



World of MEPhi

May' 19

**“THERE IS NO THAT KIND
OF FAMILY IN RUSSIA...”**

THE FIRST ENGLISH-LANGUAGE MONOGRAPHY BY THE MEPHI STAFF: ON THE PREPARATION OF PERSONNEL FOR NEWCOMER COUNTRIES IN THE FIELD OF ATOMIC ENERGY DEVELOPMENT IS PUBLISHED

The English-language monography by the employees and students of MEPHI, edited by Doctor of Economics V.A. Tupchienko and Doctor of Technical Sciences A.V. Putilov, under the name «Pilot Project Platform for the Training of Personnel of Novice Countries for the Peaceful Use of Atomic Energy» will be available in summer 2019.

The materials of the publication describe the history and current state of the peaceful use of atomic energy and forecast the development of the industry in the near future. The purpose of the edition is to contribute to the development of "atomic education" in the field of promoting the organizational, economic and political prospects for the development of nuclear energy in the world market, including oriented to the participation in this process of foreign supervisors, specialists and students.

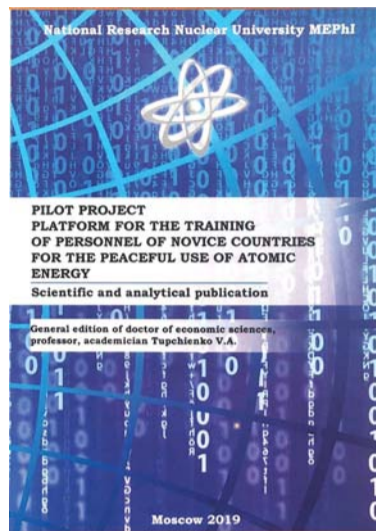
Trend or necessity?

At the moment, about 4% of students (225 thousand people) in Russia are foreigners. In 2019, about one and a half thousand foreign students study only at MEPHI, and this number is increasing every year. At the same time, the demand for the development of nuclear energy and nuclear technologies in the world is growing. There are currently more than 50 newcomer coun-

tries, which are interested in developing the peaceful use of atomic energy. All of them have submitted relevant applications to the IAEA. Rosatom State Corporation has already begun cooperation with Zambia and Bolivia: in 2018, the first agreements were signed on the development of centers of nuclear science and technology, this year the next in line is an agreement with Serbia. However, the creation of such centers presents difficulties associated with the training of specialists and the systematic development of nuclear projects. In this regard, the MEPHI put forward a proposal to create an English-language educational platform for transferring experience to newcomer countries. According to a number of experts, this will facilitate the study of material on the commercialization of nuclear technologies and will provide an opportunity to freely exchange the results of development, research, and innovative projects.

What is the distinguishing feature?

This monography is an "educational sensation" for the MEPHI scientific community for a number of reasons. For the first time since its founding in 1942, our university published a work completely written not just in a foreign language, but published taking into account the IAEA international



requirements for terminology, approaches, methods and definitions. English was chosen not by an accident, because now this language is unofficially recognized as the international language of scientific and technological communication and for most newcomer countries it is almost native.

However, while creating a monography of an international level, it is important not only to clearly state the main focus and meaningful content of scientific work, but also to precisely verify the terminological base. «For each unit for development of the peaceful use of atomic energy (and there are 19 units according to the requirements of the IAEA), it is important to make a reader understand and interpret it correctly. As part of the initiation and management of an atomic project, it is necessary to ensure that the approach to establishing work in

the emerging nuclear industry becomes more clear, transparent and understood.

And this is impossible without carefully verified terminological base», - Alexander Valentinovich Putilov, one of the project managers, noted.

Another key advantage of the monography, in comparison with many foreign and domestic sources, is rigorous data selection. «One of the main difficulties in creating the monography was that all the presented materials presented were very fragmented both in terms of topics and time of publication. We have created a structured and systematized work based on the latest information», - Sergey Merinov, undergraduate student of MEPHI, says.

