltsev**, Hanan Herzig Sheinfux, and Mordechai Segev. "Anderson localization of light in spectrally-tailored disordered potentials." in *Conference on Lasers and Electro-Optics: QELS_Fundamental Science*, pp. FTu1G-1. Optical Society of America, 2017.
- Deborah Cohen, **Alex Dikopoltsev**, and Yonina C. Eldar. "Extensions of sub-Nyquist radar: Reduced time-on-target and cognitive radar." In *Compressed Sensing Theory and its Applications to Radar, Sonar and Remote Sensing (CoSeRa)*, 2015 3rd International Workshop on, pp. 31-35. IEEE, 2015.

Patents

- Mordechai Segev, **Alex Dikopoltsev**, Eran Lustig, Yaakov Lumer, Sven Höfling, Sebastian Klemmt, Tristan Harder. "Topological insulator surface emitting laser system." US patent (accepted, 2021).
- Elad Mentovich, Itshak Kalifa, Sylvie Rockman, Alon Webman, Dalit Kimhi, and **Alex Dikopoltsev**. "Electro-optic transceiver module with wavelength compensation." U.S. Patent Application 15/087,562, filed October 5, 2017.

Conference organization

2017-2021: I have been organizing conferences since in the field of optics with the Technion Optical Society chapter. Among the invited speakers: Immanuel Bloch, Marin Soljacic, Demetrios Christodoulides, Michael Berry, Kerry Vahala and Miles Padgett.