

COLLABORATION IN SCIENCE AND TECHNOLOGY

The basic results of the international cooperation in science and technology of the Joint Institute for Nuclear Research in 2004 are represented by the following data:

- joint research has been conducted with scientific centres in Member States, as well as international and national organizations in other countries, on 51 topics of first priority and 10 topics of second priority;
- to solve cooperation issues and questions of participation in scientific meetings and conferences, the Joint Institute sent 2878 specialists;
- for joint work and consultations, as well as for participation in meetings, conferences and schools held at JINR, 1414 specialists were received;
- 27 international scientific conferences, 13 workshops and 11 meetings were organized and held;
- 21 scholarship holders worked at the Institute Laboratories.

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

A delegation from Ukraine came to JINR on an official visit on 5 February. Deputy Minister of Education and Science of Ukraine, Plenipotentiary of the Government of Ukraine to JINR V. Stognij, Corresponding Member of the National Academy of Sciences of Ukraine B. Grinev and Professor G. Zinoviev were received at the JINR Directorate by JINR Director Academician V. Kadyshevsky and JINR Vice-Directors Professors A. Sissakian and Ts. Vylov. They discussed the status and prospects of cooperation of Ukrainian scientific centres with Dubna. JINR Chief Scientific Secretary V. Zhabitsky, Chief Engineer G. Shirkov, Assistant Director V. Katrasev, FLNR Director M. Itkis, Professor Yu. Budagov, Chief of Planning Department A. Ruzaev, and leader of Ukrainian JINR staff members V. Robuk took part in the discussion. The guests visited JINR

Laboratories and met with Ukrainian specialists who work at JINR.

Deputy Minister of Atomic Energy of RF I. Kameniskikh had a working meeting with JINR Vice-Director A. Sissakian, FLNP Director A. Belushkin, IBR-2 Scientific Leader V. Aksenov and Deputy JINR Chief Engineer A. Vinogradov in the RF Ministry of Atomic Energy on 6 February. They discussed aspects of cooperation between JINR and the Ministry organizations. The JINR representatives also had a meeting with Chief of the Ministry department of atomic science and technology O. Patarakin.

On 11–12 February a delegation from the South African Republic (SAR) visited JINR. It included General Manager of international resources (Department of Science and Technology) of SAR Dr N. Arendse, physics and acceleration technology specialist Dr S. Mullions and First Secretary of the SAR Embassy in Moscow H. Jacobs.

The guests were shown around the Dzhelepov Laboratory of Nuclear Problems and the Frank Laboratory of Neutron Physics, where they learned about the main trends of research and new projects. After that the guests had a reception at the JINR Directorate. JINR Director Academician V. Kadyshevsky spoke about the history and development of JINR, its cooperation with leading world research centres.

Commenting on the results of the visit, Dr N. Arendse marked that SAR physicists were interested in cooperation with Dubna scientists. He indicated that the final aim of the negotiations was to prepare an agreement on the governmental level between JINR and the Department of Science and Technology of SAR.

The XIV annual meeting of the Joint Steering Committee for the Implementation of the BMBF–JINR Agreement on Cooperation was held on 16–17 February in Dubna at the JINR International Conference Hall. A delegation of the Federal Ministry of Education and Scientific Research of Germany partici-

pated in it. The Co-Chairmen of the Committee were A. Sissakian and P. Braun-Munzinger. Results of the year 2003 and new tasks for 2004 were considered at the meeting.

After the greeting words by JINR Director V. Kadyshevsky, JINR Vice-Director A. Sissakian made a detailed report «On the Activities at JINR in 2003, on the Programme of Scientific Research in 2004 and Main Results and Plans of Cooperation of JINR with Scientific Centres of Germany». JINR Assistant Director on Finance and Economic Issues V. Katrasev informed the participants about the JINR budget and application of German contributions. DLNP Director A. Olchevski spoke about the JINR participation in new projects and the GSI accelerator complex.

BMBF delegation included leading experts who valued highly the cooperation of JINR with German scientific centres. A protocol was signed on the results of the meeting. On the last day of their visit, the guests had excursions to JINR Laboratories.

On 27 February, at the Presidium of the Russian Academy of Sciences in Moscow, RAS President Academician Yu. Osipov received JINR Vice-Director A. Sissakian. During the meeting, they discussed aspects of cooperation between scientific centres of RAS and JINR, the organization of a Bogoliubov conference in Moscow and in Dubna (2–6 September), publication of works by N. Bogoliubov and the organization of an international (Rochester) conference on high energy physics (July–August 2006).

On 11 March the Directorates of JINR and NIKIET (Dollezhal Research Institute for Power Engineering) met in Dubna. NIKIET was represented by General Director Professor B. Gabarev, Chief Engineer-Designer V. Smetannikov and Chief of a department A. Orlov. From JINR, Director Academician V. Kadyshevsky, Vice-Director Professor A. Sissakian and other executives took part in the meeting. The sides discussed issues of cooperation. The guests visited the Institute's Laboratories.

An agreement on a five-year academic exchange between JINR and Graduate School of Science of Tokyo University was signed on 19 March in Tokyo, Japan. The agreement will promote the development of cooperation between the two centres and presupposes joint research and symposia, as well as the exchange of specialists and students.

On behalf of the Directorate of the Joint Institute for Nuclear Research, Director of the Veksler and Baldin Laboratory of High Energies Professor A. Malakhov and department leader Dr V. Ladygin took part in the signing of the document. Tokyo University was represented by Dean of the Graduate School of Science of Tokyo University Professor S. Okamura and Director of the Centre for Nuclear Study of Tokyo University Professor H. Sakai.

The signing of the agreement has been initiated by a group of scientists from VBLHE and Tokyo University, who have been actively cooperating in spin physics at intermediate and high energies for the last five years. After the agreement was signed, both sides expressed their confidence in the development of further contacts not only in spin physics but also in other priority trends of research.

CERN Director-General Professor R. Aymar, one of CERN's leading theoretical physicists Professor D. Ellis and CERN Directorate Advisor N. Koulberg visited JINR on 16 April.

At the JINR Directorate the guests were received by JINR Director Academician V. Kadyshevsky, JINR Vice-Directors Professors A. Sissakian and Ts. Vylov, JINR Chief Scientific Secretary V. Zhabitsky, JINR Chief Engineer G. Shirkov, Laboratories' leaders A. Olchevski, Yu. Potrebenikov, A. Kovalenko and JINR Assistant Director P. Bogolyubov. The JINR and Laboratories' leaders acquainted the guests with the main trends of the Institute activities, stressing especially the development of cooperation with CERN, which reflects mutual interests in the joint preparation of experiments at LHC.

Professor R. Aymar and his colleagues visited the Dzhelepov Laboratory of Nuclear Problems, the Flerov Laboratory of Nuclear Reactions, the Laboratory of Particle Physics, the JINR Experimental Workshop and other technological sites where the facilities to be used at LHC are being assembled. They also visited the accelerator complex at the Veksler and Baldin Laboratory of High Energies.

In the final talks at the Institute Directorate, Professor R. Aymar valued highly the contribution of JINR to the preparation of a new CERN scientific programme and prospects for cooperation of the two international scientific centres.

On 19 April, representatives of the Regional Bureau for Science in Europe (ROSTE, Venice, UNESCO) — Director H. Moore and Deputy Director V. Kuzminov — visited JINR.

In 1997 an agreement was signed in Paris in the UNESCO Head Quarters between the Joint Institute for Nuclear Research and UNESCO on cooperation in scientific and educational programmes. Since then, several grants have been received by JINR for research activities.

