Dear professors, lecturers, postgraduates, students and employees of MEPhI!

The eventful calendar year is coming to an end. A close-knit team, fulfilling its earlier commitments, has defended the leadership of the University in the implementation of an Academic Excellence Program, expanded its presence in the world science, significantly brought the range of educational programs to the professional requirements of the State Corporation Rosatom and other employers.

All this has been reflected in the national and world rankings, in the results of the Admission campaign; it works for the MEPhI brand and contributes to the involvement of the University in solving problems of national importance, strengthening the international prestige of Russia on the example of the nuclear knowledge export.

I thank everyone who multiplies the achievements of MEPhI through their selfless work.

I wish each of you professional success and well-being, true friendship and love! Dear colleagues, Happy New Year and Merry Christmas!

> Rector of the National Research Nuclear University MEPhI M.N. Strikhanov



POCATOM

December' 18

FOURTH CONSECUTIVE YEAR MEPHI IS MOST POPULAR **ENGINEERING UNIVERSITY IN RUSSIA**

(project «Social Navigator») has presented the Fourth Rating of Demand for Universities in Russia - 2018.

In 2018, the research included 444 universities. The evaluation of universities was carried out according to the following indicators: citation of works of employees of the organization, commercialization of

On December, 12 the international news agency «Rossiya segodnya» intellectual product and the demand for the scientific product of the organization, as well as the share of graduates who received a referral to work.

> According to the rating results, the most popular University in the group of classical universities is the Lomonosov Moscow State University. For the fourth year in a row, MEPhI has become the best engineering University.

MEPHI WINS TWO GOLD MEDALS AT DIGITAL SKILLS-2018 CHAMPIONSHIP



200 students of colleges, universities, schoolchildren and young employees of enterprises from 14 countries (Russia, China, Australia, Korea, Singapore, Japan, Estonia, Austria, Germany, France, etc.) competed at the DigitalSkills-2018. The participants demonstrated professional skills in 24 competencies related to the current areas of activity of the modern digital industry.

The Director General of the Union «Young professionals (WorldSkillsRussia)» Robert Urazov noted that the corporate championship of DigitalSkills began as a purely IT competition, but turned into a global event that helps students to see themselves in their future profession and understand that «digital» and programming is not the distant future, but what is needed now in any industry.

Employees of the National Research Nuclear University MEPhI participated in two competencies: «Operation of unmanned aircraft systems» and «Quantum technologies». Also, a student of the Lyceum Nº1511 of the MEPhI Preuniversity took part in the competition on «Analysis of information systems security from external threats». An engineer of the WorldSkills competence center at the National Research Nuclear University MEPhI Vladimir Voronin took the first place in the competence «Operation of unmanned aircraft systems» (expert - engineer of the WorldSkills competencies center of MEPhI Artem Ignatov). In the competition, the participants had to show several skills: flying through the obstacle course; capture and transfer of cargo, skills of remote control of a drone and programming of automatic flight on a given route. At the final stage, the drone had to take a photo of a three-dimensional object, and then it was necessary to create a

Within three days more than model and print it on a 3D printer on the basis of the images.

> Vladimir Voronin noted that the main rival was the representative of MSEC who took the second place: «It was very skilled rival. In my practice it was the second championship and the second victory, while he participated in three (out of offset) only during the last month therefore it was quite difficult to compete with him». According to Vladimir, he adheres to the rule which helps him to achieve good results in life: «The secret of success is simple – "Be Brave and Work Hard!" I want to add that it is necessary to find a direction that is after your own heart, and work away. I was lucky to find one. In our laboratory, we work on many projects, and each of them is interesting to the point of insanity. Go ahead!»

task was the assembling of the Bob scheme - a symbol of the signal receiver, measurement of attenuation in the resulting scheme and calculation of some parameters. The second was to configure the settings themselves, work with Alice and Bob's software, and start the generation and transmission of the key through the quantum channel. The third module was about programming on a quantum computer simulator, which took place on the IBM Q Experience platform. «In my opinion, the most difficult was the last module, as it is the most difficult to find information. I am delighted with the championship, mostly with the organization of experts and the platform of our competence. I hope that more and more participants will be interested in this competence, because now it is one of the promising areas and experts in this field are needed,» said Anisia.

