

COLLABORATION IN SCIENCE AND TECHNOLOGY

The basic results of the international cooperation in science and technology of the Joint Institute for Nuclear Research in 2008 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 42 topics of first priority and 7 topics of second priority;
- to solve cooperation issues and questions of participation in scientific meetings and conferences, the Joint Institute sent 2864 specialists;
- for joint work and consultations, as well as for participation in meetings, conferences and schools held at JINR, 1614 specialists were received;
- 30 international scientific conferences, 17 workshops and 12 meetings were organized and held;
- 14 scholarship holders worked at the Institute 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.

In January, JINR Chief Engineer G. Shirkov was on a working visit to Germany. In Hamburg he met with Professor R.-D. Heuer, research director at DESY, who will assume position of CERN Director-General in 2009. G. Shirkov also met with DESY Director on accelerators R. Brinkmann. The JINR Chief Engineer discussed with his German colleagues issues of cooperation. G. Shirkov also took part in the GDE (Global Design Effort board at the ILC) meeting chaired by Professor B. Barish, where the participants discussed the preparation of a large meeting on the International Linear Collider in Dubna in 2008.

RF Government Plenipotentiary to JINR Minister of Education and Science A. Fursenko and JINR Director A. Sissakian had a working meeting **on 15 January** at the RF Ministry of Education and Science in Moscow.

They discussed the issue of preparing meetings of the Finance Committee and the Committee of Plenipotentiaries (March 2008), and a number of questions of current activities and prospects of the JINR experimental base upgrading. Deputy Head of the Federal Agency on Science and Innovation administration V. Drozhenko and JINR Assistant Director V. Katrasev took part in the meeting.

On 1 February, in Geneva, JINR Director A. Sissakian and CERN Deputy Director-General J. Engelen had a meeting. They signed a Protocol of the joint committee on JINR–CERN cooperation. The items under discussion included the project of a JINR–CERN partnership programme, opportunities for CERN specialists to take part in the NICA/MPD project, joint R&D in experiments preparation at the LHC, activities to prepare a regular meeting of the joint committee, etc. Adviser to CERN Director-General D. Jacobs, JINR Chief Scientific Secretary N. Russakovich, and leader of the JINR group at CERN V. Karzhavin took part in the meeting.

JINR Vice-Director Professor M. Itkis and the leader of the Polish group of JINR staff members W. Chmielowski took part in the meeting of Polish and Russian businessmen, organized **on 8 February** in Moscow, on the occasion of the visit of Prime Minister of Poland Donald Tusk to Russia. M. Itkis spoke about scientific and innovation activities at JINR; W. Chmielowski told the audience about cooperation of Polish scientific centres with Dubna. Representatives of Polish business circles showed a special interest in the JINR application projects.

A meeting of the International Committee on Future Accelerators (ICFA) was held **on 11–13 February** at DESY (Hamburg, Germany). Leaders of largest high-energy laboratories of the world took part in it. The participants considered the reports of ICFA subcommittees and their plans for 2008, presentations from large laboratories on their current activities and plans

for the nearest future. JINR Director RAS Corresponding Member A. Sissakian made a report on JINR Scientific Programme, touching in particular the plans on the establishment of the Nuclotron-M/NICA complex and discussions on chances to locate the ILC in Dubna.

Among the speakers were DESY Director Professor A. Wagner, CERN Director-General R. Aymar, CERN Director-Elect R.-D. Heuer, INFN (Italy) Director Professor R. Petronzio, FNAL Director Professor P. M. Oddone, BNL Director S. Arenson, Budker INP Director Academician A. Skrinsky, IHEP Director Professor N. Tyurin, and others.

The Committee adopted a special declaration in connection with financial cuttings for a number of international scientific programmes in the USA and the UK, including those that refer to the ILC project. The start-up of the Large Hadron Collider (LHC) at CERN scheduled for the summer of 2008 is to be one of the main events of the year.

On the invitation of the JINR Directorate, Acting Ambassador Extraordinary and Plenipotentiary of the People's Republic of Bangladesh to RF Mrs R. Ahmed and Commercial Adviser of the Embassy A. Quadir visited JINR **on 18 February**. A. Sissakian, M. Itkis, N. Russakovich, D. Kamanin, and D. Fursaev received the guests at the Directorate. They acquainted them with the activities at the Institute — scientific research, innovation activities and educational programme. Mrs R. Ahmed was especially interested in the information presented by the UC Director D. Fursaev about the education system for students and postgraduates. Two scientists from Bangladesh work at JINR's LIT and BLTP. One of them, Saha Bidjan, a theoretical physicist, accompanied Mrs R. Ahmed during her visit to JINR.

On 22–24 February General Consul of the Embassy of Romania in the Russian Federation Iosif Gyero visited JINR on the invitation of the Directorate. He got acquainted with the activities at the Institute — fundamental and applied research, innovation activities, educational programme, and the contribution made by Romanian scientists to the establishment and development of the Institute. A meeting at the JINR Directorate culminated in an agreement to organize a more effective procedure to obtain visas for JINR staff members, to arouse cultural exchanges and cooperation with the Dubna SEZ. A Protocol was signed on the visit results.

On 26 February, a representative delegation of the Arab Republic of Egypt visited JINR. They were representatives of the Ministry of Higher Education and Scientific Research Doctor Ali Galeb Ahmed Galeb and Adviser on Cultural Issues of the ARE Embassy in RF Doctor Magdi Elias Fares.

Greeting the guests, JINR Director A. Sissakian noted the traditionally active cooperation of JINR scientists with their Egyptian colleagues. He spoke about

the development of scientific research at the Institute in recent years, about basic facilities, the multifaceted programme of applied research at JINR, including the application of heavy-ion physics to produce nanofilters, the production of nuclear spectrometers to solve various tasks in radioactive materials control, as well as about studies at the intersection of physics, biology and medicine, related to the therapy of oncological diseases, which were initiated in Dubna by V. Dzhelepov. A. Sissakian also made a particular stress on the educational programme developed at JINR.

JINR Vice-Director M. Itkis recalled close contacts of Egyptian physicists with FLNR and spoke about training of young specialists from Egypt at this Laboratory and joint conferences.

In his answer address, Doctor Ali Galeb Ahmed Galeb stated that the long-standing and truly traditional cooperation with JINR should be reinforced on the official level. He marked the importance of such a sphere of cooperation as nuclear security for the country today. A long-term nuclear programme has been developed in Egypt that needs specialists, and it is in this sphere, as well as in other fields, that the assistance of the Joint Institute is possible. The guests had an excursion to the Laboratory of Nuclear Reactions and the Aspekt Research and Production Centre.

The 18th meeting of the Steering Committee on the implementation of the Agreement between the Federal Ministry of Education and Research of Germany (BMBF) and the Joint Institute for Nuclear Research was held on **28–29 February** at JINR. Issues of cooperation and use of JINR facilities were discussed.

The JINR Directorate informed the committee on the strategic plan of JINR development, basic facilities development projects and most important scientific results obtained in 2007, on the implementation of the joint projects in the framework of the BMBF–JINR Agreement in theoretical and neutron physics, heavy-ion and high-energy physics, on preparation of projects at GSI and DESY, and on the activities to upgrade the computer infrastructure. The JINR Directorate presented a report on expenditures of the FRG financial contribution in 2007.

The committee discussed the question of the prolongation of the Agreement on JINR–BMBF cooperation which is in force until 31 December 2008. Both sides expressed their acute interest in the prolongation of the Agreement for another period, up to 2011, after having included clarifications and suggestions.

The sides agreed that with an account of the offered services and mutual interests, the German contribution issued for JINR in 2008 will be 1 million euros. The committee approved the list of projects to be financed from the BMBF contribution.

Head of the German delegation, the committee co-chairman Doctor R. Kepke and Head of the JINR delegation, the committee co-chairman Professor

A. Sissakian signed a Protocol where cooperation and use of JINR facilities are highly evaluated and further activities are defined.

The German delegation visited the LINAC-800 accelerator (DLNP), got acquainted with the GRID project at LIT, and saw on the spot the work to upgrade IBR-2 (FLNP).

On 24 March, a delegation of the Republic of Armenia visited JINR. It included Minister of Education L. Mkrtchyan, chairman of the Committee on Science and Technology S. Arutyunyan, and the accompanying persons. At the meeting at the Institute Directorate they exchanged their views on the plans for further cooperation. The Minister of Education introduced the new Plenipotentiary of the Government of the Republic of Armenia to JINR S. Arutyunyan. The delegation visited FLNR, RPC Aspekt and the medicobiological complex of DLNP.

On 14 April, a delegation from JINR headed by JINR Vice-Director M. Itkis took part in the work of the 5th Coordinating Committee on RSA–JINR cooperation held on the basis of the cyclotron laboratory iThemba LABS in Cape Town. The delegation included B. Gikal, D. Kamanin, and V. Shvetsov. Representatives of the RSA Department on Science and Technology and the National Research Foundation took part in the event on the South African side. The agenda included a number of organizational topics and a discussion of a long-term schedule of cooperation.

The South African participants suggested that expenses should be planned three years ahead. That will allow no delay in the RSA contribution transfer to JINR and facilitate visits to Dubna for South African scientists for scientific research and to take part in conferences. The JINR delegation appreciated the DST initiative and noted that long-term scheduling fully met their interests. DST Deputy Director-General B. Selapelo underlined that one of the efficiency criteria of joint projects would be visits of young African scientists and the work in joint projects for students and postgraduates in Dubna to write their theses in the framework of the «sandwich» approach, when the main guidance is performed by a Professor from RSA, together with a co-supervisor from Dubna, with the degree-seeking student coming to Dubna several times on two- or three-month visits.

A separate discussion was held on the proposal of JINR FLNR to construct the DC-60 cyclotron in RSA as a basic facility for an inter-university educational and scientific centre and a basis for joint applied research with JINR. Preliminary discussions showed tentative interest in the DC-72 project for radioisotope production, in connection with the plans to expand the cyclotron complex iThemba LABS.

On 17 April M. Itkis and D. Kamanin took part in the work of the 5th session of the joint Russian–South African board on scientific and technical cooperation (JSTB) as part of the Russian governmental delegation

headed by Leader of the RF Federal Agency on Science and Innovations Professor S. Mazurenko. The board focused on the cooperation in nuclear physics, nanotechnologies, biotechnologies and highly productive computing. In particular, the board noted the success in the RSA–JINR cooperation. On the initiative of the Head of the RSA delegation, General Director of the RSA Department of Science and Technology Ph. Mjwara, a decision was discussed and adopted to prepare technical evaluation for the construction of a cyclotron in RSA. Specific proposals on this question are to be discussed at the regular JSTB meeting in Dubna in September 2009.

The JINR delegation visited educational and scientific organizations around Cape Town, in particular Stellenbosch University. Vice-Rector of the University A. Van Zyl received the guests. Discussions were held about educational programmes of JINR and possible participation of South African students and postgraduates in them. The December 2007 school for young African scientists was especially marked as a successful one. The delegation from Dubna assured their South African colleagues that organizing the subsequent schools the Institute would take all suggestions into account; in particular, the school terms are planned to be longer and in warmer seasons. The next school is to be held for a month in the second half of September. Also in the schedule are scientific events for RSA young scientists where JINR specialists are to be participants.