The Regional Bureau for Science in Europe in Venice, headed by H. Moore, includes 15 departments and coordinates scientific programmes in Central and Eastern Europe. One of the forms of cooperation between the Bureau and JINR in education and professional training of young staff has become a programme of seminars for young scientists in theoretical physics and mathematics.

At the JINR Directorate the guests were received by JINR Director Academician V. Kadyshevsky, JINR

Vice-Director Professor A. Sissakian, JINR Chief Scientific Secretary V. Zhabitsky, JINR Assistant Director P. Bogolyubov. The President of the Academy of Sciences of Georgia, Academician A. Tavkhelidze, was also present at the meeting. An agreement was reached that UNESCO would sponsor the organization of the conference dedicated to the 95th anniversary of Academician N. Bogoliubov. The sides also discussed the ways to improve the system of scientific education for young people by using the experience of JINR. After the meeting at the JINR Directorate, the guests visited the Bogoliubov Laboratory of Theoretical Physics and the Flerov Laboratory of Nuclear Reactions.

On 26–28 April JINR Director Academician V. Kadyshevsky and JINR Vice-Director Professor A. Sissakian came to CERN on a working visit. On the first day of their visit they were received by CERN Director-General Professor R. Aymar and CERN Deputy Director-General Dr J. Engelen.

A wide range of cooperation issues were discussed. It was decided that the current meeting of the Joint JINR–CERN Steering Committee on cooperation would be held in October in Geneva. Professor R. Aymar mentioned that during his visit to JINR in April he was greatly impressed by the high level of research in Dubna and the trustworthy attitude of scientists and specialists to the execution of their responsibilities in the coming joint experiments at the Large Hadron Collider (LHC, CERN).

During their visit to CERN, V. Kadyshevsky and A. Sissakian met with president of the Council of the international project SESAME Professor H. Schopper, Advisor to the CERN Director-General N. Koulberg, Coordinator of CERN schools Professor E. Lillestøl and other scientists. The JINR leaders visited the sites where the assembling of the ATLAS, CMS and ALICE facilities is being conducted.

As a member of the CERN Review Resource Board, A. Sissakian took part in its meeting on LHC experiments, which was chaired by J. Engelen. Professors I. Golutvin (CMS), N. Russakovich (ATLAS) and A. Vodopianov (ALICE) participated in the meeting as experts.

On 28 April V. Kadyshevsky and A. Sissakian were received by Deputy General Secretary of the UN, General Director of the Geneva UN office S. Ordzhonikidze.

A delegation from JINR, including JINR Vice-Director A. Sissakian, Assistant Director V. Katrasev, Directorate Advisors I. Golutvin and N. Russakovich, visited Minsk on 12–14 May.

The chairman of the State Committee on science and technology, Corresponding Member of NAS RB Yu. Pleskachevsky, received the guests. The sides discussed a wide range of cooperation questions. Meetings were held with the Plenipotentiary of the RB Government to JINR, First Deputy Chairman of the State Committee on science and technol-

ogy V. Nedilko, Head of the JINR Finance Committee V. Chmel, First Prorector of the Belarussian State University S. Rakhmanov, Vice-President of NAS RB Academician A. Lesnikovich, Academician-Secretary of DPh NAS N. Kazak, member of the JINR Scientific Council N. Shumeiko and other scientists and science organizers of Belarus.

A meeting of the joint Board of Experts on the choice of JINR–Belarus cooperation programmes was held. It was co-chaired by Academician A. Lesnikovich and Professor A. Sissakian. Belarus was represented at the meeting by N. Kazak and N. Shumeiko.

Such meetings are held annually to distribute a part of the Belarus fee to JINR to finance joint projects. In 2004, 28 scientific projects were regarded from 10 Belarussian centres which cooperate with JINR Laboratories.

Having regarded and discussed all proposals, the Board took a decision to approve 26 of them and distribute the monetary support among the centres of Belarus and JINR Laboratories in the limits of the given amount. It was also pointed out at the meeting that the priority trends of further cooperation were the joint innovative projects and programmes in education and scientific staff training.

On 9 June a joint meeting of the RSC Kurchatov Institute–JINR Coordinating Scientific Council was held. Its aim was to discuss the development of cooperation between the two scientific centres.

JINR was represented by V. Kadyshevsky, Ts. Vylov, co-chairman of the Council G. Shirkov, V. Zhabitsky, V. Furman, A. Belushkin, M. Itkis, V. Voronov, V. Shvetsov, V. Brudanin; on the RSC KI side were co-chairman of the Council V. Baranov, N. Znamensky, A. Ogloblin, V. Martemianov, Yu. Galonov, P. Alekseev, Yu. Shitikov.

JINR Director Academician V. Kadyshevsky opened the meeting with greeting words to the participants and spoke about his meeting with RSC KI President Academician E. Velikhov, when they confirmed first-priority tasks in the cooperation — the IREN project and research in condensed matter physics.

G. Shirkov informed the participants about the meetings of the representatives of the two centres in October 2003 and the visit of E. Velikhov to JINR in January 2004.

At the meeting, the participants spoke about the main trends of activities in various divisions of RSC KI and JINR, including new themes of cooperation. The IREN project was the main topic of discussion as both centres are interested in its progress. In addition, the following aspects of the joint activities were considered: production of isotopes for fundamental research, industry and medicine; condensed matter physics; studies of exotic light nuclei; cluster radioactivity; nucleus–nucleus interactions at short distances; double beta decay; rare process physics; research in fundamental properties of neutrons; neutron physics.

A meeting of the Board on cooperation of JINR with scientific centres of Poland was held on 25 June in Warsaw. The co-chairmen of the meeting were Plenipotentiary of the Government of Poland to JINR Professor A. Hryniewicz and JINR Vice-Director Professor A. Sissakian.

The Board discussed the cooperation programmes for 2004, suggestions for 2005 and adopted recommendations. JINR was represented at the meeting by Professors M. Itkis and A. Belushkin, V. Katrasev, W. Hmeliowski. From the Polish side the participants were R. Sosnowski, V. Nawrocik, A. Budzanowski, A. Soltan, J. Andrzejewski, B. Lopacki, E. Suminska.

A state delegation from Thailand visited JINR on 30 June. It was headed by Advisor to the Prime Minister on International Trade Mrs Srirat Rastapana and Chairman of the Federation of Thai Industries Mr P. Phodhivorakhun. The delegation included representatives of scientific centres, commercial structures of Thai–Russian Trade Association. The aim of the visit was to get acquainted with the accelerators of JINR's FLNR and discuss prospects of the project to develop an accelerator complex in Thailand.

The delegation was received by JINR Vice-Director A. Sissakian and FLNR Deputy Director S. Dmitriev. During the visit, the guests got familiar with the history and main trends of the JINR development, applied research at the Flerov Laboratory of Nuclear Reactions and had an excursion to the Laboratory accelerator complex.

A delegation from Romania headed by the State Secretary on scientific research, Plenipotentiary of the Government of Romania to JINR G. Popa visited JINR from 26 July to 2 August. Also, Extraordinary and Plenipotentiary Ambassador of Romania in Russia D. Prunariu and the Embassy Advisor L. Nice arrived in Dubna on 28 July. They had a meeting at the JINR Directorate, where all Laboratories' leaders were present. JINR Director Academician V. Kadyshevsky informed the guests on the development of the cooperation between Romanian and JINR scientists, and on the considerable contribution of Romanian specialists to JINR activities. On his turn, G. Popa marked the outstanding role of JINR in the world science and valued highly JINR–Romanian scientific centres cooperation.

