

# UNIVERSITY CENTRE

The University Centre of JINR celebrated the 20th anniversary on 18 January 2011.

## International Student Practices

The Annual Summer Student Practice in 2011 was organized in three stages. The first week programme of practice for all stages included acquaintance lectures

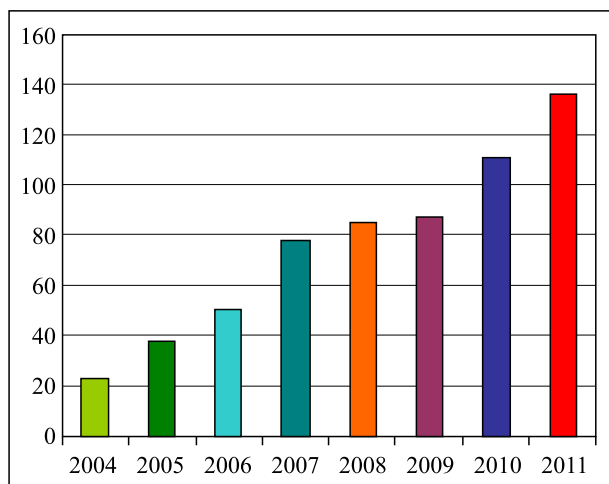


Fig. 1. The number of participants of the international practices by years

on the current researches in JINR Laboratories. After acquaintance with the Institute, students worked on the selected research-educational projects. The total num-

ber of the participants of the practice was 136 students (see Fig. 1).

The first stage (15 May–5 June): 20 students from Egypt carried out learning and research projects at BLTP, LRB, FLNP in three directions: theoretical physics of nanostructures, radiobiology, and experimental research of nanosystems.

The second stage (13–31 July): 71 students from Bulgaria, Czech Republic, France, Poland, Romania, and Slovakia worked on research-educational projects under the supervision of 31 employees of BLTP, DLNP, FLNP, FLNR, LRB, LIT and VBLHEP.

The third stage (4–25 September): 45 students from Belarus, Serbia, Ukraine, and South Africa carried out research-educational projects at BLTP, FLNP, FLNR, VBLHEP, and LIT, under the supervision of 17 employees of the Institute.

There are 56 research-educational projects in the database of the UC: FLNR — 22 projects, FLNP — 10, DLNP — 8, BLTP — 6, LIT — 5, LRB — 3, and VBLHEP — 2.

The last day of the practice was devoted to student reports on the results of the work (the students' presentations can be found on the UC practice webpage).

## The Educational Process on the Basis of JINR

In 2011, 457 students of MSU, MIPT, MEPI, Dubna International University and universities of the JINR Member States studied at the University Centre.

The UC organized a summer practice for 40 students of the State Universities of Gomel, Yerevan, St. Petersburg, Tomsk, Tula, and Uzhgorod, of Kazan Technological University, North-Caucasus State Technical University, and Siberian Federal University. Students had training practices at VBLHEP (20 students),

FLNP (14), BLTP (3), LIT (1), DLNP (1) and Administration (1).

On the UC site (<http://uc.jinr.ru/>) the content of the database of training courses (Russian and English versions) has been updated under the sections: physics and quantum field theory (33 courses); mathematical and statistical mechanics (19); condensed matter physics, the physics of nanostructures and neutron physics (15); nuclear physics (20); physics research facilities (17); and information technology (19).

## JINR Postgraduate Course

In 2011, 72 PhD students from Armenia, Belarus, Moldova, Russian Federation, Turkey and Ukraine were trained at a JINR postgraduate course.

Speciality	Number of postgraduate students	
	in 2010	in 2011
Physics of atomic nuclei and elementary particles (01.04.16)	25	24
Theoretical physics (01.04.02)	11	15
Physics of charged particle beams and accelerating technique (01.04.20)	11	8
Condensed matter physics (01.04.07)	3	3
Devices and methods of experimental physics (01.04.01)	5	5
Mathematical and software support of computers, complexes and computer systems (05.13.11)	2	4
Mathematical modeling, numerical methods and program systems (05.13.18)	9	7
Radiobiology (03.00.01)	3	3
High energy physics (01.04.023)	2	3

The distribution of JINR PhD students over specialities in 2010 and 2011 is shown in the table.

