

COLLABORATION IN SCIENCE AND TECHNOLOGY

The basic results of the international cooperation in science and technology of the Joint Institute for Nuclear Research in 2007 reflect the following data:

- joint research has been conducted with scientific centres in Member States, as well as with international and national organizations in other countries, on 44 topics of first priority and 8 topics of second priority;
- to solve cooperation issues and questions of participation in scientific meetings and conferences, the Joint Institute sent 2973 specialists;
- for joint work and consultations, as well as for participation in meetings, conferences and schools held at JINR, 1671 specialists were received;
- 31 international scientific conferences, 21 workshops and 10 meetings were organized and held;
- 19 scholarship holders worked at the Institute's laboratories.

The international cooperation of JINR is presented in agreements and treaties. Its development comprises joint experiments at basic facilities of physics centres, the acquisition of research data, preparation of joint publications of the joint research results, the supply of equipment and techniques for the interested sides, etc.

JINR Director RAS Corresponding Member A. Sissakian visited CERN on **1–6 February**. He discussed issues of cooperation and agreed upon the time and place of the next meeting of the Joint JINR–CERN Committee (Dubna, 15 November 2007) during his talk with CERN Deputy Director-General Professor J. Engelen. A. Sissakian also met with Coordinator of Cooperation with CERN non-member countries T. Kurtyka, Leader of the ATLAS collaboration P. Jenni, and other scientists.

In early February, in Beijing, meetings of the GDE executive board were held. JINR Chief Engineer RAS Corresponding Member G. Shirkov and Deputy Chief Engineer G. Trubnikov took part in them. There was also a meeting of the International Committee on Future Accelerators where JINR Vice-Director Professor

R. Lednický made a report. Along with accelerator topics, problems of the computer network development were discussed in Beijing as they become exceptionally important on the verge of the Large Hadron Collider (LHC) launch at CERN.

A press conference held on 8 February summed up the results of the meetings. The GDE Directorate, which includes famous scientists from the countries that are potentially ready to take part in the ILC construction, and the executive board, where Russia is represented by Academician A. Skrinsky (Budker INP, Novosibirsk), RAS Corresponding Member M. Danilov (ITEP, Moscow) and RAS Corresponding Member G. Shirkov (JINR), will continue to coordinate all the activities of the large international community.

The 17th regular meeting of the Steering Committee on the implementation of the Agreement on cooperation between the German Federal Ministry of Education and Research (BMBF) and JINR was held **on 26–27 February** at GSI, Darmstadt. JINR Director RAS Corresponding Member A. Sissakian headed the JINR delegation. The delegation of the Federal Ministry was headed by the leader of the Ministry Department of Fundamental Research Doctor R. Kepke.

At the meeting, the main scientific results obtained at JINR in 2006, a scientific research programme for 2007–2009, plans for JINR strategic development, and modern tendencies of scientific policy in fundamental natural sciences in Germany and Europe were discussed. Large scientific projects realized in Germany — the FAIR accelerator complex project and the free-electron X-ray laser project — were introduced to the delegations. The sides marked with satisfaction the successful development of cooperation between JINR and German scientists.

The financial report on spending the sums given by BMBF to realize the Agreement was discussed in detail. With the account of the mutual interests, the amount of the German contribution in 2007 was increased up to 965 thousand euros.

In the framework of the project A-2.53 PUC-12/JC-XII «Development of New Protective Materials and New Thermoluminescent Detectors for Radiation Safety Purposes» of the complex long-term programme of Russia–India cooperation, LRB Deputy Director Professor G. Timoshenko and LRB leading researcher V. Aleinikov were on a working visit to India (the International Accelerator Centre, New Delhi) from **26 February to 20 March**. They discussed plans for further contacts and arranged programmes on experiments to study characteristics of new thermoluminescent detectors produced with nanotechnology. First experiments are planned to be accomplished in the second half of 2007, at JINR DLNP's Phasotron proton beam.

On 7–8 March, a delegation from JINR arrived in Capetown, Republic of South Africa (RSA), to take part in III session of the Joint RSA–JINR Coordinating Committee. It consisted of JINR Vice-Director Professor M. Itkis, FLNR Director Professor S. Dmitriev, FLNP Deputy-Director V. Shvetsov, and JINR Deputy Chief Scientific Secretary D. Kamanin.

On the first day, detailed reports on basic trends and prospects for heavy-ion physics at FLNR and neutron research at FLNP were presented, along with a report on the implementation of the previous session decisions and new proposals. One of the results of joint work is expected to be the attraction of RSA postgraduates to the Institute. In this context, the idea to hold a winter school for South African students in December 2007 in Dubna was approved.

On the second day of the session the cooperation budget was adopted which approved a prolongation of the activities started in 2006 in the same amount and with the same structure. Six million South African rands (about US\$850 thousand) will be transferred to the JINR account. The RSA Department of Science and Technology (DST) reserved another million and a half rands for further support of the scientific contacts with JINR.

In the final documents of the session, R. Adam, the ex-head of DST and the NESCA corporation director-general at present, was proposed to be a candidate member of the JINR Scientific Council.

On 20 March, a delegation of Japanese scientists visited JINR. It was headed by Chairman of the ILC executive board Professor Sh. Kurokawa. The Japanese scientists discussed with the JINR Directorate issues for the preparation and holding in September 2007 a workshop on the participation in the ISTC grant (JINR, ITEP, INP SD RAS–KEK, RIKEN, Chiba). They also had talks on the development of joint work in producing ILC prototypes, in particular, a laser system for the photoinjector. Together with the Institute of Applied Physics (Nizhni Novgorod), JINR is ready to provide it to KEK. The guests were acquainted with the experimental programme at LINAC-800, visited the hall of

the LEPTA facility where the stand for the photoinjector prototype for ILC is planned to be installed.

JINR Director A. Sissakian paid a working visit to Armenia **on 2–6 April**. He met with RA Minister of Education and Science L. Mkrtchyan, Minister of Culture A. Poghosyan, Armenian NAS President R. Martirosyan, Yersu Rector R. Simonyan, RA Plenipotentiary to JINR Academician H. Vartapetian, and other state and science representatives. They discussed a wide range of cooperation issues and the status of the elaboration of the joint project of the Armenian radiation-medicine accelerator centre.

On 6 April A. Sissakian and FLNR Scientific Leader Yu. Oganessian took part in the general meeting of NAS of Armenia, where Yu. Oganessian received the Diploma of a foreign member of the National Academy of Sciences of Armenia. Yu. Oganessian made a scientific report on the activities at JINR in the synthesis of superheavy elements. A. Sissakian participated in the debates on the report by Armenian NAS President R. Martirosyan. RA Prime-Minister S. Sargsyan and Parliament speaker T. Torosyan attended the general meeting.

Together with a group of scientists from JINR and Russia, on 2–4 April A. Sissakian took part in a scientific conference and jubilee events dedicated to the centenary of Academician N. Sissakian's birth. On 4 April Supreme Patriarch and Catholicos of all Armenians Garegen II received the conference participants in Echmiadzin.

On 5–6 April, Director of Moscow CNRS Bureau V. Mayer visited JINR. He met with representatives of the JINR Directorate and visited FLNR, DLNP, VBLHE, and LPP. Issues of cooperation of French and JINR scientists and aspects of financing joint projects were discussed.

Ambassador of the Bolivarian Republic of Venezuela to Russia A. Rojas paid a visit to the Joint Institute for Nuclear Research **on 10 April**. He was received by JINR Director A. Sissakian and discussed with him issues of the development of cooperation in science, education and technology. The Ambassador confirmed the intention of the Government of his country to join JINR as an associate member, outspoken during the visit of the Venezuelan delegation to Dubna in October 2006. In particular, he mentioned the plans to send to JINR Venezuelan postgraduate students as a first actual effort, which should be followed by further actions to widen cooperation.

On 12 April an agreement was signed on the associate membership of the Republic of Serbia to JINR. On the Serbian side, the document was signed by Minister of Energy and Mining A. Popovic; on the JINR side, by JINR Director RAS Corresponding Member A. Sissakian. Greeting the Serbian delegation, which included Physics Laboratory Director of the Vinča In-

stitute of Nuclear Sciences A. Dobrosavljevic, the Laboratory staff members Doctor P. Belicev and Doctor V. Vujovic, the JINR Director stressed the fact that the signing of this agreement meant a new deeper stage of cooperation which would lead to other interesting projects and become wider as it developed on the basis of establishing the cyclotron complex in Belgrade. The next stage of the development of our relations will be the full membership of Serbia to JINR. To achieve it, it is necessary to involve Serbian students and postgraduates into cooperation.

A. Dobrosavljevic thanked the JINR Directorate for the assistance in the preparation of this agreement and long-standing cooperation. He also noted that Serbia today lives through a difficult political and economic period. Thus, the agreement will support in some way the provision of cooperation. He added that the signing of the document on the associate membership by the Minister would place the ties between the Vinča Institute and JINR on a higher level and facilitate the full membership for Serbia to JINR in the future. However, to achieve it, a decision on the governmental level is necessary, while the Government of Serbia is preoccupied with too many political and economic problems at present.

A delegation from JINR headed by Vice-Director M. Itkis had a business visit to Havana **on 17–23 April**. The delegation included JINR Chief Scientific Secretary N. Russakovich and Assistant Director G. Arzumanyan. They visited three scientific institutes which specialize in nuclear physics and a centre of gene engineering and biotechnology, situated in Havana and its vicinity. Negotiations were held at the Ministry of Science, Technology and Environment of the Republic of Cuba. The key item of the talks was the restoration of actual participation of Cuba in the activities of JINR. The negotiations were held in the spirit of agreement and complete mutual understanding.

