



Dr. Sergey Kontorov

Curriculum Vitae

Profile

10+ years of low- and high-speed fiber optic/integrated photonics devices R&D.

10+ years in technical project leadership and leading the laboratories.

Extensive background in building PIC ecosystem (modeling-design-fabrication-testing-packaging) for industry-to-academic needs.

Employment History

Senior Research Engineer at Skolkovo Institute of Science and Technology, Moscow

2018 – 2023

- building, launching and leading design and test facilities (low- and high speed) for application specific photonic integrated circuits (ASPIC)
- establishing international (EU, US, Asia) ecosystem collaboration (design-fabrication-test-package) for creating various ASPIC devices
- launching and leading ASPIC R&D projects (industry-to-academic): high-speed transceivers; interrogators; sensors for SHM; transceiver for FSO; tunable laser; QRNG; QKD; optical computing

R&D projects: Ecosystem of Photonic Integrated Circuits; PIC for telecom, lidars, optical simulators/computers, optical sensors; 6G communication systems; Lasers on a Chip, Photonic Quantum Technologies (QKD, QRNG); Industry-oriented projects in the area of PICs.

Teaching projects: Lectures „Microwave photonics and PIC“, “Ecosystem of PIC”, „ASPIC practice“.

International Cooperation:

Universities: Technical University of Eindhoven, Technical University of Darmstadt, Fraunhofer Institute in Darmstadt, Ben-Gurion University, Swiss Federal Institute of Technology Lausanne, etc..

Industry: Jeppix, EPIC, Europractise

CTO at PICsTech, Moscow

2020 – 2023

- Startup / spinoff - PICsTech company is a fabless design house for photonic integrated circuits (PICs) ecosystem
- Projects: PDK development; narrow tunable lasers; high-speed transceivers

Details

Israel

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Date of birth

13.12.1986

Links

[LinkedIn](#)

Languages

Russian

English

Hebrew

Senior Engineer at Moscow Engineering Physics Institute, Moscow

2018 – 2023

R&D of microwave photonics devices and systems (radio-over-fiber, photonic analog-to-digital converters, up/down converters, beamformers, photonic channalizers, components)

R&D projects: PIC high-speed modulators, radio-over-fiber, photonic ADC, MWP Tx/Rx, MWP channalizers, MWP up/down converters, OBFN.

Teaching projects: Lectures and seminars „Microwave photonics“.

Principal Engineer \ Head of R&D department at RTI, Moscow

2013 – 2018

- building and leading microwave photonics laboratory
- launching and leading R&D projects in the microwave photonics area
- design, build and measure microwave photonics devices and systems: multichannel transceivers; photonic up/down converters; photonic ADC; OBFN; optoelectronic oscillators; radio-over-fiber, etc.

R&D projects: MWP Tx/Rx, OBFN, MWP filters, RoF

🎓 Education

PhD, MEPHi, Moscow

2020 – 2022

PhD degree on topic "Universal ultra broadband microwave photonics receiver based on optical heterodyne technique"

MSc, University of Bristol, Bristol

2011 – 2013

Department: Electrical and Electronic Engineering

Specialty: Optical communications and signal processing

Professional Reorientation – Development engineer, MIREA, Moscow

2015 – 2016

Department: Integrated microwave photonics

Specialty: Photonics and microwave photonics in electronic systems

Specialist, MAI, Moscow

2003 – 2009

Department: Aircraft radio electronics

Specialty: Means of communication with vehicles

Bachelor, MAI, Moscow

2005 – 2008

Department: Management

Specialty: Financial / Investment management

★ Editional international cooperation / skills

Highly experienced in working with:

PIC Foundries: Smart Photonics (Netherlands), HHI (Germany), Lionix (Netherlands), Ligentec (Switzerland), AMF (Singapore), Cornerstone (UK), VTT (Finland), AIM (USA), Cumec (China), Zhiwei photonics (China)

PIC Design Houses: Bright photonics, VLC, Pilot photonics

PIC Packaging: PHiX (Netherlands), Photon First (Netherlands), Cumec (China), SPIOE (China)

PIC Software: Synopsys, Ansys, VPI photonics, Star Photonics, Keysight, Klayout, Nazca, Crosslight, Comsol/Matlab

PIC Equipment: Keysight, LUNA, Tektronix, Aragon photonics, EXFO, Mapple Leaf, MPI, Physical Instrument, Luminos, FormFactor, Yokogawa, Dimension Technology, ID Photonics, HP, Fiberpro, Pure Photonics, Sumitomo, Ixblue, Keopsys, Optilab, SHF, OZoptics, etc.