Why read?

According to its authors - students and teachers of MEPHI - this publication gives an idea of the economic effects of the development of the nuclear industry. Also, the articles in the monography provide a detailed analysis of problems at each stage of the implementation of nuclear infrastructure. The legal and regulatory spectrum, issues of recruitment are covered, strategies of development are put forward.

«Based on the current realities of the nuclear industry and the situation on the world energy market, timely analysis of the current state of nuclear

energy and the development of a long-term development strategy, which will increase the economic efficiency and competitiveness of the industry, are necessary. That is why I chose "Strategic Leadership in the Nuclear Industry" as the topic of my article», - Khanum Imanova, a second-year student from MEPHI, says. Thus, the monography allows to assess risks, increase economic efficiency and see development prospects. In addition, issues related to the implementation of a comprehensive security culture are considered. It presents both Russian and international experience in the development of nuclear infrastructure, including the experience of the State Atomic Energy Corporation Rosatom and the IAEA.

«The challenge to the new generation is intellectual mobility, as the world is changing very quickly, and therefore it is necessary to quickly rebuild, which means you must have all the necessary knowledge», - the project manager, academician of the Russian Academy of Natural Sciences, professor Vitaliy Alekseevich Tupchienko notes. It will be useful to get acquainted with the monography for students, teachers, specialists working at nuclear enterprises and those who are interested in the development of the world electric power industry in total.



YOUTH AND SCIENCE

THE MEPHI POSTGRADUATE STUDENT TOLD WHY HE WAS AWARDED WITH THE MEDAL OF THE RUSSIAN ACADEMY OF SCIENCES

The medal of the Russian Academy of Sciences for young scientists and students of higher educational institutions of Russia is annually awarded for the best work in 19 scientific fields. The award was established in order to identify and support talented young researchers, to assist the professional growth of scientific youth, and to encourage the creative activity of young scientists and university students.

By a decision of the Presidium of the Russian Academy of Sciences in 2019, Vorobyov Vladislav Stanislavovich, a postgraduate student of the Scientific & Educational Centre (SEC) NEVOD of Institute of Nuclear Physics and Technology at MEPHI, was awarded with the medal of the Russian Academy of Sciences in the field of nuclear physics for his work "Study of cosmic ray muons groups on the Coordinate-Track Installation of Drift Chambers (CTIDC) facility».

Vladislav told about his scientific path. He does not hide the fact that the road to getting a medal

was long, and there is hard work of an experimental physicist is behind this award:

– I came to the NEVOD Research and Education Center in middle of 2013, and it was at that time that work began on the creation of the world's largest track installation on drift chambers for studying cosmic rays TREC. For two years, our small team created the prototype of the detector, which was called CTIDC, for another two years we investigated the work of drift chambers, improved software, methods of data processing and reconstruction of multiparticle events. Often we solved problems that had never before been solved in cosmic ray physics. I participated in solving most of the problems associated with the detector: these are design, development of electronics, simulation, testing, data processing, etc. For the last couple of years I have devoted all my time to work. Thanks to this, with the help of a new facility, it was possible to study groups of high-density cosmic-ray muons, for

the generation of which particles with energies up to 10^{19} eV are responsible. The peculiarity of the result obtained is that this was first done using an installation with a relatively small area ($\sim 30 \text{ m}^2$) from drift chambers that had never before been used in cosmic rays. Typically, plants with an area of thousands of square kilometers work with such primary particle energies.

A postgraduate student of the Scientific & Educational Centre (SEC) NEVOD of Institute of Nuclear Physics and Technology Vladislav Vorobyov gladly shared the news that work on the construction of the supporting structures of the TREC detector had recently been completed. In the near future, staffing with technological equipment and communications will begin, and he, together with the scientific group of the experimental complex, will begin to deploy a unique track detector. The young scientist plans to devote the next years to research on this installation.