The guests visited the Laboratory of Nuclear Reactions, the medical biological complex of the Laboratory of Nuclear Problems, the Laboratory of Information Technologies, the IBR-2 reactor at the Laboratory of Neutron Physics and experimental facilities at the Laboratory of High Energies. They also met Romanian scientists working at JINR.

In the first days of August, representatives of the Republic of Belarus — Plenipotentiary of the Council of Ministers of Belarus at JINR, JINR CP Chairman V. Nedilko, JINR Scientific Council member N. Shumeiko and JINR Cooperation Steering Commit-

tee member V. Prokoshin — arrived in Dubna to sign a new version of the JINR Charter and the JINR Financial Protocol.

On 10 August the new version of documents, which regulate the Institute activities, was signed at the JINR Directorate. On the Institute's side, JINR Director V. Kadyshevsky, JINR Vice-Director A. Sissakian and Head of the JINR Budget and Financial Planning Department A. Ruzaev took part in the ceremony.

On 12 August a symbolic event took place in Astana (Kazakhstan) dedicated to the start of the construction of the Multidisciplinary research centre at the Gumilev Euroasian National University (ENU) — the ceremonial laying of the so-called corner stone of the fundamental science. The main component of the new centre will be a unique heavy-ion accelerator (DC-60) developed at JINR by a group of specialists headed by Professors M. Itkis and S. Dmitriev. Besides the development of the accelerator, scientific and educational programmes are being prepared to be realized on the basis of this centre.

The ceremonial event included speeches by Minister of Energy and Natural Resources of Kazakhstan Professor V. Shkolnik, JINR Vice-Director Professor A. Sissakian, Astana Mayor U. Shukeev and ENU rector Professor S. Abdymakanov. Also, First Deputy Minister of Science and Education Professor N. Bekturganov and other representatives of state and scientific institutions of the republic took part in the ceremony of the corner stone laying.

During the 32nd International (Rochester) Conference on High Energy Physics in Beijing (China), the members of the JINR delegation — JINR Director V. Kadyshevsky, JINR Vice-Director A. Sissakian and Plenipotentiary of the Government of Georgia to JINR, President of the Academy of Sciences of Georgia A. Tavkhelidze — were received on 16 August by Deputy Chairman of the All-Chinese Assembly of people's representatives, Chairman of the Association of Scientific Societies of China Professor Zhou Guanzhao. In the long discussion of the development of the JINR–Chinese scientific centres contacts, special attention was paid to the necessity of involving young scientists and specialists into cooperation.

The delegation of theoretical physicists from the Bogoliubov Laboratory of Theoretical Physics participated in an International Conference on Theoretical Physics which was held on 26–29 August in Constance, Romania. Review talks were presented by V. Voronov, S. Ershov, S. Gerasimov, and V. Osipov. This conference was organized under the auspices of the Ciceika–Markov Programme that was recently opened on the basis of the agreement between the JINR Directorate and Plenipotentiary of the Government of Romania to JINR. The programme is aimed at strengthening the collaboration in theoretical physics. It considerably enriched

the contacts between theorists in Dubna and Romania, and outlined new perspective directions of collaboration.

Professor A. Malakhov, director of the Veksler and Baldin Laboratory of High Energies (VBLHE), and Dr G. Melkumov, group leader at VBLHE, visited Mongolia in a period from 10 to 18 September. They had official and informal meetings with leaders, science organizers and scientists of Mongolia during the visit.

On 14 September a meeting with member of Parliament of Mongolia, President of the Academy of Sciences of Mongolia Academician B. Chadraa took place. During the meeting, problems of collaboration of Mongolian scientific centres with JINR were discussed. Special attention was paid to participation of young scientists in joint research. Director of the Institute of Physics and Technology of the Academy of Sciences of Mongolia Academician Ts. Baatar also took part in the discussion.

The problems of participation of young scientists in joint projects, possible ways of financial support of these projects and many other issues were discussed in detail during the meeting with Plenipotentiary of Mongolia to JINR, Head of the Mongolian State University Professor Ts. Gantsog on 15 September. Professor Ts. Gantsog spoke about the plans of sending a number of young researchers to work at JINR in 2005. The Plenipotentiary also mentioned that the problem of transfer of the financial contribution of Mongolia to JINR for the year 2004 had been solved. Director of the Centre of Nuclear Research of the Mongolian State University Professor S. Davaa and Academician Ts. Baatar took part in the meeting.

The results of the joint work and plans for the future were discussed at the Directorate of the Institute of Physics and Technology of the Academy of Sciences of Mongolia. Leading scientists of the Institute took part in the discussion. The results obtained by the group of Dr R. Togoo on observation of multi-quark states aroused the biggest interest. These results were obtained while analyzing the data taken previously with the 2-m propane bubble chamber at the Veksler and Baldin Laboratory of High Energies. On the same day A. Malakhov and G. Melkumov gave talks at a seminar at the Institute of Physics and Technology of the Mongolian State University. A. Malakhov made a presentation on the VBLHE research programme at the Nuclotron. G. Melkumov reported on the latest results of the NA49 experiment at CERN. The talks were listened to with great attention; a fruitful discussion followed. The Mongolian scientists showed their interest in participation in the JINR research programme.

On 13–17 September a delegation of JINR scientists, headed by JINR Director Academician V. Kadyshevsky, took part in the international conference «Modern Problems in Mathematics and Theoretical Physics» dedicated to the 95th anniversary of Academician N. Bogolyubov,

held in Kiev. It was organized by the International Association of Academies of Sciences (IAAS), NAS of Ukraine, the Institute of Mathematics and the Bogolyubov Institute of Theoretical Physics (ITP).

During the visit, JINR Director Academician V. Kadyshevsky and JINR Assistant Director P. Bogolyubov took part in the celebration of the 170th anniversary of the Shevchenko Kiev National University. On 15 September they had a meeting with the University rector, Academician of the Ukrainian National Academy of Sciences V. Skopenko and the dean of the Physics Faculty, Corresponding Member of the Ukrainian National Academy of Sciences L. Bulavin. They discussed prospects of cooperation in research and educational programmes at JINR and Kiev University.

In 2004 the University Scientific Council made a decision to elect V. Kadyshevsky Honorary Doctor of the University. Ceremonially, in the atmosphere of the 170th anniversary celebration, the JINR Director received a Diploma and a gown of the University Honorary Doctor.

On 14 September a delegation of Chinese scientists and specialists visited Dubna. They were invited to Russia by the Russian Nuclear Society. The delegation was headed by President of the Nuclear Society of China, Vice-President of the All-Chinese Foundation for Natural Sciences Academician Wang Naiyan. It also included the leaders of the China National Nuclear Corporation Zhu Jianhua and Sun Huapu, together with the leaders of the institutes for nuclear engineering, construction and information Hou Huiquin, Li Xiaoming and Wang Kaihua.

At the reception at the JINR Directorate, the Institute Vice-Director, A. Sissakian, informed the guests about the history of establishing JINR and international cooperation. He especially stressed in this context the importance of the development of fruitful scientific contacts with institutes and universities of China and meetings of JINR leaders with Chinese scientists during the international Rochester conference in Beijing. After the reception at the JINR Directorate, the delegation visited the Laboratories of Nuclear Reactions and Neutron Physics of JINR.

Head of the Chinese delegation, Academician Wang Naiyan worked at the Laboratory of Neutron Physics in 1956–1965. He remembered that time and his colleagues from Dubna with the following warm words, «Many years ago, when the Institute was organized, the level of cooperation in nuclear physics between scientific centres of China and JINR was very high. A lot of Chinese scientists and specialists worked here. I hope today there are all possibilities to further develop this cooperation, which is important to both sides. My personal feelings to Russia and Russian people are very deep».