On 21 April, Ambassador of the Republic of India Prabhakar Shukla and the Embassy Adviser on Science and Technology Pramod Shukla were received at the JINR Directorate, acquainted themselves with the scientific research programme, and visited the Flerov Laboratory of Nuclear Reactions.

Greeting the guests, JINR Director A. Sissakian stressed that the history of JINR relations with scientific centres of India had more than one decade of its existence. Not only scientists and leaders of scientific centres and universities of India but also statesmen visited the Institute in these and those years. For example, the son of Indira Gandhi Rajiv came on a visit to JINR in 1976. Today JINR has cooperation relations with 14 scientific research organizations and universities in nine cities of India. The scientific contacts of Dubna physicists with their Indian colleagues are implemented on nine scientific research topics. The cooperation has been developing most actively in recent years in the field of elementary particle physics, nuclear physics, and condensed matter physics. Indian scientists also take part in the research of electronuclear processes.

The project «Strings, Topological and Integrable Field Theories» is included into the complex long-term programme of cooperation in science and technology between RF and the Republic of India, in the section «Fundamental Research (Mathematical Sciences)». The coordinators of the project are

Professor R. Ramachandran (the Institute of Mathematical Sciences, Chennai, India) and Academician V. Kadyshovsky (JINR).

In his response speech, the Ambassador of India, Prabkhat Shukla, spoke about the concern of the Indian Government to broaden the contacts of Indian scientific centres and universities with Russian organizations. JINR occupies a special place in this list as a scientific centre of the world standard that has had long-standing ties with leading scientific centres of India — the Institute of Nuclear Physics in Calcutta, the Institute of Fundamental Research in Mumbai, the Institute of Mathematical Sciences in Chennai, and other centres.

On 21–22 April, the famous Chinese scientist, Chairman of the Asian Committee on Future Accelerators (ACFA), Vice-Chairman of the Chinese Physics Society Professor Chuang Zhang visited JINR.

The Chinese guest had excursions to VBLHEP and FLNR and visited the accelerator complexes of both laboratories. He got acquainted with the prospects of the development of heavy-ion physics in a wide energy range at the Institute (NICA and DRIBs II projects) and noted with satisfaction the importance of promoting of these projects. At the Institute seminar held at BLTP on 21 April, Professor Chuang Zhang spoke about the development of scientific research projects in high-energy physics in China.

On 22 April, Chuang Zhang was received at the JINR Directorate. Issues of JINR participation in ACFA, mutual cooperation of JINR and Chinese institutes of high-energy physics, contacts in education and staff training for scientific centres were discussed.

A JINR delegation, including JINR Vice-Director M. Itkis and FLNP Director A. Belushkin, went on an official visit to the People's Democratic Republic of Korea **on 22–26 April**. First Secretary of the PDRK Embassy in Moscow accompanied the delegation.

In Pyongyang they had meetings with Plenipotentiary to JINR, Chairman of the General Agency on Atomic Energy Li Je Sen, Director of the Agency Department of International Relations Sen Mun San, and other official persons. The JINR delegation visited the Kim Jak Polytechnic University and the Institute of Atomic Energy.

Agreements were achieved in the negotiations on the approaches to fulfill by PDRK their obligations to JINR as a Member State. A Memorandum was prepared on JINR opportunities to promote joint research with PDRK in the development of accelerators for scientific studies, production of medical isotopes, and in educational activities.

A working meeting was held between RosSEZ Leader A. Alpatov and JINR Director A. Sissakian **on 12 May** in Moscow. Issues of the Dubna SEZ development, the establishment of an international multi-

access centre on nanotechnologies, as well as other strategic questions of the development of a special economic zone of the technological-innovative type were discussed at the meeting.

On 14 May, a working meeting between the RF Minister of Economic Development and Trade E. Nabiullina and JINR Director A. Sissakian was held in Moscow at the RF Ministry of Economic Development and Trade.

They discussed practical measures to organize partnership relations of science with business and state development institutions in the implementation of innovation projects. In particular, the sides considered the proposals made by the JINR Directorate together with the company «VTB — Asset Management», the Russian Venture Company (RVC), and other partners to organize «sowing» financing (a period «from the idea to the product») — a model of a net «innovation projects factory», on the project of an international cluster centre on nanotechnologies (together with RosSEZ, Rosnanotech, RRC «Kurchatov Institute», and others), and a number of other issues. They discussed the essential importance of the establishment of international framework projects (basic facilities in fundamental science) in the territory of the Russian Federation to develop the innovation component of the Russian economy and attract young people to science and innovation activities. E. Nabiullina, who has visited Dubna and JINR twice in the recent months, highly evaluated the innovative and scientific potential of Dubna based on the international cooperation of many countries of the world. Other participants of the meeting were Deputy Minister of the RF Ministry of Economic Development and Trade A. Popova, Head of a department of the Ministry I. Oskolkov, Director on Innovations of «VTB — Asset Management» S. Romanov.

A regular, 59th, session of the Committee of Plenipotentiaries (CP) of the Member States of the International Centre for Scientific and Technical Information (ICSTI) was held **on 16 May** in Alexandria (the Arab Republic of Egypt.) As an observer, JINR Deputy Chief Scientific Secretary D. Kamanin represented JINR at the session.

At the meetings held further in Cairo, the viewpoint of JINR to broaden cooperation with ARE was actively supported by Doctor A. Khalil and Doctor M. N. El-Shazli, who worked at JINR for a long time and defended their theses at FLNR. Prospects for the cooperation development were discussed with the leader of Beni-Suef University's Physics Department Professor Kh. Khamdi, Director of the Tabbin Institute of Metallurgical Studies Professor M. Gamal, Director of the Department of Atomic Power Stations Doctor J. Ibrahim, and Director of the Atomic Energy Department Professor A. Islam. During the discussions, much interest was shown in a number of applied studies conducted at JINR, in the participation of the Institute in the estab-

lishment of a special economic zone in Dubna, in the activities of the Centre of Applied Physics of FLNR, RPC Aspekt, in JINR educational programmes and opportunities to organize partnership programmes with training centres of Russian departmental institutions in the field of nuclear reactor industry.

At the final meeting, Doctor A. Khairi marked that from his point of view Associate Membership of Egypt to JINR is quite possible and advantageous for his country.

A working meeting of Deputy Director of RosSEZ A. Petrushin and JINR Director A. Sissakian was held **on 28 May** in Dubna. They discussed issues of cooperation in the innovation sphere. Head of RosSEZ local management A. Rats, General Director of MC Dubna-Sistema I. Lensky, and JINR Assistant Director G. Arzumanyan took part in the meeting.

A JINR delegation, including JINR Vice-Director R. Lednický and LRB Director E. Krasavin, stayed in the Mongolian People's Republic **from 28 to 30 May**, on the occasion of the celebration of the 85th anniversary of the birth of Academician of the Mongolian Academy of Sciences Namsraj Sodnom.

The aim of their visit was primarily to mark the outstanding contribution of Academician N. Sodnom to the development and strengthening of scientific ties among scientists of Mongolia and JINR, as well as to discuss with their Mongolian colleagues prospects of their further participation in the Institute activities and to outline most urgent trends of research.

On the first day of the visit, President of the Mongolian Academy of Sciences Academician B. Chadraa received the delegation. One of the attendants of the meeting was Plenipotentiary of the Government of Mongolia to JINR, Chairman of the Atomic Energy Board of Mongolia Professor S. Ehnkhbat, Academician N. Sodnom's son. The sides discussed a number of issues related to the training of highly skilled specialists in radiation and nuclear safety, in connection with the implementation of a national programme in Mongolia on advances in nuclear energy industry and commercial development of uranium deposits. Mongolia plans to construct several nuclear reactors not only for industrial purposes but also for scientific research. With its tremendous experience in this field, JINR will therefore play an important role in supporting its Mongolian colleagues in these activities, as well as in training the personnel who will be strongly sought-for in the nearest future in the Republic. An agreement was achieved with the President of the Mongolian Academy of Sciences B. Chadraa and Plenipotentiary S. Ehnkhbat on sending students to JINR for training this speciality, starting from the first year course on the basis of the JINR UC and Dubna University.

The JINR delegation visited Ulaanbaatar University where they had a talk with Prorector on science Professor M. Tsogbadrakh and Director of the Nuclear Re-

search Centre of the National University of Mongolia Professor S. Davaa about closer contacts and involvement of young people who study natural sciences at this University in scientific activities at the Joint Institute.

On 30 May the ceremonial meeting dedicated to the 85th anniversary of Academician N. Sodnom's birth was held. The reports presented at the event concerned the scientific activities and career of the Academician. Professor R. Lednický talked in his report about the current status of work at JINR, the latest elaborations, and the strategic plan of development, making a special stress on the importance of the implementation of such an ambitious project as NICA. On the last day of their stay, the JINR delegation visited the laboratories of the Nuclear Physics Institute. A round-table discussion was organized which was attended by many Mongolian specialists who once worked at the Joint Institute. Scientists talked about prospects for Mongolia to take part in various projects and topics of JINR laboratories.

A regular Workshop of the Global Design Effort group (GDE) of the International Linear Collider (ILC) was held **on 4-6 June** for the first time in Dubna. The first plenary session had presentations by JINR Director A. Sissakian, B. Barish (Caltech), S. Yamada, A. Yamamoto (KEK), J. Osborne (CERN), and N. Walker (DESY). The GDE tasks include coordination of activities on the project conducted in various centres of the world and contacts with financial and political institutions of the countries that are involved in the elaboration of the project. JINR Chief Engineer G. Shirkov represents the Joint Institute for Nuclear Research in the group.

Today, more than 1600 scientists and engineers from almost 300 laboratories and universities of the world take part in the project of the International Linear Collider and the detectors that will analyze the collision processes. The official candidates for the siting of this powerful research tool are five world centres: CERN (Switzerland, France), DESY (Germany), the Fermi Laboratory (USA), the KEK Laboratory (Japan), and the Joint Institute for Nuclear Research (Dubna, Russia).

On the last day of the GDE Workshop, the GDE Directorate members had an opportunity to see the suggested territory for the ILC siting in the vicinity of Dubna, flying on board of a helicopter offered by the Moscow Region Governor for this purpose.

On 10 June, representatives of the Embassy of the Republic of Moldova in RF visited JINR: Adviser-Minister V. Sava and Adviser T. Zaraf. JINR Vice-Director R. Lednický had a meeting with the guests. JINR Chief Scientific Secretary N. Russakovich spoke to the guests about the history of the JINR establishment, main achievements of the centre and its basic facilities, the educational programme, future projects, and innovation programme.

As V. Sava marked, their visit was a reconnaissance one: to become closer acquainted with the sphere of activities at JINR, work and life conditions, any possible administrative problems that arise for Moldavian citizens who work at JINR. It was interesting for the guests to learn about the research at JINR; they were impressed by the prospects that appear with the establishment of SEZ in Dubna. All the obtained information will be given to the leaders of the Republic and the President of the Academy of Sciences. It is no doubt that the participation of Moldova in the Joint Institute's activities should be enlarged — the mission should be more numerous and the range of research trends should be wider. And of course, the stake should be placed on young people, there is no other alternative.

