

Konstantin Nesterov

GRADUATING PHYSICS STUDENT

129626, 11 Rizhskij passage Apt. 61, Moscow, Russian Federation

☎ (+7) 916-621-32-60 | ✉ ke.nesterov@physics.msu.ru | 📱 wasd171

Education

Faculty of Physics MSU (Lomonosov Moscow State University)

Moscow, Russia

B.S. IN PHYSICS

Sep. 2012 – PRESENT

- Top university of post-Soviet space
- Graduate Thesis: “Optical response of Mie-resonant nanoparticles bounded with dielectric waveguides”
- GPA: 4.51/5

“Intellectual” School for Gifted Children

Moscow, Russia

HIGH SCHOOL

Sep. 2007 – Jun. 2012

- One of top 5 schools in Russia
- Graduate Thesis: “Multistage Induction Accelerator based on Thompson’s Reconnection Gun”
- Physics & Mathematics Department

School №1201 with specialization in English

Moscow, Russia

SECONDARY SCHOOL

Sep. 2002 – Jun. 2007

Skills

Programming Python, Node.JS, VHDL, C/C++, SQL

Presentation Microsoft Office, \LaTeX , Origin

Calculations Wolfram Mathematica, MATLAB, LabVIEW

Microcontrollers Arduino, ESP8266

Web Node.JS, ES6, HTML5, Stylus, React.JS, Redux, Webpack, Kefir.JS

Languages Russian, English (TOEFL iBT: 116, IELTS Academic: 7.5)

Projects

Pending Russian Foundation for Basic Research grant applications

Moscow, Russia

LABORATORY OF NANOPHOTONICS & METAMATERIALS, QUANTUM ELECTRONICS DEPARTMENT,

Est. 2016

FACULTY OF PHYSICS MSU

- Silicon metasurfaces for ultrafast phase profile modulation of laser beams
- Investigation of non-equilibrium processes and tunneling characteristics of low-dimensional strongly localized nanostructures
- Optical and nonlinear optical effects in silicon nanoparticle oligomers with magnetic Fano resonances

Nonlinear nanophotonics based on Mie-resonant semiconductor nanostructures (funded by Russian Foundation for Basic Research)

Moscow, Russia

LABORATORY OF NANOPHOTONICS & METAMATERIALS, QUANTUM ELECTRONICS DEPARTMENT,

Est. 2016

FACULTY OF PHYSICS MSU

- Calculations of optimal geometric parameters of silicon waveguides, nanodisks or their ordered arrays, optically bounded with waveguides and nanodisk chains
- Fabrication of optically bounded silicon nanostructure samples
- Investigation of linear spectrums and transmittance of waveguides in wide spectral range, overlapping nanodisk Mie-resonant frequencies
- Investigation of nonlinear optical response and all-optical switching phenomena in created nanostructures via methods of microscopy of optical harmonics generation, four-wave mixing and “pump”-“probe” technique

Metal-dielectric metamaterials in strong optical fields (funded by Russian Foundation for Basic Research)

Moscow, Russia

LABORATORY OF NANOPHOTONICS & METAMATERIALS, QUANTUM ELECTRONICS DEPARTMENT,
FACULTY OF PHYSICS MSU

2015 – PRESENT

- Determined optimal geometric parameters of metal, dielectric and metal-dielectric metamaterials for various resonances by using Lumerical FDTD Solutions
- Fabrication of metamaterials samples by combining such methods as electron beam lithography, reactive anisotropic plasma etching, and ion implantation followed by ions sintering in nanoparticles
- Series of experiments with a range of methods including scanning electron microscopy, atomic force microscopy, confocal microscopy, and spectroscopy of optical harmonics generation
- Development of phenomenologic and microscopic models of processes, responsible for the observed effects

Evaluation of effective permittivity and permeability of artificial structures

Tohoku, Japan

SUMMER INTERNSHIP AT DEPARTMENT OF PHYSICS, FACULTY OF SCIENCE, TOHOKU UNIVERSITY

Jul. 2015 – Aug. 2015

- Used an electromagnetic simulator (CST Microwave Studio) to design the structures
- Fabricated own structures by photolithography technique
- Characterized the sample using conventional spectrometer and Atomic Force Microscope
- Measured phase information with Mach-Zehnder interferometer
- Retrieved effective permittivity and permeability based on an algorithm (MATLAB & Wolfram Mathematica)

The development of components for energy efficient superconductor and semiconductor systems, signal detection, reception, and processing of information (funded by Presidential grant)

Moscow, Russia

LABORATORY OF NANOSTRUCTURE PHYSICS, DEPARTMENT OF MICROELECTRONICS,

Feb. 2014 – Nov. 2015

SINP MSU (SKOBELTSYN INSTITUTE OF NUCLEAR PHYSICS, LOMONOSOV MOSCOW STATE UNIVERSITY)

- Developed new basic elements of superconducting circuits – controlled, fast, and compact Josephson junctions – to create new, compact, and energy-efficient superconducting element base
- Developed new energy-efficient compact and logical elements of the superconductor element base, including the basic elements for systems of reversible computing
- Developed physical foundations of new compact, energy-efficient, and non-volatile superconducting memory elements
- Development of transmission line and optimization of data transmission mechanism for the new superconducting element base
- Investigated the possibility of new base elements usage in the most widely used analog devices, such as amplifiers and SQUID detectors

Relativistic quantum cryptography and cryptography based on PTC (Phase Time Coding)

Moscow, Russia

QUANTUM INFORMATION LABORATORY, DEPARTMENT OF QUANTUM ELECTRONICS,

Dec. 2013 – Jun. 2014

FACULTY OF PHYSICS MSU

- Investigated various interferometric schemes capable of revealing non-classical features of biphoton field generated in the process of SPDC
- Got basic understanding of quantum cryptography protocols and attacks on them

Superconducting spin valve based on the Josephson junction with a layer of insulator, superconductor and ferromagnetic (funded by Federal Target Program)

Moscow, Russia

LABORATORY OF NANOSTRUCTURE PHYSICS, DEPARTMENT OF MICROELECTRONICS,

Oct. 2012 – Nov. 2013

SINP MSU (SKOBELTSYN INSTITUTE OF NUCLEAR PHYSICS, LOMONOSOV MOSCOW STATE UNIVERSITY)

- Gained knowledge about physical foundation of the Josephson junction
- Used numerical methods to calculate multifarious parameters of circuits including Josephson junctions

Honors & Awards

2012 **Winner**, Moscow State Olympiad on Physics

Moscow, Russia

2012 **Winner**, Lomonosov's Tournament on Physics

Moscow, Russia

2012 **Winner**, "Lomonosov" Olympiad on Physics and Mathematics

Moscow, Russia