

Potential scientific supervisors: Physical sciences & Technology

№	Surname	Name	University	Scientific interests	Link to portfolio
1.	Borisov	Alexander	Moscow Institute of Physics and Technology (National Research University)	Investigations in high energy heavy ion physics on the base of the data taking and analysis of ALICE experiment at the LHC at CERN.	https://eng.mipt.ru/programs/strange-hyperon-production-and-search-for-nuclear-matter-with-strangeness-in-proton-proton-and-heavy/
2.	Alikin	Denis	Ural Federal University named after the first President of Russia B.N. Yeltsin	Research primarily centers on ferroelectric materials, which hold significant promise in the realms of electronics, energy storage, and actuator devices. Also research focus revolves around the examination of defects within semiconductor ferroelectrics and their impact on functional properties. This includes conductivity and dielectric properties, polarization reversal, screening, and the piezo- and pyroelectric effects.	https://urfu.ru/en/research/postgraduate-programs-in-english/admission-options/open-doors-olympiad/research-supervisors/denis-o-alikin/
3.	Petrosyan	Arakel	Moscow Institute of Physics and Technology (National Research University)	Kinetics of rotating plasma, energy cascades in turbulence in rotating plasma flows in kinetic description Development of multiscale solar activity models involving Rossby waves activity Development of advanced numerical tools in rotating plasma kinetics Particulate flows in plasma astrophysics and applications to planets originations. Computational physics and extremal computations	https://eng.mipt.ru/programs/plasma-astrophysics-comparative-planetary-atmospheres/

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				Theoretical and numerical studies of turbulence and waves in rotating astrophysical plasma flows and in planetary atmospheres	
4.	Belov	Pavel	ITMO University	Metamaterials: <ol style="list-style-type: none"> 1. Radiophysics 2. Diffraction and scattering of electromagnetic waves 3. Metamaterials 4. Wireless data transmission 5. Magnetic resonance imaging 6. Nanoantennas 	https://aspirantura.itmo.ru/?main=43
5.	Beterov	Ilya	Novosibirsk State University	quantum information technologies, laser cooling and trapping, laser spectroscopy	https://www.nsu.ru/upload/medialibrary/ab4/3hkkxij97lem2z8m9fvgrrc6ofnb0u59/Beterov%20%D0%B0%D0%BD%D0%B3%D0%BB.pdf
6.	Bogdanov	Andrey	ITMO University	Theoretical nanophotonics and metamaterials: <ol style="list-style-type: none"> 1. Bound states in the continuum 2. Surface Waves 3. Plasmonics 4. Photonics 5. Metamaterials and Metasurfaces 6. Microcavities 7. Solid State Physics and Physics of Semiconductors 	https://aspirantura.itmo.ru/?main=43
7.	Venediktov	Vladimir	Saint Petersburg Electrotechnical University "LETI"	Structured light beams (scalar and vector optical vortices, Bessel, Airy and similar beams), their generation, propagation and analysis; Holographic tools in adaptive optics; Advanced wavefront	https://etu.ru/assets/files/oda/venedictov.pdf

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				sensors; Advanced sensors of rotation (gyroscopes) on the base of passive ring cavities (integral optics, confocal cavities and resonators of whispering gallery modes); Metasurfaces in angle and position sensing	
8.	Vlasova	Olga	Peter the Great St Petersburg Polytechnic University	Neurobiology, molecular biology, biophysics	https://opendoors.spbstu.ru/files/supervisors/portfolio/vlasova.pdf
9.	Gabdullin	Pavel	Peter the Great St Petersburg Polytechnic University	Surface, thin films, nanostructures, carbon nanostructures, field emission, materials for electronics, thermoelectricity, multilayer nanosystems	https://opendoors.spbstu.ru/files/supervisors/portfolio/gabdullin.pdf
10.	Dmitriy O. Glushkov		Tomsk Polytechnic University	condensed matter, fuel, energy source, heat and mass transfer, chemical reaction, experimental research, mathematical modeling, gel fuel	https://tpu.ru/upload/medialibrary/5b2/hcinwnz824ci9owg4yojckrn1uxpr3yc/Glushkov-en.pdf
11.	Glybovski	Stanislav	ITMO University	Antennas, electrodynamics of periodic structures, metamaterials, measurements in the microwave range, microwave devices, MRI coils	https://aspirantura.itmo.ru/?main=43
12.	Gorlach	Maxim	ITMO University	Theoretical nanophotonics, metamaterials, axion electrodynamics, topological photonics, superconducting qubits, quantum technologies	https://aspirantura.itmo.ru/?main=43

