

PREFACE

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

The All-Union (now the All-Russian) RuPAC conferences have a long history. Academician Alexander Mints raised the flag of these conferences and first four of them were held in Moscow. Since 1976 the conferences took the title of All-Union and were held in Dubna for a period of time. Later they were held in Protvino at the Institute for High Energy Physics. In 2002 the accelerator forum moved to Obninsk to the Institute of Physics and Energy and was held as the All-Russian particle accelerator conference. The abbreviation RuPAC was established there which is traditional for accelerator conferences in the world, like the European EPAC, Asian APAC and American PAC events.

The present conference RuPAC is integrated into the international system, which is called the Joint Accelerator Conferences Website (JACoW), – a world accelerator community, which formally exists under the aegis of international physics unions, has a site with a free access to the library of proceedings of accelerator conferences.

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

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

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

- Modern trends in accelerator development, colliders;
- Particle dynamics in accelerators and storage rings, cooling methods, new methods of acceleration;
- High-intensity cyclic and linear accelerators;
- Heavy-ion accelerators;
- Synchrotron-radiation sources and free-electron lasers;
- Magnetic systems, power supply and vacuum systems for accelerators;
- Superconducting accelerators and technology of cryogenics;
- Accelerating structures and powerful electronics;

- Control and diagnostic systems;
- Ion sources, electron guns;
- Accelerators for medical and industrial purposes;
- Radiation problems in accelerators;
- Injectors.

Several invited overview talks were dedicated to the current status of the world's largest accelerator centres: LHC (CERN), Tevatron (FNAL), Facility for Antiproton and Ion Research (GSI), COSY (FZJ, Jülich), DESY (Hamburg), NIRS (Japan). The national accelerator centres have also become more active: as always, a lot of new achievements and new effects are the result of research at the Budker Institute of Nuclear Physics (Novosibirsk), the U70 synchrotron (IHEP, Protvino) works regularly where the intensity of the extracted beam was achieved up to $2 \cdot 10^{13}$ particles, JINR (Nuclotron, DRIBs), ITEP with the TWAC project, the linear accelerator at INR, Troitsk.

During the conference, excursions were organized to JINR basic facilities: cyclotrons and ion sources of FLNR, medical beams of the Phasotron and LEPTA accumulator (DLNP), Nuclotron (VBLHE). The conference participants actively took part in the excursions, which were provided with the help of all the JINR Laboratories.

Closing the conference, Vice-Chairman of the Organizing Committee I.N. Meshkov said that from the talks of RuPAC'04 the participants, who represented different Russian accelerator centres, we learned a lot about new developed concepts, native recently constructed or modernized facilities and installations, collaboration in international projects. "Today when no country in the world can afford an individual construction of a large modern accelerator, Russia is actively involved in the international collaboration on the basis of originally developed "home" ideas and technologies and "middle-size" accelerators for unique experiments in physics."

All the presented talks will be published as electronic versions at JACoW web site (www.jacow.org), the invited and oral talks will be published in a special edition of the conference proceedings.