A MEETING OF STUDENTS FROM UZBEKISTAN WITH THE HEAD OF THE UZATOM AGENCY WAS HELD AT MEPHI

April 26 in Moscow, a meeting of the First Deputy Minister of Energy from Republic of Uzbekistan, Director General of the Agency for nuclear energy development under the Cabinet of Ministers of the Republic of Uzbekistan Zh.T.Mirzamakhmudov and the rector of National Nuclear Research University «MEPHI» M.N. Strikhanov.

After a working meeting with representatives of the MEPHI,

Zhurabek Tursunpulatovich and Mikhail Nikolaevich met with students of MEPHI from Uzbekistan.

Opening the meeting, the head of Uzatom Agency partly noted: «You are all under our close attention, you are our future staff and, of course, you have a very great responsibility. Now your main goal is to study well and worthy. The state can build a station, it can attract

technology, but without personnel it all will be useless».

During an interactive conversation with the leadership of the agency and the university, the students asked all their questions. Special attention was paid to current academic performance, the problems existing in this area and the solutions adopted to correct them. Separately, future nuclear scientists were interested in the issue of

internships and further employment. But as far as all modern plants are complex, high-tech facilities, specialists from various fields will be required at the future nuclear power plant in the Navoi region.

It is worth noticing that the meeting was conducted in a very open and living way and as a result turned out to be very productive.

For reference:

The Russian Federation and the Republic of Uzbekistan began cooperation in the field of the peaceful uses of atomic energy after the signing of the Intergovernmental Agreement on Cooperation in December 2017. Uzbekistan plans to build a nuclear power plant in the Navoi region by 2028. The complex will consist of two power units with a capacity of 1200 megawatts each.

In July 2018 a resolution on the establishment of Tashkent branch of the National Research Nuclear University MEPHI was signed. A branch of a Russian university will train highly qualified engineering and technical personnel in the field of nuclear energy and thermal physics, carry out fundamental and applied scientific research in the field of nuclear physics, develop and implement new educational programs and forms of training, and also support the development of pedagogical potential.



MEMORY

MEPHI HELD A MEMORY RALLY IN HONOR OF VICTORY DAY

On May 7, a ceremonial rally, dedicated to the 74th anniversary of Victory Day in the Great Patriotic War, was held at MEPHI. Students and employees of the university gathered in the square in front of the main building to express their respect and gratitude to the participants of the tragic events of 1941-1945.

The event was opened by Alexander Sergeevich Nevzorov - the Head of the Department of Cultural and Mass Work. He reminded the audience about the key events of the war and gave the floor to other speakers.

On behalf of the leadership of MEPHI, Vice-Rector Vladimir Vasilyevich Uzhva turned to the audience with such words: «I call you to take this memory relay of the Great Patriotic War and pass it on to your children and grandchildren! And I want to wish those veterans who are still among us good health so that they can share their memories with us and that these days they may have strengths to carry out all their plans they've been thought about. I congratulate everyone on our common holiday for the victory of the Soviet people in the Great Patriotic War!»

For MEPHI Victory Day is a special holiday, because our university was founded during the war, in 1942. Chairman of the interregional social movement of veterans of nuclear energy and industry Vladimir Alexandrovich Ognev noted: «Moscow Engineering Physics Institute was given a copy of the Victory Banner — the very banner that was placed above

the Reichstag - for eternal storage. And now I call young people to be worthy of their previous generation! I wish all the staff, students and everyone who is now on this square success in your most important and necessary form of work for our Fatherland!» The head of the cultural and historical center "Our Heritage" Vera Aleksandrovna Makedonskaya voiced her wishes to veterans and the younger generation: «There are 332 front-line soldiers of the Great Patriotic War and 140 rear-front workers among MEPHI students. Some of our teachers are children of war, who also saw these terrible years, had a rough time, but were able to give all the best that they had to the younger generation. I want to sincerely congratulate you on the holiday, wish you all good health!»