In 2011, seven graduate students of the UC defended their PhD theses.

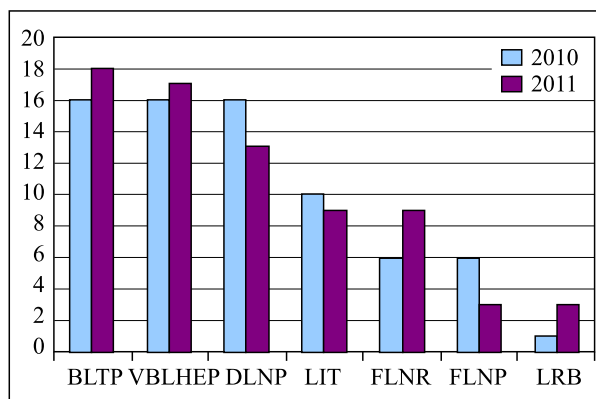


Fig. 2. Distribution of the UC PhD students over the laboratories of JINR in 2010 and 2011

In November 2011 the Federal Service for Supervision in Education and Science granted a perpetual license to the UC to operate JINR graduate course.

## The Sixth International Summer Student School

### «Nuclear Physics Methods and Accelerators in Biology and Medicine»

The sixth international summer student school «Nuclear Physics Methods and Accelerators in Biology and Medicine» was held in Dubna from 2 to 12 July. Fifty-seven students from Bulgaria, Czech Republic, France, New Zealand, Poland, Russia, and Slovakia took part

in it. The programme included student reports and lectures by leading experts from Russia, Bulgaria, Czech Republic, New Zealand, Poland, and Sweden. The Proceedings of the school will be published by the American Institute of Physics.

## School-Seminar

### «Modern Technology Acceleration in Relativistic Nuclear Physics»

The school-seminar «Modern Technologies in the Acceleration of Relativistic Nuclear Physics» was organized by the Veksler and Baldin Laboratory for High Energy Physics and the JINR University Centre on 21–22 April. Senior students of Moscow Engineering Physics Institute, Moscow Institute of Physics and

Technology, Moscow State University, MIREA and other Russian universities participated in this school. The purpose of the school-seminar is to acquaint the students with the NICA project — the creation of heavy-ion collider on the basis of the accelerator Nuclotron at VBLHEP.

## Organization of Scientific Schools

### for Teachers of Physics at JINR and CERN

The fourth school for teachers of physics from JINR Member States, organized by the JINR UC in collaboration with the European Organization for Nuclear Research (CERN) since 2009, was held in Dubna from 26 June to 1 July. Its distinctive feature was that be-

sides 26 teachers from Russia and Bulgaria, 15 Russian students from different regions of Russia were participants of the school.

The fifth scientific school was held in Geneva from 30 September till 5 November. Forty-eight teachers

from the educational institutions of Russia took part in the school. This event was organized under the support of the Ministry of Education and Science of the Russian Federation, under the Federal Targeted Programme «Research and Research-Human Resources for Innovative Russia» for 2009–2013.

### **Organization of the Scientific School of Physics Teachers from Ukraine**

A scientific school was held on 27–30 September at the UC for 16 Ukrainian university professors, teachers of high schools and schools with in-depth study of physics. The programme contained lectures on the history of the JINR laboratories and current research underway in them, on the educational activities of the Institute, special projects for schoolchildren, as well as

### **Video Conferences**

The JINR University Centre continues to hold video conferences with schools from the JINR Member States. On 24 February a video conference took place between the UC and municipal general education institution secondary school No. 17 of Kislovodsk (Stavropol Region). This conference was held in the framework of the seminar organized by the Stavropol Institute for Advanced Training of Teachers. The programme of the video conference included an account of educational opportunities at the Dubna University, demonstration of physical experiments, presentation of the internet project «Livni Znanii» (Showers of Knowledge) and the discussion of innovative physics textbook by «Prosveshchenie» publishers, prepared by staff members of JINR in the framework of the project «Spheres».