A student of the 10th grade of the Lyceum Nº1511 Mikhail Sukhov (expert – MEPhI postgraduate Ainur Zamanov) participated in the competence «Analysis of information systems security from external threats». Despite his youngest age, he finished fourth among 9 adult participants. This is Mickhail's second achievement this year. In October, he already took the first place in this competence in the VII Open championship of professional skills of Moscow «Moscow masters» by WorldSkills standards





MEPHI BECOMES LEADER IN NUMBER OF MEDALS AT WORLDSKILLS INTERUNIVERSITY **CHAMPIONSHIP**

The National Research Nuclear University MEPhI has become the winner of the II National Interuniversity Championship «Young professionals» by World-Skills standards, winning the largest number of medals. **Representatives of MEPhI** performed in 16 of the 44 categories, including «Electronics», «Mobile robotics", "Ouantum technologies», etc. Both representatives of the Moscow site and six its branches from different cities of Russia fought for gold of the competition.

The final was intense and bright. Eight new competencies appeared in the program, more than 500 students from 93 universities fought for the awards - this was 10 more than in 2017. For the second year in a row MEPhI became the leader in the number of medals. University students received 5 gold, 3 silver and 2 bronze medals. On the second place is Bauman Moscow State Technical – 4 gold and 1 bronze medals. The third line of the unofficial medal standings was shared by the State University of Humanities and Technology, Moscow State Polytechnic University, Far Eastern Federal State University and Kazan Innovative University named after V. G. Timiryasova they have 4 medals. For the first time medals will go to Samara, Orenburg, Amur, Voronezh, Novgorod regions and the Republic of Mari-El. The General Director of the Union «Young professionals (WorldSkills Russia)» thanked the participants, experts, sponsors and partners, without whom the championship would not have taken place. Robert Urazov stressed that there were no losers at the National Interuniversity Championship: «Those who did not receive a medal, do not stop at this stage. Each championship is an opportunity not only to prove themselves, not just to try, but also to take a step for further professional growth, to future victories.»

The competitions were held with the support of the Moscow Government. It was the capital of Russia that presented the largest team. «Moscow initially supported the National Interuniversity Championship «Young professionals» and hosts the final for the second time. This is quite a pragmatic decision: we are interested in encouraging future young professionals to improve their skills. It is also very important for the Moscow Government to involve universities in the development of professional competencies that are currently in demand in the market. Last year, there were 19% Moscow students among the participants of the championship, today it's 21%," said the head of the Department of entrepreneurship and innovative development of Moscow Alexey Fursin.

In 2018, MEPhI has increased its' mission in the Interunive sity Championship. The University has held one of the biggest qualifying stages in Moscow and its' 6 branches. 128 students and 110 employees took part in the competition. As a result, a team was formed to participate in the finals of the II National Interuniversity Championship World-Skills-2018 consisting of 40 people (20 student participants and 20 staff members). The MEPhI team again achieved outstanding results in the Interuniversity Championship, winning prizes in 13 out of 16 competencies in the competition which was attended by University students.

A student of the LAPLAS Institute and has a good chance to get to Anisia Klimenko won gold in the competence Quantum technologies» (expert – an engineer of the LAPLAS Institute Konstantin Lukyanov), and her colleague Violetta Sharoglazova (expert – a student of the National Research Nuclear University MEPhI Vladimir Pirog) took the second place in this competency. In this interdisciplinary competence related to the modern branch of quantum encryption and data transmission, the participants performed three modules. The first

the national championship in this competence. Mikhail solved tasks in the field of steganography and cryptography, conducted an «investigation» of the incident in the application of the bookstore (fictitious), eliminated the problems associated with the attack on the corporate network. «The whole championship was a constant improvement of my skills. It was difficult, but I coped, performed at the level of participants who work in this field," said Mikhail Sukhov.