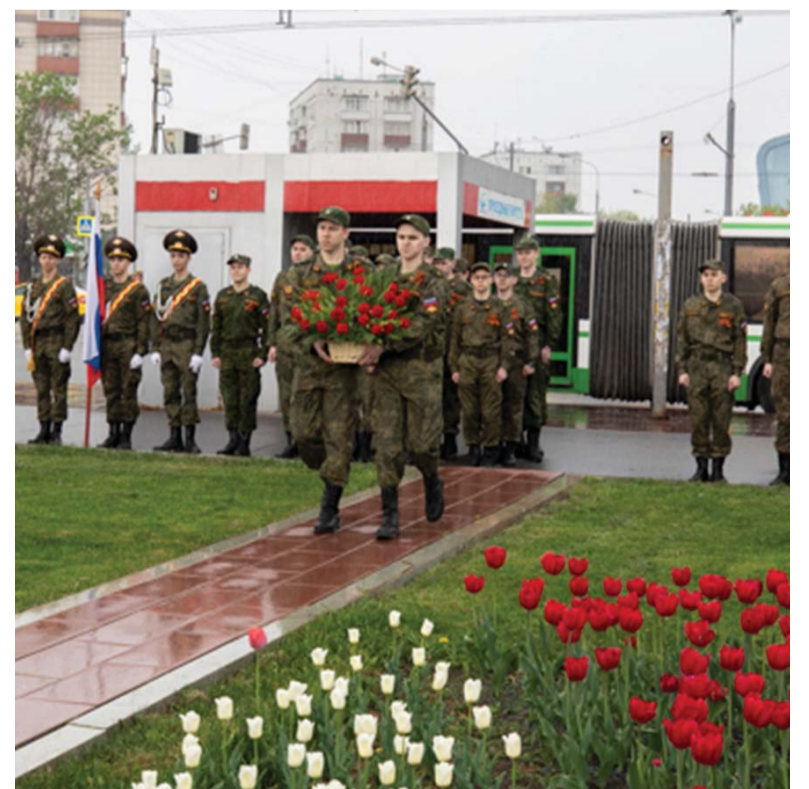
Chairman of the MEPHI trade union organization Vladimir Alexandrov in his speech noted: «The Great Patriotic War is the greatest test for our people and the whole humanity. Now we are bowing our heads to the veterans, to the rear-front workers, who in those difficult times defended freedom and independence. Thanks to them we can now work under a peaceful sky».

At the end of the ceremony, the soloist of the Academic Choir of MEPHI Ivan Dyatlov performed the song "Victory Day".

Participants in the rally honored the memory of those killed in the Great Patriotic War with a minute of silence and laid flowers at the Monument of Glory.

Also on May 7, a memory rally was held in the city of military glory Naro-Fominsk, where flowers were laid at the Obelisk of the Komsomol members who fell in battles for this city. The monument was built in October 1967 at the initiative of the MEPHI students. The university delegation took part in the event together with OINPE (Obninsk Institute for Nuclear Power Engineering) MEPHI and Lyceum No. 1523.

On May 8, the MEPHI delegation traditionally laid wreaths at the monument to the Marshal of the Soviet Union G.K. Zhukov at the metro station «Kashirskaya».



MEMORY

INTERACTIVE MUSEUM PROGRAM “KOLOMENSKOYE IN THE YEARS OF THE GREAT PATRIOTIC WAR”

On the eve of Victory Day in the Great Patriotic War, students of our university had the opportunity to immerse themselves in the atmosphere of wartime by taking part in the excursion and art program «Kolomenskoye during the Great Patriotic War.»