On 11 June, a working meeting of the STAR collaboration leader (RHIC, Brookhaven National Laboratory, the USA) Nu Xu and JINR Director A. Sissakian was held in Dubna.

They discussed issues of further cooperation in the STAR experimental programme and the implementation of the NICA/MPD project at JINR. Mr Xu was deeply interested in the NICA/MPD project and the continuation of cooperation with JINR. Deputy leader of the STAR collaboration O. Barannikov, JINR Vice-Director R. Lednický, VBLHEP Director V. Kekelidze, NICA/MPD director A. Sorin, and co-leader of the STAR topic at JINR Yu. Panebrattsev took part in the meeting.

On 24 June, JINR received a representative delegation from the Hermann von Helmholtz Association (Germany) headed by its President Professor J. Mlynek. The Helmholtz Association is the largest scientific organization in Germany. It comprises 15 research centres where 26.5 thousand staff members conduct studies in six large research domains: energy, Earth science and ecology, health care, key technologies, structure of matter, and transport and space.

The Joint Institute cooperates with more than 70 scientific laboratories and universities of Germany. The major part of cooperation is connected with activities of the Helmholtz Association.

The delegation from the Helmholtz Association had a very eventful day in Dubna: the first part of it included scientific reports made by A. Olchevski, I. Meshkov, A. Sorin, and other JINR scientists and their colleagues from Germany. A draft of the Memorandum was discussed on mutual understanding between the Society for Heavy Ion Research (GSI) and JINR in the field of baryonic matter. In the afternoon the German scientists visited JINR laboratories.

A delegation from JINR visited Hungary **on 27–28 June**. In the Hungarian Academy of Sciences the delegation was received by HAS Vice-President Norbert Kroó who had worked in Dubna for a long time. János Pusztai, director of the HAS Department on Inter-

national Cooperation, took part in the meeting. Academician N. Kroó expressed a high opinion on the Dubna initiative to hold JINR Days in Hungary and suggested that the event should be organized in Budapest at the end of the year. He also thanked the JINR Administration for conferring on him the title «Honorary Doctor of JINR». In conclusion, N. Kroó remarked that the significance of JINR had been increasing lately, and the latest events speak for it — the visit of RF President D. Medvedev to Dubna and the election of JINR Director A. Sissakian RAS Academician and Member of RAS Presidium.

The JINR delegation was introduced to HAS General Secretary Professor Tamás Németh. He showed his interest in and inquired the guests about the main trends of research at JINR, and marked with satisfaction the growing part of «non-nuclear» topics in JINR studies, as it is especially important for Hungary. He informed them in particular that the «Dubna» committee on HAS was expanded for fuller use of the JINR potential: three new members of the committee represent the «non-nuclear» topics block. T. Németh also expressed readiness to take part in the preparation of the JINR Days event in Hungary and gave warm support to this initiative.

Having the official part of the visit concluded, the working group had a meeting attended by the following staff members of the Central Institute of Physics (KFKI): Professor D. Nagy, JINR SC and HAS–JINR cooperation board member L. Botian, and Yu. Khaidukov from FLNP, JINR. Academician-Secretary of the HAS Biology Sector I. Semes also took part in the final meeting, expressing his interest in the cooperation with Dubna in the field of radiation biology and medicine. At the final meeting, the working group worked out a draft of the JINR Days programme and a plan of measures to prepare them.

A working meeting of Chairman of the Federation Council Committee on Education and Science Professor Kh. Chechenov and JINR Director Academician A. Sissakian was held **on 28 June**. They discussed a number of issues of legislative provision for the development of fundamental science, innovative and educational programmes and international projects in Russia. Assistant Chairman of the Committee G. Zotov and JINR Vice-Director Professor M. Itkis took part in the meeting.

Ambassador Extraordinary and Plenipotentiary of the Republic of Egypt to RF Mr E. Saad El-Sayed visited JINR **on 30 June**. He was received by the Director of the Institute Academician A. Sissakian and got acquainted with activities at JINR. He also visited the Flerov Laboratory of Nuclear Reactions and the territory of the special economic zone in Dubna.

On 1 July, a representative delegation of the state corporation «The Russian Nanotechnologies Corpo-

ration» (SC Rosnanotech) visited JINR. It included Deputy Director-General A. Malyshev, Director of medical programmes O. Shpichko, Adviser on Science S. Davitadze, and Assistant A. Putilov.

The aim of the visit was to become acquainted with the accelerator complex of the Flerov Laboratory of Nuclear Reactions, research and industrial opportunities at JINR, as well as innovation projects of the Institute that can be issues of cooperation with the corporation.

At the JINR Directorate, the guests (among them General Director of the ZAO Trackpore Technology V. Terentiev) were greeted by JINR Director Academician A. Sissakian, Vice-Director M. Itkis, Assistant Director on Innovative Development A. Ruzhev, FLNR Director S. Dmitriev, and Assistant Director G. Arzumanyan. The sides exchanged their views on trends of cooperation between the Institute and the corporation, and on the JINR participation in the project planned by Rosnanotech and Trackpore Technology in the special economic zone. JINR's role in this project is supposed to be in the development of a specialized accelerator by FLNR staff for the production of filters for medical purposes.

A. Sissakian made a special stress on the project of the multiple-access centre on nanotechnologies that is to be constructed in the right-bank site of SEZ. The JINR Directorate considers the Centre as the basis for the International Innovation Centre of Nanotechnologies of CIS countries and suggests that Rosnanotech take part in its implementation. A. Malyshev accepted the necessity to start joint elaboration of the multi-access Centre issue, marking the importance to provide rationale for its attractiveness among high-technology companies.

The guests saw the FLNR accelerator complex. At a working meeting at the Laboratory, they discussed technical requirements on the accelerator which can be constructed by the FLNR specialists for a project of Trackpore Technology.

A Protocol was signed on the results of the visit.

An important event occurred at JINR **on 4 July** that will have a long-standing effect on the activities of the Institute — an Agreement was signed on scientific and technical cooperation between the State Corporation on Atomic Energy (Rosatom) and the Joint Institute for Nuclear Research. The Agreement is concluded for five years. It was signed by General Director of Rosatom S. Kirienko and JINR Director RAS Academician A. Sissakian.

The Agreement promotes the continuation of relations between the Institute and the organization that guides the development of atomic industry in Russia. Now it is especially important as the Federal Agency on Atomic Energy (former Ministry of Atomic Energy) has transformed into a corporation, a business structure that to 100% belongs to the state. This structure will continue supporting the upgrading of the IBR-2 reactor,

experiments on superheavy ion synthesis, and projects of the Institute.

The sides agreed to develop cooperation in elementary particle physics and atomic nucleus physics, condensed matter physics with nuclear physics methods, providing maximal efficient use of the existing accelerators at their disposal, research reactors, equipment for experimental data processing, and other experimental and research facilities, as well as to construct equipment for these purposes.

A delegation of the Government of Jordan headed by Deputy Director of the Jordanian National Board on Atomic Energy Professor Kamal Aradge visited JINR **on 18 July**. The delegation also included Professor Abdul-Khalim Vriekat, director of the Board on Fundamental Research, Doctor Mohammed Omari, director of the Department of International Relations of the Board on Atomic Energy, and I. Selivanov, coordinator of the Rosatom projects in the Middle East and North Africa. At the JINR Directorate, a presentation about JINR was demonstrated to the guests, who showed much interest in the information. Professor K. Aradge pointed out that there were two main trends of cooperation with JINR that interested the guests most. As long as Jordan intends to build its first nuclear power station, they expressed their wish to address our scientific centre for training specialists in the field of nuclear energy. The guests also showed their interest in carrying out joint research projects in cooperation with the Institute. Under the UN auspices, a synchrotron is under construction in the territory of Jordan. The SESAME project, which includes this complex, is a physics research centre for all countries of the Middle East, so in this context it would be useful to establish cooperation and partnership with JINR to finish the construction of the synchrotron ring.

JINR Scientific Leader Academician V. Kadyshchinsky, Chief Engineer RAS Corresponding Member G. Shirkov, Assistant Director RAS Corresponding Member I. Meshkov, Chief Scientific Secretary N. Russakovich, Deputy Head of the administration of scientific and organizational activities and international cooperation D. Kamanin, and staff members B. Gikal (FLNR) and Yu. Pepelyshev (DLNP) took part in the talks.

The delegation visited the Flerov Laboratory of Nuclear Reactions, RPC Aspekt, and the Veksler and Baldin Laboratory of High Energy Physics.

On 21 July, JINR Director Professor A. Sissakian and Scientific Director of the Institute of the Society on Heavy Ion Research (GSI, Germany) Professor H. Stöcker signed a Memorandum of Understanding and Cooperation in research of hot and dense baryon matter properties and development of JINR and GSI accelerator complexes.

GSI and JINR have rich experience of conducting joint research in the new elements synthesis, radiobiological experiments, and studies of condensed matter.

It is noted in the Memorandum that the studies of hot and dense baryon matter play an important role in modern experimental and theoretical programmes. To proceed with the research, an accelerator complex SIS100/300 is being developed at GSI in the framework of the FAIR project. A similar complex, NICA, is planned to be developed at JINR. The two different approaches to conduct experiments — studies with a fixed target at SIS100/300 and collider experiments at NICA/MPD — are complementary.

The following domains of mutual interest are stated in the Memorandum: development of cryomagnetic systems for the SIS100 and NICA accelerators, joint development of magnets for the CBM, PANDA, MPD, and SPD detectors, software development, and cooperation in designing accelerators for superheavy elements synthesis.

Ambassador of the Republic of South Africa to Russia Mr B. U. D. Langa, accompanied by S. Rasher, the former first secretary of the RSA Embassy in Moscow and the present head of the RSA Embassy office in Minsk, and Professor of Cape Town University J. Cleymans visited JINR **on 25 July**.

At the JINR Directorate, the Ambassador was received by JINR Director A. Sissakian, JINR Vice-Director M. Itkis, JINR Chief Scientific Secretary N. Russakovich, his Deputy and Adviser on JINR–RSA cooperation D. Kamanin, and JINR UC Director D. Fursaev. The Directorate members acquainted the guests with the main trends of the Institute activities, paying special attention to those fields where the cooperation of RSA scientific centres with JINR is most active. The Ambassador expressed in his turn a high opinion of JINR activities, and its contribution to the development of fundamental and applied physics research and training of scientific staff in the Republic of South Africa.

The guests visited the Flerov Laboratory of Nuclear Reactions, where they showed special interest in the experience of design and construction of accelerators for research in nuclear physics and their exploitation in applied research. They also visited the Aspekt Research and Production Centre.

Mr B. U. D. Langa marked that he was pleased to visit Dubna and see with his eyes the results of the work of the international community of scientists and specialists. He also said that the presentation at the Directorate was very interesting and informative. The cooperation is very important for them because very urgent fundamental research is carried out in Dubna, for example, in nuclear physics, and scientific achievements are applied in medicine and other fields of practice. Training of students and young scientists is of equal importance, and in this context their contacts with the JINR UC are very useful. The conditions for young staff training are very good at JINR, both in theoretical fundamental physics and in technological subjects. Stu-

dents from RSA come to JINR with great interest and pleasure.

