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PERSONALIA

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In memory of Boris Sergeevich Dzhelepov

The Russian scientific community grieves another painful loss, the death of Boris Sergeevich Dzhelepov, on 22 April 1998 in St.-Petersburg at the age of 88. Dzhelepov was a prominent scientist, a Corresponding Member of the Russian Academy of Sciences, the founding member and the head of the Russian school of nuclear spectroscopy. He was a World War II veteran, a professor of St. Petersburg State University, and the Principal Researcher of the V G Khlopin Research and Production Agglomeration 'Radium Institute'.

We have lost another of that legendary regiment of scientists whose work and talent built the nuclear science and technology of the USSR and the nuclear shield of Russia.

Boris Sergeevich Dzhelepov was born in Odessa on 12 December 1910. He was a student at the Leningrad State University from 1927 to 1931, and then worked at the Leningrad Physicotechnical Institute of the USSR Academy of Sciences at the Alikhanov laboratory. In 1934 he was able to greatly improve the method of preparing artificially radioactive isotopes and presented and brilliantly defended his thesis for Candidate of Physicomathematical Sciences. In this work he studied for the first time the spectra of the nuclei that became known abroad substantially later. In 1935, as an assistant professor of Leningrad State University, he organized the group of young talented physicists (which included such subsequently famous physicists as A M Prokhorov, N A Vlasov and N A Burgov) with whom he continued his research into the physics of nuclei.

During the World War II Boris Sergeevich Dzhelepov served in the navy and took part in the development of ship protection against magnetic mines. In 1944 he joined a group of nuclear scientists who were demobilized from the army on Kurchatov's initiative and took part in the atomic weapons project. But a short time later he returned to Leningrad State University and took on himself the work of training the nuclear physicists that the country needed so badly. The first physicists who specialized in nuclear physics graduated in 1945; in 1946, Dzhelepov's group was transformed into the Department of Nuclear Physics, LSU, one of the first in the country. Dzhelepov chaired it for more than 40 years. In 1945, Boris Sergeevich organized the laboratory of nuclear spectroscopy at the Radium Institute (RI) of the USSR Academy of Sciences. Under his guidance, the nuclear spectroscopy laboratories of Leningrad State University, the Radium Institute and VNIIM turned into great research centres of world importance. On his initiative and under his participation the laboratories of nuclear spectroscopy were created in Dubna and other towns and republics of the former Soviet Union.

Boris Sergeevich designed and constructed a number of original high-precision instruments for studying nuclear radiation and in their time they were the best in the world. Using them Dzhelepov, his disciples and his colleagues in Leningrad, Dubna and other nuclear research centres of the country studied the emission spectra, energy and intensity of nuclear decay into various channels, the shape and boundaries of beta spectra, gamma and conversion spectra, the quantum characteristics of nuclear levels and half-lives of hundreds of unstable isotopes. Dzhelepov not only mined for these data but systematized them and published them as widely known tables of isotopes, handbooks and reviews, well respected the world over. Boris Sergeevich pioneered a broad program of research of nuclei far removed from the stability region. Within this program, the properties of the neutron-deficient isotopes of rare-earth elements were studied, nearly 100 new nuclei were discovered, and much was learnt about the properties of nuclei with high static deformation in Leningrad, Dubna and other towns of the country within the span of 1950s – 1970s. An analysis of journal publications readily shows that about a quarter of the entire research output in nuclear spectroscopy was provided over a long period by the research establishments of the USSR.

Boris Sergeevich Dzhelepov
(12.12.1910 – 22.04.1998)

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Translated by V I Kisin

Boris Sergeevich authored or co-authored nearly 700 scientific publications and more than twenty books. These covered the effects of the atomic electric field on beta decay and fundamental tables for analyzing beta spectra which, together with nuclear decay schemes, are everyday handbooks for the researchers. Boris Sergeevich was one of the first to establish experimentally an upper limit on the neutrino mass. He predicted a new type of decay, proton radioactivity, which was experimentally discovered twenty years later. Somewhat before Mössbauer, he pointed to the promise in observing resonance scattering off the nuclei of a crystalline lattice. His thesis for Doctorate of Physicomathematical Sciences proposed original ideas on the properties of 'mirror' nuclei of different orders.

The annual conferences on nuclear spectroscopy and nuclear structure, first All-Union and then International, convened regularly for nearly half a century, were Boris Sergeevich's unique creation. He was the brain and the fire behind them, the chairman of the organizing committees (and in recent years, their honorary chairman). In some years, these conferences assembled up to 600 scientists from all over world. Owing to his titanic efforts, nuclear scientists were able to meet and to discuss pressing science problems each year, which was a rarity in the USSR. Dzhelepov Conferences carried on the tradition of pre-war All-Union Congresses on nuclear physics. For Boris Sergeevich, the highest priority was to make it possible for young scientists and postgraduates to speak at these conferences and exchange ideas.

Under his leadership or on his initiative, 16 conferences were also convened in Dubna on neutron-deficient isotopes and the theory of the nucleus, as well as nine All-Union nuclear physics schools, eleven All-Union seminars on high-precision measurements in nuclear spectroscopy and several International symposia on selected aspects of nuclear structure were organized in a number of cities around the country. Dzhelepov established a scientific seminar at Leningrad State University, the first such special seminar on nuclear physics in the higher education establishments of the country, which for a long time was open to all Leningrad and played an important role in the development of nuclear physics in Leningrad.

For more than 30 years Dzhelepov was the Editor-in-Chief of one of the leading research journals, "*Izvestiya RAN, Seriya Fizicheskaya*" ('*Izvestiya Physics*'), and worked hard on improving the scientific level of the publications. He was member of numerous science committees and councils in Russia and abroad.

Dzhelepov was exceptional in raising a new crop of researchers. The nuclear departments of the St. Petersburg State University trained more than 1000 highly skilled specialists in nuclear physics. Anyone who went to his lectures will always remember his brilliant, state-of-the-art but at the same time sparkling and engaging presentations. More than 50 people obtained Cand. Sci. (Phys.-Math.) under Boris Sergeevich's direct guidance, nearly 60 of his disciples reached level of Dr. Sci. (Phys.-Math), three became Members of the Russian Academy of Sciences, several are Corresponding Members of RAS, and there are a number of professors, institute directors and laboratory heads. Dzhelepov's tremendous effort brought him a number of awards and distinctions, and for his great contribution to the nuclear weapons program he received a State Prize.

Dzhelepov's name will never vanish from the history of nuclear physics, and his disciples and everyone who knew Boris Sergeevich will remember his brilliant talent and his multifaceted activities to the end of their days.

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