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13.	Gorbunov	Dmitry	Moscow Institute of Physics and Technology (National Research University)	Astroparticle physics and cosmology (dark matter models, inflation and reheating, baryogenesis) Physics beyond the Standard Model of particle physics (supersymmetry, grand unification, hidden sectors, etc) Quantum field theory Neutrino physics	https://eng.mipt.ru/programs/theoretical-particle-physics-and-cosmology/
14.	Eremina	Rushana	Kazan (Volga region) Federal University	Magnetic phase transitions in double perovskites Sr ₂ Me'Me''O ₆ ; On the theory of electric fields on 4f electrons in rare-earth oxide compounds, taking into account the spatial distribution of charges on oxygen	https://kpfu.ru/portal/docs/F1321441936/Eremina.R.M.portfolio.na.anglijskom.yazyke.pdf
15.	Zavjalov	Sergey	Peter the Great St Petersburg Polytechnic University	Improving the spectral efficiency of optimal FTN signals. Improving the energy efficiency of optimal signals for 5G networks. Improving the efficiency of information transmission systems in conditions of limited signals on the transmitting device, including non-linear ones.	https://opendoors.spbstu.ru/files/supervisors_portfolio/zavjalov.pdf
16.	Zatsepin	Anatoly	Ural Federal University named after the first President of Russia B.N. Yeltsin	Electron-optical properties of disordered and low-dimensional structures; Applied optics and photonics of functional materials; Radiation physics, electronic excitations and defect states in materials for micro-optoelectronics;	https://urfu.ru/en/research/postgraduate-programs-in-english/admission-options/opendoors-olympiad/research-supervisors/anatoly-f-zatsepin/

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				Energy structure and electronic-optical properties of nanomaterials based on nanocarbon or its analogs	
17.	Zimovets	Ivan	Moscow Institute of Physics and Technology (National Research University)	Multiwave Solar Physics – analysis of observational data in broad spectral ranges (from gamma-rays to radio waves) from various ground-based and space observatories	https://eng.mipt.ru/programs/solar-activity-space-weather/
18.	Ivanov	Andrei	ITMO University	<p>Investigation of the mechanisms of optical cooling of semiconductor nanostructures of various dimensions, as well as bulk crystals doped with rare-earth ions</p> <p>Investigation of the mechanisms of translational and internal optical cooling of mesoscopic objects levitating in ion and optical traps</p> <p>Investigation of optimizing the optical pumping of solid-state laser systems to reduce the thermal load of the active element using optical cooling mechanisms</p> <p>Investigation of optical nonlinear processes for the implementation of the Ising machine for solving combinatorial problems</p>	https://aspirantura.itmo.ru/?main=43

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19.	Kaputkina	Natalia	University of Science and Technology MISIS	Physics of low-dimensional structures, theory and computer simulation	https://en.misis.ru/university/events/olimpiad/2023-09/4849/
20.	Konevega	Andrei	Peter the Great St Petersburg Polytechnic University	Nuclear medicine, molecular biophysics, structural biology, cryoelectron microscopy, cell biology, molecular biology, etc.	https://opendoors.spbstu.ru/files/supervisors/portfolio/konevega.pdf
21.	Kravchenko	Evgeniy	Novosibirsk State University	Development of new methods and detector systems for particle detection. Development of scintillation detectors and Cherenkov detectors based on aerogel. Development of methods for particle identification.	https://www.nsu.ru/upload/medialibrary/1ff/9383xi7sg7wfr6p424xc9bemt5onvkfr/kravchenko-en-05.12.23.pdf
22.	Morgun	Leonid	Moscow Institute of Physics and Technology (National Research University)	Quantum materials (DSM, WSM, TI) Strongly correlated electrons in Si MOSFET Low temperature transport and thermodynamic properties of superconductors	https://eng.mipt.ru/programs/quantum-effects-in-strongly-correlated-and-quantum-materials/
23.	Makarov	Sergey	ITMO University	Perovskite nanophotonics: 1. Perovskite nanolasers and microlasers 2. Effects of nanophotonics in thin-film optoelectronic devices 3. Perovskite devices with dual functionality 4. Highly efficient perovskite solar cells	https://aspirantura.itmo.ru/?main=43