In followup of the negotiations, a Memorandum was signed where it was marked in particular that the Government of the Republic of Cuba appoint its new Plenipotentiary in the nearest future, who, in his turn, appoint a member of the JINR Scientific Council from Cuba.

The results of the visit and the negotiations were summed up at the State Department of Cuba, where the delegation from JINR had a warm meeting with Adviser on Science to the President of the Republic of Cuba Fidel Castro Dias-Balart. He marked the timeliness of the visit of the delegation from Dubna, congratulated the guests on the jubilee of JINR, spoke about their intentions to establish a regional Latin American scientific laboratory, and expressed his readiness to support the intention to promote the cooperation of Cuban and JINR scientists.

On 18 April, a delegation of the Embassy of China in Moscow visited JINR. It included Adviser

on Science and Technology Yuj Mindo, Second Secretary Chen Si and Deputy Director of the Chinese–Russian technopark «Druzhba» Zhu Yujlan. The guests met with the Institute's Director A. Sissakian, Vice-Director R. Lednický, Chief Engineer G. Shirkov, JINR Scientific Leader V. Kadyshevsky, FLNR Director S. Dmitriev, DLNP Deputy Director Yu. Kazarinov, UC Director D. Fursaev, and AFK Dubna–Sistema General Director I. Lensky.

During the visit, opportunities to train young Chinese specialists at JINR were discussed. In this connection, not only training of students and postgraduates were discussed but also opportunities for young Chinese scientists to come to JINR Laboratories for traineeship or study at special courses. Yuj Mindo promised that 5–10 young scientists from China would come to JINR in 2008 for traineeship. After the reception at the Directorate the guests visited FLNR, the Aspekt Research and Production Centre, and the site of the Dubna SEZ.

A working meeting of CERN Director-General R. Aymar, members of the Russia–CERN Joint Committee L. Evans, D. Jacobes, J. Ellis, and T. Kurtyka was held **on 19 April** with Russian scientists participating in the Joint Committee Academicians V. Matveev, A. Skrinsky, RAS Corresponding Member A. Sissakian, and Professor V. Savrin. The participants exchanged opinions on current events of cooperation. Professor R. Aymar informed the scientists about the work of the special board on the analysis of the aftermath of the accident which took place at testing the magnetic triplet produced at the Fermi National Laboratory (USA).

Rector of Yerevan State University Corresponding Member of Armenian NAS A. Simonyan and Pro-rector on science and international ties Professor S. Arutyunyan visited JINR **on 20–21 April**. They arrived to become acquainted with the Institute and its fundamental and applied research, to meet with JINR's Armenian staff members, visit Dubna University, and discuss all trends of cooperation both in science and in education. A Centre for High Energy Research was established in Armenia, which is interested in training the staff at JINR, especially young employees.

While on a visit to Dubna University, the guests expressed an idea to invite their colleagues to Yerevan, to sign an agreement there.

On 24 April the meeting of the Scientific and Technical Council (STC) of the RF Federal Agency on Science and Innovations was held at the Agency on the topic «Nuclear Physics, Accelerators, Elementary Particle Physics and Condensed Matter Physics». At the meeting, the item of the participation of Russian scientific centres and JINR in the international project of the accelerator complex (FAIR, GSI) in Darmstadt was considered. The following reports on the Russian scientific centres' part in the project were listened to: by RAS Corresponding Member B. Sharkov, ITEP director, RAS Academician A. Skrinsky, BINP direc-

tor, and others. JINR Director RAS Corresponding Member A. Sissakian made a report on the status and prospects of JINR participation in the FAIR project and the PANDA, CBM, and PAX experiments. He stressed that the tasks facing JINR in this cooperation are closely connected with those related to the development of the own experimental basis (in particular, the Nuclotron–NICA complex).

STC supported the proposal for Russian institutes and JINR to take part in the FAIR project. JINR was also represented at the meeting by RAS Corresponding Members I. Meshkov, G. Shirkov, and Professor A. Olchevski.

On 26 April in Dolgoprudnyi, at the Moscow Physics and Technology Institute (MPTI), a working meeting was held of MPTI Rector RAS Corresponding Member N. Kudryavtsev and JINR Director RAS Corresponding Member A. Sissakian. They discussed issues of widening the cooperation between MPTI and JINR. The meeting was also attended by First Prorector Professor T. Kondramin, Dean of the Department of General and Applied Physics Professor F. Kamenets, and UC Director Professor D. Fursaev. A decision was taken to organize a new basic chair «Fundamental and Applied Problems in Microworld Physics» (Leader A. Sissakian, Deputy Leaders D. Fursaev and G. Shelkov).

On 15 May JINR Director A. Sissakian received the Head of a scientific group of the Applied Mathematics Faculty of Stellenbosh University (RSA) Professor B. Herbst. Professor B. Herbst thanked him for an opportunity to come and for the welcome he received at the Institute. Not only JINR was on the list of his interests; Ben Herbst had a visit to MSU's Physics Faculty and was acquainted with the activities at Dubna University. He spoke at the seminars at DLNP and LIT, informed JINR staff members on the studies of his group in computer sight which has good prospects in a wide range of applied research, and in ray therapy in particular.

Coordinator of RSA–JINR cooperation D. Kamanin said that Professor B. Herbst enthusiastically joined the experimental studies of his group at FLNR. These studies include the analysis of specific data on actinide nuclei fission obtained in the PHOBOS collaboration using the methods of image recognizing in «noisy» pictures.

The 58th session of the Committee of Plenipotentiaries of the Member States of the International Centre of Scientific Technical Information (ICSTI) and an international seminar on problems of multilateral cooperation in innovation and technology transfer organized by ICSTI under the auspices of UNIDO (a UN Industrial Development Organization) were held **on 29–30 May** in Vienna, Austria. JINR Director A. Sissakian and Deputy Head of the Administration of Scientific Organizational Activities and International Cooperation D. Kamanin represented JINR at the events.

In his greeting speech at the opening of the seminar, A. Sissakian noted that ICSTI and JINR have a number of mutual organizational features and tasks. The participants of the seminar showed much interest in the report by A. Sissakian «International Scientific Centre and Territory of Innovation in Dubna», as JINR has well-known experience of organizing international cooperation and interesting results in applied research which are being transformed into real innovative projects.

Vienna «rencontres» resulted in signing a Protocol of the trilateral JINR–ICSTI–IAEA meeting on joint actions to promote data distribution in the innovation sphere on the basis of wide international cooperation. In particular, an intention is expressed in the Protocol to organize the school «Nuclear Physics for Sustainable Development» and an INIS seminar in 2008, on the basis of JINR and Dubna International University. Also in the Protocol, the intention of JINR is expressed to promote further development of the ICSTI journal «Information and Innovations». The Protocol confirmed the intention of the participants to prepare a trilateral IAEA–JINR–ICSTI Agreement on cooperation in the field of building a data base and innovative projects package of atomic, nuclear, nano- and information technologies.

On 19–22 June JINR received a delegation from the Asia Pacific Centre for Theoretical Physics (APCTP), an international nongovernmental research organization that includes the states of the Asia-Pacific region, i. e., Australia, Vietnam, China, Malaysia, Mongolia, Singapore, Thailand, Taiwan, the Philippines, the Republic of Korea, and Japan. The Republic of Korea is the residence country for APCTP. This organization conducts research practically in all fields of theoretical physics and supports educational programmes.

The visit was part of the Cooperation Agreement between JINR's BLTP and APCTP, signed in October 2006 in P'ohang (the Republic of Korea). The Agreement envisages various contacts in the area of research and educational programmes of JINR and APCTP. Professor of the Kunsan National University Sang Pie Kim headed the delegation of the Korean scientists. The aim of their visit was to take part in the bilateral workshop of JINR's BLTP and the Asia Pacific Centre for Theoretical Physics. The Centre presented reports on nuclear and statistical physics, and astrophysics. BLTP staff members made presentations on a wider range of research, including high energy physics and mathematical physics. In future, it is planned to widen the ties, among them exchanges of students and young scientists. BLTP suggested that APCTP Member States, and especially South Korea, should send young physicists to Dubna.

On 20 June, JINR Director A. Sissakian and Dean of MSU's Computational Mathematics and Cybernetics (CMC) faculty E. Moiseev signed an agreement between the Joint Institute for Nuclear Research and the MSU

CMC faculty on cooperation in the sphere of information technology and education.

The sides agreed upon the establishment of an experimental Grid gateway e-L&e-S — electronic training and electronic science — for the integration of these techniques in behalf of the development of the Russian national system of IT education and training of highly skilled scientific and technical personnel in science and high technology. The work in this field will be done on the basis of JINR in Dubna and the CMC faculty of the Lomonosov University in Moscow, in the form of a unified networked resource administrated in accordance with the principles of the regulation on virtual Grid organizations; on the basis of coordinated annual reports of JINR and CMC MSU in scientific research, education and other spheres.

The sides also signed an Agreement among JINR, SRINP MSU and the CMC faculty of MSU on the joint scientific research activities in the field of powerful distributed technologies and Grid systems. The agreement envisages the participation of SRINP MSU in the joint work with JINR and CMC MSU in the indicated sphere, as well as the elaboration of the joint master programme «Powerful Distributed Technologies and Grid».

