


University	Peter the Great St.Petersburg Polytechnic University
Level of English proficiency	C1 (Advanced)
Educational program and field of the educational program for which the applicant will be accepted	ENGINEERING & TECHNOLOGY
List of research projects of the potential supervisor (participation/leadership)	<ul style="list-style-type: none"> • Federal target program "Development of design and general control principles for an integrated electrolysis unit for simultaneous generation of anolyte for disinfection of water and ferrate for disinfection of wastewater", 2014-2016; • Federal target program "Development and testing of energy-efficient mobile drives sucker rod pumps with adaptive group control system for oil wells", 2015-2019; • "Control system development and modernization for the lathe VOEST-ALPINE-STEINEL WNS 300S", 2016- 2017; • Federal target program "New digital technologies for modeling and creating functional gradient materials and structures for additive manufacturing of parts and assemblies with variable structure, chemical composition and density", 2017-2019 • "A Novel Mobile Water Purification Plant (One Drop)" within the Cross-Border Cooperation Program "Southeastern Finland - Russia", 2019-present times
List of the topics offered for the prospective scientific research	<ul style="list-style-type: none"> • Energy-efficient drives of mechatronic and robotic equipment • Optimization of the laws of motion of robot drives and technological equipment
 <p>Research supervisor: Olga N. Matsko Candidate of Technical Sciences in Robots, Mechatronics and Robotic systems</p>	2.02. <i>Electrical engineering, electronic engineering</i> 2.02. <i>RB Robotics</i>
	<u>Supervisor's research interests</u> Optimization of motion laws of actuators and drives of robots and process equipment, energy recovery, energy efficiency of mechatronic drives.
	<u>Supervisor's specific requirements:</u> English is at least Upper Intermediate level CAD and CAE software packages knowledge A diploma of higher education in robotics, mechatronics or automation Characteristics: Responsibility, discipline, punctuality
	<u>Supervisor's main publications</u> 1. A N Volkov, O N Matsko, A V Mosalova. Automated adaptive drive for the sucker rod pump, IOP Conf. Series: Earth and Environmental Science, 194 (2018) 022023, 9p. doi:10.1088/1755-1315/194/2/022023 (Scopus) 2. V. L. Zhavner, O. N. Matsko, M. V. Zhavner. Comparative Analysis of Mechatronic Drives for Reciprocal Motion, International Review of Mechanical Engineering (I.R.E.M.E.), Vol. 12, N. 9, September 2018, p.784-789 (Scopus) 3. Мацко О.Н., Волков А.Н., Мосалова А.В. Выбор энергосберегающих законов движения мехатронных приводов технологических машин// Научно-технические ведомости СПбПУ. Естественные и инженерные науки -

- СПб.: Изд-во Политехн. ун-та, 2018. Том 24. №4 – с.141-149. ВАК
4. A Volkov, A Kornilova, O Matsko, A Mosalova. Optimization of the robot motion law by the criterion of minimizing maximum instantaneous power and electric motor size, IOP Conf. Series: Earth and Environmental Science, 539 (2020) 012122, 8p. doi:10.1088/1755-1315/539/1/012122 (Scopus)
 5. A. N. Volkov, A. A. Kornilova, L. V. Podkolzina, O. N. Matsko. Static balancing and power consumption of industrial robots and process machines for various application, Journal of Physics: Conference Series, **1753** (2021), 1002. Scopus. <https://iopscience.iop.org/journal/1742-6596>
 6. A Volkov, O Matsko, A Mosalova. Minimization of Power and Energy Consumption of Mechatronic Drives in Robotics and Technological Equipment. Journal of Physics: Conference Series, Intelligent Information Technology and Mathematical Modeling 2021 (ИТММ 2021) 2131 (2021) 032028, IOP Publishing, doi:10.1088/1742-6596/2131/3/032028 – Scopus.
 7. O. N. Matsko. Optimization of mechatronic drives motion laws for automated equipment, Journal of Physics: Conference Series, International Conference on Actual Issues of Mechanical Engineering (AIME 2021) 2061 (2021) 012041, IOP Publishing, doi:10.1088/1742-6596/2061/1/012041 Scopus
 8. А.Н. Волков, А.В. Козлович, О.В. Кочнева, О.Н. Мацко. Пути повышения эффективности функционирования транспортных роботов // Наука и бизнес: Пути развития – Москва: [б. и.], 2022. № 11(137) – с.30-38 ВАК [http://globaljournals.ru/assets/files/journals/science-and-business/137/sb-11\(137\)-2022-main.pdf](http://globaljournals.ru/assets/files/journals/science-and-business/137/sb-11(137)-2022-main.pdf)
 9. A Volkov, A Kolesnikova, A Kornilova and O Matsko. Investigation of the effect of algorithms of positioning robots on their power and energy consumption, E3S Web of Conferences (IIRPCMIA 2021) 378, 03002 (2023) <https://doi.org/10.1051/e3sconf/202337803002> - Scopus
- Крохмаль В.В., Мацко О.Н., Габриель А.С., Мохова Н.А. Влияние центробежной силы на давление в рабочей камере пневматической пружины на мехатронном испытательном стенде // Наука и бизнес: Пути развития – Москва: [б. и.], 2023. № 4 (142) – с.72-75 ВАК <http://globaljournals.ru/nauka-i-biznes/arhiv/>