At first, during a tour of the historical territory — Gosudarev Yard — students learned about the way the museum survived during the Great Patriotic War, how its employees saved valuable exhibits and preserved architectural monuments. Students discovered a completely new Kolomenskoye - with anti-aircraft batteries, balloons and bomb shelters, learned about the life of the museum during the Moscow battle. Then the program participants got the opportunity to take the “Young Fighter Course” - to test the equipment and armament of the militias who volunteered for the front. As part of the interactive program, students were shown how to assemble and disassemble a raincoat, roll up an overcoat, fill a duffel bag, wind a footcloth. Students also were allowed to hold a battle bayonet, F1 grenade called «limonka», Mosin-Nagant in their hands. This experience of using genuine wartime artifacts, the audio recording of voice of the announcer Y.B. Levitan and wartime songs allowed to create a feeling of that historical period. Then the hardships of the war were slightly brightened up by the plain soldier’s kitchen, simple food on a halt or in between battles. The program participants tasted soldier’s porridge with stew, making sure that it can be tastier than any gastronomic delights.

When the Germans approached Moscow, Kolomen-

skoye entered one of the two contours of the city’s defense. There were a large railway station and industrial zone ZIL near the Museum Reserve, where bombs flew from the first month of the war. Enemy forces actively tried to influence the Warsaw highway and the Kursk route. There stood an anti-aircraft warfare in the reserve area. It was made to protect not so much a museum as the banks of the Moscow River and railway junctions. Bomb shelters were organized in the basements of the Church of the Kazan Icon of the Mother of God, of the Church of the Ascension of the Lord and in the southern closet of the Colonel’s «Polkovnichyi» chambers. Chambers. The employees of Kolomenskoye meuseum made every possible effort to save unique architectural monuments and museum collections. One part of the collection was transported to Kazakhstan, the other was bricked up in the museum’s cellars under the Front Gate. The windows and doors of the architectural complex were closed with metal shields from the effects of the blast wave. Local residents and the

remaining museum staff organized regular duty.

There were many monuments of wooden architecture of the XVII century, which were located next to the House of Peter The First, in Kolomeskoye. Despite the fact that all objects were impregnated with a refractory mortar, not a single building could withstand a direct bomb hit. Workers monitored the temperature in the basements. In winter, each building had to be heated manually using its own resources. And if the stone tolerated heat differences, then the storage of wood, metal and fabrics required special conditions. «Kolomeskoye» Museum Reserve was opened on May 8, 1945 for visitors. The first exhibition object was the House of Peter The First, exhibition halls were also being prepares for the opening. By 1946, the museum began its full-fledged work.

The excursion and art program dedicated to the history of Kolomenskoye during the Great Patriotic War was held for first-year students and students of the MEPHI military department with the participation of the Cultural Historical Center «Our Heritage».



INTERNATIONAL COOPERATION

ADVENTURES OF THE MEPhI STUDENT IN ITALY

STUDENT OF THE DEPARTMENT OF ELEMENTARY PARTICLES TAKES PART IN THE WORK OF THE BOREXINO NEUTRINO EXPERIMENT



The Department of Elementary Particle Physics at MEPhI closely cooperates with leading international experiments, both in the scientific and educational fields.

As part of such cooperation, a fourth-year undergraduate student, Radik Nugmanov, traveled to the Italian Alps for a three-week internship to participate in the «Borexino» neutrino experiment and shared his impressions with us.

– For three weeks I was at the Gran-Sasso National Laboratory, which is located in the Abruzzo region of Italy. During this time, I worked on the «Borexino» international

experiment. The experiment is one of the largest liquid scintillation detectors in the world. It is located under the Gran-Sasso mountain. This experiment is unique because it was the first to be able to measure the spectrum of solar neutrinos with record accuracy.

My job was to monitor the continuous operation of the detector and its electronics, to troubleshoot problems arising in the process of data acquisition, and to verify data initially. Also during this internship, I became more familiar with the work of the detector's electronics and acquired the primary professional skills of working with it.

I really liked the atmosphere in the underground laboratory. Modern equipment, large installations - everything looks simply grandiose!

I also liked to feel like part of a large team: I felt that the result of the work made by those who will work with the data that was typed under your supervision, depends on your actions. This is a big responsibility, but it did not stop me from doing my job well.