Head of the Department on Cooperation with Europe and Oceania of the Republic of Korea's Ministry of Science and Technology Nam Yun Cho and chief of a department of the Korean Institute of Standards and Science Doctor Miungsu Kim visited JINR **on 26 June**. The aim of their visit was to get acquainted with the R&D status at JINR and discuss possible trends for cooperation. JINR Director A. Sissakian and Vice-Director M. Itkis received the delegation. Assistant Director G. Arzumanyan, Deputy Chief of the Administration of Scientific and Organizational Activities and International Cooperation D. Kamanin, BLTP Deputy Directors A. Sorin and V. Osipov, and DLNP staff members G. Alekseev and Yu. Davydov took part in the discussion. Such representative participation of JINR in the meeting shows JINR's great interest in developing contacts with scientific centres of the Republic of Korea.

The guests were acquainted with the scales of JINR activities, they were told about cooperation with other scientific centres, large experiments and facilities at JINR. The delegation visited the Flerov Laboratory of Nuclear Reactions and the Aspekt Research and Production Centre.

On 3 July, Chairman of the Nuclear Regulatory Agency of Bulgaria and Plenipotentiary of the Government of Bulgaria to JINR Serguei Tsochev visited JINR. He was received by JINR Director A. Sissakian, who acquainted him with scientific research projects at JINR in which Bulgarian scientists participate and told him about traditions of cooperation of JINR and Bulgarian physicists. They also discussed prospects of joint research.

An agreement was achieved between the JINR Directorate and the Plenipotentiary of the Government of Bulgaria on widening the contacts, including cooperation in education and attracting more young Bulgarian scientists to work at the Institute.

On 26–27 July, president of the Proton Therapy International company Timoti Wasyluka and its sales manager Donald Ludwig came to JINR on a working visit. At the JINR Directorate, the guests made a presentation about the company and were acquainted with the Institute specialists who are involved in the establishment of a radiation medical centre in Dubna. The issues under discussion were the opportunities of JINR in this field and investment conditions for the company. The visit was initiated by the Hans Waloschmiller firm's representative A. Matthiz. The guests visited VBLHE, DLNP, and FLNR. They highly evaluated the potential of JINR in the development of the trend of their interest.

On 31 July, Plenipotentiary of the Republic of Poland to JINR Professor Z. Popovicz was received at the Institute's Directorate. Z. Popovicz was appointed Plenipotentiary in March 2007, succeeding Academician A. Hrynkiewicz in this position. JINR Vice-Director M. Itkis expressed satisfaction with contacts and cooperation with Poland; he marked the outstanding role of the former Plenipotentiary A. Hrynkiewicz in the development and strengthening of the cooperation of Polish scientific centres with JINR. At present, Polish staff members work practically at all Institute's Laboratories. The JINR UC actively develops its contacts with universities of Poland. M. Itkis acquainted Z. Popovicz with advanced projects of scientific research and innovations and told him about modernization of the basic experimental complexes that will be very important for further development of the Institute. A. Belushkin, V. Voronov, D. Kamanin, R. Lednický, A. Olchevski, D. Fursaev, W. Chmeliowski, and G. Shirkov took part in the meeting.

JINR Director RAS Corresponding Member A. Sissakian visited Yakutiya **on 20–24 August**, on the invitation of the first president of the Republic of Sakha (Yakutia), RS(Ya), and Deputy Chairman of the Federation Council of the RF Federal Assembly M. Nikolaev. The JINR Director gave master classes in the framework of the national project of the Republic «Master Classes on Priority Trends in Science and Technology by Leading Russian and Foreign Scientists». He gave lectures on scientific directions and innovation projects at JINR in the halls of the physics and mathematics forum «Lensky Territory» (village Oktemtsy), the Ammosov Yakut State University, the Presidium of the Yakut Scientific Centre of SD RAS, and of the RS(Ya) National Centre of Medicine.

The JINR Director had a meeting with Deputy Chairman of the RF Federation Council M. Nikolaev, Deputy Chairman of the Presidium of the Yakut Scientific Centre of SD RAS Academician of the Academy of

Sciences of the Republic of Sakha (Yakutia) A. Shikov, members of the Yakutia State Council Presidium, Director of the Melnikov Institute of Permafrostology of SD RAS Professor R. Chzhan, RAS Corresponding Member V. Belobaev, Director of the Institute of Space Physics Research and Aeronomy of SD RAS Professor E. Berezko, leaders of the foundation «Future Generations» L. Shiton and V. Borisov, staff members of the scientific test site «Giant Air Showers», professors of the Yakut University, and other representatives of the scientific community of the Republic of Sakha. An extensive range of cooperation issues was discussed in the fields of fundamental research, educational and innovative programmes.

On 22 August YaSU Rector A. Alekseev and JINR Director A. Sissakian signed an agreement between YaSU and JINR on cooperation in science, innovations and education.

On 23 August A. Sissakian was received by Vice-President of the Republic of Sakha (Yakutia) E. Mikhailova. They had talks on the development of cooperation of the Joint Institute with RS(Ya) scientific and educational centres. The negotiations resulted in the signing of the General Agreement between RS(Ya) and JINR. It is the first agreement signed on the governmental level with a republic being an RF constituent entity. M. Nikolaev, First Deputy Minister of Science and Education of RS(Ya) M. Lebedev, and other officials took part in the negotiations. The visit of A. Sissakian to Yakutia was covered in the mass media of the Republic.

Lately, the contacts of JINR and Yakut scientists have grown more active. JINR leading scientists Academician D. Shirkov, Professors D. Fursaev, V. Zagrebaev, and V. Korenkov have visited the Republic of Sakha. Young Yakut scientists have had their training courses at JINR.

Attending the European School on High Energy Physics (Trest, Czech Republic), **on 30 August – 1 September**, JINR Director A. Sissakian had meetings with Plenipotentiary of the Government of the Czech Republic to JINR Professor R. Mach, Scientific Secretary of the Presidium of the Czech Academy of Sciences Professor I. Niderle, CERN Deputy Director-General Professor J. Engelen, and other officials. Current issues of cooperation were discussed.

A working meeting of RF Minister of Education and Science and Plenipotentiary of the RF Government to JINR A. Fursenko and JINR Director A. Sissakian was held on **10 September** in Moscow, at the Ministry of Science, Industry and Education. Issues of the discussions were current activities at JINR, upgrading of the Institute, preparation to the regular meetings of the JINR Scientific Council (September) and the Committee of Plenipotentiaries (November). Chief of the RF Federal Agency on Science and Innovations (FASI) S. Mazurenko, department director of the RF Ministry of Science, Industry and Education A. Khlunov, FASI

Deputy Manager V. Drozhenko, and JINR Assistant Director on Financial and Economic Issues V. Katrasev took part in the meeting.

On 17 September, JINR Director RAS Corresponding Member A. Sissakian received the CDF project leader Doctor R. Roser (the Fermi National Accelerator Laboratory, USA). They discussed a wide range of cooperation issues.

A meeting on the FAIR complex developed at GSI (Darmstadt) was held **on 18 September** in Moscow at the Alikhanov Institute of Theoretical and Experimental Physics (ITEP). ITEP Director RAS Corresponding Member B. Sharkov presided the meeting. GSI Director Professor H. Stöcker, FAIR project leader Professor H. Gutbrod, directors of collaborating institutes, and project systems coordinators noted in their presentations the great interest in the development of cooperation in this one of the brightest megaprojects implemented by physicists from Germany, Russia, and other countries.

JINR Director RAS Corresponding Member A. Sissakian said that JINR scientists were very much interested in the implementation of the partnership programme in the framework of the FAIR project. JINR group coordinators A. Malakhov, A. Kovalenko, and A. Kulikov also attended the meeting.

On 19 September, Minister of Science and Technology of the Bolivarian Republic of Venezuela Éktor Navarro Dias and the accompanying persons visited JINR. JINR Vice-Director R. Lednický, Chief of the Administration of Scientific and Organizational Activities and International Cooperation N. Russakovich, Deputy Chief D. Kamanin, and JINR UC Director D. Fursaev received the delegation at the JINR Directorate. The guests were much impressed by the computer presentation about JINR, made by R. Lednický. D. Fursaev answered in detail all questions, asked by the guests, concerning the educational programme and opportunities for students and postgraduates from Venezuela to take part in it. The guests were also very much interested in various applications of fundamental physics, including medicine, and prospects of SEZ to be established in Dubna.

On 19–21 September, JINR Director RAS Corresponding Member A. Sissakian visited Chisinau on the invitation of President of the Academy of Sciences of the Republic of Moldova (ASM) Academician G. Duka and ASM Vice-President and Plenipotentiary of the Government of Moldova to JINR ASM Corresponding Member I. Tiginianu.

Bilateral negotiations were held at the Academy of Sciences on the development of scientific ties among JINR and Moldovan research centres; new promising proposals on cooperation were discussed. In particular, Academician G. Duka informed the JINR Director about the plans to establish a Centre of Ionized Technologies in Moldova with the support of IAEA and

invited JINR to join this project, both in the scientific programme and in training courses for the centre staff. In his turn, A. Sissakian spoke about the plans to establish in Dubna, together with the RRC «Kurchatov Institute», a Centre of Ion-Plasma Nanotechnologies of CIS countries.

On 21 September, the JINR Director was received by the Prime-Minister of the Republic, V. Tarlev. The Prime-Minister expressed his concern in strengthening of JINR–Moldovan scientists' cooperation. «Science should not have borders», were his concluding words of the meeting. The Moldovan Prime-Minister thanked A. Sissakian for visiting Moldova.