On April 13 the UC held two video conferences with teachers and students from Moscow, Volgograd and Dubna. In the first video conference a new innovative physics textbook produced by the collective of «International Internet Magazine for Students in Nat-

### **Organization of Visits**

In 2011, lectures and excursions to the Laboratories of JINR were organized for students of MEPI (25), MIPT (22), Bauman MSTU (70), Dubna University (16), Ukrainian universities (12); excursions and activities in the UC physical laboratory for schoolchildren from Moscow (128), Dmitrov (15), Podolsk

### **Work with Schoolchildren and Teachers**

Physics lessons were held twice a week for 20 schoolchildren of the higher grades from Dubna. During educational visits, demonstrations and work-

Information about the organization and holding of schools is on a special website «Virtual Academy for High Energy Physics» (<http://teachers.jinr.ru/>). It was created by the UC to present and support scientific and educational programmes for school pupils and teachers from the JINR Member States.

excursions to the JINR basic facilities. During a JINR–CERN video conference the participants learned about experiments at the Large Hadron Collider and the activities of the European Organization for Nuclear Research. The school was supported by the «Little Academy of Sciences of Ukraine».

ural Sciences» under the project «Spheres» as well as the scientific and educational site «Livni Znanii» have been demonstrated for the teachers of 60 schools in Volgograd Region. The second video conference connected the audience of the Moscow School named after Kolmogorov (SESC), a school in Volgograd, the UC, where there were the students of Dubna schools, and CERN. Physicists from CERN representing academic institutions of Moscow and St. Petersburg scientific organizations answered the schoolchildren's questions.

On 26 November, a video conference was held between JINR and Lyceum No. 1 in Petrozavodsk. The video conference was held within the annual physical conference «Physics of Life». Students of physics and mathematics classes and teachers of educational institutions, students and teachers of Physics and Engineering Faculty of Petrozavodsk State University took part in this conference. The JINR leading experts told the audience about actual research and development.

district (31 students and 9 teachers), Dubna (55), for 19 school pupils from Berlin (Germany), 8 children of Polish schools and their 6 teachers, as well as for the 30 pupils from boarding school at the Russian Ministry of Defense.

shops were organized for school groups at the physical practical training laboratory of the UC.

## **On Training and Upgrading Skills of Workers, Engineers and Other Employees**

Training courses for the personnel who perform maintenance of facilities subordinate to Rostekhnadzor and Atomnadzor were attended by 63 staff members of the Institute. Thirty-two staff members of other Dubna organizations were trained at the UC training centre on professions which are under the jurisdiction of Rostekhnadzor. In 2011, 22 employees of the Institute improved their skills in various seminars organized by the educational institutions of Moscow and Dubna. Thirty-eight staff members were trained at the courses organized by JINR and certified by the Central Certification Commission of JINR. In 2011 the certification was organized for 11 executives from the Institute according to the normative legal acts and to the normative-technical

documents that set industrial safety requirements in various sectors of surveillance by the Territorial Certification Commission of Rostekhnadzor. Twelve students from MOATT and MOPEK passed practices at JINR in 2011.

From 16 March till 13 April there were organized lectures and workshops on accelerators and their applications in nuclear medicine. Lectures were given by 13 employees of FLNR.

The UC continues to hold English language courses for postgraduate students and staff members of JINR.

Russian language courses for foreign specialists started at the UC in October 2011.

## **The University Centre Textbooks**

In 2011, the following UC textbooks were published:

- *V. B. Zlokazov*. «Automata Theory»;
- *V. A. Kalinnikov*. «Fundamentals of Computer Circuitry»;

- *A. V. Nesterenko*. «Theoretical Description of the Adler Function and the Electron–Positron Annihilation into Hadrons».