On 1 August, a working meeting of the Plenipotentiary of the Government of Czechia to JINR Professor R. Mach and JINR Director Academician A. Sissakian was held in Dubna. They discussed issues of cooperation between JINR and scientific centres of Czechia. JINR Assistant Director V. Katrasev took part in the meeting.

The 27th International Colloquium on Theoretical Group Methods in Physics was held **on 13–19 August** in Yerevan State University. It was organized by the International Union of Pure and Applied Physics, JINR, and scientific centres of Armenia.

Speaking at the opening ceremony, JINR Director Academician A. Sissakian, Chairman of the standing committee of the colloquium Professor H.-D. Doebner, and Chairman of the «Group-27» Organizing Committee Professor G. Pogosyan marked rapid development of this scientific trend in the last years and the important role of JINR theoreticians, in particular from Russia and Armenia, in elaboration of theoretical group methods in physics.

During his working visit to Yerevan, A. Sissakian had meetings and discussions with Armenian NAS President Academician R. Martirosyan, RA Minister of Economic Development and Trade N. Yeritsyan, RA Deputy Minister of Culture G. Gyurdjian, Head of RA Central Bank V. Gabrielyan, Plenipotentiary of the Government of the Republic of Armenia to JINR, Chairman of the Committee on Science Professor S. Arutyunyan, RA NAS Vice-President Academician Yu. Shukuryan, Chairman of the Armenian Physical Society R. Avanian, and other official persons. They discussed prospects for the development of cooperation in scientific, educational and applied research programmes. JINR Scientific Council member G. Pogosyan and JINR Finance Committee member G. Torosyan took part in the discussions.

JINR Director A. Sissakian visited a number of Italian scientific centres **on 2–6 September** on the invitation of the INFN (National Organization for Nuclear Research, Italy) President.

After a visit to basic installations and a meeting with scientists from LNF (Frascati), negotiations of INFN President Professor R. Petronzio and JINR Director A. Sissakian were held on 3 September. The sides exchanged the information on R&D of scientific research at JINR and scientific centres in Italy, in particular, on the new projects «Super B-factory» (Frascati) and NICA (Dubna).

The negotiations noted a high level of cooperation and concernment in the development of scientific ties, and discussed drafts on cooperation agreements in several new trends. A Protocol was signed on the negotiations results. DLNP Director A. Olchevski and INFN

administration member Professor S. Bertolucci took part in the negotiations. JINR scientists made a donation of a two-volume collection of selected papers by the famous physicist Bruno Pontecorvo and a film about the scientist to INFN.

On 4 and 5 September, being on a visit to the Gran Sasso National Laboratory, A. Sissakian and A. Olchevski had a meeting with the Laboratory Director Professor E. Kocchia and learned about the status of the experiments OPERA, BOREXINO, etc., where JINR takes an active part. They also discussed a wide range of cooperation issues.

On 10 September a delegation of the Republic of Cuba, including Adviser to the President of the Republic of Cuba on Science Professor Fidel Castro Diaz-Balart, Ambassador Extraordinary and Plenipotentiary of the Republic of Cuba to RF Juan Valdes Sigeroa, and the Embassy staff members, visited JINR. The guests met with JINR Director A. Sissakian, JINR Vice-Director M. Itkis, JINR Chief Scientific Secretary N. Russakovich, and other members of the Directorate. During the talks at the Directorate, the guests became acquainted with strategic directions of fundamental and applied research at JINR, upgrade measures of the existing facilities and development of new basic installations, prospects for JINR involvement in the Dubna Special Economic Zone.

At the JINR International Conference Hall, a presentation was held of the book by Fidel Castro Diaz-Balart «Nuclear Energy: Danger to the Environment or Solution for the 21st Century?» (6th edition, for the first time in Russian). «We have reached the Renaissance in our cooperation arrested by reasons beyond the control of scientists. We have all grounds to be optimistic about the development of relations among scientists of Cuba and Russia, Cuba and JINR», pointed out JINR Director A. Sissakian.

On 22 September, a delegation of Nankai University (Tianjin, PRC) headed by its Rector Professor Sue Jingweng visited JINR.

At the meeting at the JINR Directorate, the guests were acquainted with the main trends of fundamental and applied research at JINR, operating basic facilities and plans to develop new ones, and the JINR educational programme. The aim of the visit was to promote cooperation with JINR and develop relations between the countries. A general agreement on cooperation with JINR was signed. It was the most important result of the visit of the delegation from Nankai University to Dubna.

The cooperation will start with the exchange of visits of scientists and discussions of joint projects. Nankai postgraduates will come to JINR for training courses.

The guests invited the leaders of the Joint Institute to visit Nankai University to take a closer look at opportunities for scientific research. It will make further cooperation more effective.

On 23 September, a delegation of the Arab Republic of Egypt headed by Deputy Minister of Higher Education and Scientific Research Doctor Mohamed Gaber Abu Ali visited JINR. JINR Vice-Directors M. Itkis and R. Lednický, JINR Scientific Leader V. Kadyshevsky, Assistant Director V. Katrasev, Chief Scientific Secretary N. Russakovich, and his Deputy D. Kamanin received the guests at the JINR Directorate.

M. Itkis informed the guests on the scientific policy of the Joint Institute, key issues of fundamental research, new and upgraded basic facilities, JINR educational programme, the innovation belt around the Institute, and the history of the cooperation of Egyptian scientists with their colleagues from JINR.

During the visit, an agreement was discussed on the associate membership of Egypt to JINR. The guests demonstrated vivid interest in all research trends at the Joint Institute, but they were especially interested in the peaceful use of atomic energy and research in radiobiology. They were also impressed by the opportunities opened here with the establishment of a special economic zone. There are similar economic institutions in Egypt, but Russia is ahead of ARE in peaceful applications of atomic energy, and the cooperation in this field would be very fruitful.

Russia and Egypt have an agreement on training Egyptian students in Russian universities. The guests expressed their hope that Dubna would also join this agreement.

A delegation of the US Congress Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism headed by Ambassador Wendy R. Sherman visited JINR **on 24 September**. The aim of the visit was to become familiar with the results of the cooperation in provision of physical protection, recording and control of nuclear materials.

JINR is the only international organization in Russia and CIS countries that uses nuclear materials in scientific purposes. It should be noted that the Joint Institute is the best site for physical protection, recording and control of nuclear materials. For 12 years already the JINR Scientific Centre for Applied Research (SCAR) has been working in the project, in cooperation with national laboratories of the USA and the US Department of Energy.

About US\$3 million have been invested in the programme of physical protection, recording and control of nuclear materials at JINR by the American side for these 12 years; the Joint Institute for Nuclear Research has made a similar contribution. The American side highly estimates such shared financing, regarding it a testimony of their mutual commitment to the cause of international security.

Besides the development of physical protection systems, recording and control of nuclear materials, the main trends of cooperation include the elaboration of the federal information system of nuclear materials,

constant monitoring of nuclear materials, and the development of their handling standards. More than 120 American specialists from the national laboratories in Albuquerque, Los Alamos, Livermore, Brookhaven and others, as well as about 200 specialists from JINR and several Russian centres and firms, have taken part in these activities for the past years.

The fact that this work is important not only for the Joint Institute but also for the Russian nuclear sites deserves a special mentioning. For example, an automated system for recording and control of nuclear materials has been developed at JINR for small and medium nuclear sites in RF. A program package has been elaborated for the Federal Information System of recording and control of nuclear materials directly for RF nuclear sites; it has been introduced at JINR and other Russian nuclear sites. In addition, a hardware-software complex has been developed and implemented at JINR for testing the elements and nodes of physical protection, providing efficient and high-quality maintenance and procedure work that does not affect the whole system capacity. A number of other elaborations have been implemented. Nine international conferences and joint training practice for RF Rostekhnadzor (Russian technical control) and the US Department of Energy inspectors have been held under the auspices of JINR.

On 20–21 October, a JINR delegation headed by JINR Director Academician A. Sissakian took part in the events on the completion of the establishment of the Large Hadron Collider (LHC) at CERN.

A scientific seminar-festival of the designers and constructors of the time-of-flight detector of the ALICE set-up (TOF ALICE) was held on 20 October. Following the scientific reports, the outstanding Italian physicist Professor Antonino Zichichi was awarded the Bruno Pontecorvo Prize at the festive ceremony. Academician A. Sissakian, who handed the Diploma and the Laureate badge, congratulated A. Zichichi on the Prize and marked his outstanding contribution to neutrino physics, the establishment of the largest underground laboratory in Gran Sasso, and strengthening cooperation among scientists. Ambassador Extraordinary and Plenipotentiary of Italy to Switzerland Giovanni Caracciolo di Vietri took part in the ceremony and made a speech. In conclusion, Professor A. Zichichi took the floor with words of gratitude.

On 20 October awarding ceremonies were held for the organizations that contributed most to the construction of the LHC and experimental facilities. JINR was awarded for its participation in the manufacturing of the magnetic superconducting toroid of the ATLAS facility, whose main part was produced at the Experimental Workshop of JINR and assembled at CERN by workers and specialists of JINR laboratories and departments. JINR Director A. Sissakian and Head of the Experimental Workshop V. Danilov received the award. A. Sissakian thanked the team of scientists and special-

ists who were involved in the work, CERN, and ATLAS Administration for the award.

The inauguration ceremony of the Large Hadron Collider was held on 21 October at CERN. It was attended by delegations from CERN Member States and other countries that were actively involved in the LHC development. The official delegation from Russia included RF Minister of Education and Science A. Fursenko, Rosnauka Head S. Mazurenko, Chairman of the RF State Commission for Academic Degrees and Titles Academician M. Kirpichnikov, and other science leaders. JINR Director A. Sissakian took part in the ceremony as an official guest.

On 31 October JINR Director RAS Academician A. Sissakian had a meeting with the administration of the Sistema Non-governmental Pension Fund (NPF) — its President O. Prilepsky and Vice-President on development and marketing T. Obidina.

They discussed at the meeting issues of the fund cooperation with JINR and other enterprises in Dubna, primarily, opportunities of NPF and JINR in additional retirement support for JINR staff members. A. Sissakian stressed the particular urgency of this problem for the veterans of the Institute and suggested that real efforts are taken in this issue in the nearest future.

The sides agreed that they make the necessary calculations and estimations, in the course of November 2008, of the financial parameters of the JINR participation in the non-governmental pension-fund scheme. Head of the JINR administration of personnel and innovative development A. Ruzaev is in charge to coordinate this work.

A meeting of JINR Director RAS Academician A. Sissakian with the leaders of the Federal State Unitary Enterprise «Central Scientific Research Institute of Chemistry and Mechanics» (CSRICM) of the Federal Agency of the Russian Federation on technical and export control was held **on 1 November** at the JINR Directorate. General Director of CSRICM S. Eremin and Deputy Director on Science V. Zosimov took part in the meeting.

FSUE CSRICM is one of the leading scientific organizations in the area of nanotechnology in the Russian Federation. Therefore, the sides paid basic attention to the discussion of issues of cooperation exactly in this field. A. Sissakian and S. Eremin signed an Agreement between JINR and CSRICM on cooperation in the development of the Centre for Multiple Access «Nanotechnologies» in the Dubna technical-innovation special economic zone.

JINR Vice-Director M. Itkis, JINR Assistant Director on Innovative Development A. Ruzaev, General Director of OAO Dubna–Sistema Managing Company I. Lensky took part in the meeting.