At the closing meeting at the Directorate, where JINR was represented by A. Sissakian, M. Itkis, A. Belushkin, A. Olchevski, E. Krasavin, and other

JINR leaders, specific measures to develop cooperation between JINR and Chinese scientific centres were discussed. In particular, the Chinese side suggested that an agreement should be prepared on the cooperation between JINR and the All-Chinese Foundation of Natural Sciences.

On 14 October JINR hosted a delegation from the International Science and Technology Centre (ISTC). The delegation included ISTC Executive Director N. Jousten, Principal project Manager Yu. Malakhov and Senior project Manager K. Bunyatov.

JINR Director Academician V. Kadyshevsky spoke to the guests about the history of the Institutes, the discoveries made at its Laboratories, main scientific trends and basic facilities. He paid special attention to the long-standing cooperation between JINR and ISTC. Thirteen projects have been successfully completed at JINR with the support of ISTC and 11 projects are in the process of implementation. JINR Chief Engineer G. Shirkov, JINR Chief Scientific Secretary V. Zhabitsky, FLNP Deputy Director V. Shvetsov and JINR Assistant Director for International Affairs P. Bogolyubov also attended the meeting.

The guests visited the Flerov Laboratory of Nuclear Reactions, where the Laboratory Director, M. Itkis, and the Scientific Secretary of the Laboratory, A. Popoko, informed them on the research at the accelerator complex. Deputy Director of the Frank Laboratory of Neutron Physics V. Svetsov acquainted the members of the delegation with the work of the unique IBR-2 reactor. The guests also visited the Dzhelepov Laboratory of Nuclear Problems, where they saw a medical clinical complex and watched the process of manufacturing of submodules for the hadron calorimeter ATLAS.

Representatives of the Embassy of the United Kingdom in Moscow visited JINR on 27 October. They were First Secretary of the Embassy, Head of the Science, Environment and Nuclear Safety Department S. Montgomery, representative of the UK Ministry of Trade and Industry D. Mathews and specialist of the Science, Environment and Nuclear Safety Department M. Lachinov. As the visit was initiated by the British side, the guests spent two days in Dubna to become acquainted with the programme of the development of Dubna as a science city and find possible routes of cooperation in the field of high technology. The guests visited the Institute Laboratories, learned about scientific application projects at JINR and the research at the Scientific Production Centre ASPEKT.

On 3 November an enlarged session of the JINR Scientific and Technical Council (STC) was held under the chairmanship of Professor I. Savin. It took place in the conference hall of the Bogoliubov Laboratory of Theoretical Physics and was devoted to the discussion of a programme of a candidate for the JINR Director post.

Academician V. Matveev, chairman of the Election Board established by the Committee of Plenipotentiaries to prepare the elections of the Institute Director, informed the audience about the results of their work. He stated that Professor Alexei Sissakian had been registered as a candidate for the post of the Director of JINR. His candidature had been proposed and approved by the Plenipotentiaries of 15 JINR Member States. Many outstanding scientists expressed their personal support to this decision. In particular, in his letter to the election board, CERN Directorate Adviser Professor J. Ellis outlined A. Sissakian's high prestige as a scientist and his great contribution to the development of CERN–JINR cooperation.

Professor A. Sissakian made a report «JINR's Development Programme», where he paid primary attention to the development of fundamental science, applied research and educational projects. He also discussed the issues of maintaining and support of the Institute's infrastructure, social and economic policy at the Directorate and other aspects.

The programme theses of the candidate were backed and supplemented in the speeches by M. Itkis, I. Golutvin, I. Meshkov, V. Kekelidze, I. Gramenitsky, A. Malakhov, V. Peshekhonov. Academician V. Kadyshevsky valued highly the candidature of Professor A. Sissakian as a scientist and science organizer.

JINR STC approved the programme of the candidate for the post of JINR Director, underlying the necessity of a further more detailed discussion of actual ways of its implementation. The elections for the JINR Director post will be held during the regular CP session in March 2005. Due to a proposal of a number of Plenipotentiaries, the Election Board plans to discuss the question of establishing a post of JINR Scientific Leader, which will be occupied by Academician V. Kadyshevsky.

A meeting of the joint Board on JINR–CERN Cooperation was held on 11 November in the International Conference Hall. The following participants attended it: Chairman of the PAC for Particle Physics T. Hallman (BNL, the USA), member of the JINR Scientific Council N. Shumeiko (Belarus), member of the PAC for Particle Physics N. Giokaris (Athens University, Greece), leaders of JINR Laboratories and joint projects — V. Kekelidze, A. Olchevski, A. Malakhov, V. Ivanov, I. Golutvin, A. Vodopianov, I. Savin, V. Zhabitsky, G. Shirkov and others. CERN was represented by CERN Chief Scientific Officer Professor J. Engelen (Co-Chairman of the Board) and CERN Directorate Adviser N. Koulberg.

JINR Vice-Director Professor A. Sissakian, who is the Board Co-Chairman on JINR's side, opened the meeting. In the plenary part of the event, reports were made on largest joint projects on development of the equipment for the experiments ATLAS, ALICE, CMS at the hadron collider LHC, which is under construction. Results of the cooperation in 2004 were discussed

and plans for 2005 were made. Professor J. Engelen stressed the timely execution of all responsibilities of JINR in joint experiments and spoke about the status of activities for the experiments at LHC.

The second part of the meeting was connected with visits to JINR Laboratories. At the Dzhelepov Laboratory of Nuclear Problems, the CERN representatives were informed about the assembling of the muon chambers for ATLAS. The guests visited technical sites at the Laboratory of Particle Physics, such as testing of the monitors, production of semiconductor detectors for CMS, testing of parts of the system for the beam transversal fluctuations damping for LHC, production of straw-type detectors and large chambers. At the Veksler and Baldin Laboratory of High Energies, the CERN delegation were introduced to the TRD project for ALICE.

Finally, the guests were acquainted by Academician Yu. Oganessian with the status of the latest experiments on superheavy elements' synthesis at the Flerov Laboratory of Nuclear Reactions and were received by JINR Director Academician V. Kadyshevsky.

Preparations and research on LHC is the basis for a long-standing scientific programme of JINR in high energy physics in the TeV range. JINR makes a key contribution to the realization of many parts of these activities.

The assembling of the large dipole magnet at the intermediate site in the P2 LHC underground hall was conducted at CERN in 2004. Performed by a group of specialists from JINR's VBLHE, it manifested the high quality of the magnet yoke production. Specialists from CERN acknowledged the correct choice of the yoke manufacturing technique, which included its preliminary horizontal assembling. In practice, the yoke elements needed no additional treatment, the magnet parameters fully met the technical specifications. The assembled dipole magnet underwent tests at the nominal current and successfully passed them.

On 10 December 2004 a unique operation of assembling the hadron tile-calorimeter for the ATLAS set-up was completed. The last, 64th, module locked the central part ring (the barrel) of the hadron calorimeter in the

LHC experimental hall 100 m underground. The assembling had been conducted by a group of JINR specialists (D. Demin, V. Kolomoets, S. Studenov) headed by N. Topilin, together with their colleagues from CERN. M. Lyablin and V. Batusov (JINR) provided metrological control in the CERN measurement group.

