UNIVERSITY CENTRE

JINR-Based Education Process

In 2008, students of the JINR-based departments of Moscow Institute of Physics and Technology, Moscow Institute of Radio Engineering, Electronics, and Automatics, and Dubna University, as well as students coming from other higher education institutions of the Russian Federation and JINR Member States attended the JINR-based programmes — 536 altogether. Students of Dubna-based institutions began to dominate in number (80% in 2008), which allows a conclusion do be drawn that opening of JINR-based departments at Dubna University leads to a qualitative change in the JINR Education Programme: the Institute started to train its own research staff beginning with their entering the university as first-year students. JINR can thus have a stronger influence on the education process adjusting it to JINR's needs; besides, the Institute staff can be involved both in research and teaching.

The above does not mean that the UC began to pay less attention to students of higher education institutions of other JINR Member States. On the contrary, there was an increase both in the number of these students (about fivefold) and in the number of higher education institutions which have concluded agreements with the UC (there are now 21 such institutions in Russia and 16 in other JINR Member States).

For students, a database of courses offered in the academic year 2008–2009 and their contents in English and Russian is available at the UC's site, http://uc.jinr.ru. The courses are grouped into the following sections: particle physics and quantum field theory; mathematical and statistical physics; condensed matters, nanostructures and neutron physics; nuclear physics; physics research facilities; information technologies; and humanities.

JINR Postgraduate Studies

The special feature of the JINR postgraduate programmes is that the postgraduates combine attending the UC courses with doing research at JINR Laboratories for preparing their theses. In 2008, the greatest number of postgraduates were attached to the Laboratory of Nuclear Problems (24). There were 21 postgraduates at the Laboratory of Theoretical Physics, 11 at the Laboratory of Information Technologies, 8 at the Laboratory of High Energy Physics, 6 at the Laboratory of Neutron Physics, 2 at the Laboratory of Nuclear Reactions, and 1 at the Laboratory of Radiation Biology. JINR's total postgraduate enrolment was thus 73 in the year 2008.

The most popular postgraduate specialty in 2008 was Nuclear and Elementary Particle Physics with an enrolment of 32. Other specialties' enrolment was as follows: Theoretical Physics (13), Mathematical Modelling, Numerical Methods, and Software Complexes (11), Charged Particle Beams and Accelerator Techniques (7), Condensed Matter Physics (3), Instruments and Techniques of Experimental Physics (3), Radiobiology (2), Mathematical and Software Support of Computers, Computational Complexes, and Computer Systems (1).

In 2008, seven postgraduates defended their Candidate's theses.

JINR's total postgraduate enrolment in 2008 was made up by citizens of the Russian Federation and the following JINR Member States: Armenia, Belarus, Georgia, the Ukraine, and Uzbekistan.

In November–December 2008, annual evaluation of postgraduates' academic progress was held at the laboratories. The postgraduates presented reports on their research results, Candidate's Degree Minimal Requirement Examination results, published articles or articles prepared for publication, and participation in scientific

conferences. The evaluation results are considered for advancing the postgraduates to the next academic year and assigning them stipends.

Presentation of the JINR Student Laboratories

In May 2008, a presentation of the JINR Student Laboratories was held. The necessity of creating laboratories for training physicists arose in 2003 when the Departments of Theoretical and Nuclear Physics were established at Dubna University with JINR's participation. To solve this task, it was decided that student laboratories should be created on the Institute's territory with the participation of Dubna University's departments and included in the UC infrastructure so that other JINR-based higher education institutions' departments would be able to participate in the creation and use of the laboratories.

Practical classes are held now at the laboratories of atomic physics, optics, and molecular physics; the laboratory of nuclear physics was founded. Specialized facilities are going to be installed later for students to be able to perform research and applied works.

2008 International Student Practices

The International Student Practices in JINR Fields of Research arouse great interest among scientific youth, which is indicated by a continuous growth in the number of the applications for attending them. For this reason, the UC is beginning to conduct the practices all year round.

In 2008, the practice was held in three stages: in July, for 40 students from Bulgaria, the Czech Republic, Romania, Slovakia, and the Ukraine; in September, 24 Polish students came for a three-week practice; in late September, they were joined by 21 students and postgraduates from the Republic of South Africa, which was the second time that representatives of South African scientific youth came to JINR to attend a practice.

The practice programme was drawn up taking into account the positive experience of the past years (the first practice was held in 2004). It included performing study research projects at the Institute's Laboratories, lectures by JINR's leading scientists and specialists, excursions, and culture events.

