



Mikhail Grigorievich Meshcheryakov

17.09.1910 – 24.05.1994

To the 110th anniversary of the birth



A brief illustrated sketch is dedicated to the outstanding experimental physicist, talented organizer of science, head of works on creating the first accelerator in Dubna, one of the founders of the town and the Joint Institute for Nuclear Research



M.G. Meshcheryakov was born on 17 September 1910 in the Sambek village of the Taganrog district of the Don Cossack region. His father, Grigory Dorofeevich, died in 1916 on the Western Front leaving a widow, Nadezhda Osipovna, with four small children. In 1930, combining the work of a grinder at a plant in Taganrog with his studies at the evening workers' faculty, Mikhail Meshcheryakov managed to complete his secondary education and enter the Faculty of Physics of Leningrad State University.

M.G. Meshcheryakov is a student of the Faculty of Physics of Leningrad State University, 1931

After graduating with honors from the university in 1936,

M.G. Meshcheryakov entered a postgraduate course and studied for three years at the Radium Institute of the USSR Academy of Sciences under the guidance of Professor I.V. Kurchatov. In those years, the first one-meter cyclotron in our country was built there, and studies in the field of neutron physics and radiochemistry of the products of radioactive nuclei artificial transformations began.



M.G. Meshcheryakov and I.V. Kurchatov near the first cyclotron in Europe at the Radium Institute of the USSR Academy of Sciences, 1939



M.G. Meshcheryakov near the cyclotron

M.G. Meshcheryakov was formed as an experimental physicist in the atmosphere of research initiated by I.V. Kurchatov, V.I. Vernadsky, L.V. Mysovsky, V.G. Khlopin. In 1940, M.G. Meshcheryakov defended his Ph.D. thesis and became a head of a laboratory at the Radium Institute, which was equipped with the only operating cyclotron in our country and in Europe at that time, accelerating deuterons to an energy of 4.4 MeV.



In 1941, M.G. Meshcheryakov became a volunteer in the people's army, and in early July he was already in the troops of the Leningrad Front. In 1942, after being discharged from a military hospital and demobilized, he got involved in the work on the atomic problem.

The breakthrough of the siege of Leningrad in 1944 allowed M.G. Meshcheryakov and his colleagues at the Radium Institute to start the restoration of the cyclotron and carry out a long cycle of irradiation of uranium blocks in order to elaborate a plant technology for separating plutonium from uranium.



From May 1946 to February 1947, M.G.Meshcheryakov was a scientific observer from the Soviet Union on Bikini Atoll, where the United States performed atomic bomb tests, and after returning from Bikini to New York, he was appointed a scientific expert of the Technical Committee of the UN Atomic Commission.



Celebration of the 200th anniversary of Princeton University, 1946. M.G.Meshcheryakov is the first from the left in the second row



I.V.Kurchatov involved M.G.Meshcheryakov in the discussion and examination of the physical programme of the atomic project. Being the chairman of the commission for testing the equipment of the physical sector at the Semipalatinsk Test Site, M.G.Meshcheryakov participated in preparing a test of the first Soviet atomic bomb on 29 August 1949.



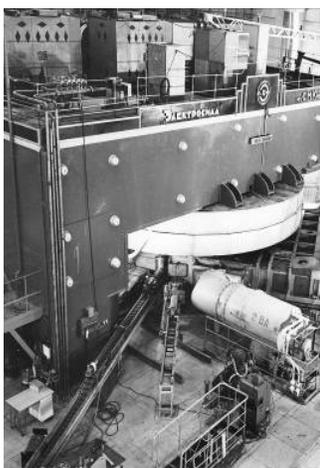
E.Teller, creator of the hydrogen bomb, and M.G.Meshcheryakov. Dubna, 1992

In 1947, M.G.Meshcheryakov was appointed a scientific head of works on designing and constructing the most powerful particle accelerator at that time, i.e. a synchrocyclotron, in the area of the Bolshaya Volga village (now Dubna).

In a short time, he and his colleagues carried out the physical modeling of the new accelerator and successfully solved a number of complex scientific-technical and organizational problems related to the construction of this machine and creation of a scientific laboratory based on it.



Building of the synchrocyclotron. Dubna, 1949



At the end of 1949, i.e. in just two years, the world's largest particle accelerator (a five-meter synchrocyclotron enabling the acceleration of protons to 480 MeV) was launched under the leadership of M.G.Meshcheryakov. The first experiments performed on the synchrocyclotron led to the emergence of a new research area in our country, namely, high-energy particle physics. In 1951, to advance physical studies into the area of even higher energies, M.G.Meshcheryakov carried out a "flash-like" reconstruction of the synchrocyclotron in just a year and a half: the diameter of the magnet poles was increased to 6 meters, and the energy of accelerated protons reached 680 MeV.