On 14 November, a regular meeting of the 6th Joint Coordinating Committee on JINR–RSA cooperation was held at the Joint Institute.

Director of the RSA Department of Science and Technology Ph. Mjwara and RSA Ambassador in RF B. Langa headed the delegation of the Republic of South Africa. JINR was represented at the meeting by Vice-Director R. Lednický, Chief Scientific Secretary N. Russakovich, Deputy Head of the administration of the scientific and organizational work and international cooperation D. Kamanin, FLNP Director A. Belushkin, FLNP Deputy Director V. Shvetsov, FLNR Deputy Director A. Popeko, and the UC Deputy Director S. Pakulyak.

A. Belushkin made a report and acquainted the participants with opportunities to develop cooperation in nanotechnology. A. Popeko informed the Committee about the development of the FLNR cyclotron complex and implemented projects in JINR Member States. S. Pakulyak spoke about the opportunities at the Institute University Centre in educational programmes. V. Shvetsov's presentation covered a wide range of application of neutron activation analysis and neutron scattering. D. Kamanin reported on the implementation of the resolutions by the previous meeting of the Committee and current issues.

In October 2005 the RSA Government signed an agreement with JINR establishing the Associate Membership of the Republic of South Africa to JINR. It concerns, firstly, the educational programme: two groups of students and postgraduates from RSA universities have already had introductory practice in basic research trends at JINR. Several groups of scientists from the Joint Institute have given lectures in RSA, they have taken part in conferences and conducted joint research with universities of RSA, the cyclotron laboratory iThemba L. A. B. S., and the nuclear energy corporation NECSA. Cooperation in the field of neutron activation analysis application in medicine and biology is successfully developing.

Opportunities for cooperation in nanotechnology were discussed at the meeting. It is planned to hold a workshop in February–March 2009 in RSA with Russian institutions and JINR, where the most urgent tasks in this field will be considered. RSA is interested in the development of nanotechnology application in medicine, industry (geology and production of new materials), electric energy and water production. Cooperation in education will be continued. In summer next year one more group of students from RSA universities will take part in the traditional summer school for students from JINR Member States.

A regular meeting of the Joint JINR–CERN Steering Committee on cooperation was held **on 27 November** at CERN, co-presided by CERN Research Director J. Engelen and JINR Director Academician A. Sissakian.

CERN Director-General-elect R.-D. Heuer took part in the meeting. Issues of cooperation in the preparation of experiments at the Large Hadron Collider (ALICE, ATLAS, CMS, LHC-Dampers) and other aspects of the

facilities development were discussed. Project leaders and heads of Dubna groups took part in the discussion, marking the importance of active cooperation in the phase of obtaining physics data.

JINR Chief Scientific Secretary N. Russakovich made a report on a proposed programme of joint JINR–CERN cooperation (a «partnership programme»). His proposal was positively accepted.

The participants of the meeting also discussed a question of organization of joint courses for secondary school teachers. It was noted that this fruitful cooperation between the two international centres is exclusively important for the world physics community. The same day, R.-D. Heuer and A. Sissakian had a working meeting.

JINR Days in Hungary were organized **on 3–7 December** in the capital of Hungary Budapest. The event was organized by the Hungarian Academy of Sciences. Leading scientists from Hungarian scientific centres and the Joint Institute for Nuclear Research also took part in its procedure. A representative delegation from JINR headed by JINR Director Academician A. Sissakian arrived in Budapest for the occasion. Hungary now is an Associate Member to JINR. The agenda of the event included a historical review of JINR–Hungary cooperation, a poster photo exhibition, a presentation of the Dubna Special Economic Zone, and scientific reports on the main trends of the Institute activities.

The Days opened with a conference in the Hungarian Academy of Sciences. HAS President J. Pálincás, Ambassador Extraordinary and Plenipotentiary of RF to Hungary I. Savolsky, and Minister of Science, Research and Innovations of the Republic of Hungary K. Molnár greeted the participants of the opening ceremony. A. Sissakian made a report «JINR: Looking Forward to Future» where he presented the main plans of the Institute in science, education and innovations, and opportunities to widen the cooperation with the Hungarian scientific community.

On 5 December, the guests from JINR were received at the Hungarian National Office for Research and Technology. The audience listened with interest to the reports by A. Ruzaev on the JINR participation in the establishment of the special economic zone and by Director of Aspekt Research and Production Centre Yu. Nedachin on the activities of the Dubna SEZ resident company that successfully instruments JINR elaborations. Representatives of Hungarian spin-off companies that work in bio- and information technology spheres also gave interesting and useful information.

The meeting finished with a round-table discussion that was opened by President of the Hungarian National Office for Research and Technology G. Csopaki, who appraised the results of the meeting dedicated to the cooperation in innovations. President of the Hungarian Association for Innovation for small and medium businesses G. Szabó, President of the Hungarian–Russian

Administration of the Chamber of Commerce and Industry of Hungary R. Nagy, Hungarian Attache on Science and Technology at the Hungarian Embassy in RF G. Graczka, Chairman of the HAS Committee on Dubna G. Nagy, and HAS Vice-President N. Kroó represented the Hungarian side at the round-table discussion. From JINR, A. Ruzaev, A. Belushkin, and D. Kamanin took part in the event. The discussion demonstrated that Hungarian colleagues are deeply interested in cooperation in the framework of the Dubna special economic zone.

A protocol was signed on the results of the round-table discussion where the sides supported the intention of JINR to integrate into the European scientific infrastructure and the seventh Framework Programme. Besides, JINR proposed to consider a possible involvement of the Institute basic facilities as scientific infrastructure accessible for Hungarian scientists. The sides recommended that the HAS Committee on Dubna forward the results of the conference to the Hungarian Academy boards and promote their inclusion into the national road map of Hungary to raise the level of cooperation. The mutual interest in the area of educational and applied high-technology projects was stressed in the document.

In early December, JINR Director Academician A. Sissakian and Governor of the Moscow Region B. Gromov signed an Agreement on cooperation between the Government of the Moscow Region and JINR in scientific and technical, educational and innovation spheres. The Agreement is adopted to establish favourable conditions for the development of the scientific and technical, and educational potential of the Institute, and its efficient application to the benefit of the social and economic development of the region.

Ambassador Extraordinary and Plenipotentiary of Romania to RF Constantin Grigorie received in his Moscow residence JINR Director Academician A. Sissakian **on 9 December** and had a talk with him. They discussed a wide range of issues of cooperation of JINR with Romanian scientists. The same day at the Embassy of Romania in Moscow, they had an evening with the poetess Anna Blandiani. A group of JINR staff members took part in the evening as guests.

CONFERENCES AND MEETINGS HELD BY JINR

Ten conferences were the largest among scientific conferences and workshops held at JINR in 2008.

On 28 January – 2 February, the fifteenth interdisciplinary conference «*Mathematics. Computer. Education*» (MCE) was held. The MCE conferences are or-

On 17–18 December, Minister of Economy of the Republic of Armenia Nerses Eritsyanyan visited JINR.

On the first day of the visit, the Minister met with JINR Vice-Director R. Lednický, Head of administration of scientific and organizational work and international cooperation N. Russakovich, and Assistant Director G. Arzumanyan. He also visited FLNR, DLNP, FLNP, and Aspekt Research and Production Centre. On the second day of the visit, JINR Director A. Sissakian received the guest; then he had excursions to VBLHEP and the special economic zone. With great interest, N. Eritsyanyan got acquainted with the scientific, educational and innovative components of the strategic plan for JINR development. Today, JINR cooperation with Armenia is conducted in 18 scientific topics. The major part of them is exercised by the Yerevan Physics Institute and Yerevan State University. The Minister said that the task to modernize and re-structure YPI that the Republic faces at the moment made him take a decision to visit Dubna.

On 19 December, a representative delegation from Ukraine, headed by Ambassador Extraordinary and Plenipotentiary of Ukraine to the Russian Federation, First Deputy Secretary of the National Security and Defense Council of Ukraine Konstantin Grishchenko visited Dubna. Together with the delegation, Plenipotentiary of the Government of Ukraine to JINR Vadim Stogniy also arrived in Dubna. On their arrival, the guests had a meeting with the JINR Directorate headed by Academician Alexei Sissakian. Aspects of deepening and extending the long-standing cooperation of Ukrainian scientists in the framework of the Joint Institute for Nuclear Research were discussed. In particular, closer interactions of the Institute with European Union research programmes were considered. The delegation included diplomats, recognized scientists, and directors of largest physics institutes of this JINR Member State.

The Ukrainian guests visited the VBLHEP Nuclotron complex, got acquainted with the project to develop the NICA collider and R&D of JINR basic facilities (DRIBs, IREN, etc.). Then they informed about the activities in the Dubna Special Economic Zone. Before leaving Dubna, K. Grishchenko and V. Stogniy had a meeting with the JINR Ukrainian staff members and discussed their problems at the Institute.

ganized on a regular basis at the Laboratory of Information Technologies (LIT) during winter student holidays every two years. For the last fifteen years, thousands of scientists, professors, lecturers, high school teachers, students, postgraduates, high school students, cultural workers, and representatives of administration have at-

tended the conferences. The organizers of the conference are JINR, Moscow State University, Pushchino Scientific Centre of Biological Studies of RAS, Dubna University, and the interregional public organization «Women in Science and Education».

The specific feature of these conferences is that they have a scientific and educational, and interdisciplinary character. They provide for professional scientific dialogue at sectional sessions and allow scientific youth to communicate with experienced researchers and lecturers, and to discuss their results. Hundreds of PhD and dozens of Doctor theses have been defended using the results presented at the conferences.

The conference attendees heard the famous JINR scientists: JINR Director Corresponding Member of the Russian Academy of Sciences A. Sissakian, Academician Yu. Oganessian, LIT Director V. Ivanov, and Rector of Dubna University, President of the Russian Academy of Natural Sciences O. Kuznetsov. With absorbed attention they listened to V. Kadyshesky's lecture «Physics and Geometry» about the essences of the universe and the structure of space, time and matter. Professor R. Pose, an advisor to the LIT Directorate, spoke about interaction of Russian and German scientists.

The presentation «Global System of Distributed Computing GRID: Concepts and Prospects» delivered by LIT Deputy Director V. Korenkov provoked big interest. Use of GRID opportunities allows expansion of multiple access and mathematical processing of experimental data received in all scientific areas — from high-energy physics to geophysics and astronomy. GRID also extends the capabilities for mathematical simulation of complex systems, including biological and social ones, thus opening wide prospects for formalization of knowledge about these systems and understanding the mechanisms of their functioning.

V. Belaga's report «Development of Innovative Educational Products on the Basis of Modern Multimedia Technologies» was of particular interest for higher school lecturers and school teachers, as most of participants are anyhow involved in the pedagogical process. The educational products developed by a team of JINR specialists on different subjects, performed at a high theoretical and methodical level and convenient for users, for both teachers and pupils, are widely claimed in higher schools and secondary schools of Russia.

Two plenary sessions were devoted to the problems of modelling biological systems (reports of scientists from MSU, Pushchino, and MPTI) and to the questions of the modern Russian economics (reports delivered by scientists of the Institute of Economics of RAS and the Central Economic and Mathematical Institute of RAS).