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24.	Meisner	Lyudmila	National Research Tomsk State University	Condensed state physics, structural phase transformations, surface modification, synthesis of surface alloys using ion and electron beams, ion-plasma treatments, structure and properties of titanium-based alloys, problems of biocompatibility of metallic materials.	http://tsuod.tilda.ws/meysneren
25.	Mikhailov	Vladimir	MEPhI	Composition of galactic and solar cosmic rays, Electron and positron component of cosmic ray, Cosmic ray time variations, Search for exotic components of cosmic rays (antiparticles, strenglets, quarks)	https://eng.mephi.ru/study-with-us/contests/supervisors/vvmikhajlov
26.	Moskvin	Alexander	Ural Federal University named after the first President of Russia B.N. Yeltsin	Theory of strongly correlated systems, high-temperature superconductivity, magnetism, optics	https://urfu.ru/en/research/postgraduate-programs-in-english/admission-options/open-doors-olympiad/research-supervisors/alexander-s-moskvin/
27.	Nezvanov	Alexander	Moscow Institute of Physics and Technology (National Research University)	More than 10 years ago, it was discovered the intense reflection of low-energy neutrons from nano-dispersed media. Since then, the FLNP JINR has been studying the interaction of neutrons with diamond nanoparticle powders. At the moment, there are no worldwide analogues of the nanostructured reflectors of very cold neutrons created by us. The accumulated knowledge and collaborations with industrial partners allow us to move on to creating intensive sources of such neutrons. Their appearance will	https://eng.mipt.ru/programs/development-of-the-intense-source-of-low-energy-neutrons/

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				give a new pulse to both neutron studies of condensed matter and the study of fundamental interactions.	
28.	Nikitin	Andrey	ITMO University	Power engineering: scientific research is carried out in the field of thermodynamic and thermophysical processes	https://aspirantura.itmo.ru/?main=43
29.	Obraztsova	Elena	Moscow Institute of Physics and Technology (National Research University)	Our research interests are focused on synthesis, comprehensive optical characterization and new applications of carbon nanostructured materials (single-wall carbon nanotubes, graphene, carbon onions, carbon peapods, graphene nanoribbons inside carbon nanotubes and on metallic surfaces. Main applications are: ultrafast beam modulators for solid state lasers and transparent conductive electrodes.	https://eng.mipt.ru/programs/optical-properties-of-carbon-nanostructures/
30.	Orlova	Anna	ITMO University	Fundamental research in the field of development of colloidal systems and multilayer coatings based on colloidal quantum-sized semiconductor 0D, 1D and 2D nanocrystals; magnetic nanoparticles; metal oxides; molecular generators of reactive oxygen species (ROS); specific indicator molecules; porous dielectric matrices	https://aspirantura.itmo.ru/?main=43