The main constructive elements of the barrel — steel nuclear absorbers (modules) — were produced at JINR. The 10-year «Odyssey» of developing the barrel has come to an end. The activities for ATLAS at JINR were headed by N. Russakovich and led under the guidance of Yu. Budagov and D. Khubua. Together with JINR, many scientific centres and industrial enterprises of different countries took part in the programme, including some JINR Member States (Georgia, Belarus, Romania, Slovakia, Czechia).

On 11 December, Chairman of the Board on Standards, Metrology and Testing of the Slovak Republic, in charge of the construction of the cyclotron centre in Bratislava, D. Podgorski, Extraordinary and Plenipotentiary Ambassador of the Slovak Republic to Russia A. Cisar, First Secretary of the Embassy R. Mereni, accompanied by the Embassy representatives, arrived at JINR to sign an agreement of cooperation. JINR was represented by JINR Director V. Kadyshevsky, JINR Vice-Director A. Sissakian, FLNR Director M. Itkis, VBLHE Director A. Malakhov, FLNR Deputy Director S. Dmitriev. The Slovak scientists and specialists working at JINR were also present at the meeting.

D. Podgorski and V. Kadyshevsky signed an agreement on the cooperation in nuclear medicine, radiobiology and development of experimental accelerator techniques between JINR and the Board on Standards, Metrology and Testing of the Slovak Republic. The agreement is aimed at further development of joint projects within the framework of the activities to establish a cyclotron centre of the Slovak Republic with scientific support of JINR, as well as implementation of the Med-Nuclotron project which is mainly designed for oncological therapy with carbon nuclei beams. During the talks at the JINR Directorate, both sides suggested to unite efforts of those JINR Member States who are also members of the European Union to render support for the Med-Nuclotron project in Dubna.

CONFERENCES AND MEETINGS HELD BY JINR

Ten conferences were the largest among scientific conferences and workshops held at JINR in 2004.

On 25–31 January, the Laboratory of Information Technologies hosted the XI international conference «*Mathematics. Computer. Education*» initiated by the Interregional Association «Women in Science and Education». The purpose of such conferences is to integrate the efforts of Russian and foreign scientists, specialists

and teachers directed towards developing science and higher education in Russia and other countries of CIS, as well as preserving the traditions of the Russian science and education and their integration in the international community.

Traditionally, since 1994 the conference «*Mathematics. Computer. Education*» has been held annually during students' winter holidays alternately in Dubna and Pushchino.

The conference was organized by the Joint Institute for Nuclear Research, Moscow State University, Pushchino Centre for Science, Central Institute of Economics and Mathematics of RAS, Institute of Applied Mathematics of RAS, Institute of Philosophy of RAS.

Considerable interest was generated by the plenary sessions with reports and lectures delivered by outstanding scientists such as «Possibility, Elements of Theory and Application» by Yu. Pytiev, «Mathematical Experiments with Open Non-Ideal Systems' Models» by G. Yelenin, «Search and Discovery of New Transuranium Elements» by Yu. Oganessian, «The Evolution from the Viewpoint of Physics: History, Concepts and Perspectives» by Werner Abeling. The reports delivered by JINR scientists — «New-Generation Detectors in HEP» by A. Zarubin, «Statistical Model of Information Traffic» by V. Ivanov, «Quantum Computing» by V. Gerdt, «Development of the Education System at the JINR UC» by S. Ivanova and «International Scientific Educational Internet-Magazine of Natural Sciences for Students» by Yu. Panebrattsev — attracted particular interest of the conference attendees.

The conference was structured around the topics:

- Computers in science and education;
- Computational methods and mathematical simulation;
- Mathematical models in chemistry, biology and medicine;
- Mathematical models in economics and ecology;
- Analysis and simulation of social and economic processes;
- Natural science and humanitarian education.

Round-table discussions «Cultural Environment of Russia: Books, Journals, Conferences, Internet» conducted by Z. Zhuravleva (Writers' Union, St. Petersburg) were organized in the framework of the conference.

Simultaneously and in a close contact with the conference, in the JINR Holiday Hotel «Ratmino» the 8th international intellect club «Gluon» conducted the final part of the international tournament «Computer Physics» attended by 40 best high-school students of Russia divided into six teams from various cities (Moscow, Samara, Rostov-na-Donu). The purpose of the tournament is to attract gifted students who have exhibited interest in fundamental science and computer science. The conference attendees visited the JINR Laboratories.

On 25 March a *seminar dedicated to the 20th anniversary of launching the IBR-2 reactor* was held in the conference hall of the Frank Laboratory of Neutron Physics.

JINR Director Academician V. Kadyshevsky and JINR Vice-Director Professor A. Sissakian addressed the FLNP community with greetings and congratulations. FLNP Director Professor A. Belushkin handed the I. Frank Diplomas to the scholarship holders of 2004 — young scientists E. Ermakova, V. Budnarchuk and V. Yudin.

FLNP Chief Engineer V. Ananiev spoke in his opening address about the history of the development and work-out of the IBR-2 reactor and introduced the guests of the seminar, specialists from NIKIET. The presentation by Dr E. Shabalin was dedicated to the history of the development of the movable reflectors and cold moderators at the IBR-2 reactor. It was rich in context and lively humour. Chief of a Laboratory sector Professor A. Balagurov made a report «Neutron Diffraction at the IBR-2 Reactor». He spoke about the unique parameters of the reactor and their role in the development of condensed matter physics at the Laboratory.

An excursion to the IBR-2 reactor was organized for the seminar participants.

The *International Seminar on Interaction of Neutrons with Nuclei (ISINN)* gathered on 26–29 May in Dubna for the twelfth time. The ISINN series started in 1993 with a highly representative specialized conference held due to joint efforts of JINR's FLNP, Los-Alamos National Laboratory and Triangle Universities Nuclear Laboratory (Durham, the USA). ISINNs, organized by the Frank Laboratory of Neutron Physics of JINR have gradually grown into a series of annual meetings devoted to a wide spectrum of neutron nuclear physics issues, with its own quite stable audience. One of the chief aims of the seminars is, however, the attraction of the young to investigations in neutron nuclear physics with the aim of experience and experimental culture preservation. To this end, during all these years the International Programme Committee and the seminar organizers have made special efforts to renew the seminar audience, especially by inviting young physicists as ISINN speakers.

The ISINN-12 programme traditionally covered quite a wide spectrum of issues in neutron nuclear physics. Anyway, each seminar has one or two record issues that attract the largest number of speakers and contribute the largest number of new results. For ISINN-12, it was the physics of fission together with problems related to violation of fundamental symmetries in neutron-induced reactions. This, however, did not mean that the other traditional topics, such as fundamental properties of the neutron and UCN physics, environmental problems and the structure of excited nuclei, experienced a lack of attention. A total of about 60 oral presentations and 30 posters were contributed to the seminar. Thirty participants from abroad and over 50 participants from Russia attended the seminar. In addition, about 60 participants from JINR Laboratories took part in the event.

The *2004 European School of High-Energy Physics* was held on 31 May – 12 June in Sant Felui de Guixols near Barcelona, Spain. It was jointly organized by CERN, JINR and the Institut de Física de Altes Energies (IFAE) of Barcelona University, Spain. These schools have been traditionally organized for 34 years. The first one took place in 1970 in Loma-Koli, Finland.

A big group of students and school organizers from JINR took part in the event. Among the lecturers were JINR Vice-Director Professor A. Sissakian, who acquainted the participants with the scientific programme of JINR, and Professor D. Kazakov, who read a course of lectures «Beyond the Standard Model». The school attendants listened to the lectures with great interest. The discussion leader was Dr V. Bednyakov of JINR. The International Organizing Committee actively prepared the school. DLNP Director A. Olchevski and staff member of the JINR Department of International Contacts T. Donskova were among the committee members.

