UNIVERSITY CENTRE

International Student Practices. Annual student training courses 2012 were held in three stages. The program of the first week for all stages of training traditionally included introductory lectures on the research conducted in JINR laboratories. Further on, students worked on the research–educational projects, which they had chosen. The total number of participants in the training courses 2012 came up to 119 students (see Fig. 1).

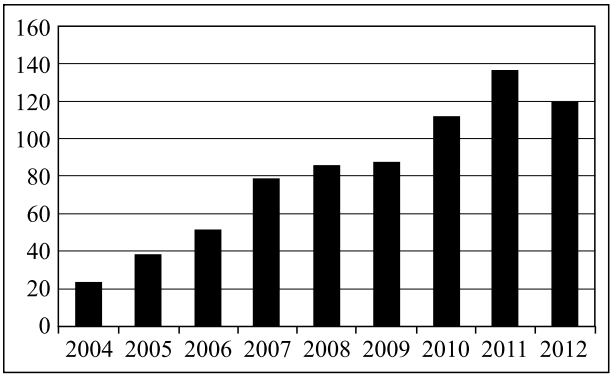

Fig. 1. The number of international training courses participants over the years

The participants have the opportunity to find more about research–educational projects in advance and to choose the scientific field, which they are most interested in. The database of UC web-site (http://uc.jinr.ru) offers 43 projects, 18 of which have been prepared by FLNR specialists.

The first stage (13.05–03.06): 15 students from Egypt conducted research–educational projects on three basic subjects: «High Energy Physics and Heavy Ion Collisions», «Radiobiology», «Neutron Activation Analysis» in FLNP, LRB, VBLHE, FLNR.

The second stage (01.07–22.07): 63 students from Member States: Poland (21 students), Czech Republic (20), Romania (16), Bulgaria (3), Slovakia (2) chose projects prepared by specialists from FLNR (9), FLNP (4), BLTP (1), LIT (1), VBLHE (1), DLNP (1), LRB (1).

The third stage (26.09–12.10): 33 students from South Africa and 8 from Belarus conducted projects in FLNR (6), FLNP (4), LIT (1), LRB (1), BLTP (1), VBLHE (1), DLNP (1).

The training courses were completed by participants' giving report-presentations. These reports are available on UC web-site in training courses sections, subsection «Events».

Educational Process on the Basis of JINR. In 2012, the University Centre trained 437 students from basic departments of MSU, MIPT, MIREA, «Dubna» University and JINR Member-States universities. For 31 students of MIPT, MEI, Vladimir, Gomel, St. Petersburg, Tomsk and Tula State Universities, Kazan State Technological University, Kiev National University, Siberian Federal University, UC organized summer practical and undergraduate training courses. The students were trained in VBLHE (17 students), FLNP (11), DLNP (2), FLNR (1). The UC website (http://uc.jinr.ru/) contents of training courses database was upgraded (both English and Russian versions) in sections: particle physics and quantum field theory (30 courses), nuclear physics (23), condensed matter, physics of nanostructures and neutron physics (17), physics research facilities (15), information technologies (13), mathematical and statistical physics (12).

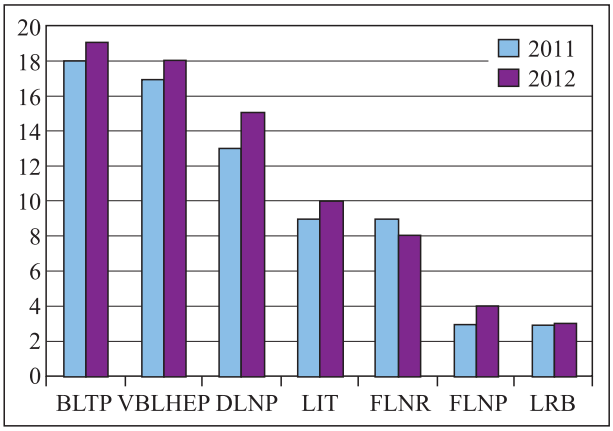

Fig. 2. Distribution of UC postgraduate students over the JINR laboratories in 2011 and 2012

JINR Postgraduate Courses. In 2012, JINR postgraduate courses were attended by 77 people from Armenia, Belarus, Germany, Moldova, Russia, Turkey, Ukraine (see Fig. 2).

The distribution of UC postgraduate students over specialties in 2011 and 2012 is shown in the Table.