More than 400 participants attended the event, young people being a half of them. The participation of 50 students and postgraduates on a competitive basis was provided in the framework of the Presidential Programme by the State Club «Personnel Stockpile».

During the conference, round-table discussions were organized: «The Cultural Space of Russia», «Museum in the Modern World» (presented by T. Goncharova, a keeper of Muranovo museum), and «Gender Problems in Education» (headed by the Chairman of the public organization «Stimula» T. Ivashkevich). A film made by JINR staff members «First JINR Director Academician Blokhintsev» was shown with comments and retrospections of the JINR photographer and chronicler Yu. Tumanov.

An international symposium «*Trends in Heavy Ion Physics Research*» dedicated to the 75th anniversary of Scientific Leader of the Flerov Laboratory of Nuclear Reactions Yuri Oganessian was held from 22 to 25 May in Dubna. Leading scientists from 14 countries took part in the symposium. The most valuable gift for the hero of the occasion, as well as for all participants of the meeting, was a wide review of programmes of scientific studies that are being realized in the leading laboratories such as GANIL in France, GSI in Germany, RIKEN in Japan, NSCL and LLNL in the USA, and others.

A circle of scientific problems discussed at the symposium included the most important topics of modern nuclear physics: from studies of a structure of light nuclei near and beyond the drip-line to the synthesis of superheavy elements. A review of the status and perspectives of the synthesis of superheavy elements was done by Professor W. Greiner (Germany). The talk of Professor H. Gaeggeler (Switzerland) was dedicated to results of the experiments on the study of chemical properties of elements 112 and 114, carried out at FLNR. Director of NSCL K. Gelbke gave a report dedicated in particular to experiments that resulted in the discovery of extremely neutron-rich isotopes ^{40}Mg , $^{42,43}\text{Al}$, and ^{44}Si which probably define the neutron drip-line in the range $Z = 12-14$. Results of a number of experiments dedicated to search and studies of the resonance structure of nucleon unstable systems $^5,7\text{H}$, $^{9,10}\text{He}$, and $^{10-13}\text{Li}$ were reported by B. Jonson (Sweden), S. Gales (France), and T. Motobayashi (Japan).

The development of the experimental base is by tradition one of the most discussed topics. The giant acceleration complexes intended for the production of secondary radioactive beams in wide ranges of mass and energy are under construction at the present time almost in all leading laboratories of the world. At GANIL the first experiments within the framework of the SPIRAL2 project are planned for 2012. This project includes a linac, a $d-n$ converter and a uranium target, which has to provide for 10^{14} fissions per second. As a result of acceleration of fission products, the widest set of radioactive exotic beam of a large intensity will be available for experimentalists. The grandiose international project FAIR is in the construction stage nowadays at GSI. Russia and JINR are the active participants of the project. Implementation of the project will pro-

vide the widest possibilities for experimentalists in different fields of physics: from radiobiology and nuclear astrophysics to studies of quark–gluon plasma. The fragmentation of heavy nuclei, e.g., uranium with an energy of 1 GeV/nucleon, will be used for the production of secondary beams. As a result, one can get about 1000 different species of radioactive nuclei. The upper limit of secondary beam intensity will make up to 10^{12} particles per second. A similar research complex, the factory of radioactive beams of RIKEN, is under development in Japan.

The talk of JINR Director Professor A. Sissakian was dedicated to perspectives of the Nuclotron-based project NICA/MPD, which is planned to be implemented at the Institute.

On 8–21 June, a traditional *European School on High Energy Physics* was held in Herbeumont-sur-Semois (Belgium). The event dates back to 1970 when the CERN–JINR school for young scientists was organized for the first time.

Young physicists from CERN and JINR Member States took part in the school. More than 30 lectures were given on urgent problems in elementary particle physics. There were two representatives from JINR among the discussion leaders — A. Gladyshev (BLTP) and D. Naumov (DLNP). Academician V. Rubakov (INP, RAS) read two basic lecture courses: «Quantum Theory and Standard Model» and «Cosmology». JINR Director Academician A. Sissakian gave a lecture on JINR scientific programme. CERN Deputy Director-General Professor J. Engelen spoke about the concluding phase of the LHC development. Representatives of CERN, JINR, and Belgium scientific centres acted as the school organizers. The next event of this type will be held in June 2009 in Germany.

XIII international conference «*Selected Problems of Modern Theoretical Physics*», to mark the centenary of the birth of D. Blokhintsev, was held in Dubna on 23–27 June.

JINR Director A. Sissakian opened the conference with a report about Dmitri Blokhintsev, an outstanding scientist, organizer, scholar, and a public figure who paved the way for the deep traditions in fundamental and applied physics and organization of large-scale scientific research.

About 190 scientists from JINR and scientific research organizations and universities of Argentina, Australia, Belarus, Brazil, Canada, France, Germany, Great Britain, Greece, Holland, Hungary, Iran, Italy, Mexico, the Netherlands, Poland, Portugal, Romania, Russia, Ukraine, and the USA attended the conference. 128 reports were presented, including 26 plenary and 4 reports at the memorial section. World-known theoretical physicists L. Faddeev, V. Kadyshesky, D. Shirkov, A. Di Giacomo, M. Mueller-Preussker, A. Slavnov, L. Lipatov, M. Vasiliev, H. Kleinert, H. Reinhardt, V. Aksenov and

others, and young scientists and postgraduates from different countries made their presentations. It was one of the main priorities of the conference organizers to attract young scientists to the event. At the memorial session, A. Kuzemsky, G. Efimov, A. Sukhanov, and E. Kapuscik spoke about D. Blokhintsev's research in solid matter physics, quantum field theory, and fundamental problems of quantum mechanics. A new documentary produced by Dubna cinematographers about Dmitri Blokhintsev was shown at the conference. A photo exhibition was opened at the JINR Laboratory of Theoretical Physics during the conference; the JINR Scientific and Technical Library organized an exhibition of scientific papers by D. Blokhintsev; the Culture Centre «Mir» hosted an art exhibition of paintings by Dmitri Blokhintsev.

The scientific programme of the conference reflected the current status of research at JINR in theoretical physics of elementary particles, quantum field theory, mathematical physics, gravitation and cosmology. The main topics of the conference were the following: hadron matter at nonzero temperature and density, confinement and chiral symmetry in QCD on lattice, the Schwinger–Dyson equations and functional renormalization group, hadronization and confinement models, strong interactions phenomenology, nucleon spin structure, deep inelastic hadron scattering, fundamental problems of quantum theory, quantized fields theory, gravitation and cosmology, and modern methods in mathematical physics (quantization of systems with constraints, string theory, supersymmetry, and conformal field theory).

The participants of the conference were intrigued by the presentation on the project of upgrading of one of the JINR basic facilities, the Nuclotron, in the framework of the NICA/MPD project, as well as about the programme of research into the properties of new materials at the IBR-2 reactor.

The international conference «*Distributed Calculations and Grid Technologies in Science and Education*» was held on 30 June–4 July at the Joint Institute for Nuclear Research. The conference is organized twice a year. This conference is the only event in Russia dedicated to the issues of development and application of Grid technologies and other related aspects of information technologies. Organized by JINR LIT under the support of the Russian Foundation for Basic Research, the conference year by year attracts more and more specialists.

The programme included not only the issues of the establishments and operation of Grid infrastructures, but also theoretical and practical aspects of application of distributed calculation media, distributed data processing, etc.

The conference gathered 228 participants from 20 countries: Armenia, Azerbaijan, Belarus, Bulgaria, Czechia, France, Germany, Georgia, Kazakhstan,

Moldova, Poland, Romania, Russia, Slovakia, Spain, Sweden, Switzerland, Ukraine, the USA, and Uzbekistan, as well as from CERN and JINR. Russia was represented by participants from 49 universities and research centres. Representatives of the companies T-platform, IBM, Niagara, Etegro, Linux Inc, Nortel, Samsung, Intel, and JetInfosystems took part in the conference.

There were the following sections at the conference: «Grid Applications», «WLCG — Worldwide LHC Computing Grid», «Grid Service and Architecture», and «Personnel Training in Advanced IT Trends». LIT JINR staff members organized a session on Grid technologies for beginning users.

Plenary reports at the conference, which are a tradition, dwelt on modern status and prospects of foreign Grid centres development. These were the report by O. Smirnova (Sweden) «Intermediate ARC Software and Its Expansion in the Distributed Tier1-Centre NDGF», M. Delfino (Spain) «Prospects and Promising Opportunities of Grid-Support Expansion in Spain», D. Nilsen (Germany) «Grid-Activity in the Computer Centre Steinbuch (SCC)», K. Alex et al. (Romania) «Roman Tier2 Federation — National Contribution to WLCG Collaboration», V. Sidorenko et al. «MD-GRID JRU Consortium and Its Role in the SEE-GRID-SCI Project», N. Pukhaeva (France) «Grid in the Computer Centre, IN2P3», and by L. Levchuk et al. (Ukraine) «Peculiarities of Grid-Cluster Architecture of the Kharkov Physics and Technology Institute».

A special plenary session was devoted to issues related to the Grid-computing for LHC experiments. The following reports were presented there: Yu. Andreeva (CERN) «Computer Monitoring of LHC Experiments for CCRC08 (Combined Computing Readiness Challenge) and Its Continuation», A. Tsaregorodtsev (France) «Grid Workload Control with Pilot Tasks», A. Vanyashin (ANL, USA) «ATLAS Database Availability for Data Processing from LHC on Grid». On behalf of the ALICE collaboration, F. Furano (CERN) presented a computing model for the ALICE experiment.

Computer chemistry is a traditional application of Grid technologies. D. Varlamov et al. in their report «Distributed and Parallel Calculations in Chemistry at the Resource Grid Node of IACP, RAS» presented the heterogeneous distributed computer medium on the basis of the intermediate software gLite-3, developed and operated at IACP in 2005–2008. For the first time it was reported at the conference on «Use of Grid Technologies for Research in Nanomaterials Structure and Properties» (V. Volokhov et al., IACP, RAS).

O. Keeble (CERN) made a status report on the EGEE project (Enabling Grids for E-science, «Grid Expansion for the E-science Development»). V. Iljin (SRINP, MSU) made a status report on RDIG.

A special section was organized in the framework of the conference on education issues in advanced in-

formation technologies. Scientists from Dubna, St. Petersburg, and Petrozavodsk shared their experience of personnel training. In total, 38 plenary reports, 65 section reports, and 9 poster presentations were delivered at the conference.

The participants were unanimous in their opinion that such type of the events is a powerful tool for consolidation and professional experience sharing. Each time, it becomes more and more useful and important for Grid development and its applications both in Russia and in JINR Member States.

On 7–11 July the international conference on theoretical physics «*Dubna-Nano2008*» took place at the Bogoliubov Laboratory of Theoretical Physics. The conference programme included such topics as dynamics and spectroscopy of atomic clusters, carbon systems (fullerenes, nanotubes, graphene), quantum dots, quantum transport (including spintronics), Josephson junctions, and bio-nano systems. Though the conference was announced as a theoretical one, some talks of experimentalists were also presented, and the technological applications of nanosystems were widely discussed.