During his stay in Spain, A. Sissakian discussed cooperation matters with CERN Chief Scientific Officer Professor J. Engelen, CERN–JINR schools Director Professor E. Lillestøl, IFAE Professor M. Cavalli-Sforza and other scientists.

The JINR–Germany user meeting «*Research in Condensed Matter Physics at the IBR-2 Reactor*» was held on 12–16 June at JINR's Frank Laboratory of Neutron Physics. More than 80 scientists from Germany and JINR who collaborate in joint projects took part in it. The meeting was meant to discuss the efficiency of using the reactor for the research in condensed matter physics and to develop cooperation within the framework of the user policy exercised at IBR-2.

Reports were made on the experimental data obtained at IBR-2 in the last three years. Much attention was also paid to the development of the equipment base of the reactor, including the modernization of the acting facilities, the work-out of new methods of experiments and data analysis. All research opportunities at IBR-2 were presented for the suggestions on the new studies at the facility.

This meeting on the topic is the third since 1998. It will undoubtedly facilitate further development of the research in condensed matter physics with neutrons at the IBR-2 reactor at JINR and increase the number of experimenters from Germany who are using this unique source of high flux neutrons.

From 29 June to 2 July, an international conference «*Distributed Computing and Grid Technologies in Science and Education*» was held at the Laboratory of Information Technologies. The conference was the first one dedicated to the issues of the implementation of advanced Grid technologies and distributed computing in all fields of human activities.

More than 200 scientists attended the conference. The participants heard 79 reports dedicated to the implementation of Grid infrastructures and development of tools for functioning of such systems, as well as to the issues of solving applied tasks with the help of the created structures. Due to the participation in the EDG (European DataGrid) project, the Russian centres and JINR have gained experience of working with the newest Grid software, and the Russian segment has been included in the European infrastructure. Since

2003, the Russian research centres and JINR have been participating in the LCG (LHC Computing Grid) project devoted to the creation of a global infrastructure of regional centres for processing, storage and analysis of data from LHC experiments. The new project EGEE (Enabling Grids for E-science in Europe) joins 70 institutes from 28 countries worldwide. Its purpose is to develop a Grid infrastructure accessible 24 hours a day. Before the conference, for the first time in Russia, one-day training courses were organized for the conference participants in the framework of the EGEE project.

In the general opinion of the participants, the conference was a key event for those concerned in expansion of their computing resources and ready to present these resources for solving common tasks, and such meetings should be organized annually. The successful work of the conference also became possible due to the financial support provided by JINR, the Russian Foundation for Basic Research and the Russian Agency of the Hewlett-Packard company.

Production and research of the properties of the nuclei far from the stability line are one of the most interesting and intensively developing scientific trends in the world. Annually and even monthly many conferences and meetings on this research are held in different countries, but the most authoritative among them is *EXON — the International Symposium on Exotic Nuclei*. In 2004 it took place in Peterhof, a picturesque historical city of Russia. 220 participants and 162 reports from 23 countries were the manifestation of Zeitgeist of the research. It was organized by JINR's Flerov Laboratory of Nuclear Reactions, RIKEN (Japan), GANIL (France), GSI (Germany) — the leaders in the research among scientific centres in the world.

The topics of the symposium could be relatively divided into the following parts: the synthesis and properties of neutron-rich nuclei of light and superlight elements, the synthesis and properties of superheavy elements, rare processes and decays, beams of radioactive nuclei, the mechanism of nuclear reactions with heavy-ion beams and issues of scientific research arrangement.

In conclusion of the symposium, a round-table discussion was held where problems of cooperation in the realization of projects and work-out of new research programmes were regarded. It was marked there that the exchange of student groups and training of young researchers are of great importance.

The international conference «*Problems of Theoretical and Mathematical Physics*» dedicated to the 95th anniversary of N. Bogolyubov was held from 2 to 6 September in Moscow and Dubna. The conference was organized by JINR and the Russian Academy of Sciences with the support of RFBR and UNESCO Office in Venice — the Regional Bureau for Science in Europe.

The conference was attended by more than 120 participants from 15 countries. Among them were

scientists of the older generation — renown theoretical physicists, disciples and colleagues of Academician N. Bogolyubov, as well as young people who were at the start of their theoretical physics career. More than 60 reports were presented at the conference. Their topics were related to modern problems of systematics and nonlinear mechanics, quantum field theory and elementary particle theory, statistical physics and kinetics — exactly those to which N. Bogolyubov made a decisive contribution.

The conference opened on 2 September at the Steklov Mathematical Institute of RAS, where from 1948 to 1992 N. Bogolyubov was its director, with the greeting address of RAS President Yu. Osipov to the audience. On the same day the participants of the conference visited the Novodevichy cemetery and put flowers to the tomb of N. Bogolyubov.

On 3 September the conference moved to Dubna, where it continued its work at the Laboratory of Theoretical Physics named after N. Bogolyubov. The meetings in Dubna opened with the presentations by JINR Director Academician V. Kadyshevsky, Academician V. Vladimirov, RAS Corresponding Member N. Bogolyubov (jr.), JINR Vice-Director A. Sissakian, Rector of Dubna University O. Kuznetsov and others. The first conference day in Dubna was closed at the special evening session with a report by Professor P. Isaev about the life and creative work of N. Bogolyubov in Dubna.

A day of the conference agenda was devoted to the discussions of modern problems of statistical physics and kinetics. More than 15 reports were delivered on this physics topic. Among them were plenary reports by N. Plakida (JINR) «The Theory of Superconductivity in Cuprates», A. Zagorodny (Ukraine) «Diffusion in Velocity Space Caused by Strong Random Fields», P. Entel (Germany) «Magnetism and Correlation Effects in Nanoparticles», A. Avella (Italy) «Composite Operator Method: History and Perspectives», T. Tropin (JINR) «Kinetics of the Cluster Growth in Fullerene Molecular Solutions», V. Zagrebnoy (France) «Bogolyubov Approximating Hamiltonian Method for Boson Models», N. Tonchev (Bulgaria) «Behaviour of Systems with Long-Range Interaction in Restricted Geometry», E. Tareeva (Moscow) «New Kinds of Phase Transitions: Transformations in Disordered Substances».

The last day of the conference, 6 September, was devoted to new trends in quantum field theory and elementary particle theory. The topics were presented in reports by Academician A. Slavnov (Moscow) «Progress in Noncommutative Field Theories», Professor A. Sergeev (Moscow) «On Noncommutative Seiberg–Witten Equations», Professor V. Kuvshinov (Belarus) «Fidelity and Wilson Loop in QCD and Quantum Computations», Professor M. Polikarpov (Moscow) «Qualitative Properties of Elementary Particles from Supercomputers», Professor A. Andrianov (St. Petersburg) «Stringification of Chiral Dynamics», Professor B. Arbuzov (Moscow) «The Bogolyubov Quasiaverage Method and Dynamical

Electroweak Symmetry Breaking», Professor I. Savin (JINR) «Recent Results on the Nucleon Spin Structure», S. Derkachov (St. Petersburg) «Quantum Integrability in (Super) Yang–Mills Theory on the Light Cone».

JINR Vice-Director Professor A. Sissakian made a concluding report with words of gratitude. He reminded the participants of the conference in Moscow and Dubna that the Bogolyubov conference in Kiev would be held on 13–17 September 2004.

The XVII international Baldin seminar on high energy physics problems «*Relativistic Nuclear Physics and Quantum Chromodynamics*» was held in Dubna on 27 September – 2 October. It is the second seminar without A. Baldin, the scientific adviser and leader of the seminar.

