Dr. Mikhail Lazarev

Citizenship : Russia
E-mail : mvlazarev@hse.ru

Education:

2007-2011 **Bachelor degree in Applied Mathematics and Physics, Moscow Institute of Physics and Technology (MIPT)**, department of Problems of Physics and Energetics ”Features of the formation of forbidden bands in one- dimensional photonic crystals of high contrast”.
Supervisors: Dr. Alexander Merzlikin

2011-2013 **Master degree in Applied Mathematics and Physics, Moscow Institute of Physics and Technology (MIPT)**, department of Problems of Physics and Energetics ” Tunneling of the electron packet in graphene”.
Supervisors: Prof. Yury Lozovik

2013-2019 **PhD Student, Ecole Polytechnique Fédérale de Lausanne (EPFL)**, Laboratory of Physics of Nanostructures (LPN) ”Tailored-Potential Semiconductor Quantum Nanostructures Grown in Inverted Pyramids”.
Supervisors: Prof. Eli Kapon

Professional experience:

2021-present PostDoc, HSE University, Laboratory of Methods for Big Data Analysis (LAMBDA)

2013-2019 Laboratory of Physics of Nanostructures, EPFL – PhD student, teaching assistant for general physics.

2010-2013 Laboratory assistant at Institute of Theoretical and Applied Electromagnetics RAS.

2007-2009 Teacher in school at Moscow Institute of Physics and Technology (State University).

Technical skills:

Nanofabrication, clean room processing, lithography, microscopy techniques, spectroscopy, optics laboratory, cryogenic experiments.

Computer skills:

Matlab, Python, PyTorch, ML, Deep Learning, Computer Vision, NLP, Generative models,

Fortran, Wolfram Mathematica, UNIX, Latex, Adobe Illustrator CC.

Links:

http://www.linkedin.com/in/mikhail-lazarev-978bb6b9

https://github.com/Mikelazarev/

Languages:

Russian Mother tongue
English Fluent (C2)
German Beginner (A1)
French Beginner (A1)

List of publications:

Al-Maeeni A., Lazarev M. et al. "Review on automated 2D material design" 2D materials 2024

Khelimskii D., Lazarev M. et al. "Artificial Intelligence, Cardiology, Machine learning, Computer vision" Computers in Biology and Medicine. 2024

Popov, S., Lazarev, M., Belavin, V., Derkach, D., & Ustyuzhanin, A. (2023). Symbolic expression generation via variational auto-encoder. *PeerJ Computer Science*, *9*, e1241.

Lazarev, M., Rudra, A., & Kapon, E. (2023). Physical origins of optical anisotropy in quantum-confined semiconductors: The roles of valence band mixing, transition broadening, and state filling. *Journal of Applied Physics*, *133*(9).

M. Lazarev "Numerical study of Valence Band states evolution in AlGaAs [111] QDs systems" (PeerJ Materials science 2023, acepted)

M. Lazarev "Tailored-Potential Semiconductor Quantum Nanostructures Grown in Inverted Pyramids" EPFL 2019**.**

Lazarev, M., Szeszko, J., Rudra, A., Karlsson, K. F., & Kapon, E. (2015). Parabolic tailored-potential quantum-wires grown in inverted pyramids. *Journal of Crystal Growth*, *414*, 196-199.

M. V. Lazarev, A. M. Merzlikin "Formational features of the band gaps in one-dimensional large contrast photonic crystals" Journal of radio electronics N 9 2011

Conferences, schools or invited talks:

M. Lazarev "Магия нанофизики и причём тут искусственный интеллект" ЗИЛ.НАУКА 2022 (oral)

M. Lazarev "Material science with AI" 3rd HSE-Yandex autumn school on generative models 2021 (oral)

M. Lazarev and al. "Valence Band Mixing in Tailored Potential quasi-1D nanostructures" International conference of optics of excitons in confined systems OECS 11-16 October 2015 Jerusalem (oral)

J. Szeszko, V. V. Belykh, A. Rudra1, M.Lazarev, P. Gallo, N. N. Sibeldin and E. Kapon "Site-controlled tailored-potential quantum wires grown by OMVPE on patterned substrates", 17th International Conference on Metalorganic Vapour Phase Epitaxy. Lausanne, Switzerland, July 13-18 2014 (poster).

Teaching Duties

Current HSE course:

Deep learning course

Master program "Financial Technologies and Data Analysis"

Approximately 50 students, 14 weeks. Since 2023

External teaching:

EPFL course of general physics (Physics department, second year)

Approximately 60 students. 2014-2018