For me, this has become an invaluable experience of working on an experiment of a global size. Here I acquired very important skills for working with electronics and with real data. I hope this is not the last trip for me.

STUDENTS OF MEPhI FROM VIETNAM PASSED A SHORT-TERM EDUCATIONAL PRACTICE IN ST. PETERSBURG

From April 25 to 26, a group of undergraduates from Vietnam of the Department of Electrophysical Installations (EFU) of the LaPlas Institute have short-term training practice in specialized organizations of St. Petersburg.

Students specializing in medical accelerators visited the «Korad» research and production enterprise, which designs and manufactures linear electron accelerators, as well as the «Rad» Radiation Accelerator Center for sterilizing medical products.

Students familiarized themselves with the development of a linear

resonant electron accelerator with an energy of 8 MeV for gamma-activation analysis of rocks at «Korad» LTD. At «Rad» LTD, located on the territory of the Russian Scientific Center of Radiology and Surgical Technologies named after Academician A.M.Granov, in the village of Pesochny near St. Petersburg, the students studied the operation of the radiation-accelerating complex for sterilization of medical products and got acquainted with the requirements for the development, validation and current control of the sterilization process of medical devices.



“RUSSIAN FOLK TOYS” MASTER CLASS WAS HELD IN KOLOMENSKOYE MUSEUM

MEPhI foreign students continue their acquaintance with the Russian history and culture. Interactive workshops in «Kolomenskoye» Museum Reserve contribute to immersion in the atmosphere of medieval Russia with its unique traditions and folk crafts. The art of making toys, including rag dolls, dating back to antiquity, occupies a prominent place among traditional crafts. On May 15, participants of workshop in Kolomenskoye learned many interesting facts about folk culture and the technology of making toys in peasant families. Foreign students tried to make a rag doll with their own hands. The results did not leave anyone indifferent. Everyone left workshops with beautiful handmade souvenirs, which will please participants' relatives and friends. Thus, our centuries-old history and culture has become even closer and more understandable for foreign students.



OUTSIDE OF THE CLASSROOM

STUDENT BRIGADES OF MEPhI — ON THE STAGE!



On May 17, the III annual Creative Festival of the MEPhI student brigades was held in the assembly hall.

Guys from five groups and invited guests from MPEI competed in four nominations: dance, author's song, original genre and visiting card of a group. The performances turned out to be completely diverse: there were a hot dance from our charming girls, and an exciting story about assembling a brigade for the

new soil, and a cover for the stunning song of the SCT (Student Construction Team) "Atom named after G.I. Egorov", and a stylish dance of the counselors, and the story that a combat shirt is more stylish than a leather jacket.

The chords of the group songs spread throughout the hall and made everyone feel the atmosphere. After the competitive program for all the MEPhI students and festival guests, Sergey Grudinin from the SCT «Anchor» song about the new soil. In the end, of course, the traditional songfest took place.

And now about the results: the best are

in «Dance» nomination:

SCT «Creators of Energy»

SCT «Triumph»

STT (Student Teaching Team) «Alta-vista»

in «Author's song» nomination:

SCT «Sleipnir»

SCT «Creators of Energy» and SCT «Triumph»

in «Original genre» nomination:

SCT «Lighthouse»

SCT «Amperage» and SCT «Vertex»

in «Visiting card» nomination:

SCT «Triumph»

SCT «Creators of Energy»

SCT «Sleipnir»

in the whole team classification:

SCT «Creators of Energy»

SCT «Triumph»

SCT «Sleipnir»

Thank you guys for a stunning evening!



THE MEPhI STUDENT DETACHMENTS PASSED THE SCHOOL OF A YOUNG FIGHTER (SYF)

From May 9 to 12, the ME-PhI School of a Young Fighter was held in the Volga SRC (Sports and Recreation Camp). 75 representatives of the university's detachment movement took part in the School.