Specialty	Number of postgraduate students	
	in 2011	in 2012
Nuclear and elementary particle physics (01.04.16)	24	22
Theoretical physics (01.04.02)	15	19
Charged particle beam physics and accelerator techniques (01.04.20)	8	7
Physics experiment techniques, instrument physics, and physics research automation (01.04.01)	5	7
Mathematical simulation and numerical methods (05.13.18)	7	7
Mathematical and software support of computers, computational complexes, and networks (05.13.11)	4	5
High energy physics (01.04.23)	3	4
Solid state physics (01.04.07)	3	3
Radiobiology (03.01.01)	3	3

Organization of Scientific Schools for Teachers of Physics at JINR and CERN. From June 24 to 30, 2012, Dubna hosted the School for teachers of physics from JINR Member States. Like last year, teachers with pupils of 9–10 grades were invited to Dubna, where a special program had been prepared for school children. The School was attended by 37 teachers, along with their best 24 pupils from Russia, Belarus, Bulgaria, Poland, Ukraine (the number of applications for participation was three times greater). The program of the School included popular science lectures by leading experts from JINR and CERN, visiting experimental facilities and JINR laboratories, video conferencing with CERN, which introduced the participants to the European Organization for Nuclear Research and the experiments at the Large Hadron Collider, as well as research seminar organized for high-school students who presented reports on one of the branches of physics. During the round table «Contemporary Problems of Physics and Physics Teaching Methods at School», the teachers gave presentations on their experience of teaching physics, discussed modern teaching trends.

From October 28 to November 3, 2012, a scientific School for Russian teachers of physics was held at CERN (Geneva). 32 teachers of physics from Geneva, Moscow and Moscow region, V. Novgorod, Vladivostok, Divnogorsk, Rostov-on-Don, Salsk, Samara, St. Petersburg, Severodvinsk, Taganrog, Ulyanovsk, Urai (Khanty-Mansiysk), and Cheboksary participated in the work of the School.

Information on organization and hosting of Schools is available on a dedicated web-site «Virtual Academy for High Energy Physics» (http://teachers.jinr.ru/).

«High Energy and Accelerator Physics» School. UC participated in the organization and hosting of the School «High Energy and Accelerator Physics», which was held from September 27 to October 2, 2012. The School was organized by JINR, CERN, and the ISTC. School participants in Dubna were 52 people from Russia, Armenia, Belarus, Georgia, Kazakhstan, Tajikistan. The program included lectures by leading experts from Russia, Belgium, Germany, Switzerland, excursions to basic JINR facilities, and discussions.

Practical Training in High Energy Physics and Information Technologies. From September 24 to 29, 2012, the UC conducted practical training in high energy physics and information technologies. For 10 young employees of Shevchenko National University of Kiev, Bogolyubov Institute of Theoretical Physics and Institute for Scintillation Materials of Ukraine National Academy of Sciences, lectures and workshops were organized.

Video Conferencing. JINR University Center continues to organize video conferences with schools from the JINR Member States. In 2012, a video conference between the UC and high schools of Tikhvin (Leningrad region) and Ryazan was held. In September, the UC hosted a video conference «Study of Cosmic Ray Air Showers» with Tikhvin and Kislovodsk, dedicated to the 100th anniversary of the cosmic rays discovery.

Organization of Visits. In 2012, introductory lectures and excursions to JINR laboratories were organized for students from Bauman MSTU (56 students), MEPhI (33), MIPT (16), MSU (3), Tver State University (38); guided tours, video conferences and physical workshops were organized for pupils from Stavropol Krai (17), Dolgoprudny (48), Dmitrov (25), Dubna (17), Moscow (66), Novocheboksarsk (48), Ryazan (20), for 26 Polish pupils and their teachers (7), as well as for 20 participants of the 8th summer inter-regional school of physics, for 35 participants and diploma winners of the conference «Future of Russia — in High Technologies 2012» from St. Petersburg.

Working with Pupils and Teachers. For 20 high-school students from Dubna, classes of physics were held twice a week within the school period. For the period of introductory visits, workshops and demonstrations in physics were organized for school groups in the UC physical laboratory.

On Training and Retraining of Workers, Engineers, and Employees. 32 staff members of the Institute were trained at the training courses for personnel maintaining facilities subordinate to Rostechnadzor and

Atomnadzor. In 2012, 5 members of the Institute improved their skills at various seminars organized by academic institutions of Moscow. 109 staff members were trained at the courses organized by JINR and certified by JINR Central Certification Commission. In 2012, certification of 3 Institute executives and specialists in the normative legal acts and normative-technical documents stating requirements for industrial safety in various industries of supervision was organized by the Territory Certification Commission of Rostechnadzor. In 2012, 8 students from MRICC and MRATT were trained at JINR.

The UC continues to run English language courses for postgraduate students and JINR staff members, and Russian language courses for foreign specialists.

UC Textbooks. In 2012 the following UC textbooks were published:

- *G. Efimov.* «Quantum Mechanics»;
- *I. Issinskiy.* «Introduction to Charged Particle Accelerator Physics»;
- *V. Gorokhov.* «Philosophy and History of Science»;
- *R. Dzholos.* «Nuclear Models».