Visits to the Institute of Applied Physics, the Institute of Engineering Electronics, the Institute of Geology and Seismology, and the Central City Library were organized. On the Moldovan side, Academician V. Moskalenko, Professors K. Gudima and M. Baznat, and other scientists took an active part in the meeting and negotiations.

On 27–29 September Murray Gell-Mann, an American theoretical physicist, visited the Joint Institute for Nuclear Research on the invitation of the JINR Directorate.

At the age of 40, in 1969, Professor M. Gell-Mann was awarded the Nobel Prize in physics for the discoveries connected to the elementary particles classification and their interactions.

In Dubna, the worldwide famous scientist, the author of the well-known today «quark model», took the floor at the session of the international Scientific Council and spoke to its members about his scientific results and plans, including those on cooperation with the multidisciplinary institute established by him in Santa Fe (USA), where one of the main research domains is complex adaptable systems.

The visit of Professor M. Gell-Mann to Dubna is a milestone for JINR and Santa Fe scientists for their joint search for clues to complex systems of the microworld in the interactions with the environment. The Directorate, scientists and specialists of JINR expressed their sincere gratitude to Professor M. Gell-Mann for his visit to Dubna, meetings with the scientific community, and his interest in scientific research in high energy physics, nuclear physics, and condensed matter physics. The Nobel Prize winner gave two lectures to the Institute staff members: one about getting creative ideas and the other about why and how Nature can be conformable to itself, which were met with tremendous enthusiasm.

During his meetings with Professor M. Gell-Mann in Dubna and in Moscow, at the ceremonial meeting in honour of the American scientist at the Moscow government, JINR Director Professor A. Sissakian marked the utmost importance of scientific cooperation in fundamental and interdisciplinary research. He stressed, in particular, the great role of the visit of the famous

American scientist to Russia in support of a new growing movement — the forum «Moscow as the Intellectual Capital of the World». This movement, initiated by scientists representing various scientific trends, was supported by the Moscow government and has been positively influencing the intellectual development of the Russian capital and Russian science as a whole.

At the SC session, on 28 September, the title «Honorary Doctor of JINR» was conferred on M. Gell-Mann.

The Adviser on Science to the President of the Republic of Cuba, Fidel Castro Diaz-Balart, received JINR Director A. Sissakian **on 4 October** in Moscow. The meeting took place in the residence, with Ambassador Extraordinary and Plenipotentiary of the Republic of Cuba to RF Jorge Marti Martinez attending it. A. Sissakian told them about the scientific programme implemented at JINR and advanced plans for the nearest 10–15 years. Issues of the realizable restoration of Cuba's participation in the JINR research programme in 2008 were discussed. Fidel Castro Diaz-Balart expressed the commitment of the Cuban side to renew cooperation: to start with, several Cuban scientists could be sent to the Institute on a short-visit basis. He accepted with gratitude A. Sissakian's invitation to come to JINR at the time convenient to him.

On the invitation of Yerevan State University Rector Corresponding Member of Armenian NAS A. Simonyan, JINR Director and Vice-President of Dubna University RAS Corresponding Member A. Sissakian stayed in Yerevan **from 10 to 13 October** on a working visit. He met with YerSU Rector A. Simonyan, Prorector Professor S. Arutyunyan, Deans of the Faculties of Physics and Biology Professors R. Avagyan and Eh. Gevorgyan, President of Armenian NAS R. Martirosyan, Deputy Minister of Trade and Economic Development V. Gushchyan, Deputy Minister of Culture G. Gyurjyan, Heads of the Armenian Physics Society Academicians P. Avakian and Yu. Chilingaryan, YerPhi Director Professor G. Asatryan, Head of Administration of the Arzhapnyak Municipal District R. Ovsenyan, and other scientists and public figures. They discussed a wide range of cooperation issues of JINR and Dubna University contacts in scientific, innovation and educational programmes with scientific centres of the Republic of Armenia, in particular, the project of a medical biological centre.

An Agreement was signed during the visit on scientific, educational and cultural cooperation between YerSU and Dubna University. On behalf of RANS Presidium, A. Sissakian handed Diplomas and badges of this Academy to A. Simonyan and R. Martirosyan.

On 11 October in the building of the University, YerSU Rector and A. Sissakian took part in the opening ceremony of a new auditorium named after Academician N. Sissakian, whose centenary of birth is celebrated in 2007.

A group of MEPI teachers and students came to JINR on a visit **on 16 October**: 18 professors of section chairs and 6 students and postgraduates.

On a request expressed by MEPI, JINR leading scientists gave survey lectures on fundamental physics and applied research at the heavy ion beams, and on oncological therapy at the charged particle beams. The guests were acquainted with the FLNR cyclotron complex, the DLNP medical beam, and saw the Nuclotron.

A meeting at the Directorate summed up the results of the visit. A. Sissakian told the guests about the advanced projects at JINR, briefly outlined the centre history and answered numerous questions. N. Russakovich, G. Trubnikov, I. Kryukova, and D. Kamanin also answered the visitors' questions. Naturally, the majority of the questions were about opportunities for cooperation in education. The meeting participants discussed how to send students to practice courses, how to advertise JINR wider, when to organize the next meeting. The guests appreciated the Institute administration's hospitality and thanked JINR staff members and leaders for interesting lectures and excursions. They expressed special gratitude to the administration of the Laboratory of Nuclear Reactions.

On 22–24 October JINR Director RAS Corresponding Member A. Sissakian visited CERN (Geneva), where he took part in the meetings of the Joint Resource Committee that coordinates the preparation activities for the experiments at the Large Hadron Collider (LHC). The meetings were presided by CERN Deputy Director-General Professor J. Engelen. The participants considered the status of the preparation activities for the projects ATLAS, CMS, ALICE, LCG, LHC-b, and TOTEM (JINR's groups are actively involved in the first four). CERN Director-General Professor R. Aymar and the LHC project leader Professor L. Evans took the floor at the plenary meeting; they informed the audience about the plans to finish the development of the Large Hadron Collider by the spring-summer of 2008 and the status of other activities conducted and planned at CERN, in particular, after the LHC has been launched.

On 23 October A. Sissakian met with Professor J. Engelen and had a long talk with him on the issues of the JINR–CERN cooperation development. He also had meetings with other CERN leaders and scientists. An agreement in principle was achieved to work out a five-year JINR–CERN partnership programme, to be discussed at the Joint Committee meeting in Dubna.

On 29 October, the JINR Directorate received First Secretary of the Embassy of the Republic of South Africa (RSA) in Moscow S. Rasher and Attaché on science N. Arendse.

The status and prospects of RSA–JINR cooperation were highly evaluated at the meeting in Dubna. S. Rasher and N. Arendse underlined the importance of this cooperation for the development of joint educa-

tional programmes, research in theoretical and experimental physics, radiobiology, and computing. As JINR Scientific Leader V. Kadyshevsky marked, the established atmosphere of friendly ties among scientists, primarily, young researchers, was of special importance, for it is the young scientists who are expected to lead to success and progress.

JINR Director A. Sissakian and JINR Vice-Director M. Itkis visited Germany **on 4–8 November**. They had meetings and talks with Director-General of the Ministry of Education and Research of Germany B. Brumme-Bothe, President of the Helmholtz Association Professor J. Mlynek, GSI (Darmstadt) Director Professor H. Stöcker, FAIR project leader Professor H. Gutbrod, Honorary Director of the Institute of Theoretical Physics of Frankfurt am Main University Professor W. Greiner, and other scientists. They discussed issues of widening JINR contacts with German scientific centres and of preparation of new agreements on cooperation. Special attention was paid to an increase of cooperation in heavy-ion physics of low and high energies (the projects FAIR, HIBIS, NICA, the Nuclotron, etc.).

On 7 November A. Sissakian, M. Itkis, and DLNP Director Professor A. Olchevski took part in the ceremonial signing procedure of the agreement among eleven Member States (the Russian Federation and some other JINR Member States among them) on the start of the joint implementation of the FAIR project (a facility for antiproton and ion research). JINR plans to participate in the implementation of both the accelerator and the experimental part of the project. German colleagues, in their turn, were much interested in the JINR heavy-ion research programme.

General Director of the State Corporation «Russian Corporation of Nanotechnologies» (SC Rosnanotekh) L. Melamed and Director of venture funds of OAO Bank VTB S. Romashov visited the Joint Institute for Nuclear Research **on 15 November**.

At JINR, L. Melamed and S. Romashov saw the accelerator complex of the Laboratory of Nuclear Reactions, where its Director S. Dmitriev told them about pioneer achievements of JINR scientists in fundamental research and demonstrated to them examples of successful commercial application of scientific results. During a thorough discussion A. Sissakian made comments on JINR's plans to establish, together with Dubna enterprises, an international nanotechnological cluster of the technical and innovation type. L. Melamed appreciated the results of JINR's activities in the sphere of nanotechnologies and confirmed the necessity for JINR to cooperate with SC Rosnanotekh. He also informed his colleagues on the RF Government instruction to submit proposals in connection with the establishment of an International Centre of Nanotechnologies of CIS countries on the JINR basis (on the results of the visit of First Vice-Premier S. Ivanov).

A. Sissakian and S. Romashov agreed on the main trends of the Bank VTB–JINR partnership. It is planned to organize a VTB–Dubna Centre for Technology Transfer (a business incubator), to jointly prepare projects and companies for a venture fund, to cooperate in the sphere of staff training, etc.