The present seminar is the 17th one. It has become worldwide known and gained reputation as a prestigious conference on physics of strong interactions, first of all on topical problems of quantum chromodynamics and nuclear interactions at relativistic energies.

About 120 reports were presented at plenary and parallel sessions. The main topics of the international seminar were:

- Quantum chromodynamics at large distances,
- Relativistic heavy-ion collisions,
- Hadron spectroscopy and multi-quark states,
- Structure functions of hadrons and nuclei,
- Multiparticle dynamics,
- Polarization phenomena and spin physics,
- Studies of exotic nuclei in relativistic beams,
- Applied use of relativistic beams,
- Progress in experimental studies at the high-energy accelerators,
- Accelerator facilities: status and perspectives.

The scientists from such countries as Bulgaria, Belarus, Germany, Iran, India, Mongolia, Poland, Russia, Slovakia, the USA, France, Greece, Egypt, Czech Republic, Uzbekistan, Ukraine and former Yugoslavia (Serbia and Montenegro) took part in the conference.

The *XIX Russian Particle Accelerator Conference (RUPAC-2004)* was held from 4 to 8 October at the Joint Institute for Nuclear Research. The conference was supported by JINR, the Russian Academy of Sciences, the RF Committee of Atomic Energy, the Ministry of Science and Education, and the Russian Foundation for Basic Research. Chairman of the Programme Committee Academician A. Skrinsky made a salutatory talk at the opening ceremony.

The All-Union (now the All-Russian) RUPAC conferences have a long history. The present conference RUPAC is integrated into the international system, which is called the joint web-site of accelerator conferences (JACoW), — a world accelerator community, which formally exists under the aegis of international physics unions and has a site with a free access to the library of proceedings of accelerator conferences. All this became possible due to efforts of the RAS Scientific Council on particle accelerators.

The fact that the number of the conference participants has grown much recently indicates that the scientific potential of the Russian accelerator physicists is on a high level, and the interest to the RUPAC conference increases. 268 officially registered participants attended the conference plenary sessions, and, besides, free listeners arrived (as a rule, students and graduate students from Moscow universities and institutes). It is a pleasure to note a considerable amount of young attendees — about one third of all participants.

Physicists and engineers, working in the field of physics and technology of the accelerators, from many scientific, educational and industrial centres of Russia took part in the conference: they were from Moscow, Saint Petersburg, Novosibirsk, Protvino, Obninck, Sarov, Troitsk, Nizhni Novgorod, Dubna, and also from the world leading accelerator laboratories: DESY, Forschungszentrum Jülich, GSI (Germany), CERN (Switzerland), FNAL (the USA), ORNL (the USA), NIRS and KEK (Japan), the University of Sannio (Italy), Kharkov Physics and Technology Institute (Ukraine), the Institute for Nuclear Research of NAS

(Kiev, Ukraine), Sukhumi Physics and Technology Institute (Abkhazia).

A total of 79 oral reports and 129 posters gave the full representation of the modern status of the accelerator science and technology at the conferences. They covered a wide spectrum of the directions of the scientific studies: from problems of the development of new accelerators at ultra high energy, improvement and reconstruction of the already existing accelerators up to the trend of the development and wide use of the accelerators in industry and medicine.

During the conference, excursions were organized to JINR basic facilities — cyclotrons and ion sources of FLNR, medical beams of the Phasotron and LEPTA accumulator (DLNP), Nuclotron (VBLHE). The conference participants actively took part in the excursions, which were provided with the help of all JINR Laboratories. During the conference, a meeting of the Accelerator Council of RAS was held, in which all representatives of the leading Russian and Ukrainian accelerator centres took part.

PARTICIPATION OF JINR IN INTERNATIONAL CONFERENCES

In 2004, JINR scientists and specialists participated in 191 international conferences.

Largest delegations represented JINR at the workshop «Future of SH Elements» (Darmstadt, Germany), the NUSTAR workshop (Darmstadt, Germany), the Environmental Physics Conference (EPC'04) (Minya, Egypt), XXXVIII PNPI Winter School on Nuclear and Particle Physics (Repino, Russia), the International Conference on Deep Inelastic Scattering (DIS'04) (Strbske Pleso, Slovak Republic), the International Conference on Linear Colliders (Paris, France), the 11th international seminar «Neutron Scattering Investigation in Condensed Matter» (Poznan, Poland), the workshop «Hadron Structure and QCD: from Low to High Energies» (HSQCD-2004) (Repino, Russia), the PANDA Collaboration Meeting (Darmstadt, Germany), the Workshop on Meson Production, Properties and Interaction (Cracow, Poland), the international conference «Neutrino-2004» (Paris, France), the workshop «Hierarchy of Scales in Magnetic Nanostructures Tunability of Exchange Coupling with Hydrogen» (St. Petersburg, Russia), the workshop «High Energy Physics and Quantum Field Theory» (Peterhof, Russia), the 13th international colloquium «Quantum Groups and Integrable Systems» (Prague, Czech Republic), the international conference «Frontiers of Particle Astrophysics» (Kiev, Ukraine), 54th International Workshop on Nuclear Spectroscopy and Atomic Nucleus Structure (Belgorod, Russia), the International Nuclear Physics Conference (Goeteborg, Sweden), the 8th International Computational Accelerator Physics Conference (ICAP'04) (St. Petersburg, Russia), the Advanced Stu-

dies on Symmetries and Spin (Prague, Czech Republic), the 9th European Particle Accelerator Conference (EPAC'04) (Lucerne, Switzerland), the international conference «Computer Algebra in Scientific Computing» (CASC'04) (St. Petersburg, Russia), the international conference «Physics at LHC» (Vienna, Austria), the 34th International Conference on High Energy Physics (Beijing, China), the 58th Scottish universities summer school in physics «Hadron Physics» (St. Andrews, the UK), the 19th European Conference on Few-Body Problems in Physics (Groningen, the Netherlands), the international conference «Phase Transitions in Strongly Interacting Matter» (Prague, Czech Republic), the 2nd International Conference on Theoretical Physics (Constanta, Romania), the 6th International Conference on Nuclear and Radio Chemistry (NRC-6) (Aachen, Germany), the international conference «Hadron Structure-2004» (Smolenice, Slovak Republic), IX European Powder Diffraction Conference (Prague, Czech Republic), the 19th General Assembly of European Seismological Commission (ESC) (Potsdam, Germany), the international conference «Modern Problems of Mathematical and Theoretical Physics» (Kiev, Ukraine), the International conference «Diffraction-2004» (Cala Gonone, Italy), the international symposium «Nuclear Physics around the Coulomb Barrier» (Strasbourg, France), the international conference «Computing in High Energy Physics» (CHEP'04) (Interlaken, Switzerland), the 16th International Spin Physics Symposium (Trieste, Italy), the 17th International Conference on Cyclotrons and Their Applications (Tokyo, Japan), the International School on

Problems of Modern Nuclear Physics (Hanoi, Vietnam), EGEE Second Conference (Hague, the Netherlands), VI International Workshop on Application of Lasers in Atomic Nuclear Research (Poznan, Poland), III Sissakian's Readings (Yerevan, Ashtarak, Armenia), the European School of High Energy Physics (CERN–JINR school) (Sant Feliu de Guixols, Spain), XI inter-

national conference «Symmetries in Physics» (Prague, Czech Republic), the International Symposium on Exotic Nuclei (EXON-2004) (Peterhof, Russia), V international workshop «Very High Multiplicity Physics» (Smolenice, Slovak Republic), the 9th Annual RDMS CMS Collaboration Conference (Minsk, Belarus).