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31.	Orlova	Tatiana	ITMO University	<p>Self-assembled supramolecular architectures, their topology, evolution, optics, photonics and photophysics:</p> <ol style="list-style-type: none"> 1. Principles, methods, approaches of forming localized elastic excitations in liquid crystals 2. Spatiotemporal evolution of localized liquid crystal structures 3. Numerical and experimental analysis of the topology and evolution of liquid crystal structures 4. Study of optical and photonic properties of localized liquid crystal structures 5. Development of “smart” photomechanicochemical systems based on localized elastic excitations 	https://aspirantura.itmo.ru/?main=43
32.	Petrov	Nikolay	ITMO University	<ol style="list-style-type: none"> 1. Digital holography 2. Phase retrieval 3. Terahertz technology 4. Singular optics 5. Femtosecond optics 6. Nonlinear optical properties 	https://aspirantura.itmo.ru/?main=43
33.	Polyutov	Sergey	Siberian Federal University	<p>Resonant synchrotron X-ray spectroscopy of molecular and condensed media, Nanoplasmonics, photonics (modeling of hybrid 2D nanomaterials), Quantum chemistry (applications in X-ray spectroscopy and nanoplasmonics)</p>	https://www.sfu-kras.ru/files/Polyutov_S.P._Struktura_nauchnogo_profilya_portfolio_PNR_2023_ENG_0.pdf

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34.	Pchitskaya	Ekaterina	Peter the Great St Petersburg Polytechnic University	Algorithms and software for the neurobiological data analysis	https://opendoors.spbstu.ru/files/supervisors/portfolio/pchitskaya.pdf
35.	Romanov	Aleksei	ITMO University	<ol style="list-style-type: none"> 1. Micro- and nanomechanics of disclinations in solids 2. Mesoscopic models of plastic deformation and fracture 3. Physical and mechanical properties of amorphous, nanostructured and nanocomposite materials 4. Micro- and nanomechanics of dislocation defects in thin film materials of electronics and optoelectronics 5. Theoretical foundations of modern optoelectronic devices 	https://aspirantura.itmo.ru/?main=43
36.	Rubin	Sergey	MEPhI	General relativity and gravitation, metric of extra dimensions at high energies and its evolution to low energies. Relation between the physical parameters and the extra space metric.	https://eng.mephi.ru/study-with-us/contests/supervisors/sgrubin
37.	Rouzine	Igor	Peter the Great St Petersburg Polytechnic University	Multi-disciplinary research at the interface of evolution theory, population genetics, virology, and immunology	https://opendoors.spbstu.ru/files/supervisors/portfolio/rouzine_eng.pdf
38.	Rybin	Mikhail	ITMO University	Bound states in the continuum, phase change materials, quasicrystals, resonant interaction of light with photonic structures, Fano resonances, all dielectric	https://aspirantura.itmo.ru/?main=43

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				metamaterials, photonic crystals, and nanoantennas	
39.	Sorokin	Pavel	University of Science and Technology MISIS	Electronic structure calculations; Atomistic simulations of various bulk and nanosystems at empirical potential and density-functional theory levels; Growth of graphene and related materials; Defects in carbon nanomaterials; effects of the irradiation on the mechanical and electronic properties of carbon nanomaterials; Inorganic two-dimensional materials; Heterostructures promising for spintronics applications; Catalytically active nanostructures.	https://en.misis.ru/university/events/olimpiad/2023-09/4849/
40.	Pavel A. Strizhak		Tomsk Polytechnic University	heat and mass transfer, ignition, condensed substance, composite fuel, alternative sources of energy, phase transform, numerical simulation, physical experiment, heat power engineering	https://tpu.ru/upload/medialibrary/9cb/zy10vti53qbbe8pjxhwcjlpqw1y8goun/Strizhak-AYA.pdf
41.	Roman Surmenev		Tomsk Polytechnic University	Ferroelectric, magnetoelectric, composites, implants, tissue engineering, surface modification, piezoelectric response, piezoresponse force microscopy, scaffolds, piezoelectric materials, magnetic field, ultrasound, wireless power transfer, flexible electronics	https://tpu.ru/upload/medialibrary/bc6/75gmze54a16mq35m21czwrqoxq0jl9yc/Surmenev-AYA.pdf

