

# UNIVERSITY CENTRE

Realization of the educational programme of JINR was discussed on December 11, 2009 at the meeting of the Council of JINR University Centre. JINR Director Academician of RAS A. N. Sissakian gave a positive evaluation of the results of the JINR educational programme in 2009 and stressed that the inflow and assignment of young personnel to the innovational and scientific programmes of JINR remains the priority task. For young scientists from the Member States, JINR must be attractive first of all by the possibilities of holding here advanced scientific researches. A new project of Regulations on the UC and plans of work in 2010 were discussed at this meeting. The initiative of the UC on creating a Work Committee of the UC Council was supported, in the structure of which there entered the deputy directors of laboratories supervising educational programmes and representatives of the JINR-based departments of the Russian higher education institutes.

## International Student Practices in 2009

International student practice in the JINR fields of research was divided in 2009 into three stages. It was organized in July for the students from Poland (22 students), Czech Republic (13), Romania (12), Serbia (1), in September for 23 students from the Republic of South Africa, and at the end of October for 16 students from the Arab Republic of Egypt.

The practice included the work on small (three weeks long) research projects in the laboratories of the Institute, presentation reports of students on the work done by them, lectures by the leading scientists and specialists on the JINR laboratories activity, and also excursions and cultural activities.

Research projects for the practice in 2009 were developed by the staff of FLNR (7 projects), FLNP (11), DLNP (5), VBLHEP (2), LRB (1), BLTP (1), LIT (1). The complete list of projects can be found at the UC web-site (<http://uc.jinr.ru>) in the section «JINR UC Study Projects and Laboratories».

## Educational Process on the Base of JINR

Students of the following institutes participated in the educational process at the University Centre in 2009: at the JINR-based departments of MPTI — 16 students, MSU — 24, MIREA — 166, Dubna University — 229; and from other institutes of Member States (MEPI, MEI, state universities of Belgorod, Voronezh, Gomel, Erevan, Kazan, Kostroma, Saratov, St. Petersburg, Irkutsk, Minsk, Tver, Tomsk, Tula, Uzhgorod; Pomorsk, Uralsk, Yuzhno-Uralsk state universities, Sibirsky FU, the National University of Kiev, Uzbekistan, the University of the AS of Moldova) — 116, in total 551 students.

The UC organized the summer practice for 113 students from MSU, MPTI, MIREA, Dubna University, state universities of St. Petersburg and Tula, Uralsk State Technical University, the Kazan State Technical University, the Tomsk Polytechnical University, and the National University of Uzhgorod.

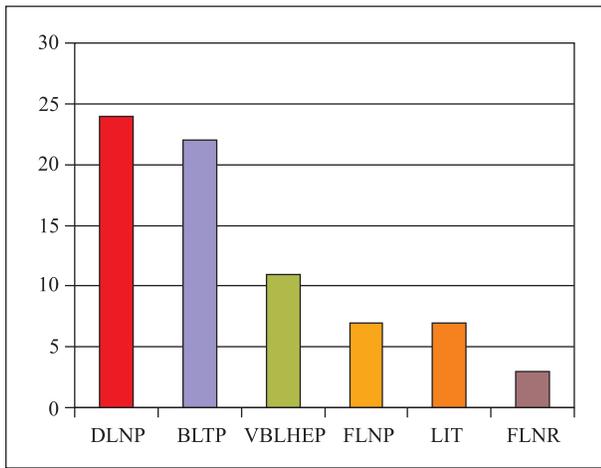
A list of themes for bachelor's and master's students diploma works offered by the scientific staff of JINR laboratories appeared on the UC web-site in the section «Students».

The content of the database of educational courses (Russian and English versions) was renewed also at the UC web-site in the following sections: particle physics and quantum field theory — 34 courses; mathematical and statistical physics — 19; condensed matter physics, physics of nanostructures and neutron physics — 21; nuclear physics — 15; physical equipment — 18; information technologies — 15.

## Postgraduate Studies at JINR

The distribution of postgraduate students over the JINR laboratories is shown in the diagram.

The total number of postgraduate students in 2009 is 74.



The distribution of these students over the specialties existing for JINR postgraduate studies is shown in the table.

Specialty	Number of postgraduate students in 2009
Physics of atomic nuclei and elementary particles (01.04.16)	27
Theoretical physics (01.04.02)	16
Physics of charged particle beams and accelerator technique (01.04.20)	9
Condensed matter physics (01.04.07)	4
Devices and methods of experimental physics (01.04.01)	3
Mathematical and software support for computers, computational complexes and computer systems (05.13.11)	3
Mathematical modeling, numerical methods and software complexes (05.13.18)	7
Radiobiology (03.00.01)	4
High Energy Physics (01.04.23)	1

In 2009, 23 students were accepted for the postgraduate studies at JINR. Nine postgraduate students of the UC defended in 2009 the Candidate (PhD) dissertations, three of them straight after finishing the postgraduate studies. Up to now among 198 postgraduate students, who finished postgraduate studies at JINR starting from 1998, 53 people defended their theses. The postgradu-

ate students of JINR in 2009 were representing Armenia, Belarus, Georgia, Moldova, the Russian Federation, Turkey, and Ukraine.

### International Activities

The JINR University Centre participated in the organization of the 5th International Summer School «Nuclear Methods and Accelerators in Biology and Medicine», which took place in Bratislava in July 2009. There were Professors G. Trubnikov, G. Shirkov, A. Sidorin, M. Frontasyeva, E. Krasavin and M. Ostrovsky among the lecturers of the School.

Seventeen students from the Russian Federation, 21 from the Czech Republic, 24 from Poland, 10 from Slovakia, 6 from the Republic of South Africa and 2 students from Bulgaria got a financial support from JINR in order to participate and to present their reports during the School.

