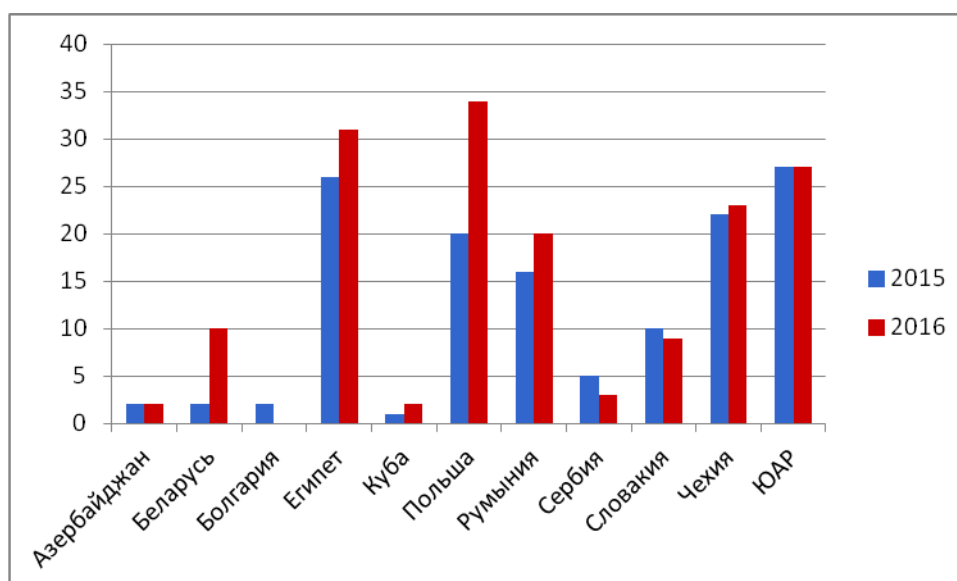


JINR UNIVERSITY CENTRE IN 2016

In 2016, JINR University Centre celebrated its anniversary: 25 years ago it was established in order to implement the educational programme of the Institute.

International Student Practice'2016

In 2016, 161 representatives of Azerbaijan, Belarus, Egypt, Cuba, Poland, Romania, Serbia, Slovakia, Czech Republic, and South Africa participated in the three stages of the Practice.



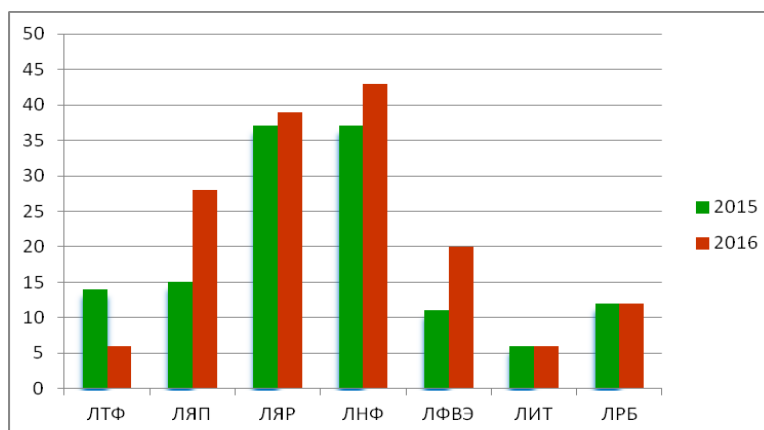
Number of ISP participants distributed by countries, 2015-2016

The 1st stage of the Practice 2016 started on May 23. Traditionally, this stage is attended by representatives of Egypt. Twenty-eight under- and post-graduate students and young scientists from 16 universities and research centres of Egypt were selected by the authorised national representatives (out of 100 applicants) to participate in the Practice.

The 2nd stage of the Practice 2016 began on July 4. Thirty-four students from Poland, 23 – from the Czech Republic, 20 – from Romania, 9 – from Slovakia, and 2 – from Azerbaijan came to JINR to take part in the event. This stage is always noted for a large number of participants. However, in 2016 the number of people willing to participate in the Practice was a record – 88 students won selective competitions in their countries.

On September 5-23, 27 students from South Africa, 10 – from Belarus, 3 – from Serbia, and 2 – from Cuba became participants in the final 3rd stage of the Practice.