On the invitation of Ambassador Extraordinary and Plenipotentiary of Romania to RF I. Donka, a delegation of JINR staff members visited **on 29 November** the photo exhibition organized by the Embassy and dedicated to the 51st anniversary of Romania–JINR cooperation. Ioan Donka marked at the opening ceremony the significance of cooperation of Romanian scientific centres with JINR for the progress of science in Romania and strengthening of the ties between the countries. JINR Director A. Sissakian highly appraised the importance of cooperation with Romania for JINR — it is one of the 11 states that founded the Joint Institute for Nuclear Research. He also noted the significant role of the outstanding Romanian scientist H. Hulubei in the organization of scientific trends of the Institute, as well as the contribution made by JINR Vice-Directors at different times S. Titeica, A. Mihul, and A. Sandulescu, and Deputy Directors of JINR Laboratories G. Adam, O. Balea, and N. Popa.

Plenipotentiary of the Government of Romania to JINR Nikolae Viktor Zamfir attended the exhibition opening ceremony.

On 2–5 December, a JINR delegation headed by JINR Director RAS Corresponding Member A. Sissakian was on a visit to France. The delegation included JINR Vice-Director Professor M. Itkis and JINR Chief Scientific Secretary Professor N. Russakovich.

A meeting of the committee on the JINR–IN2P3 cooperation was held on 3 December at CNRS. Results of the contacts in 2007 were discussed and plans for 2008 were considered. IN2P3 was represented by Deputy Director Professor S. Galès and Professor A. Müller, Chief of the International Policy Department É. Perret. Under discussion was a draft of an Agreement on the associate membership of France to JINR, to be signed in 2008.

A delegation from JINR visited UNESCO on 4 December and was received by Director of UNESCO's division of basic and engineering sciences Professor M. Nalecz. A wide range of UNESCO–JINR cooperation issues were discussed. First Secretary of the RF Bureau in UNESCO V. Popov, and UNESCO Adviser V. Zharov took part in the meetings.

A meeting of the joint CERN–JINR committee on scientific cooperation was held at the International Conference Hall **on 7 December**. Co-chairmen of the committee are JINR Director A. Sissakian and CERN Deputy Director-General Professor J. Engelen. The discussion topics at the meeting were the participation of JINR in experiments at the LHC (R. Lednický, M. Nessi, R. Cousins) and preparations to

process data from the LHC experiments (V. Korenkov, L. Robertson). Leading scientists and specialists from JINR and CERN acquainted each other with advanced projects in particle physics developed in both centres. A. Olchevski and A. Ruzaev spoke on the development of a Special Economic Zone in Dubna. The participants of the meeting discussed a draft of JINR–CERN cooperation plan for the coming five years. It is for the first time in the history of the two centres' contacts that such a document has been elaborated. It will serve to further strengthen the mutually beneficial ties between the centres.

JINR Director RAS Corresponding Member A. Sissakian visited Ukraine **on 10–11 December**.

He had a meeting with President of IAAS and NAS of Ukraine Academician B. Paton, with whom he discussed issues of cooperation in the aspects of establishment of an International Centre of Nanotechnologies of CIS countries in Dubna, joint participation in a number of advanced scientific and educational programmes, and preparation for celebrating the centenary of the birth of Nikolai Bogoliubov, a prominent scientist-scholar. Vice-Presidents of NAS of Ukraine Academicians A. Shpak, A. Naumovets, and Director of the Bogoliubov ITP Academician A. Zagorodnii took part in the meeting.

A. Sissakian had a meeting with First Deputy Minister of Education and Science of Ukraine A. Gurzhii, Plenipotentiary of the Government of Ukraine to JINR V. Stognii, and JINR Scientific Council Member Academician B. Grinev, with whom he discussed cooperation issues in fundamental science, educational and innovative activities.

On 14 December, a meeting was held of the President of the Russian Academy of Sciences, Yu. Osipov, and the Director of the Joint Institute for Nuclear Research, A. Sissakian, where they discussed issues of scientific cooperation and science organization, following the discussion results at the meeting of the Council on Science, Technology and Education under the RF President held on 30 November, as well as the questions on the programme of fundamental scientific research for 2008–2012. At the meeting, an Agreement on the development of scientific and technical cooperation was signed between the Joint Institute for Nuclear Research and the Russian Academy of Sciences.

The RF Academy of Sciences is one of the world's most respected partners in science for JINR; it has a profound effect on the development of fundamental research at the international scientific centre in Dubna.

Issues of coordination of the scientific and technical cooperation between JINR and RAS have recently become items of special importance. This fact is related to the necessity to consolidate the scientists' efforts to increase, in the framework of recent reforms, the credibility of science for the public, as well as to promote and develop modern scientific projects and solve

scientific tasks. New technological and organizational-legislative advantages set up due to the status of the special economic zone in Dubna, the city where JINR is located, are also significant factors to be accounted for.

According to the Agreement, JINR and RAS exchange publications, data on fundamental research and its organization on a permanent basis. Efforts will be undertaken to render support in organizing international conferences, seminars, and working meetings whose participants are scientists from scientific institutions of RAS and JINR Member States. Each side will inform the other about most important events and provide their representatives with opportunities to attend meetings of the RAS Presidium, Directors' Council of RAS institutions and the JINR Scientific Council as observers.

JINR and RAS will place at each other's disposal their nuclear physics facilities and complexes (accelerators, research reactors, experimental set-ups, etc.), existing or under construction, on the basis of mutual interests, as well as the necessary equipment, devices and means of data processing, to provide for joint research. Each side agrees to submit assistance and consulting on the issues it is most competent in to the other side, on its request.

Once a year, meetings of JINR and RAS representatives and experts will be organized for discussions of interactions patterns and joint activities, and other questions of mutual interest.

On 19 December, an Agreement on cooperation in nanotechnologies between the Joint Institute for Nuclear Research and the National Academy of Sciences of Ukraine was signed in RAS Presidium by NASU President Academician B. Paton and JINR Director RAS Corresponding Member A. Sissakian. NASU First Vice-President and Chief Scientific Secretary Academician A. Shpak and JINR Scientific Leader V. Kadyshesky were present at the signing ceremony.

On 24 December, JINR Director A. Sissakian and MSU Rector V. Sadovnichii signed an Agreement between the Joint Institute for Nuclear Research and the Lomonosov Moscow State University on the development of cooperation in scientific research and education. The signing procedure was entry 1 in the agenda of the meeting of the MSU Scientific Council, which was held at the Intellectual Centre — the Fundamental Library of MSU.

JINR and the Lomonosov Moscow State University play an important role in Russia and abroad in the

process of science and education integration; they have been partners for a long time and have mutually creative influence on fundamental research. Today strong ties unite scientists and departments of JINR and MSU in scientific and technical cooperation and education in 25 topics that overlap practically all research trends in Dubna and Moscow University.

The Agreement implies joining the efforts of JINR and MSU in developing and maintaining favourable conditions for scientific research and innovation activities, improving the educational and research procedure and science–education integration. The sides will reciprocally communicate their plans, publications, information on research and education and their organizational aspects; make efforts to support the organization of conferences, seminars and working meetings attended by the teaching staff and scientists of JINR and MSU, as well as inform each other on their most important events, including involvement in international projects. The sides will arrange that their representatives take part in sessions of their scientific councils and programme advisory bodies as observers. To conduct joint research, JINR and MSU will provide, on the basis of special protocols, the access to research facilities and complexes (accelerators, research reactors, experimental set-ups, telecommunication and information complexes, etc.), available or under construction, as well as research equipment, devices and means of data processing, to the other side's disposal.

Taking into account the considerable experience of JINR and MSU and favourable conditions for international cooperation, the sides agreed to include, on mutual consent, other research and educational organizations (of the Russian, foreign or international origin) into joint activities, as a third side.

The sides agreed to hold meetings of their representatives and experts once a year to discuss their cooperation patterns and joint activities, and other issues of mutual interest.

In **December**, JINR Chief Engineer G. Shirkov visited the Fermi National Accelerator Laboratory in Batavia. He had meetings with FNAL Director Pierre Odonne and the project group leader for the development of the International Linear Collider (ILC) Barry Barrish. They discussed the programme of the regular ILC meeting planned to be held in Dubna in June 2008.

CONFERENCES AND MEETINGS HELD BY JINR

Eleven conferences were the largest among scientific conferences and workshops held by JINR in 2007.

III international symposium «*Problems of Biochemistry, Radiation and Space Biology*» (Moscow, Dubna) was held on 24–28 January. It was organized

by the Russian Academy of Sciences, the Department of Biological Sciences of the Russian Academy of Sciences, the Bach Institute of Biochemistry of RAS, the Institute of Biomedical Problems of RAS, the National Academy of Sciences of the Republic of Armenia, Yere-

van State University, the Dubna International University of Nature, Society and Man, and the Joint Institute for Nuclear Research.

A tradition already, the symposium was dedicated this time to the centenary of the birth of Academician Norair Sissakian (1907–1966), an eminent biochemist, one of the founders of space biology, an outstanding organizer of science and global cooperation of scientists.

Along with Russian participants, foreign scientists from Italy, Canada, the USA, and CIS countries (Armenia, Georgia, Belarus, Ukraine) attended the forum. About 200 people took part in the symposium (150 participants and 50 guests); the agenda included 18 plenary and 50 section reports, with 20 poster presentations.

