Researcher profile (portfolio) form for potential research supervisors of postgraduate track participants in the Global Universities Association International Olympiad for graduate and postgraduate applicants.

University	Tomsk Polytechnic University
English language proficiency	B1 level (certificate of TPU 0), from 26.12.2019
Applicant's postgraduate program	2.4.9. Nuclear power plants, fuel cycle, radiation safety 2.2.8 Methods and equipment for control and diagnostics of materials, products, substances and natural environment 1.3.2 Instruments and methods of experimental physics
List of research projects of a potential research supervisor (participation/leadership)	• Head of the grant of the President of the Russian Federation for support of young Russian scientists No. MK-3295.2004.5 (2004-2005). • Head of the grant of the program Development of the scientific potential of higher education "Universities of Russia" (2005). • Head of the grant of the Analytical departmental target program "Development of the scientific potential of higher education" No. 2.1.1 / 544 (2009-2011). • Responsible executor of the grant of the Federal Target Program (2010-2012). State Contract No. 02.740.11.0738 of 5.04.2010, project "Hazardous Phenomena and Nonstationary Processes in the Dynamics of the Surface Atmosphere". • Head of the Federal Target Program "Research and Development in Priority Areas for the Development of the Scientific and Technological Complex of Russia for 2014–2020" Agreement on the Grant of the Ministry of Education and Science of Russia No. 14.575.21.0105 on the subject "Development of Radiation Monitoring Technology with an Optimal Set of Synchronously Controlled Markers-Indicators of Extreme Climate Phenomena (2014-2016).
List of possible research topics	1. Study of the contributions of various components to the total radiation level of surface atmosphere. 2. Investigation of the processes of transport of radioactive gases and aerosols in various environments. 3. Research of natural processes and phenomena with help of ionizing radiation of natural radionuclides. 4. Studying of the influence of the developing technosphere on the radioecological well-being of the urban environment. 5. Development of new methods for assessing geophysical quantities based on radiation markers. 6. Development and modernization of devices and complexes for radiation monitoring.
	• Engineering and Technology 2.03. Mechanics and Mechanical Engineering, Nuclear Physics and Technology
	Supervisor's research interests (detailed description of research interests):
	Applied Physics in Geophysical Problems
	Dosimetry and radiometry Technologies of natural phenomena monitoring by radiation tracers

<table>
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Research supervisor:
Valentina S.Yakovleva,
Doctor of Technical Science</td>
<td>Development of methods and ways to estimate geophysical values by radioactive marker-indicators</td>
</tr>
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<td>Research highlights:
The research uses equipment and data from TPU Tomsk Observatory of Radioactivity and Ionizing Radiation (TORII), a geophysical observatory and experimental sites of the Institute of Climate and Ecological Systems Monitoring of the Siberian Branch of the Russian Academy of Sciences, as well as unique TPU scientific developments.</td>
</tr>
<tr>
<td>Supervisor’s specific requirements:
• C++
• GEANT4
• MatLab
• Mathematica
• Disciplines: dosimetry, nuclear physics, protection from ionizing radiation</td>
</tr>
<tr>
<td>Supervisor’s main publications (specify a total number of publications in journals indexed by Web of Science, Scopus, RSCI for the last 5 years, list up to 5 most significant publications with the publication details):
1. ANALYSIS OF GAMMA-RADIATION BACKGROUND CHANGES DURING PERIODS OF ATMOSPHERIC PRECIPITATION Yakovleva V.S., Poberezhnikov A.D., Yakovlev G.A., Kobzev A.A., Smirnov S.V., Arshinov M.Y. Atomic Energy. 2022.
2. GEANT4 SIMULATION OF PRECIPITATED ACTIVITY-TO-γ-DOSE RATE CONVERSION FACTORS FOR RADON AND THORON DECAY PRODUCTS Yakovleva V., Yakovlev G., Parovik R., Smirnov S., Kobzev A. Mathematics. 2022. T. 10. № 3.
3. RAINFALL INTENSITY AND QUANTITY ESTIMATION METHOD BASED ON GAMMA-DOSE RATE MONITORING Yakovleva V., Zelinskiy A., Yakovlev G., Parovik R., Kobzev A. Sensors. 2021. T. 21. № 19. C. 6411.
4. RADON RELEASE RATE FROM SOIL INTO THE SURFACE ATMOSPHERE SPECIFICS Yakovlev G.A., Yakovleva V.S. Vestnik KRAUNC. Fiziko-Matematiceskie Nauki. 2021. T. 35. № 2. C. 150-158.
5. MODEL FOR RECONSTRUCTION OF γ-BACKGROUND DURING LIQUID ATMOSPHERIC PRECIPITATION Yakovleva V., Zelinskiy A., Parovik R., Yakovlev G., Kobzev A. Mathematics. 2021. T. 9. № 14. C. 1636.</td>
</tr>
<tr>
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<td>Intellectual property rights (if applicable)
(list key intellectual deliverables)
1. A method for determining moisture content in the snow cover Yakovleva V.S., Yakovlev G.A., Belyaeva I.V. Patent for invention RU 2695949 C1, 29.07.2019. Application No. 2018137127 of 22.10.2018.
2. A PROCESS FOR DEFINITION OF THE INTENSITY AND QUANTITY OF Rainfall Yakovlev G.A., Yakovlev V.S., Nagorsky P.M., Belyaeva I.V. Patent for invention RU 2689839 C1, 29.05.2019. Application number 2018132153 of 07.09.2018.
3. A. Yakovlev G.A., V.S. Yakovleva, I.V. Belyaeva. Patent for invention RU 2694080 C1, 09.07.2019. Application number 2018132067 of 06.09.2018.</td>
</tr>
</table>

