OBITUAR Y

Mikhail Grigor'evich Meshcheryakov

Professor Mikhail Grigor'evich Meshcheryakov, an outstanding experimental physicist, a talented science manager, Honorary Director of the Laboratory of Computer Technology and Automation of the Joint Institute for Nuclear Research, Corresponding Member of the Russian Academy of Sciences, died on 24th May 1994.

Mikhail Grigor'evich is one of the famous members of that generation of scientists whose selfless work in the difficult postwar years resulted in the establishment of scientific centres for the research on the physics of atomic nuclei and elementary particles. Whole cities were build for this purpose.

One of such centres, which later became a part of the Joint Institute for Nuclear Research, was formed under the leadership of Mikhail Grigor'evich at a small settlement known as Novo-Ivan'kovo, which later became the city of Dubna.

M G Meshcheryakov was born on 17 September 1910 in the family of a peasant. In 1927-1930 he worked as a turner in a factory in the city of Taganrog and studied at the Physics Department of the Leningrad State University. After graduating from the University in 1936, Meshcheryakov continued as a postgraduate student under the supervision of Professor I V Kurchatov at the Radium Institute of the USSR Academy of Sciences. In 1938 he began to take active part in the commissioning of a onemetre cyclotron and when the cyclotron was working, he studied radiative capture of neutrons with energies above 1 MeV by complex nuclei. In 1940 M G Meshchervakov became head of a laboratory at the Radium Institute. His research work was interrupted by the Second World War. Meshcheryakov volunteered for the army and at the beginning of July 1941 he was already fighting on the Leningrad front.

He was wounded and after leaving hospital he was demobilised in July 1942. He returned to the Radium Institute which was then evacuated to the Kazan University. When the Leningrad blockade was lifted in 1944, M G Meshcheryakov and his colleagues reactivated the cyclotron at the Radium Institute and used it in their research.

In 1946–1947 M G Meshcheryakov was a Soviet expert in the Atomic Commission of the United Nations. On return from the USA he became Deputy Director of the Institute of Atomic Energy and scientific leader of the work on the design and commissioning, in the region of a

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Mikhail Grigor'evich Meshcheryakov (1910–1994)

settlement called Bol'shaya Volga (now in the city of Dubna), of the six-metre synchrocyclotron, which was the largest at the time. He used the experience in the commissioning of the cyclotron in Leningrad and, with a group of colleagues, he solved in the short period of a few years a number of scientific and technical as well as organisational problems, and made research on the syn-chrocyclotron possible.

M G Meshcheryakov worked on a number of research projects on nuclear reactions and the results were used by him in 1950 to defend his doctoral thesis. The successful commissioning of the synchrocyclotron in 1949 was followed by the development of a new field of research in the Soviet Union. The first-class scientific results obtained with the synchrocyclotron made it possible to transform this research centre into the Institute of Nuclear Problems of the USSR Academy of Sciences. M G Meshcheryakov was appointed Director of this Institute.

From 1950 the scientific interests of Meshcheryakov became concentrated in the study of the nucleon-nucleon interactions above the pion formation threshold. The data on the resonant nature of the processes of formation of pions in p-p collisions earned Mikhail Grigor'evich and his colleagues wide acclaim in the world of science.

Another field of research which attracted Meshcheryakov also proved successful: it was the study of the polarisation effects in double and triple p-p scattering at energies in excess of 600 MeV. The results taken as a whole made it possible to determine, in the range of energies hitherto not investigated, the matrix elements and the phases of the p-p scattering. The values of these have later been confirmed on a number of occasions by research carried out abroad and have become the basis of the modern formulation of the one-boson exchange model of nuclear forces.

M G Meshcheryakov initiated the use of magnetic spectroscopy methods in precision measurements of the momentum spectra of charged particles emitted as a result of bombardment of nuclei with protons and high-energy nuclei. This approach yielded a series of new results. The whole programme of research of the structure of nuclei in beams of 660 MeV protons, started by Meshcheryakov, had an important influence on the subsequent development of relativistic nuclear physics.

In 1966 M G Meshcheryakov was given the task of organising a special laboratory (Laboratory of Computer Technology and Automation) at the Joint Institute for Nuclear Research. His task was to develop methods for making use of the latest progress in computer technology and automation in the field of physics of nuclei and elementary particles. With astonishing energy he tackled the applications of computers in research. He quickly formed a team of scientists, who developed the largest, at the time, computer system, as well as automated detectors and measuring instruments. These instruments, together with computer software, are now being used in many branches of science and economy of the country. New technical means with which the Laboratory had become equipped made it possible to carry out on-line experiments with the aid of computers and to analyse large numbers of photographs taken by track cameras.

In his multifaceted scientific and organisational work at the post of the Director of the Laboratory of Computer Technology and Automation Mikhail Grigor'evich regarded as a matter of first importance the need to formulate and develop new promising directions in computer physics, mathematics, and informatics. For example, he strongly supported the development of new methods for the solution of nonlinear problems in mathematical physics and analytical calculations on computers. This enabled the Joint Institute for Nuclear Research to become one of the leaders among the major scientific centres of the world in this respect. Much attention and support was given by M G Meshcheryakov to calculations on a lattice in gauge theories. He was one of the initiators of this scientific direction at the Joint Institute. With his support the Laboratory headed by him began to develop methods for parallel calculations, which had become a powerful instrument in calculations in modern physics.

Mikhail Grigor'evich had been Professor at the Moscow State University since 1953 and he gave much time to the training of young scientists: he supervised postgraduate students and read a course on the physics of elementary particles. He paid much attention to the training of many physicists who are now heading major scientific research teams both at the Joint Institute for Nuclear Research and in the laboratories in the countries which are members who have established the Joint Institute.

M G Meshcheryakov was a member of the Scientific Council on the Use of Computer Technology and Automation Techniques in Experimental Nuclear Physics and a member of the editorial boards of a number of scientific journals.

The creative persona of M G Meshcheryakov, citizen and scientist, included a sense of responsibility for the state of physics. He was a man of high principles and a goodnatured colleague.

The outstanding scientific work of M G Meshcheryakov was recognised by high state awards. He was twice the laureate of the State Prize of the Soviet Union, he received three times the Order of Lenin, as well as other orders and medals from the Soviet Union and from the countries participating in the work of the Joint Institute.

The memory of Mikhail Grigor'evich will always remain in the hearts of his friends, colleagues, and students.

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