Three main sections made the scientific part of the programme: biochemistry, space biology and medicine, general and space radiobiology. As all the participants unanimously stated, one of the characteristic features of the symposium is an opportunity to be acquainted with elaborations by specialists who work in related fields of science. This greatly enriches and widens the scientific outlook of biologists working in various domains of modern science, allowing them to concentrate on its urgent issues; and gives opportunities to approach the solution of their tasks with critical analysis in cooperation with colleagues from other institutes and laboratories.

The results of the symposium work were reviewed during the round-table discussion «Scientific Heritage of Academician N. Sissakian and Modern Problems in Biochemistry and Space Medicine», which was held under the chairmanship of RA NAS Academician A. Galoyan and Professor E. Krasavin.

The Russian Academy of Natural Sciences instituted the jubilee silver medal named after N. Sissakian «For the Large Contribution of Scientists to the Development of Biochemistry and Space Biomedicine» on the occasion of the centenary of N. Sissakian's birth. On 26 January, the medal presentation ceremony was held where the first set of the N. Sissakian awards was given. RANS President Professor O. Kuznetsov handed the medals. Among the recipients were RAS Academicians O. Gizenko, A. Grigoriev, M. Ostrovsky, RA NAS Academicians A. Galoyan and K. Karagezian, N. Sissakian's disciples Professors M. Odintsova and N. Gumilevskaya, RAS Corresponding Member A. Sissakian (the scientist's son), and others.

The 11th Scientific Conference of Young Scientists and Specialists was a regular event in the series of conferences and schools held in Dubna by the Association of JINR Young Scientists and Specialists. These conferences are traditionally organized in the last week of winter student holidays and attended by students, postgraduates, young scientists and specialists from JINR and other scientific centres of Russia.

A total of more than 80 applications were forwarded to the scientific forum of young scientists and special-

ists. Topics of priority research were discussed at the conference in more detail. The main themes of the plenary meetings of the 11th conference were scientific and applied studies in power industry, ecology, new methods of radiation control, techniques and methods of handling radioactive wastes.

The topics of the plenary meetings determined the main trend of the conference which has a considerable educational component along with the research one. One of the main aims of the conference was not only to give young scientists from JINR Member States an opportunity to present their results, but also to inform them in a comprehensible manner about most advanced scientific achievements of the recent years. It was not insignificant that at the same time young JINR staff members involved in experimental elaborations could present in detail technical aspects of facilities and experiments at the section meetings.

The conference is also an event under review where a competition of papers by the participants is held to award JINR prizes for young scientists and specialists. The following prizes were awarded summarizing the conference:

In the nomination «Scientific and Technical Application Studies» the first, second and two encouraging prizes were awarded to A. Tamonov (FLNP), E. Ermakova (FLNP), S. Gursky (DLNP), and Z. Goryainova (FLNP), respectively; in the nomination «Scientific Methods and Scientific and Technical Studies» encouraging prizes were awarded to A. Lubashevsky (DLNP) and A. Lebedev (LIT); in the nomination «Research Experimental Studies» two first prizes were awarded to M. Zhabitsky (DLNP) and S. Pankov (FLNP), two second prizes to N. Rebrova (FLNP) and A. Kulko (FLNR), and an encouraging prize to A. Kiselev (VBLHE); in the nomination «Research Theoretical Studies» the second prize was awarded to A. Bednyakov (BLTP).

On 16–19 May the traditional ***International Seminar on Interactions of Neutrons with Nuclei*** (ISINN-15) was held. More than 100 specialists in neutron physics attended it. The topics of the ISINN-15 plenary sessions and poster sections were neutron sources, electric dipole neutron moment, fundamental properties of the neutron, ultracold neutron physics, nucleus fission, nuclear data, and research in related fields. To take part in the event, specialists from Belarus, Vietnam, Germany, China, Korea, Russia, Romania, Slovakia, France, Czechia, and Switzerland arrived in Dubna. This year, Russian research centres were less represented than usual — these were RRC «Kurchatov Institute», SRINP MSU, PINP, Raduim Institute, Voronezh and Obninsk universities. The main foreign neutron centres participated on the usual scale: Laue–Langevin Institute (ILL, France), the P. Scherrer Institute (PSI, Switzerland), and other research centres and universities.

On 24 June–22 July, the *4th International Summer Student Practice in JINR Fields of Research* was organized. In 2007 the practice was held in two stages: the first one was for Polish, Czech, and Slovak students; the second one was for Romanian, Bulgarian, and Belarussian students. The practice was also attended by students of the Republic of Sakha (Yakutia) within the Russian Federation.

Besides being held in two stages, this practice had other new important features. First, the practical work performed by the students at JINR Laboratories received the status of research projects. For the practice participants to get an idea of the projects in advance and thus to have an adequate picture of the topic range, a database of detailed description of the projects was put up at the UC Internet site. In the future, the base will be improved and extended. Second, at the end of each stage of the practice, its participants presented their results of performing the project. The presentations had increased students' responsibility for the work and allowed them to exchange their impressions.

In other respects, the practice followed the established traditions. In the afternoon, the students worked at the Laboratories; in the morning, they attended lectures given by JINR's leading specialists. The programme also included excursions and trips.

IX International School-Seminar on Urgent Problems of Microworld Physics was held on 23 July–3 August in Belarus, at the holiday hotel «Zoloty Peski» («Golden Sands») not far from Gomel. The school is held biennially in the framework of the international cooperation between JINR and the National Centre for Particle Physics and High Energies, BSU (Minsk). About 120 participants attended the school-seminar, with over 30 representatives of JINR among them. V. Nikitin (JINR), P. Meridani (Italy), Yu. Tikhonov (Novosibirsk), V. Ivanov (JINR), E. Tomasi-Gustafsson (France), P. Rossi (Italy), L. Azhgirei, E. Kokoulina, O. Rogachevsky, S. Shimansky, Yu. Uzikov (JINR), A. Zaitsev (Protvino), A. Dorokhov (JINR), A. Pankov (Gomel), A. Kiselev (Protvino), and other scientists gave lectures. Young specialists and scientists made many reports at the school; four best reporters were selected: V. Zykunov (Gomel), A. Skachkov (JINR), A. Churakov (JINR), and V. Petrov (Minsk). The school proceedings are available at the web site <http://gomelschool.hep.by/agenda.html/>

The international workshop «*Supersymmetries and Quantum Symmetries*» (*SQS'07*) was held at the Bogoliubov Laboratory of Theoretical Physics from 30 July to 4 August. Professor E. Ivanov opened the event. The workshop, as well as all previous meetings of this cycle, was dedicated to the memory of Viktor Ogievetsky, whose name is connected to the tradition of holding seminars on urgent issues of supersymmetries and quantum symmetries in the elementary particle the-

ory since the late 1980s. Those seminars became very popular at that time among Russian theoreticians; they were held regularly and eventually grew into international meetings. When in 1996 V. Ogievetsky died, his disciples and followers kept the tradition. *SQS'07* was attended by a large number of theoreticians, from both Russia and abroad. Eighty-two reports were delivered, among them 34 plenary and 48 section presentations. This time, the main topics of the conference were string theory, quantum and geometric aspects of supersymmetric theories, higher-spin theories, supersymmetric integrable models, quantum groups and noncommutative geometry, standard model and its supersymmetric extensions.

In 2007, 118 scientists attended the workshop. They represented Australia, Armenia, Bulgaria, Brazil, the United Kingdom, Germany, the Netherlands, Greece, Georgia, Ireland, Spain, Italy, Canada, Poland, Russia, Romania, Serbia, the USA, Ukraine, France, the Czech Republic, and Sweden. Among the participants there were leading experts in the theory of elementary particles, quantum field theory, gravitation and string theory, noncommutative geometry and integrable systems: K. S. Stelle (Imperial College, London), A. Tseytlin (Imperial College, London, and Lebedev Physical Institute, Moscow), M. Vasiliev (Lebedev Physical Institute), D. Sorokin (Padova University), J. A. de Azcarraga (University of Valencia), J. Lukierski (Wroclaw University), L. Mezincescu (University of Miami), P. Fre (Torino University), J. Niederle (Institute of Physics, Prague), J. Buchbinder (Tomsk University), G. Zoupanos (National Technical University, Athens), and others. Plenipotentiary of the Government of the Republic of Poland to JINR Professor Z. Popovicz took part in the workshop.

The European School on High Energy Physics was held on 19 August–1 September in Trest (Czech Republic) marking the 37-year tradition of joint JINR–CERN schools. More than 100 young physicists from CERN and JINR Member States listened to the lectures on urgent problems in particle physics, given by leading scientists of the world. Among the lecturers were the following outstanding scientists: the Nobel Prize winner J. Cronin (USA), Professors F. Lebrant (CERN), J. Iliopoulos (France), H. Murayama (USA), U. Waidemann (CERN), and others. JINR Director Professor A. Sissakian and CERN Deputy Director-General Professor J. Engelen gave special lectures on scientific programmes at JINR and CERN. The leading theoretical physicist O. Teryaev from Dubna was one of the discussion leaders who assisted the listeners to grasp the information. Dubna scientists Professor A. Olchevski, Doctor R. Leitner (together with Professor E. Lillestole and I. Hoshen, he was a co-director of the school), and the Organizing Committee secretary T. Donskova contributed much to the organization of the school in Czechia.