DEVELOPMENT OF THE JINR INTERNATIONAL COLLABORATION AND RELATIONS DURING THE YEARS 1965–2004

| | 1965 | 1975 | 1985 | 1990 | 1995 | 2000 | 2004 |
|--|------|------|------|------|------|------|------|
| 1. Number of visits to JINR by specialists from Member States (excluding participants in JINR conferences) | 203 | 1026 | 1469 | 1050 | 299 | 425 | 370 |
| 2. Number of visits by JINR specialists to Member States | 171 | 474 | 600 | 778 | 682 | 682 | 767 |
| 3. Number of conferences and meetings organized by JINR | 19 | 42 | 49 | 44 | 52 | 54 | 51 |
| 4. Number of visits to international conferences and research centres of non-Member States | 69 | 131 | 119 | 437 | 1451 | 1946 | 2112 |
| 5. Number of visits of scientists from non-Member States | 27 | 226 | 144 | 563 | 1036 | 990 | 709 |
| 6. Number of JINR fellows | – | 11 | 3 | 16 | 28 | 17 | 21 |

LIST OF CONFERENCES AND MEETINGS HELD BY JINR IN 2004*

| No. | Name | Place | Date | Number of participants |
|-----|---|-------------------|----------------------------|------------------------|
| 1. | 95th session of the JINR Scientific Council | Dubna | 15–16 January | 119 |
| 2. | Workshop on Neutrino Detector NOMAD–HARP Experiments | Dubna | 21–23 January | 30 |
| 3. | International conference «Mathematics, Computers and Education» | Dubna | 25–31 January | 320 |
| 4. | International conference «Classical and Quantum Intergable Systems» (in memory of M. V. Saveliev) | Dubna | 26–29 January | 99 |
| 5. | International SAD Project Workshop | Dubna | 27–28 January | 31 |
| 6. | Winter School on Theoretical Physics | Dubna | 30 January – 7 February | 59 |
| 7. | VIII Scientific Conference of Young Scientists and Specialists | Dubna | 2–6 February | 84 |
| 8. | XIV Meeting of the BMBF–JINR Steering Committee on Cooperation and Usage of JINR Facilities | Dubna | 16–17 February | 21 |
| 9. | Meeting of the JINR Finance Committee | Dubna | 19–20 February | 27 |
| 10. | International workshop «Application and Development of Lobachevsky's Ideas in Modern Physics» | Dubna | 25–27 February | 38 |
| 11. | Meeting of the Committee of Plenipotentiaries of the Governments of the JINR Member States | Dubna | 18–19 March | 98 |
| 12. | Seminar Devoted to the 20th Anniversary of the IBR-2 Reactor | Dubna | 25 March | 150 |
| 13. | MPC&A Sustainability Workshop | Dubna | 29–31 March | 48 |
| 14. | Meeting of the Programme Advisory Committee for Nuclear Physics | Dubna | 1–2 April | 50 |
| 15. | Meeting of the Programme Advisory Committee for Particle Physics | Dubna | 5–6 April | 100 |
| 16. | Conference of the Operators and Users of the Satellite Communication and Broadcasting Network of the Russian Federation | Dubna | 16–19 April | 250 |
| 17. | Meeting of the Programme Advisory Committee for Condensed Matter Physics | Dubna | 19–20 April | 40 |
| 18. | Second international seminar «Markov Readings» | Dubna | 12 May | 60 |
| 19. | VI international workshop «Application of Lasers in Atomic Nuclear Research» | Poznan, Poland | 24–29 May | 50 |
| 20. | BECQUEREL collaboration workshop «Clustering Studies in Multifragmentation of Relativistic Nuclei» | Dubna | 25–27 May | 30 |

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

| No. | Name | Place | Date | Number of participants |
|-----|--|------------------------------|--------------------------|------------------------|
| 21. | International Seminar on Interaction of Neutrons with Nuclei (ISINN-12) | Dubna | 26–29 May | 150 |
| 22. | III Sissakian's Readings | Yerevan, Ashtarak, Armenia | 30 May – 3 June | 49 |
| 23. | XII European School on High-Energy Physics | Sant Feliu de Guixols, Spain | 31 May – 12 June | 128 |
| 24. | BAIKAL Collaboration Workshop | Dubna | 31 May – 3 June | 48 |
| 25. | 96th session of the JINR Scientific Council | Dubna | 3–4 June | 125 |
| 26. | Workshop «Development of the Cyclotron for Screening System Based on Nuclear Resonance Absorption of Gamma Rays in Nitrogen» | Dubna | 7–9 June | 31 |
| 27. | III JINR–Germany IBR-2 Users Meeting | Dubna | 12–16 June | 53 |
| 28. | Meeting of the Control Commission | Dubna | 17–18 June | 10 |
| 29. | International symposium «Nuclear Medicine in the 21st Century» | Dubna | 19–24 June | 138 |
| 30. | XI international conference «Symmetries in Physics» | Prague, Czech Republic | 21–24 June | 100 |
| 31. | International conference «Distributed Computing and Grid Technologies in Science and Education» | Dubna | 29 June – 2 July | 181 |
| 32. | International Symposium on Exotic Nuclei (EXON-2004) | Peterhof, Russia | 5–12 July | 205 |
| 33. | NEMO Collaboration Workshop | Dubna | 7–9 July | 28 |
| 34. | International SAD Workshop | Dubna | 12–13 July | 27 |
| 35. | International school «Selected Topics on Nuclear Physics» | Dubna | 20–29 July | 73 |
| 36. | School-seminar «Hot Points in Astrophysics and Cosmology» | Dubna | 2–13 August | 91 |
| 37. | International seminar «Experimental Methods in Particle Physics» | Dubna | 10 August | 100 |
| 38. | V international workshop «Very High Multiplicity Physics» | Smolenice, Slovak Republic | 30 August – 3 September | 25 |
| 39. | Bogolyubov conference «Problems of Theoretical and Mathematical Physics» | Dubna, Moscow | 2–6 September | 145 |
| 40. | Workshop «Molecular Simulation Studies in the Material and Biological Sciences» | Dubna | 9–10 September | 25 |
| 41. | NIS Workshop | Dubna | 16–17 September | 45 |
| 42. | XVII Baldin international seminar on high-energy physics problems «Relativistic Nuclear Physics and Quantum Chromodynamics» | Dubna | 27 September – 2 October | 179 |
| 43. | International Seminar Dedicated to the 30th Anniversary of JINR–IN2P3 Collaboration | Dubna | 30 September – 1 October | 31 |
| 44. | VIII research workshop «Nucleation Theory and Applications» | Dubna | 1–31 October | 52 |
| 45. | XIX Russian Particle Accelerator Conference (RUPAC-2004) | Dubna | 4–8 October | 236 |
| 46. | Meeting of the Programme Advisory Committee for Particle Physics | Dubna | 9–10 November | 100 |
| 47. | Meeting of the Joint CERN–JINR Committee on Scientific Collaboration | Dubna | 10–11 November | 22 |
| 48. | Meeting of the Programme Advisory Committee for Condensed Matter Physics | Dubna | 15–16 November | 46 |
| 49. | Meeting of the Programme Advisory Committee for Nuclear Physics | Dubna | 18–19 November | 50 |
| 50. | 9th RDMS CMS Collaboration Conference | Minsk, Belarus | 28 November – 2 December | 117 |
| 51. | BAIKAL Collaboration Workshop | Dubna | 30 November – 4 December | 48 |