CHOOSE YOUR FUTURE!

has held a Job Fair – an 80 people signed up for ect and offer them an inannually organized platform for interaction of enterprises.

significantly expanded. The program of the Fair was very rich and included not only traditional of- educational ployment for students, but also a plenary session prises.

Students were able to communicate with representatives of 68 companies, including the State Corporations Rosatom and Roscosmos, the Ministry of Industry and Trade, enterprises of the military-industrial resentative of the incomplex, institutes of the **dustry project of the** experience in SV can Academy of Sciences, enterprises of the Federal ration for training of tain positions. Applica-Biomedical Agency, as **beginning specialists** tions are submitted by well as such well-known in the field of project more than 8 thousand companies as Sberbank, Rosbank, Aeroflot, Mail. ru and others. The or- rika" (Factory): ganizers tried to make of 2019 will find a place to meet with students, tion in the state. for practice or work. For the efficiency of students' search for the employer, the space was divided into specialized «territories»: enterprises of high-tech sector, IT technologies and production, finance and audit, science and technology.

Before the event, students and graduates were given invitation cards with a list of companies

an introductory practice.

University students with MEPhI E.B. Vesna not- one, we have the most representatives of various ed, «Our task is to en- employees from the MEsure that 100% of guys PhI's Institute of Interna-This year, the event was choose our key industrial tional Relations, there are partners as their future also a lot of people from employer – those for whom we are developing security, however, techfers of practice and em- And here Rosatom State comed in our company. Corporation is the undisputed leader. Every year, with employees, career the corporation employs training, and each trainadvice for graduates and about 30% of the gradu- ee is assigned a mentor students, career guidance ates of the MEPhI Mos- – a current manager and activities for Lyceum stu- cow site». By the way, in project manager. dents, presentations of the framework of the Fair joint programs, as well as there was held a promomaster classes, trainings tion of the «Rosatom intern of HR-compe- a chance to prove themand excursions to enter- Career Day». About 500 tencies department in selves so that to receive students registered to participate in it!

> shared their impressions en an opportunity to see ates of MEPhI, I graduabout the Job Fair in ME-PhI, as well as advice to future applicants.

Rosatom state corponuclear industry «Fab-

sure that every graduate Job Fair, because we want trainee receives a posi-

On December 6, MEPhI ployment in enterprises, attract them to our projteresting job. Since our As the vice-rector of company is international the Faculty of information programs. nical areas are also wel-We have a good adaptation program, we arrange

Kristina «Sberbank":

Employees of employers because students are giv- now we have many gradutheir points of growth, ated from this University, and for employers - to but in my time there were find potential candidates. no such events. Students, first and fore-Julia Kuzmina, rep- most, pass internships, and those who have this **their** impressions of consider to occupy certwo hundred of them who undergo training. As sta-- We take part in the tistics show, every third



Arkadiy Sayans, first innovative company, it year senior in the British audit and consulting company "EY":

 I think the Job Fair is a useful event for students, because a student can find Yurtaeva, an internship and there is an offer of employment. - The Job Fair is good I would like to note that

Students also shared the event and career plans for the future: Alexander Novoselov, 6 year, PhysBio:

- I'm finishing my stud**management** in the students, we select about ies this year and I'm already doing my internship. I was attracted by the stand of the Rosatom ment, so I want to apply state corporation. This is for the leadership proa very technological and

seems to me that every MEPhI graduate would like to build a career in it. That is why I could not miss such an event as the Job Fair, where Rosatom can offer me an interesting job. I would like to work in the Analytics Department of the state corporation.