The Practice programme traditionally included lectures on the research conducted at JINR and visits to the main experimental facilities, but most of the time was devoted to research projects. The database of research projects at the UC website (<http://uc.jinr.ru>) has 61 projects. In the 1st stage of the Practice the staff-members of the laboratories supervised 32 projects; in the 2nd stage – 42 projects; in the 3rd stage – 39 projects. The final day of the Practice was dedicated to the participants' presentation of reports on the work performed.



Number of ISP participants distributed by JINR laboratories, 2015-2016

Egyptian students took part in a social event in Dubna University. For the participants of the 2nd stage a picnic on Lipnia Island was organised. The participants in the 3rd stage visited Moscow and Tver and took part in a new social event – "International Morning" – organised in the JINR Visit Centre. It included a lecture on the history of Russia and Dubna, as well as reports of the participants on the history and traditions of their countries, demonstration of national costumes and tasting of national cuisine.

JINR-based education

In 2016, 440 students from the JINR-based departments of MSU, MIPT, MEPhI, University "Dubna", and universities of the Member States were trained at the JINR University Centre.

Summer training was organised for 238 students from the universities of Armenia, Belarus, Georgia, Mongolia, and the Russian Federation. Among the universities of RF were: MSU, MIPT, MEPhI, MISA, Voronezh State University, St. Petersburg State Electrotechnical University, Tver State Technical University, Tomsk Polytechnic University, South-Russian State University. Students of the JINR-based departments of University "Dubna" constituted the major part of trainees. To do the training, the students were attached to the JINR Laboratories. The largest number of students was in VBLHEP - 81 people; LIT welcomed 44 students, and LRB - 35.

In 2016, 19 degree-seekers from the Russian Federation, Georgia, and Kazakhstan were attached to JINR in order to prepare their PhD theses without mastering the training programmes of the teaching staff at the PhD courses. Eleven of them chose "Physics of atomic nucleus and elementary particles" as their major subject.

The UC website (<http://uc.jinr.ru/>) database of training courses intended for students from the JINR-based departments of MSU, MIPT, and University "Dubna" presents 124 lecture courses in the following fields: particle physics and quantum field theory, nuclear physics, condensed matter physics, nanostructure and neutron physics, physics setups, information technologies, mathematical and statistical physics.

Engineering and Physics Training intended for accelerator engineers and experimental physicists is a new activity offered by JINR UC. Currently, it includes hands-on courses on vacuum and RF technology, electronics and precision laser metrology. Courses on nuclear physics, automation and particle detectors are being elaborated. After commissioning the electron accelerator LINAC-800, a part of these courses can be performed using the accelerator beams.

New student programmes

The Summer Student Programme 2016 was attended by 39 under- and post-graduate students from MSU, MIPT, MEPhI, universities of St. Petersburg (St. Petersburg State University, St. Petersburg Electrotechnical University "LETI", ITMO University), University "Dubna", universities of Belarus, Egypt, Kazakhstan, Cuba, Poland, Romania, South Africa. Over 6-8 weeks, from June to October, students and postgraduates fulfilled their research projects in the Laboratories of the Institute.

International scientific school for physics teachers at JINR

On June 19-25, 2016, JINR hosted a regular School for Physics Teachers from JINR Member States. The event was attended by 26 teachers and 8 school students from Bulgaria, Russia, and Ukraine. Russian teachers and students came from Vologda, Moscow, Rostov, Samara, Sverdlovsk, Tambov, and Chelyabinsk regions, the Crimea, Nenets AO, Tatarstan, and Chuvashia. On June 26 - July 1, the third School for 20 teachers from Moscow and Moscow region was held with the financial participation of the Moscow City Teachers' House.

With regard to the feedback from the former participants, the programmes of the Schools included popular science lectures by the leading JINR specialists, visits to the main experimental facilities of JINR, and hands-on activities in the UC Physics Lab. High-school students presented

their reports at a scientific seminar. For the teachers a round table "Modern physics issues and methods of teaching physics at school" was planned.

On October 30 - November 6, CERN hosted the 9th Scientific School for Physics Teachers from JINR Member States. The School was organised by CERN and JINR, with the financial support of the Centre of National Intellectual Reserve, Moscow State University. The School was attended by 46 physics teachers from Armenia, Kazakhstan, Moldova, Russia, and Ukraine. The Russian Federation was represented by teachers from Moscow and Moscow region; St. Petersburg; Arkhangelsk, Vologda, Irkutsk, Kirov, Kurgan, Kursk, Lipetsk, Novosibirsk, Pskov, Samara, Sverdlovsk, Tambov, Tomsk, and Chelyabinsk regions; Bashkortostan, Tatarstan, and Chuvashia.