The UC organized special educational courses for the students on demand from the universities of the Member States. In February 2009, a group of Polish students from the Maria Curie-Skłodowska University (Lublin) came for the course «Radiational Defense and Nuclear Safety». For the second-year students, who has chosen the specialties related to the organization of nuclear safety, there were organized lectures, practical lessons and excursions held by the JINR staff.

In the framework of the Bogoliubov–Infeld programme at the end of October 2009, a summary student seminar was organized at the Adam Mickiewicz University (Poznan, Poland). Professor V. Nawrocik (a member of the Scientific Council of JINR), Professor R. Zavadny, Dr W. Chmielowski (an advisor of the chief of the JINR Scientific Organizational Work and International Collaboration Department), Professor S. Z. Pakuliak (the acting director of UC), students of the Polish universities who were taking part in the summer practice at JINR, and also the school teachers whose students visited JINR in the framework of the Bogoliubov–Infeld programme were among the participants of this seminar. Students presented their reports on the completed scientific work done during the summer practice, their impressions about JINR and the Bogoliubov–Infeld programme. Several reports done by the Polish school pupils were dedicated to the scientific activity of Professor Marian Danysh, who was a vice-director of JINR in 1956–1959.

Students and postgraduate students from Moldova universities visited JINR in May 2009 in the framework of the days of science of the Republic of Moldova in JINR. The UC organized for them introductory courses, which included the lectures and excursions to the laboratories of the Institute. The lectures and excursions were held by: V. A. Osipov, J. M. Shukrinov, V. U. Yushankhaj (BLTP); I. D. Alexandrov, I. I. Zinkovskaja (FLNP); G. N. Timoshenko (LRB); S. Z. Pakuliak (UC). On

15 May, young scientists from Moldova took part in the round-table discussions «Collaboration in the Field of Science and Innovations» and «Innovations and Transfer of Technologies» organized by JINR and the Academy of Sciences of the Republic of Moldova and held at the Congress Centre of the Special Economical Zone «Dubna».

### **Organization of the All-Russian Scientific School for Russian Teachers of Physics at CERN**

The UC took part in the organization of an all-Russian scientific school for Russian teachers of physics held at the European Organization for Nuclear Research (CERN) from 1 to 7 November with the financial support of the Federal Agency on Science and Innovations in the framework of the Federal Target Programme «Science and Science-Pedagogical Personnel of International Russia» for 2009–2013.

Forty-six teachers of physics from different secondary schools of the Russian Federation participated in the work of the School. Leading physicists of Russia working at CERN (including the JINR representatives) presented lectures on modern achievements in the field of particle physics, cosmology, accelerator technique, information and nanotechnologies. The School programme included also visits to experimental laboratories and workshops, where CERN experimental facilities were designed and constructed.

### **The Work with School Pupils and School Teachers**

Physics lessons were organized in the school physical laboratory at the UC for the Dubna school pupils of higher grades. In 2009 there were 40 pupils in two groups. These lessons included lectures, helping the students to prepare for entering the physics faculties of Russian higher education institutes, and also the work in the school physical laboratory.

Twenty-four schoolchildren from a physics study group (Berlin, Germany) came to JINR on an acquaintance visit in June 2009. Excursions to the laboratories of the Institute, which were held by Professors G. V. Mitsin (DLNP), A. G. Popeko (FLNR) and S. S. Shimansky (VBLHEP) were organized for this delegation. The visit was organized on the initiative of Dr W. Kleinig (BLTP).

Ten school pupils from the lyceums of Polish cities of Velun, Leszno, Poznan, Svinoujscie, Slupsk, Sulenchin, Tarnowskie Gory, and also their teachers came

to JINR for a two-week acquaintance visit at the end of June. The visit programme provided the acquaintance with the base experimental equipment of the Institute, implementation of a course of laboratory works in the school physical laboratory at the UC, and excursions. The trip was organized in the framework of the Bogoliubov–Infeld programme. At the same time, a visit to JINR of five students and four teachers of the Stockholm University (Sweden), specializing in the field of biodosimetry, was organized.

Two teachers of physics of higher schools from Sofia (Bulgaria) visited JINR during a week in November. They have acquainted with the experience of teaching physics to Dubna school pupils at the JINR University Centre, attending the lectures and practical lessons given by I. A. Lomachenkov.

### **Training**

One of the UC activities is training of the JINR workers, engineers and staff members. In 2009, 19 workers of the Institute were educated for the professions qualified for the Rostekhnadzor of RF. At the courses organized at JINR 92 staff members of the Institute were trained and attested by the Central Assessment Commission of JINR as people responsible for the exploitation and service work for the machines, mechanisms and equipment under the pressure.

The training of young scientists and specialists of the Institute at the courses of the English language is continued. In 2009 these courses were taken by 42 staff members of the Institute and 21 postgraduate students of the UC.

### **Textbooks of the UC**

In 2009 the following items were published as the textbooks of the UC:

- M. V. Frontasyeva «Neutron Activation Analysis on the Reactor IBR-2, FLNP, JINR»;
- S. A. Baginyan, V. V. Ivanov, L. A. Sevastyanov «Discrete Mathematics: Mathematical Logic, Elements of Theory of Coding and Theory of Graphs»;
- V. A. Kalinnikov «Development of the Windows-Applications with the Help of API Functions on the Base of the Object-Oriented Language C++»;
- A. I. Ahmadov, E. A. Kuraev, Yu. M. Bystritsky, E. S. Kokoulina «Partial Derivatives Equations and the Methods of Mathematical Physics».