Svetlana Slepneva, 5 year, ICIS:

- There are a lot of different companies, and it's very cool, because everyone can find something interesting. Most of all I was attracted by the company «Severstal». There I met my friend, who spoke about all the advantages of working in the city of Cherepovets. The fact is that there are very good conditions for employgram of the company.



that are represented at the Fair. Representatives of the personnel services of the enterprises put their signature in front of the company's name, confirming that the company is ready to accept a candidate for a job or internship. This was the main result of visiting the event. According to the results of the Fair, more than 700 students made arrangements about practices and internships and about 400 - about em-

YOUNG SCIENTIST OF SEC NEVOD AWARDED MEDAL **OF RUSSIAN ACADEMY OF SCIENCES**



On December 13, the Alexandrinsky Palace of the RAS Presidium has hosted a ceremony of awarding medals pf the Russian Academy of Sciences for young scientists and students of higher educational institutions. Medals were presented by the **Vice-President of the Russian** Academy of Sciences, academician Valery Kozlov.

The lecturer of SEC NEVOD Egor Zadeba received a prize in nuclear physics for the cycle of works on "Coordinate-tracking detector based on drift chambers for registration of near-horizontal muon flux generated by ultrahigh energy cosmic rays".

The development of a new coordinate-tracking detector started in 2013 in the framework of cooperation between MEPhI and IHEP. Multi-wire drift chambers designed for neutrino accelerator U-70 were transferred to the University. These chambers have a large effective area (~ 2 sq. m.) and high precision of charged particles tracks registration (1 mm) at only four measuring

channels, so it was proposed to use these unique qualities in the new installation for registration of muon groups in the experimental complex NEVOD. Before that, drift chambers had never been used in the research of cosmic rays.

In four years the team of young employees and students under the leadership of Egor Zadeba managed to develop and create a design of a new installation, which records technological systems as well, to implement a network mode with existing detectors of the experimental complex.

The first in the world coordinate tracking installation on the drift chambers for the registration of cosmic rays has been put into operation, it registered events with a density of 15 particles per square meter, which today is a record for installations with verv low number of measuring channels.

It should be noted that Egor Zadeba is already a winner of the 2012 competition medals of the Russian Academy of Sciences for University students.

SMART CLOTHES & BIONIC PROSTHESES: RESEARCHERS LEARN TO READ MUSCLE SIGNALS

at the National Research **Nuclear University MEPhI** have recently developed a Myo Interface device ator contest and was ranked capable of reading the muscle's electrical activity and converting it into Innovative Radioelectronics signals.

The new development will be used to create exercise dustrial Innovation Award. equipment for those in rehabilitation, smart clothes for athletes that can take electrocardiograms as well as the device, which looks like monitor other indicators, and a system to control bionic Bluetooth and power supply arm prostheses. It can also be used for remote control of smartphones and Smart a gyroscope and accelerom-House systems.

Myo Interface is a project of a human-computer interface logues, our device has a that reads the arm muscles' electric activity, recognizes gestures and translates them into commands for devices, explained Bulat Aitbayev, master's degree student at MEPhI's Higher Engineering School. «Myo comes from 'muscle' in Greek, » told Bulat Aitbayev. «The electrodes read the electromyographic signals of the muscles, while the interface uses special algorithms to recognize movement patterns and translate them into to solve the subject of recdevice commands.» This project has been underway since 2015. Myo Interface won FASIE's Start-1 grant worth two million rubles; this money was used to preliminary adjustment time.

Scientists and engineers totype capable of recognizing up to eight gestures.

In 2017, this project won the Generation-S Pre-Accelerfirst in the Innovation in the Business nomination of the competition. In 2018, it also won the Chinese-Russian In-

Recently, the developers have assembled a brand new, autonomous version of a wristband equipped with modules, and also has an inertial module that includes eters.

«Compared with the anahigher accuracy and lower device recognition delay rate,» Aitbayev explained.



«It also allows the use of a wider range of various recognition algorithms.»

Developers are planning to use the laboratory prototype to create a system for controlling the upper limbs' bionic prostheses and update the virtual and augmented reality movement tracking system. Researchers also managed ognition algorithms, which used to stop working upon removing and attaching the electrodes back again; this allowed the reduction of the assemble the laboratory pro- In the future, developers are Smart House systems.