The programme of the event included lectures, visits to experimental facilities, meetings with scientists both in the working and informal environment, and excursions.

Physics Days'2016

On March 27-29, 2016, Dubna hosted Physics Days held in the framework of the JINR 60th anniversary celebration. The event was organised by the JINR University Centre and the Interschool Mathematics and Physics Open Classroom. For the third time amateurs of physics of different ages had the opportunity to see exciting scientific demonstrations, including those with liquid nitrogen, and independently perform physics experiments. Those who are fond of mathematics solved tasks and puzzles, participated in mathematical battles. The event was attended by school students from Dubna, Dmitrov District, Moscow, St. Petersburg, and Otto Wichterle Gymnasium of Ostrava-Poruba (Czech Republic).

Within the framework of Physics Days, the 5th Robotics Tournament of the Open Upper-Volga Educational Cyber Network was held. The tournament was organised by JINR, the Interregional Computer School, Keldysh Institute of Applied Mathematics, and Open Upper-Volga Educational Cyber Network (OUVECN).

Video conferences

JINR UC continues organising and assisting in the running of videoconferences, as well as in the broadcasting through the JINR system of videoconference management. In 2016, the following video conferences were held:

- video broadcasting of the joint workshop sessions "Physics at the LHC";
- video conference for pupils of the 5, 7, 8, 9 and 11 grades of Moscow school No.1386;

- video conference "Joint Institute for Nuclear Research: NICA collider, the most important discoveries of the recent years" for students from Troitsk and Novomoskovsky administrative district of Moscow;
- video lectures "Elements of relativistic quantum field theory" by A. Khvedelidze for students of the National Research University "Moscow Engineering Physics Institute";
- virtual tour of the CMS experiment (CERN) in the JINR Library;
- video conference on the new JINR accelerator complex NICA and the work of the DLNP Medical and Technical Complex organised for students from Moscow school No.185.

VI All-Russian Science Festival NAUKA 0+

At the VI All-Russian Science Festival NAUKA 0+ held on October 7-9 in Moscow, JINR was represented at two sites, where exhibitions dedicated to the main fields of research and pioneer projects of the JINR Laboratories were installed. Visitors of all ages had the opportunity to participate in physics and chemistry experiments, competitions and master-classes in robotics, as well as to acquire new knowledge about science using interactive technologies, educating programmes and games.

Visits

The programme of introductory visits for students from Balashikha, Veliky Novgorod, Dubna, Moscow, Michurinsk, Smolensk, St. Petersburg, Tver, John F. Kennedy Physics School (Berlin) included lectures on JINR, visits to the main experimental facilities, hands-on activities in the UC Physics Lab, popular science demonstrations, and a visit to the A.N. Sissakian Education Centre. Students of the Bauman State Technical University made a tour of the IBR-2 reactor. For children from a city summer camp "LETO" demonstration of experiments with liquid nitrogen was organised.

Work with school students

During the academic year, twice a week, 33 Dubna high-school students attended physics classes that included hands-on activities in the UC Physics Lab, as well as lectures training pupils for the Unified State Exam.

For pupils of all ages, the Center for Additional Education "PRIMER" started its work with the support of the University Centre, thus enhancing and complementing the JINR Interschool Open Classroom programme. The Centre "PRIMER" will organise clubs, projects

and tutorials in mathematics, informatics, robotics, and science, as well as provide assistance in the preparation for the final examination.

**Advanced training and skill improvement of workmen, engineers, technicians,
and staff-members**

89 JINR staff-members and 20 representatives of Dubna organisations were trained at the courses intended for the personnel maintaining the facilities subordinate to Rostekhnadzor. 91 JINR staff-members were trained at the courses organised at JINR and certified by the Central Attestation Commission of JINR. In 2016, the Territory Certification Commission of Rostekhnadzor certified 22 JINR top executives and specialists in the normative legal acts and normative-technical documents stating requirements for industrial safety in various spheres of supervision. 430 JINR staff-members were trained and certified by the Central Attestation Commission of JINR in the new rules on labour protection related to working at heights. 160 people were trained in labour protection, and the knowledgeability of the heads and committee members of the structural divisions of the Institute was tested. 33 top executives and specialists of the Institute were trained in fire safety. 10 students from MRICC and MRATT were trained at JINR.

151 JINR staff-members attend language courses organised by the University Centre: English – 105 people, French – 22, German – 15, Russian as a foreign language – 9 foreign specialists.