The conference embraced more than 100 physicists from 16 countries (Armenia, Bulgaria, Germany, Denmark, Canada, India, Iran, Spain, Poland, Portugal, Russia, the USA, Ukraine, France, Sweden, and Japan). Among them were such famous experts as M. Vozmediano (Spain), P. Hawrylak (Canada), A. Eletskii (Russia), K. Kadowaki (Japan), N. Pedersen (Denmark), E. Suraud (France), and B. von Issendorff (Germany). It is worth noting that Professor K. Kadowaki is a coordinator of nanophysics research in Japan, while Professor N. Pedersen in Europe. The largest delegations at the conference were from Russia and Japan. The physicists from Dubna presented oral talks (R. Nazmitdinov, V. Nesterenko, R. Pinchak, and Yu. Shukrinov from BLTP, and E. Krasavin from LRB) and several posters.

The conference demonstrated once again that physics of nanosystems is indeed one of the most promising branches of modern science. A variety of nanosystems and related phenomena open exciting opportunities for both fundamental science and applications. Nanosystems physics is rightly one of the main sources for qualitatively new technology of the future. «*Dubna-Nano2008*» was the first meeting in Dubna devoted to nanophysics, which gathered groups of researchers so diverse and representative.

The 7th international conference «*Renormalization Group-08*» was held at JINR on 1–5 September. The first conference of this series took place in Dubna in 1986. Later on it was organized in Dubna, Mexico, Slovakia, Finland and now again returned to Dubna. The term «renormalization group» which appeared in the renormalization theory in quantum field theory has also a more general physical meaning. The point is that

various physical systems preserve their properties under scaling transformations; only parameters are changed in a very specific nonlinear way. The formulas describing these changes have a group-theory origin. Solutions of the group equations allow one to describe the scale invariant properties of the system. The method of the renormalization group which first appeared in quantum field theory was later extended to the theory of critical phenomena, theory of turbulence, theory of dynamical systems, and other fields of physics dealing with scaling transformations. Therefore, this conference was a multidisciplinary one and joined together scientists from different areas who use similar methods of investigation. This year, the conference was timed to the 80th anniversary of the founder of these conferences, one of the pioneers of the renormalization group method Academician D. Shirkov. More than 100 scientists from JINR, Armenia, Austria, Belgium, Belarus, Brazil, Chile, Finland, France, Germany, India, Poland, Romania, Russia, Slovakia, Slovenia, Ukraine, and the United Kingdom participated in the conference.

On 29 September–4 October XIX international Baldin seminar on high energy physics problems «*Relativistic Nuclear Physics and Quantum Chromodynamics*» was held in Dubna. The seminar continued the series of traditional conferences established by the outstanding scientists Academician A. Baldin and Academician M. Markov in 1969. The series of these conferences is formally called «Baldin Autumn».

JINR Director, Chairman of the Organizing Committee Academician A. Sissakian opened the scientific agenda with a report dedicated to the centenary of the birth of Moisei Markov, an outstanding scientist, science organizer, scholar, and public figure who established sound traditions in fundamental physics and organization of large-scale scientific projects.

About 200 scientists from JINR, Armenia, Belarus, Bulgaria, Czechia, France, Germany, Japan, Poland, Portugal, Romania, Russia, Slovakia, Ukraine, the USA, and Uzbekistan took part in the conference. More than 130 reports were presented on the latest theoretical and experimental achievements at leading scientific centres (JLab, RHIC, GSI, Fermilab, MAMI, CERN, JINR, RIBF, J-PARC, etc.). The following researchers made interesting and informative reports: C. Perdrisat (USA), E. Tomasi-Gustafsson (France), H. Machner (Germany), Br. Slowinski (Poland), G. Rupp (Portugal), K. Itahashi (Japan), L. Pondrom (USA), F. Sakuma (Japan), D. Marchand (France), V. Karmanov (Russia), A. Baldin, S. Bondarenko, S. Gerasimov, E. Dorokhov, Yu. Zanevsky, G. Efimov, V. Kekelidze, N. Kochelev, V. Ladygin, A. Sorin, O. Teryaev, S. Shimansky (JINR), and many others. A section session was devoted to discussions of the presentations on the NICA project. The reports on new experimental data obtained at the RHIC facilities aroused special interest. The report by

T. Hallman «Characterizing the New State of Strongly Interacting Quark–Gluon Matter Discovered at RHIC» on the discovery of a new state of strongly interacting matter — quark–gluon plasma — deserves special mentioning. The next, XX (jubilee) seminar will be held in 2010.

On 7–10 October, the JINR Laboratory of Information Technologies (LIT) hosted the all-Russian scientific conference «*Digital Libraries: Perspective Methods and Technologies, Electronic Collections*» (RCDL'2008) that celebrated its 10th anniversary in a series of conferences. They aim to form a community of experts in Russia working for research and elaboration of technologies in the field of digital libraries (DL), collecting knowledge and data for general and specific applications. The RCDL conferences have always been open to Russian as well as to foreign leading specialists in the specified area that allowed them to exchange experience, ideas and results for setting up contacts for close cooperation in the future. As a result, for the last ten years over 1000 specialists in various fields of science, education and application have attended them.

The conference programme included full texts of 33 papers, 14 short talks, and 6 poster presentations. It summed up the achievements in the mentioned area. Besides, other general issues of creating facilities of forming, analysis and search in the repositories of text and multimedia data of different structure were considered. Traditionally, special attention was paid to the work on the electronic collections created within the RFBR projects. The programme also included two tutorials by Hannes Kulovits and Andreas Rauber (Vienna, Austria) entitled «Preservation Planning with Plato» and by George Kakaletis (Greece), Pasquale Pagano (Italy), and Pedro Andrade (CERN) entitled «D4Science Project Overview», as well as a report by Pasquale Pagano (Italy) «Virtual Research Environments: The e-Infrastructures, Preternatural Digital Libraries». The joint Italian–Greek–CERN presentation dedicated to the creation of scientific and purely applied collections of information and means of their access is of special interest, because the software applied by the authors perfectly works together with the base software developed for functioning the international Grid-structure EGEE (European Grid for E-science). RDIG (Russian Data Intensive Grid) operates in the framework of this structure with the most active participation of JINR.

In the framework of the RCDL'2008, a specialized Russian seminar on the data retrieval methods estimation ROMIP'2008 was organized where the developers of algorithms and analysts of the well-known companies Yandex, Mail.ru, Galaxy Soft, KM.RU, HeadHanter, etc., presented their reports. It should be noted that young conference participants took a keen interest in this seminar, attended in total by more than 50 people.

For the conference, the LIT specialists have developed and implemented a site of the conference and an effective maintenance system for work with the authors who presented their materials and with their reviewers. Before the conference started, the JINR Publishing Department issued the Proceedings of the conference by the method of direct reproduction from the originals. In the common opinion of the conference attendants and the members of the Steering Committee, the Dubna conference, which was opened by the presentation about the history and the scientific programme of JINR and its place in the world science, delivered by JINR Director A. Sissakian, was very successful from the scientific and organizational viewpoints. The organizational support was provided by the Institute of Informatics Problems of the Russian Academy of Sciences and Moscow section of ACM SIGMOD. The financial support came from the Russian Foundation for Basic Research and from the Division of Nanotechnologies and Information Technologies of the Russian Academy of Sciences.

An *international workshop on R&D at the CBM facility* was held on 14–17 October in Dubna. CBM is developed for the new European research centre FAIR (Facility for Antiproton and Ion Research). The project is implemented in Darmstadt (Germany) at GSI (the Society for Heavy Ion Research) by 14 countries, including Russia, to study the structure of matter and the Universe evolution. About 120 physicists from scientific centres of these countries took part in the workshop at JINR.

The participation of Russia in the FAIR project won support during the 9th round of the Russian–German interstate consultations on the top level a year ago in Wiesbaden, when, in the presence of Vladimir Putin

and Angela Merkel, a Declaration of Intent on cooperation in the construction and operation of the International Accelerator Centre for Heavy Ion and Antiproton Research was signed, along with other documents, between the RF Federal Agency on Atomic Energy and the German Ministry of Education and Scientific Research. The Joint Institute for Nuclear Research has been taking part in the implementation of this project almost since its very start.

Dubna physicists are considerably involved in the development of the accelerator complex in Darmstadt: they take part in the construction of the accelerator itself; on the basis of the elements that are used in the Dubna Nuclotron and superconductivity they work out magnetic elements prototypes that are meant to be used for the development of the Darmstadt accelerator complex — a new international centre. Besides, a number of physicists groups work for the experiments that are planned to be conducted in the future at this accelerator complex, in particular, the CBM experiment (Compressed Baryonic Matter) that was the key topic of this large international workshop in Dubna. Exactly for this project, the dipole superconducting magnet is being designed in Dubna.

This kind of workshops have been organized in different countries of the world, and the fact that this time it was held in Dubna demonstrates the appraisal of the contribution of the Joint Institute to the development of the new international scientific centre in Darmstadt and, in particular, to the CBM experiment. In addition, JINR physicists take part in the preparation of the scientific programme, processes simulation, and the work-out of transition radiation detectors — they have accumulated great experience while developing, for example, the ALICE facility for the Large Hadron Collider.

PARTICIPATION OF JINR IN INTERNATIONAL CONFERENCES

In 2008, JINR scientists and specialists participated in 203 international conferences.

The largest delegations representing JINR attended the following events: the Workshop on Transactinide Nuclei Fission (Jyväskylä, Finland); JINR/IHEP Workshop on NICA/MPD (Protvino, Russia); the 42nd PNPI Winter School (Repino, Russia); the CBM Collaboration Meeting (Darmstadt, Germany); the Workshop on Physical, Biological and Medical Aspects of Higher LET Radiation Energy Transfer in the Matter (Prague, Czech Republic); the workshop «Properties of Exotic Nuclei» (Brussels, Belgium); PANDA Collaboration Meeting (Darmstadt, Germany); the International Workshop on Hadron Structure and Spectroscopy'08 (Torino, Italy); the international workshop «Polynomial

Computer Algebra» (St. Petersburg, Russia); the Workshop on Superconductive Cyclotron C-400 (Luviana-Neuve, Belgium); the International Workshop on e^+e^- Collisions from Phi to Psi (PHIPSI08) (Frascati, Italy); the 15th International Scientific Conference of Students, Postgraduates and Young Scientists «Lomonosov» (Moscow, Russia); APCTP–BLTP–RIKEN Joint Workshop on Quarks and Mesons in Nuclear Physics (Pohang, Republic of Korea); the 44th All-Russian Conference on Problems of Mathematics, Informatics, Physics and Chemistry (Moscow, Russia); the 7th Conference of Young Scientists, Specialists and Students dedicated to the 15th anniversary of the Institute of Medical and Biological Problems of the Russian Academy of Sciences (Moscow,

