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Birck Nanotechnology Center

Ilya A. Rodionov is Professor in the Department of Electrical and Computer Engineering at the Bauman Moscow State Technical University (BMSTU). He is also a founding director of the interdisciplinary Research and Educational Center Functional Micro/Nanosystems at the Bauman Moscow State Technical University. Ilya A. Rodionov and his research team focus on the technology of advanced nanophotonic devices, superconducting and linear optical circuits for quantum information processing, alternative energy, MOEMS-based and microfluidic lab-on-chip devices, as well as the development of custom control electronics.

Ilya received his PhD in Electrical Engineering from Scientific Research Institute of System Analysis of Russian Academy of Science and BMSTU, his MS in Informatics and Control Systems and BS in Electronic Equipment Design and Technology from the BMSTU (Moscow). After obtaining his BS from the BMSTU in 2006, Ilya gained more thab 8 year industry experience at semiconductor FAB participating in 0.5-0.18 um CMOS IC technology development with sub-wavelength design rules. In 2014 he built-up and started the interdisciplinary research and educational center and new nanofabrication facility at BMSTU.

Robust engineering of integrated circuits for superconductive qubits and linear optic quantum computing

Ilya A. Rodionov

Professor, Department of Electrical and Computer Engineering
Bauman Moscow State Technical University (BMSTU)

Friday, March 1, 2019
11:00am – 12:00pm
BRK 1001

Quantum technologies is a rapidly grown research area, which have the potential to lead the revolution in supercomputing, big data, sensing, global communications and security. Quantum information science is one of the prospective global technology growth drivers. The leading quantum computing concepts of design like superconductive qubits, linear optic quantum computing devices, solid-state and hybrid quantum systems are based on traditional semiconductor technology platforms. However, new materials and nanoscale fabrication techniques are needed to explore the underlying physics and fulfill the subsequent specifications. Ultra-precise device design, losses in thin films, surface, structure, interfaces quality and experimental setup are coming into the fore. In this talk, we will present our patented epitaxial atomically smooth metals based SCULL material platform for high-Q quantum devices which could be effectively exploited in almost every lab by utilizing standard PVD tools. We will also present our latest experimental results and fabrication features of cutting-edge quantum computing devices and various high-Q plasmonic devices with world-record performance.

PURDUE UNIVERSITY Discovery Park