	4. A PROCEDURE FOR DEFINITION OF THE INTENSITY OF RINDING SADS IN A PRIMARY LOSS OF THE ATMOSPHERE Yakovleva V.S., Nagorsky P.M., Kondratyeva A.G., Cherepnev M.S., Yakovlev G.A. Patent for invention RU 2656118 C1, 31.05.2018. Application No. 2016147858 of 07.12.2016. 5. A PROCESS FOR DEFINITION OF TURBULENT DIFFERENCE in a PRISEMIUM Layer of the ATMOSPHERE Yakovleva V.S., Nagorsky P.M., Kondratyeva A.G., Yakovlev G.A. Invention patent RU 2656114 C2, May 31, 2018. Application No. 2016146898 of 30.11.2016. 6. A method for monitoring the density of unperturbed radon flux from the ground Yakovleva V.S., Kondratyeva A.G., Cherepnev M.S. Patent for invention RU 2616224 C , 13.04.2017. Application No. 2015151393 of 01.12.2015. 7. Pat. 2470327 RU, IPC G 01 T 1/178 Yakovleva, Valentina Stanislavovna. Method for measuring the effective diffusion coefficient of radon and thoron in soil No. 2011128256/28; application. 07.07.11; Publ. 20.12.12. 8. Pat. 2470328 RU, IPC G 01 T 1/178 Yakovleva, Valentina Stanislavovna. Method for measuring the rate of advection of soil gases № 2011128257/28; applied in Russian Federation. 07.07.11; Publ. 20.12.12. 9. Pat. 2428715 RU, IPC G 01 T 1/16 Method for measurement of radon flux density from the surface of the soil by beta and gamma radiation / V. S. Yakovleva, A. V. Vukolov; № 2010121664/28; application. 27.05.10; publ. 10.09.11. 10. Pat. 2419817 RU, IPC G 01 T 1/00 Method for measuring the flux density of radon and thoron from the surface of the ground by alpha radiation / V. S. Yakovleva, A. V. Vukolov; no 2010107853/28; application. 03.03.10; publ. 27.05.11. 11. Pat. 97540 RU, IPC G 01 T 1/20 Device for the measurement of radon and thoron flux density from the soil surface by alpha radiation: utility model / V. S. Yakovleva, A. V. Vukolov; National Research Tomsk Polytechnic University (TPU). - No. 2010114478/28; application. 12.04.10; publ. 10.09.10. 12. Pat. 100295 RU, IPC G 01 T 1/16 Automated device for continuous measurement of radon flux density from the surface of the ground by beta and gamma radiation: utility model / A. V. Vukolov, V. S. Yakovleva; № 2010131974/28; application. 29.07.10; publ. 10.12.10. 13. Pat. 2239206 RU, IPC G 01 T 1/178 Method for determination of soil gas convection rate / V.S. Yakovleva, N.K. Ryzhakova; ¹ 2003123662/28; declaration. 25.07.03; publ. 27.10.04. 14. Pat. 2239207 RU, IPC G 01 T 1/178 Method for measuring the emanation factor of radon-222 in soils / N.K. Ryzhakova, V.S. Yakovleva; № 2003124036/28; application. 30.07.03; publ. 27.10.04. 15. Pat. 2212688 RU, IPC G 01 T 1/167 Method for determination of radon flux density from the surface of the earth / N.K. Ryzhakova, V.S. Yakovleva; № 2002120659/28; application. 29.07.02; publ. 20.09.03. 16. Pat. 2212689 RU, IPC G 01 T 1/167 Method for measuring the steady-state equilibrium volumetric activity of radon in the soil air / V. S. Yakovleva, N. K. Ryzhakova; № 2002120761/28; application. 29.07.02; publ. 20.09.03.