VII International Seminar in Memory of Professor V. Sarantsev was held on 2–7 September in Alushta (Ukraine). It was organized by JINR, the Budker Institute of Nuclear Physics of RAS SD, and the RAS Scientific Council on accelerators of charged particles. Physicists from scientific centres of Russia (Moscow, Novosibirsk, Tomsk), Ukraine, Japan, Great Britain, Italy, and the USA took part in it. They represented a traditionally wide range of occupations: from accelerator specialists who solve fundamental physics tasks to specialists in applied issues. Each seminar has its own specificity. This year it was devoted to the ILC topics, but the traditional themes were also covered there. Leading scientists and specialists from various countries made reports. In addition, the seminar participants were acquainted with the scientific biography of Professor V. Sarantsev.

The International Meeting on Spin Physics (DSPIN-07) was held on 3–7 September at BLTP, JINR. A round-table discussion was organized in the framework of the meeting, where the results of research with polarized beams were presented which were obtained in the experiments conducted on the basis of the JINR VBLHE accelerator complex; research plans were discussed for studies at the Nuclotron-M accelerator, which could become basic for the development of the polarization programme at the NICA collider. Light polarized nuclei beams at the NICA accelerator complex would make the new accelerator complex of VBLHE a unique centre where the research would be attractive for the world physics community, as there will be no other existing or planned to be constructed accelerator with such opportunities in the 10 GeV energy range for colliding beams. That will allow conducting at the accelerator the experiments that were impossible before, giving a real chance to solve the mystery of one of the most important quantum characteristics — the spin — at JINR facilities.

The discussions with leading specialists in this field who attended DSPIN-07 showed that the implementation of the spin programme at the Nuclotron-M, and later at NICA, would make it possible to establish a centre on polarization research on the basis of the JINR VBLHE accelerator complex. A selection of beams and the range of accessible energy will provide competitive unique opportunities for the experiments in spin physics. The centre of this kind would undoubtedly attract physicists from the whole world who are involved in polarization research as it would be complementary in the polarization research planned at JLAB (USA), GSI (FAIR, Germany), and KEK (JPARC, Japan) with other beams and a different kinematics.

The meeting dedicated to the centenary of the birth of Academician Vladimir Veksler and 50 years since the launch of the Synchrophasotron was held on 10–12 October at the JINR International Conference Hall. The meeting crowned the cycle of the jubilee

events that started on 5 March 2007 in Moscow with a scientific session and a joint meeting of the Scientific Councils of LPI RAS, JINR, INP RAS, and the Scientific Council on particle accelerators.

JINR Director RAS Corresponding Member A. Sissakain opened the meeting. He greeted all the participants — the veterans who took part in the development and launching of the Synchrophasotron and remember with warmth the first director and founder of the laboratory, the guests of the meeting who represented the scientific centres where V. Veksler worked, and young scientists who are destined to implement new projects at the laboratory named after Veksler and Baldin. First Deputy Minister of Industry and Science Yu. Vorontsov addressed the meeting participants with words of greeting on behalf of the Governor and the Government of the Moscow Region.

The scientific programme of the meeting was very rich — it offered a summing-up of the results of the tremendous research that started at the first Soviet particle accelerator of high energies and continued at JINR and in scientific centres of the Member States. At the same time, this research is aimed at new projects and activities stated in the JINR strategic development programme. VBLHE Director Professor V. Kekelidze noted these particular features of the meeting in his speech.

RAS Corresponding Member A. Lebedev (LPI, RAS) made a review report on V. Veksler's scientific research activities. LPP Honorary Director Professor I. Savin shared his memoirs about the founder of the Laboratory of High Energies.

The development of scientific ideas and research initiated by Academician V. Veksler was the main theme of the following reports: «V. Veksler: Ion Collective Acceleration» (Eh. Perelshtein), «Research at the Synchrophasotron Bubble Chambers» (V. Glagolev), «Emulsion Studies at the LHE Accelerator Complex» (P. Zarubin), «On Physics Research at the Synchrophasotron» (V. Nikitin), «V. Veksler and Progress in Photomeson Physics in Our Country» (G. Sokol, LPI, RAS), «The Synchrophasotron and Relativistic Nuclear Physics» (A. Malakhov). V. Penev (JINR–Bulgaria) spoke on the results obtained at the Synchrophasotron in the joint research of scientists from JINR Member States.

The second day of the meeting opened with a report by V. Kekelidze on the research programme at VBLHE. S. Vokal (JINR–Slovakia) presented a review of the main results of the studies at VBLHE in recent years. A. Sissakian and A. Sorin made reports on the status of the NICA/MPD project at JINR. A. Kovalenko, N. Meshkov, E. Donets, and V. Toneev continued the discussion of this topic. The meeting participants took part in the session on the NICA/MPD project.

XI conference «*Science. Philosophy. Religion*» was held in Dubna on 30–31 October. It was organized by

the Joint Institute for Nuclear Research, the Moscow Ecclesiastical Academy (MEA), the Lomonosov Moscow State University (MSU), the Foundation of the Saint All-Lauded Apostle Andrew the First Called (FAFC), and the Centre of the National Glory (CNG).

It continued the tradition of the annual conferences «Science. Philosophy. Religion» held in the 1990s. Their aim was to overcome the segregation between the secular and theological science and stereotype concepts on the confrontation of science and religion, as well as to build up a world outlook in public opinion which would in harmony combine theological, philosophical and scientific aspects of knowledge. The theme of the XI conference was «Culture and Freedom».

Opening the conference, Director of the Joint Institute for Nuclear Research RAS Corresponding Member A. Sissakian recalled the rich history of holding such conferences on the initiative of the first Director of JINR D. Blokhintsev, the outstanding Soviet physicist, one of the organizers of the atomic energy industry. Those meetings had been hugely acute methodology discussions among scientists and philosophers. A. Sissakian also marked that the prominent mathematician and physicist Academician N. Bogoliubov, JINR director in 1965–1989, who was an ardent Orthodox Christian, contributed much to the revival of the spiritual life of Dubna. A. Sissakian finished his speech with the words: «The conference will be a remarkable event in the life of our city and the Institute. It will encourage scientific and spirit endeavours. The Dubna Administration and the JINR Directorate will continue

making their contributions to the organization of the conferences.»

The Egorievsk Bishop Mark, deputy chairman of the Department of External Relations at the Moscow Patriarch's Office, delivered the address and benediction by the Metropolitan of Smolensk and Kaliningrad to the conference and its participants. Bishop Mark expressed his hope that the conference participants would give a «merited, adequate and science-based answer» to the circles that try to impose on the public the idea that religion and Church are the citadels of outdated, stagnant and unscientific views.

Professor of the Moscow Ecclesiastical Academy A. Osipov gave a brilliant review of all the previous conferences «Science. Philosophy. Religion». Summing up the experience, he marked that the attendees of the previous conferences came to the conclusion that science, philosophy and religion are different ways for cognition of the world, but they are parallel and instead of excluding each other they are mutually complementary.

The discussion on the reports delivered at the conference was held as three round-table meetings. It made it possible to fully discuss the issue «Culture and Freedom» and account for a variety of opinions and evaluations expressed by the maximum number of participants. All participants were unanimous in their decision to continue the discussions. By mutual consent they expressed their gratitude to the Foundation of the Saint All-Lauded Apostle Andrew the First Called and JINR for the excellent organization of the conference.

PARTICIPATION OF JINR IN INTERNATIONAL CONFERENCES

In 2007 JINR scientists and specialists participated in 231 international conferences.

The largest delegations representing JINR attended the following events: UNISA–JINR Symposium (Pretoria, Republic of South Africa); XLI Winter School of St. Petersburg Institute of Nuclear Physics (Repino, Russia); the Workshop on Computer Algebra and Differential Equations (CADE-2007) (Turku, Finland); XX PANDA Collaboration Meeting (Genoa, Italy); the international symposium «Problems of Biochemistry, Molecular and Radiation Biology and Genetics» (Yerevan, Armenia); the scientific and technical conference «Modern Problems of Mathematical Modelling in Physics, Mechanics and Management» (Tver, Russia); the 4th Central European Training School on Neutron Scattering (Budapest, Hungary); XLIII Russian Conference on Problems of Mathematics, Informatics, Physics and Chemistry (Moscow, Russia); XIV Annual Seminar on Nonlinear Phenomena in Complex Systems (Minsk, Belarus); the ILC GDE Meeting (Hamburg, Germany);

the 6th international conference «Nuclear and Radiation Physics» (Almaty, Kazakhstan); the meeting «The ILC Beam Energy Measurements» (Zeuthen, Germany); LVII International Conference on Nuclear Physics (the 57th Meeting on Nuclear Spectroscopy and Atomic Nucleus Structure (Nucleus-2007)) (Voronezh, Russia); the 4th European Conference on Neutron Scattering (ECNS-2007) (Lund, Sweden); the 2007 Europhysics Conference on High Energy Physics (Manchester, the UK); the 11th International Conference on Magnetic Fluids (ICMF-11) (Košice, Slovak Republic); the 15th International Conference on Supersymmetry and Unification of Fundamental Interactions (SUSY-2007) (Karlsruhe, Germany); the 13th Lomonosov Conference on Elementary Particle Physics (Moscow, Russia); the 18th international conference «Ion-Surface Interactions» (Zvenigorod, Russia); the 14th Euroschool on Exotic Beams (Houlgate, France); the international conference «Hadron Structure'07» (Modra-Harmonia, Slovak Republic); the 9th Small Triangle Meeting on