The main objectives of the School were training of beginners and future fighters of student groups, team building, preparing guys for the summer season and promoting a healthy lifestyle. For four days, future fighters, divided into six teams, listened to lectures on the basics of detachment life from experienced teams,

passed useful training with complex naming, learned to apply the acquired knowledge in practice. For example, each team had to come up with a name, a motto, an emblem and make a flag of their "little detachment" according to all the rules of the YRPO «RSG» (Youth all-Russian Public Organization «Russian Student Groups»)

The departure began with a large-scale subbotnik, where organizers and fighters prepared a recreation center for the summer season. A surprise for the participants was an elaborate evening quest.

The organizers wanted to show future fighters everything that they would expect in the summer. Therefore, the guys not only wrote lectures in their notebooks, but also competed in a variety of sports and showed creative numbers invented on the spot in a couple of hours, and even took part in a real detachment wedding! And the final bonfire with detachment songs in the «Oryol» circle were not left indifferent to anyone.

All participants in SYF-2019 returned home encouraged and ready for the third working season!



CITIUS, ALTIUS, FORTIUS!



THANKS FOR THE SUPPORT! RUGBY PLAYERS OF MEPH SUCCESSFULLY COMPLETE THE SEASON

On May 27, rugby players of MEPH returned from St. Petersburg, where they took part in the final of the All-Russian rugby-7 competition among students, and on Wednesday, May 29, they were waiting for the games of the final of the Moscow Rugby Championship as part of the XXI Moscow Student Sports Games.

Petersburg. Our team was determined to win, won all the matches of the preliminary tournament, but lost to the Moscow champion – MAI team and from the second place in the group went to the game with the first place in another group - with the team of Dagestan. Southerners were more powerful, as a result, the players of MEPH had to fight for fifth place. In this match, our guys opposed the team of Crimea. We won! The result is a worthy performance in the All-Russian final, and fifth place in Russia belongs to the MEPH!

It is appropriate to note that the Dagestan team took 3rd place, and the MAI (Moscow Aviation Institute) team

became the Champion of Russia, defeating the team of the Krasnoyarsk SFU (Siberian Federal University) in the final, which indicates the level of Moscow student rugby.

The final games in Moscow on Wednesday were simpler, but a serious fight broke out in the bronze match between the teams of the Moscow State University of Civil Engineering and the Financial University. The «engineers» were stronger than the «financiers»: they took the third place. The final pair of competitors for the “gold” of the Moscow Championship was MEPH and MAI. «Aviators» confirmed their reputation as the champion of Russia not without difficulties and became the first team in Moscow! Team of MEPH own the silver medals!

Congratulations to the rugby players of MEPH with “Silver double” of the Championship of Moscow in the competitions of the XXXI Moscow Student Sports Games.

CULTURE

“CARPE DIEM” CHAMBER CHOIR OF MEPH BECAME A SILVER WINNER AT THE V INTERNATIONAL EURASIA CANTAT CHOIR ASSEMBLIES

From May 3 to 7, «CARPE DIEM» Chamber Choir defended the honor of MEPH at the V International Choir Assemblies in Yekaterinburg.

The creative team was represented in the nomination “Mixed choirs” and was evaluated by an international jury, which included leading experts in the field of choral and vocal musical culture from Lithuania, France and Russia.

The Chamber Choir traveled

to the capital of Ural region for the first time. Performances took place in the Makletsky Concert Hall and Yekaterinburg Museum of Fine Arts. They also managed to get acquainted with the famous Boris N. Yeltsin Presidential Center, where the contest was closed. No less than 80 teams participated in it.

The competitive “CARPE DIEM” performance program was diverse, consisting of classical works, works by contem-

porary domestic and foreign composers.

The Chamber Choir managed to cover the period of the last six centuries of European choral art in 20 minutes of live performance. The highlight of the performance was the work «Nyon, nyon» by a modern American composer Jake Ranestad, who revived the audience with incendiary rhythm and non-trivial sound effects, skillfully selected by the author.

Probably, it was performance to get an award - the Silver Diploma!