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42.	Maria A. Surmeneva		Tomsk Polytechnic University	Biomaterial Science, Coating deposition, Materials characterization, Biomaterial Engineering, Biomaterial Functionalization, additive manufacturing, PECVD	https://tpu.ru/upload/medialibrary/9a4/5ht0rr6ymu9026bhdbc62v9lo9647fij/Surmeneva-AYA_.pdf
43.	Ushakov	Ivan	University of Science and Technology MISIS	Selective laser treatment of solid materials. Formation of physical and mechanical properties of materials. Radiation-resistant materials, biocompatible materials, corrosion-resistant materials, etc.	https://en.misis.ru/university/events/olimpiad/2023-09/4849/
44.	Ushakova	Elena	ITMO University	<p>Synthesis and functionalization of carbon nanoparticles by solvothermal and microwave methods</p> <p>Hybrid materials based on carbon nanoparticles and metal, semiconductor and magnetic nanoparticles</p> <p>Carbon nanoparticles emitting in the red and near infrared region of the spectrum</p> <p>Chiral carbon nanoparticles for theranostics</p> <p>Sensors based on carbon nanoparticles</p>	https://aspirantura.itmo.ru/?main=43

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45.	Filatov	Yuri	Saint Petersburg Electrotechnical University "LETI"	Ring laser gyro physics and application; Fiber optic gyro physics and application; Laser method and means of displacement measurement; Laser metrology	https://etu.ru/assets/files/oda/struktura-portfolio-pnr-angl-filatov.pdf
46.	Freidin	Alexander	Peter the Great St Petersburg Polytechnic University	Mechanics of deformable solids	https://opendoors.spbstu.ru/files/supervisors-portfolio/freidin.pdf
47.	Khomitsky	Denis	Lobachevsky State University of Nizhni Novgorod (UNN)	Theory of nanostructures, spintronics; Optical and transport properties of nanostructures; Spin dynamics in quantum dots and topological insulators; Regular and irregular dynamics of spin in nonstationary fields.	http://eng.unn.ru/images/Open_Doors/Profiles/khomitsky.pdf
48.	Evgeniya Sheremet		Tomsk Polytechnic University	The work of Prof. Sheremet focuses on nanomaterials. The study of laser treatment processes on nanomaterials and their composites are the basis for the fabrication of graphene-based composites for biomedical applications. Plasmonic nanomaterials have a special benefit of working as nano-antennas focusing light at the nanoscale and enhancing optical spectroscopy signals. It is used for nanospectroscopy applications	https://tpu.ru/upload/medialibrary/5a6/shbgtoylqhu5qzvdot4jkfrg529gz9z/SHeremet-AYA .pdf
49.	Sheremet	Mikhail	National Research Tomsk State University	Conjugate heat and mass transfer Natural, mixed and forced convection Heat and mass transfer in porous	http://tsuod.tilda.ws/sheremeten

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				media Fluid flow and heat transfer in nanofluids Turbulent heat and mass transfer Convective-radiative heat transfer Heat transfer and flow pattern in electronic systems Bioheat and mass transfer Heat transfer and flow pattern in building elements Computational fluid dynamics and heat transfer	
50.	Shilko	Evgeniy	National Research Tomsk State University	Development of the mathematical formalism of particle-based numerical methods including discrete element method, dissipative particle dynamics, etc. Development of the models of the dynamic mechanical behavior of composite materials including permeable fluid-saturated solids Numerical study of the mechanisms of wear at different scales Numerical analysis of the mechanical behavior of biological tissues under dynamic loading Development of the DEM-based software for computer modeling of deformation and fracture of technical and biological materials	http://tsuod.tilda.ws/shilkoen

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51.	Shkodyrev	Vyacheslav	Peter the Great St Petersburg Polytechnic University	Complex research of scientific and technical problems using modern technology of mathematical modeling and computational experiment.	https://opendoors.spbstu.ru/files/supervisors_portfolio/shkodyrev.pdf
52.	Valentina S.Yakovleva		Tomsk Polytechnic University	Radioactivity in the environment; Dosimetry and radiometry; Simulation of ionizing radiation transport	https://tpu.ru/upload/medialibrary/b87/nrurq0c7oeg1nah864uhdzq97tgwz6lb/YAkovleva-AYA .pdf