Theoretical Physics (Medzilaborce, Slovak Republic); the Workshop on Beam Cooling and Related Topics (COOL'07) (Bad Kreuznach, Germany); the 11th International Conference on Meson-Nucleon Physics and the Structure of the Nucleon (MENU-2007) (Jülich, Germany); the 20th European Conference on Few-Body Problems in Physics (Pisa, Italy); the PANDA Collaboration Workshop (Darmstadt, Germany); the 3rd International Conference on the Chemistry and Physics of the Transactinide Elements (TAN-07) (Davos, Switzerland); the international conference «Path Integrals: New Trends and Perspectives» (Dresden, Germany); the 10th CBM Collaboration Meeting (Dresden, Germany); the 7th international conference «Interaction of Radiation with Solids» (IRS-2007) (Minsk, Belarus); the 18th International Conference on Cyclotrons and Their Applications (Cyclotrons-2007) (Giardini Naxos, Italy);

XII International Conference on Hadron Spectroscopy (Hadron-07) (Frascati, Italy); XIV scientific and technical conference «Vacuum Science and Technology» (Vacuum-2007) (Sochi, Russia); the international conference «Physics at the Future Colliders» (Tbilisi, Georgia); the international seminar «Imaging and Clustering» (Stellenbosh, Republic of South Africa); VI National Conference on Application of X-Rays, Synchrotronic Radiation, Neutrons and Electrons for Examination of Materials (Moscow, Russia); the scientific conference session of the Nuclear Physics Section of the RAS Physical Sciences Department «Physics of Fundamental Interactions» (Moscow, Russia); the Conference on Condensed Matter Physics, Superconductivity and Materials Science, dedicated to the 50th anniversary of IRT research reactor (Moscow, Russia); XXIII PANDA Collaboration Meeting (Darmstadt, Germany).

DEVELOPMENT OF THE JINR INTERNATIONAL COLLABORATION AND RELATIONS DURING THE YEARS 1965–2007

	1965	1975	1985	1990	1995	2000	2005	2007
1. Number of visits to JINR by specialists from Member States (excluding participants in JINR conferences)	203	1026	1469	1050	299	425	339	862
2. Number of visits by JINR specialists to Member States	171	474	600	778	682	682	927	921
3. Number of conferences and meetings organized by JINR	19	42	49	44	52	54	65	62
4. Number of visits to international conferences and research centres of non-Member States	69	131	119	437	1451	1946	2150	2052
5. Number of visits of scientists from non-Member States	27	226	144	563	1036	990	733	809
6. Number of JINR fellows	—	11	3	16	28	17	21	19

LIST OF CONFERENCES AND MEETINGS HELD BY JINR IN 2007*

No.	Name	Place	Date	Number of participants
1.	101st session of the JINR Scientific Council	Dubna	18–19 January	140
2.	International workshop «Classical and Quantum Integrable Systems»	Dubna	21–26 January	73
3.	III international symposium «Problems of Biochemistry, Radiation and Space Biology»	Dubna, Moscow	24–28 January	150
4.	Workshop «Neutrino Physics at Accelerators»	Dubna	25–27 January	30
5.	5th Winter School on Theoretical Physics	Dubna	29 January – 7 February	50
6.	XI Scientific Conference of Young Scientists and Specialists	Dubna	5–10 February	108
7.	Meeting of the JINR Finance Committee	Dubna	16–17 February	92
8.	17th Meeting of the Steering Committee for the BMBF–JINR Agreement Implementation	Darmstadt, Germany	26–27 February	15
9.	20th UNESCO Task Force Meeting on Long-Range Air Pollution Transport in Europe	Dubna	5–9 March	70
10.	Session of the Committee of Plenipotentiaries of the Governments of the JINR Member States	Dubna	22–23 March	110
11.	XI workshop «Nucleation Theory and Its Applications»	Dubna	1–30 April	55
12.	Meeting of the Programme Advisory Committee for Nuclear Physics	Dubna	12–13 April	100

*A number of conferences were held in association with other organizations.

No.	Name	Place	Date	Number of participants
13.	Meeting of the Programme Advisory Committee for Condensed Matter Physics	Dubna	16–17 April	56
14.	XV International Seminar on Interaction of Neutrons with Nuclei	Dubna	16–19 May	120
15.	Workshop on Computer Algebra	Dubna	24–25 May	50
16.	International symposium «Physics of Heavy Ions», dedicated to the 50th anniversary of the Flerov Laboratory of Nuclear Reactions	Dubna	24–26 May	142
17.	International symposium «Modern Methods of Radiospectroscopy in Studying Structure and Function of Biopolymers in Biology and Medicine»	Dubna	28 May – 2 June	61
18.	International workshop «Logarithmic Conformal Field Theories and Statistical Mechanics»	Dubna	4–8 June	40
19.	Baikal Collaboration Workshop	Dubna	5–8 June	50
20.	International school and colloquium «Integrable Systems and Quantum Symmetries»	Prague, Czech Republic	7–17 June	70
21.	International Conference on Muon Catalyzed Fusion and Related Topics	Dubna	18–21 June	83
22.	International workshop «Relativistic Nuclear Physics: From Nuclotron to the LHC Energies»	Kiev, Ukraine	18–22 June	70
23.	Workshop of the Asia Pacific Centre for Theoretical Physics and the JINR Laboratory of Theoretical Physics	Dubna	18–25 June	30
24.	International Summer Student Practice in JINR Fields of Research	Dubna	24 June – 22 July	150
25.	Meeting of the Programme Advisory Committee for Particle Physics	Dubna	28–29 June	81
26.	PANDA Collaboration Workshop	Dubna	2–6 July	95
27.	Meeting of the Forum of the State Regulation Bodies of Countries Operating VVER Reactors	Dubna	3–5 July	34
28.	International conference «Symmetries and Spin»	Prague, Czech Republic	8–15 July	70
29.	International summer school «Nuclear Physics Methods and Accelerators in Biology and Medicine»	Prague, Czech Republic	8–19 July	100
30.	Regional Courses on Radiation Safety for Customs Officials	Dubna	9–12 July	34
31.	International Summer School on Modern Mathematical Physics	Dubna	22–30 July	60
32.	TUS Collaboration Meeting	Dubna	23–27 July	25
33.	International School-Seminar on Urgent Problems of Microworld Physics	Gomel, Belarus	23 July – 3 August	70
34.	International workshop «Supersymmetries and Quantum Symmetries»	Dubna	30 July – 4 August	116
35.	International summer school «Nuclear Theory and Astrophysical Applications»	Dubna	7–17 August	99
36.	International Conference on Modern Physics	Ulaanbaatar, Mongolia	13–19 August	100
37.	European School on High-Energy Physics	Třešt, Czech Republic	20–30 August	113
38.	International Workshop on Electron-Positron Colliders — VII Scientific Seminar in Memory of V. Sarantsev	Alushta, Ukraine	2–7 September	65
39.	XII Workshop on Spin Physics at High Energies	Dubna	3–7 September	114
40.	XX International Seminar on Charged Particle Accelerators	Alushta, Ukraine	9–15 September	120
41.	XXI International Symposium on Nuclear Electronics and Computing (NEC'07)	Varna, Bulgaria	10–17 September	90
42.	XXXVII ESNA Annual Meeting	Dubna	10–14 September	105

No.	Name	Place	Date	Number of participants
43.	Second Joint JINR–Romanian School-Seminar on Neutron Application in Nuclear, Condensed Matter and Life Science Research	Baia Mare, Romania	11–16 September	40
44.	Seminar on Power Engineering	Dubna	12–13 September	30
45.	International conference «New Trends in High-Energy Physics»	Yalta, Ukraine	15–22 September	60
46.	III International Pontecorvo Neutrino Physics School	Alushta, Ukraine	16–26 September	40
47.	International workshop «Very High Multiplicity Physics»	Dubna	17–20 September	40
48.	IV Session of the Joint JINR–Republic of South Africa Coordination Committee	Dubna	25–26 September	14
49.	102nd session of the JINR Scientific Council	Dubna	27–28 September	144
50.	V International Meeting of INTRUS Operators (INTRUS-2007)	Dubna	2–4 October	78
51.	EDELWEISS Collaboration Workshop	Dubna	6–8 October	25
52.	Workshop Dedicated to the Centenary of V. Veksler’s Birth and the 50th Anniversary of the Synchrotron Launching	Dubna	10–12 October	147
53.	IV international workshop «Quantum Physics and Communication»	Dubna	15–19 October	82
54.	Multilateral Radiation Health Working Group Meeting	Dubna	22–26 October	23
55.	11th international conference «Science. Philosophy. Religion»	Dubna	30–31 October	120
56.	1st meeting of CBM and MPD STS workgroups «Technical Challenges of the CBM and MPD Silicon Tracking Systems»	Dubna	12–13 November	20
57.	Meeting of the JINR Finance Committee	Dubna	23–24 November	90
58.	Meeting of the Committee of Plenipotentiaries of the Governments of the JINR Member States	Dubna	27–28 November	125
59.	Baikal Collaboration Workshop	Dubna	5–7 December	47
60.	IAEA TC first workshop «Harmonization of QA/QC Systems According to ISO and International Standards in Nuclear Analytical Laboratories of the Russian Federation (IAEA TC Project RUS7003)»	Dubna	9–15 December	40
61.	Winter Practice for South African Students	Dubna	9–19 December	26
62.	NEMO 3 SuperNEMO Collaboration Workshop	Dubna	10–13 December	52