Since 1950, the scientific interests of M.G.Meshcheryakov focused on the study of proton-proton and proton-nucleus interactions at energies above the pion production threshold. Another cycle of works by M.G.Meshcheryakov and his staff was related to the detailed study of elastic pp-scattering in the energy range of 460-660 MeV. In the given works, it was shown for the first time that the elastic proton-proton interaction above the pion production threshold had the character of diffraction scattering. In 1953, M.G.Meshcheryakov was elected a corresponding member of the USSR Academy of Sciences.



Scientific sector of M.G.Meshcheryakov



JINR Scientific Council, 1959

The studies of the structure of nuclei using high-energy protons as test particles, performed by M.G.Meshcheryakov in 1955, were highly fruitful.

In 1953, the synchrocyclotron-based research centre under the leadership of M.G.Meshcheryakov was transformed into the Institute for Nuclear Problems (INP) of the USSR Academy of Sciences. In March 1956, INP became a member of the Joint Institute for Nuclear Research, i.e. an international intergovernmental research organization.



M.G.Meshcheryakov and J.Cockcroft (England). Dubna, 1958



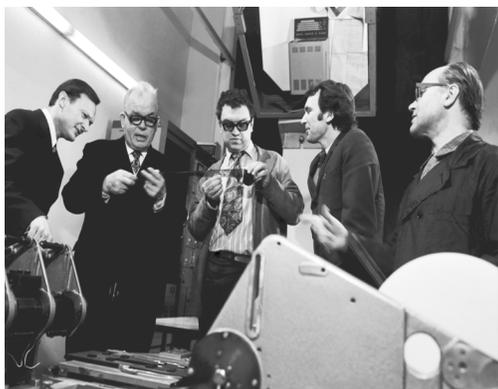
Professor R. Wilson (USA) and M.G.Meshcheryakov, 1976

Applying the largest magnetic spectrometer at that time to analyze nuclear reaction products, M.G.Meshcheryakov and his colleagues discovered a new nuclear process, i.e. the direct knocking-out of deuterons from nuclei by protons with an energy of 675 MeV (registered in the USSR as Discovery N221).

In 1966, M.G.Meshcheryakov headed the work on organizing at JINR a new Laboratory of Computing Techniques and Automation (LCTA) designed to equip scientific research in the field of nuclear and elementary particle physics with modern computing facilities.



M.G.Meshcheryakov presents a model of the new LCTA building, 1976



M.G.Meshcheryakov with the developers of the scanning machine "Spiral Meter". From left to right: R.Pose, M.G.Meshcheryakov, V.M.Kotov, A.E.Selivanov, A.S.Burov. LCTA, 1975

In a short time, at LCTA a large complex of powerful computing facilities was created, high-performance scanning devices and projectors to process images from bubble, spark and streamer chambers were designed, graphic display devices and the equipment for the communication of experimental facilities with computers were developed.



M.G.Meshcheryakov shows the computing equipment of LCTA to the plenipotentiaries of the JINR Member States

M.G.Meshcheryakov devoted a lot of time and effort to scientific personnel training. As a professor of Moscow State University since 1954, he supervised the work of postgraduates and taught a course on elementary particle physics, which aroused abiding interest among the audience.

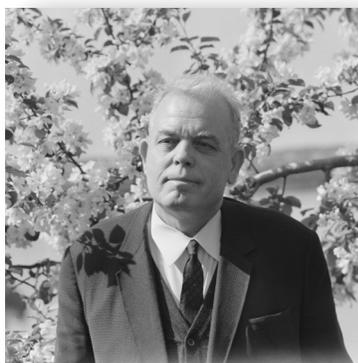


M.G.Meshcheryakov talks with students during the International School on the theory of the nucleus. Dubna, 1992

As a lecturer and a leader of scientific seminars, he had an enormous influence on the formation of many young physicists who later made a significant contribution to world science.

M.G.Meshcheryakov fruitfully combined the scientific activity with social work. In different years, he was a member of the Bureau of the Department of Physical and Mathematical Sciences of the USSR Academy of Sciences, a member of the Scientific Council of the Faculty of Physics of MSU, a member of the editorial boards of the journals "Atomic Energy", "Nuclear Physics", "Journal of Experimental and Theoretical Physics", "Nuclear Instruments and Methods", "Physics of Elementary Particles and Atomic Nuclei", the chairman of the Scientific Council on the use of computing techniques and automation facilities in experimental nuclear physics of the Nuclear Physics Department of the USSR Academy of Sciences.

The scientific activity of M.G.Meshcheryakov was marked with high awards of the JINR Member States. He was a laureate of the USSR State Prize (twice).



Mikhail Grigorievich Meshcheryakov, Scientist and Citizen, was characterized by a sense of responsibility for the general state of physical science in our country, the highest professionalism, the ability to rise above the level of a purely qualitative, descriptive analysis of experimental results, relying on the mathematical apparatus. He was always distinguished by optimism, passion for science, unflagging creative search, the ability to focus on the most urgent problems of physics.



Mikhail Grigorievich with his wife, Lyudmila Vasilievna, and their granddaughters

Bright personality, talent, the ability to quickly perceive new things, along with the openness of character, the capacity to selflessly work as part of a large team – these are qualities essential for everyone...

 M.G.Meshcheryakov, 1987