In 2008, the study research projects were worked out by the Laboratory of Neutron Physics (7 projects), Laboratory of Nuclear Reactions (6 projects), Laboratory of Nuclear Problems (5 projects), Laboratory of High Energy Physics (2 projects), Laboratory of Radiation Biology (2 projects), and Laboratory of Theoretical Physics (2 projects). The full list of the projects is available in the section «UC study projects and laboratories» of the UC's site, http://uc.jinr.ru.

International Activities

In February 2008, nuclear safety and radiation protection courses were held for 23 students of Maria Curie-Sklodowska University (Lublin, Poland). The students attended lectures and were acquainted with the work of JINR's Polish staff. The courses were also attended by six Polish students performing their diploma work at the Laboratory of Neutron Physics and Laboratory of Nuclear Reactions. The course was held as part of the University's curriculum.

Student Visits to the UC

Meetings between first-year students of Moscow Institute of Physics and Technology (MIPT) and JINR scientists became a tradition. In March and October, MIPT students met with scientists of the Laboratory of Theoretical Physics and Laboratory of Nuclear Problems. The students learned about the advantages of studying at MIPT's JINR-based department and had excursions to JINR's basic facilities.

Secondary School Pupils-Oriented Activity

The UC performs activities oriented at the most talented secondary school pupils of JINR Member States with a view to attract their attention to the possibilities of making a scientific career in JINR's fields of research. The UC performs three kinds of secondary school pupils-oriented work: classes at the UC's practical laboratory course during all the academic year, visits to the UC by pupils from JINR Member States, and large-scale school conferences and scientific contests.

As part of an optional school course of physics, two groups of the 10th and 11th-grade pupils have weekly classes at the UC's practical laboratory course. The aim of the classes is to educate the pupils in the basics of physical measurements and to give them a feel of performing research.

The UC is the initiator and organizer (since 2007, a co-organizer) of Moscow Region's School Pupil Conferences on Modern Issues of Natural Sciences. In 2008, the Summer School Conference «Modern Physics 2008» was held in the last week of June. The Conference was organized by the UC and the Foundation for Fundamental Physics Support (FFPS). It was participated by 70 eighth and tenth-grade pupils of schools with advanced programmes of physics and mathematics from Moscow, the Moscow Region, St. Petersburg, Yekaterinburg, and Stavropol. The expansion of the Conference's geography points to its gradual level and status rise. The School Conference can later become international because some of its sections were already participated by 15 Polish school pupils who were then on an acquaintance visit to JINR.

Two teachers came from Bulgaria to study the experience of conducting this kind of conferences and to have contacts with their Russian colleagues.

The Conference programme included science contests, theoretical and experimental problem sessions, physics team competitions, popular lectures on modern issues of science (from microworld physics and cosmology to current problems in research and technology) by leading scientists, excursions to JINR Laboratories, meetings with scientists and cultural workers, and a culture and sport programme.

One of the aims of the Conference was to draw the attention of prospective higher education institutions' entrants to the opportunities of studying at the JINR-based departments of Moscow Institute of Physics and Technology, Moscow State University, and Dubna University. Another aim was to select potential participants of the FFPS Programme of Training Prospective Physicists.

The partners in the Conference organization were Dubna University, the Department of Problems of Physics and Astrophysics and the Department of Fundamental and Applied Problems of Microworld Physics of the Faculty of General and Applied Physics at Moscow Institute of Physics and Technology, the All-Russia Correspondence School of Mathematics, the «Second School» Lyceum, and the Physics and Mathematics Club of St. Petersburg.

Following an established tradition, the Charity Foundation of the Joint-Stock Financial Corporation «Sistema» and Dmitry Zimin's «Dynasty» Foundation were the Conference's sponsors.

Professional Development System

One of the UC's activities consists in the retraining and professional development of the working, technical, engineering, and office staff. In 2008, 10 JINR staff learned a second specialty; 28 completed the courses of training staff in charge of facilities supervised by the Russian Federation's Technical Inspection; 37 staff of organizations located in Dubna learned professions that are within the jurisdiction of the Russian Federation's Technical Inspection.

At the seminars held in Moscow, St. Petersburg, and Dubna, 21 JINR staff improved their qualifications. 65 JINR staff received qualifications allowing them to operate and maintain pressure machines, mechanisms, and facilities. Local Certification Commissions of the Russian Federation's Technical Inspection and Russian Federation's Nuclear Inspection certified 14 JINR top-rank staff and specialists according to the legal and technical standard documents setting the industrial safety requirements in different fields.

In 2008, 14 students of Technical Lyceums No. 67 and 95 had practical training at JINR. The English courses for JINR's young scientists and specialists have been continued. In 2008, they were attended by 55 JINR staff and 17 students of JINR-based departments.