★ R&D Experience

In my R&D work, I supervised multiple projects in collaboration with various academic&industry Centers in Russia and Europe in the following areas:

- Photonic Integrated Circuits
- Microwave Photonics
- Telecom / Datacom
- Quantum
- Sensorics

In modeling, I have supervised team (10+ designers) for simulation and designing ASPIC based devices based on various technological platforms (InP, SOI, SiN, SION, LNOI) as well as digital twins creation. 10+ years experience of hand-on and leading of fiber optic and PIC design labs.

Fabrication experience includes: working as with standard foundries as with own developed and optimized PDK and IP blocks; Photonic Integrated Circuit related technologies. 5+ years working with PIC technologies.

Characterization experience includes: low- and high-speed fiber optic and PIC characterization for various applications (MWP, telecom, sensoric, quantum, computing); excellent knowledge of both photonic and high-speed equipment and measure techniques. 10+ years experience of hand-on and leading of fiber optic and PIC test labs.

★ Key Projects

- High SFDR transceivers
- Multichannel OFBN and Rx
- Multichannel MWP channelizer
- High-speed PADC
- High SFDR RoF

- PIC high-speed modulators
- Low noise OEO
- Photonic sensor systems for ship building industry
- QRNG on a chip
- Sequence of optical transistors with VCSELs
- Free space QKD optical communication systems
- THz communication for 6G systems
- ECOVIC - ECOSystem for Photonic Integrated Circuits
- Source for QKD on chip
- Tunable laser source on chip
- Structural Health Monitoring for oil distillation tower
- Optical neural networks
- Optoelectronic oscillator on chip
- Laser wavelength synchronization
- Development of PDK library
- Silicon based Laser source
- PIC based interrogator
- Ion trap on PIC

🔧 Courses

Phot1x: Silicon Photonics Design, Fabrication and Data Analysis, The University of British Columbia

2020 – 2020

Deep-Dive PIC Design Course 2020, Eindhoven University of Technology

2020 – 2020

Automated Design of Photonic Integrated Circuits using VPIcomponentMaker Photonic Circuits, VPIphotonics

2021 – 2021

Optical fiber lasers and amplifiers IR band for scientific and industrial applications, Lumibird

2019 – 2019

★ Key publications

Kontorov S.M, et al., "Development and optimization of integrated photonic waveguide and passive devices on silicon on lithium niobate material platform towards creation of phase modulator", 2022

Kontorov S.M, et al., "Formation of Broadband Microwave Signals and Multichannel Frequency Conversion with a Microwave Photonics Reference Frequency Spectrum Generator", 2021;

Kontorov S.M, et al., "Noise properties of cascaded optical majority gates ", 2021;

Kontorov S.M, et al., "Focusing grating couplers for radio-frequency surface ion traps", 2021; Kontorov S.M, et al., "Optical Frequency Comb Generation for Broadband Microwave Photonics Receiver", 2020;

Kontorov S.M, et al., "Development of an Integrated Photonic Interrogator based on an Arrayed Waveguide Grating", 2020;

Kontorov S.M, et al., "Reference frequencies comb generation for microwave photonics ADC with signal spectral-interval estimation", 2019;

Kontorov S.M, et al., "Multichannel microwave photonics receiver", 2019;

Kontorov S.M, et al., "Signal Spectral-Interval Estimation in Fast Photonic Analog-to-digital Converters", 2018;

Kontorov S.M, et al., "Photonic Analog-to-Digital Conversion of Microwave Signals Using Spectral-Interval Estimation", 2018;

Kontorov S.M, et al., "A Universal Microwave Photonic Receiving Channel", 2018;

Kontorov S.M, et al., "Microwave photonics frequency conversion of microwave signals", 2018