Russia); the International Seminar on Neutron Scattering Investigation of Condensed Matter (13 ISNSICM) (Poznan, Poland); the 1st Workshop on State of Art in Nuclear Cluster Physics (SOTANCP 2008) (Strasbourg, France); XV international seminar «Nonlinear Phenomena in Complex Systems» (Minsk, Belarus); the 15th International Seminar on High Energy Physics («Quarks-2008») (Serguiev Posad, Russia); the 4th International Conference of Physics of Liquid Matter: Modern Problems (PLMMP) (Kiev, Ukraine); the Russian scientific conference «Medical and Biological Problems of Toxicology and Radiology» (St. Petersburg, Russia); the 3rd international symposium «Atomic Clusters Collisions: Structure and Dynamics from Nuclear to MesoBioNano Scale» (ISACC 2008) (St. Petersburg, Russia); the 10th International Workshop on Meson Production, Properties and Interaction (MESON 2008) (Cracow, Poland); the 2nd international conference «Current Problems of Nuclear Physics and Atomic Energy» (NPAE-Kyiv2008) (Kiev, Ukraine); the 3rd National Conference on Theoretical Physics (Buşteni, Romania); the 5th International Conference on New Developments in Photo Detection (Aix-Les-Bains, France); VII international conference «Ion Implantation and Other Applications of Ions and Electrons» (Kazimierz Dolny, Poland); the 3rd Light Ion Nuclear Collision Workshop (LINC 2008) (Protvino, Russia); the 11th European Particle Accelerator Conference (EPAC 08) (Genoa, Italy); the 58th International Workshop on Nuclear Spectroscopy and Atomic Nucleus Structure («Nucleus-2008») (Moscow, Russia); the 17th International Laser Physics Workshop (LPHYS'08) (Trondheim, Norway); the international workshop «Hadron Structure and QCD: From Low to High Energies» (HSQCD08) (Gatchina, Russia); the 53rd Annual Conference of the South African Institute of Physics (SAIP) (Mankweng, RSA); the 8th Baikal School on Physics of Elementary Particles and Astrophysics (Baikal Summer JINR–Irkutsk State University School) (Baikal–Bolshye Kotly, Russia); the international conference «Applications of Computer Algebra» (ACA'08) (Hagenberg, Austria); the interna-

tional summer school «Atomic Properties of Heaviest Elements» (Witenberg, Germany); the 36th Meeting of the European Society for Radiation Research (Tour, France); the 8th International Conference on Quark Confinement and the Hadron Spectrum (Mainz, Germany); the Zakopane Conference on Nuclear Physics (Zakopane, Poland); the 5th International Conference on Exotic Nuclei and Atomic Masses (ENAM'08) (Ryn, Poland); the 2nd international conference «Mathematical Biology and Bioinformatics» (Pushchino, Russia); the International Meeting on PANDA (Ferrara, Italy); the EXA&LEAP 2008 International Conference on Exotic Atoms and Low Energy Antiproton Physics (Vienna, Austria); the ATLAS Physics and Computing Workshop (Protvino, Russia); the EGEE'08 Conference (Istanbul, Turkey); the International Conference on New Aspects of Heavy Ion Collisions near the Coulomb Barrier (FUSION 08) (Chicago, the USA); the 4th International Conference on Materials Science and Condensed Matter Physics (Chisinau, Moldova); the 15th nuclear physics workshop «Marie&Pierre Curie» (Kazimierz Dolny, Poland); the international conference «New Trends in High-Energy Physics» (Yalta, Ukraine); the 21st Russian Particle Accelerator Conference (RuPAC-2008) (Zvenigorod, Russia); the 15th scientific and technical conference «Vacuum Science and Engineering» (Dagomys, Russia); the 5th Interdisciplinary Workshop on the Critical Stability of Quantum Few-Body Systems (Erice, Italy); the international scientific conference «Modeling of Non-linear Processes and Systems» (Moscow, Russia); the Compact Linear Collider Workshop (CLIC 08) (Geneva, Switzerland); the European Cyclotron Progress Meeting (Berlin, Germany); the workshop «Strangeness Polarization in Semi-inclusive and Exclusive Lambda Production» (Trento, Italy); the 12th International Workshop on Advanced Computing and Analysis Techniques in Physics Research (ACAT 2008) (Erice, Italy); the 18th Particles and Nuclei International Conference (PANIC08) (Eilat, Israel); the international conference «Scintillation Materials Engineering and Radiation Technologies» (Kharkov, Ukraine).

DEVELOPMENT OF THE JINR INTERNATIONAL COLLABORATION AND RELATIONS DURING THE YEARS 1975–2008

	1975	1985	1990	1995	2000	2005	2007	2008
1. Number of short-term visits to JINR by specialists from Member States (not counting Russian specialists)	1026	1469	1050	299	425	339	862	888
2. Number of visits by JINR specialists to Member States	474	600	778	682	682	927	921	691
3. Number of conferences organized by JINR	42	49	44	52	54	65	62	60
4. Number of visits to international conferences and research centres of non-Member States	131	119	437	1451	1946	2150	2052	1745
5. Number of visits of scientists from non-Member States	226	144	563	1036	990	733	809	726
6. Number of JINR fellows	11	3	16	28	17	21	19	14

LIST OF CONFERENCES AND MEETINGS HELD BY JINR IN 2008*

No.	Name	Place	Date	Number of participants
1.	International seminar «Modern Problems of Elementary Particle Physics» devoted to the memory of I. Solovtsov	Dubna	17 January	70
2.	Meeting of the Programme Advisory Committee for Particle Physics	Dubna	17–18 January	75
3.	Meeting of the Programme Advisory Committee for Condensed Matter Physics	Dubna	21–22 January	57
4.	Workshop «Physics and Computing at ATLAS»	Dubna	21 January	50
5.	International workshop «Classical and Quantum Integrable Systems»	Protvino, Russia	21–24 January	100
6.	Workshop «Neutrino Physics at Accelerators»	Dubna	23–25 January	42
7.	Meeting of the Programme Advisory Committee for Nuclear Physics	Dubna	24–25 January	59
8.	6th Winter School on Theoretical Physics	Dubna	26 January – 5 February	63
9.	15th international conference «Mathematics. Computer. Education»	Dubna	28 January – 2 February	122
10.	International school-seminar «Pulsed Advanced Neutron Sources» devoted to the 100th birthday of D. Blokhintsev (PANS-III)	Dubna	29 January – 4 February	70
11.	103rd session of the JINR Scientific Council	Dubna	21–22 February	98
12.	18th Meeting of the Steering Committee for the BMBF–JINR Agreement Implementation	Dubna	28–29 February	20
13.	Meeting of the JINR Finance Committee	Dubna	11–12 March	49
14.	Session of the Committee of Plenipotentiaries of the Governments of the JINR Member States	Dubna	14–15 March	80
15.	International conference «Symmetry in Physics» devoted to the 90th birthday of Ya. Smorodinsky	Dubna	27–29 March	49
16.	ATLAS Physics Workshop at JINR	Dubna	21 April	35
17.	12th research workshop «Nucleation Theory and Its Applications»	Dubna	1–30 April	58
18.	International workshop «Heavy-Ion Physics with the ATLAS Detector»	Dubna	12–13 May	17
19.	8th Markov Readings devoted 100th birthday of M. Markov	Dubna–Moscow	13–16 May	60
20.	12th Workshop on Computer Algebra	Dubna	14–16 May	18
21.	International symposium «Trends in Nuclear Physics Research»	Dubna	21–25 May	130
22.	ILC European meeting «ILC Conventional Facilities and Siting»	Dubna	3–7 June	32
23.	Workshop of the Baikal Collaboration	Dubna	3–6 June	46
24.	European School on High-Energy Physics (a CERN–JINR school)	Herbeumont-sur-Semois, Belgium	8–21 June	130
25.	Meeting of the Programme Advisory Committee for Particle Physics	Dubna	10–11 June	80
26.	16th International Seminar on Interaction of Neutrons with Nuclei	Dubna	11–14 June	98
27.	Meeting of the Programme Advisory Committee for Condensed Matter Physics	Dubna	16–17 June	59

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

No.	Name	Place	Date	Number of participants
28.	Meeting of the Programme Advisory Committee for Nuclear Physics	Dubna	19–20 June	54
29.	17th international colloquium «Integrable Systems and Quantum Symmetries»	Prague, Czech Republic	19–21 June	70
30.	13th international conference «Selected Problems of Modern Theoretical Physics» dedicated to the 100th birthday of D. Blokhintsev	Dubna	23–27 June	178
31.	1st School for Leaders of Youth Scientific Units in the Field of Science and Education («Dubna-2008»)	Dubna	23–29 June	120
32.	International Summer Student Practice in JINR Fields of Research	Dubna	29 June – 20 July	72
33.	3rd international conference «Distributed Computing and Grid Technologies in Science and Education»	Dubna	30 June – 4 July	146
34.	12th Scientific Conference of Young Scientists and Specialists	Dubna – Lipnya	4–6 July	56
35.	International conference on theoretical physics «Dubna-Nano2008»	Dubna	7–11 July	120
36.	Higher congress for young scientists, postgraduates and students of CIS countries on modern methods of nano-systems and materials research «Synchrotron and Neutron Techniques in Nano-Systems Research»	Dubna	7–26 July	71
37.	2nd Helmholtz international summer school «Dense Matter in Heavy Ion Collisions and Astrophysics»	Dubna	14–26 July	64
38.	International conference «Symmetries and Spin»	Prague, Czech Republic	20–27 July	68
39.	2nd Helmholtz international summer school «Heavy Quark Physics»	Dubna	11–21 August	75
40.	27th International Colloquium on Group Theoretical Methods in Physics	Yerevan, Armenia	13–19 August	120
41.	International conference «Renormalization Group and Related Topics» (D. Shirkov fest)	Dubna	1–6 September	118
42.	Advanced School on Modern Mathematical Physics	Dubna	7–17 September	87
43.	Nuclear and Radiation Safety Inspectors Workshop	Dubna	9–11 September	15
44.	Workshop «Molecular Simulation Studies in Material and Biological Sciences»	Dubna	10–12 September	37
45.	12th Annual RDMS (Russia and Dubna Member States) CMS Collaboration Conference	Minsk, Belarus	14–19 September	84
46.	NEMO/SuperNEMO Collaboration Meeting	Dubna	15–18 September	50
47.	Winter Practice for South African Students and Postgraduates	Dubna	21 September – 12 October	22
48.	104th session of the JINR Scientific Council	Dubna	25–26 September	66
49.	19th Baldin International Seminar on High Energy Physics Problems	Dubna	29 September – 4 October	186
50.	10th Russian conference «Digital Libraries: Advanced Methods and Technologies, Digital Collections» (RCDL 2008)	Dubna	7–11 October	120
51.	CBM Collaboration Meeting	Dubna	13–18 October	120
52.	International seminar dedicated to the 100th anniversary of birth of I. Frank	Dubna	23–24 October	60
53.	13th Annual Conference of the Operators and Users of the Satellite Communication and Broadcasting Network of the Russian Federation	Dubna	28–30 October	250

No.	Name	Place	Date	Number of participants
54.	Round table meeting «Physics at NICA»	Dubna	5–6 November	61
55.	Meeting of the JINR Finance Committee	Dubna	18–19 November	47
56.	Session of the Committee of Plenipotentiaries of the Governments of the JINR Member States	Dubna	21–22 November	76
57.	12th international conference «Science. Philosophy. Religion»	Dubna	25–26 November	120
58.	Workshop of the Baikal Collaboration	Dubna	2–5 December	47
59.	Chernikov Seminar on Gravity	Dubna	16–17 December	65
60.	ATLAS Physics Workshop at JINR	Dubna	24 December	50
