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**TO THE MEMORY
OF VITALII PETROVYCH SHELEST
(15.10.1940–06.06.2020)**



Vitalii Shelest, the well-known Ukrainian scientist and science organizer, physicist-theorist, Dr. Sci. in physics and mathematics, Professor, Corresponding Member of the National Academy of Sciences of Ukraine, promoter of the development of fundamental research in physics of elementary particles and relativistic nuclear physics in Ukraine, passed away on June 6, 2020.

Vitalii Shelest was born on October 15, 1940, in Kharkiv. After graduating from the school in 1957, he became a student of the Faculty of Physics at the Taras Shevchenko Kyiv State University and graduated with honors from the Chair of theoretical physics in 1962. That very year, he entered the post-graduate course at the Institute of Physics of the Academy of Sciences of the Ukrainian SSR. In 1963, he was sent to the Laboratory of Theoretical Physics at the Joint Institute for Nuclear Research (Dubna, Russia), where he continued his post-graduate studies under the supervi-

sion of M.M. Bogolyubov. At that time, Vitalii Shelest executed a cycle of works associated with the solution of the quantum-mechanical and field-theoretic problem of three bodies that favoured the study of the analytic structure of multiparticle partial scattering amplitudes of elementary particles. These works made the basis of his Candidate dissertation “Some issues of scattering in the three-body problem” in 1965.

After the dissertation defense, he was invited to work at the Laboratory of Theoretical Physics of the JINR. In 1965, he and his colleagues proposed the equations that describe strongly interacting elementary particles in terms of the idea of quarks – new (at that time) particles of matter. In 1966, Vitalii Shelest returned to Kyiv and the next year defended his Doctoral dissertation where he considered the description of bound quark states and calculated the electromagnetic currents of baryons in the framework of the relativistic quark model. It should be noted that, after Shelest’s works, this problem attracted the attention of various authors, in particular, the world-famous physicist-theorist Richard Feynman. Though the followers applied somewhat improved methods, the study presented in the Doctoral dissertation by Vitalii Shelest was actually the first one in this very important field of modern theoretical physics. The problem turned out to be so difficult that has not been solved completely until now. But the approaches developed by Vitalii Shelest in the relativistic quark model became fruitful in the consideration of many problems of high-energy nuclear physics. Therefore, it was not surprising that, in 1969, Vitalii Shelest who was under the age of 30, was elected a Corresponding Member of the Academy of Sciences of the Ukrainian SSR.

In 1966, by the initiative of the world-famous scientist Academician M. Bogolyubov, the Institute for Theoretical Physics (now, M.M. Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine) was established in Kyiv. Its activities were aimed at the studies of the most challenging problems in theoretical physics. In the formation of the new Institute, V. Shelest has made a huge organizational work. Since 1967, he was the Deputy Director for scientific affairs and, since 1970, the Head of the Department of Physics of Elementary Particles. Simultaneously, Vitalii Shelest was a Professor at the Chair of Quantum Field Theory of the Taras Shevchenko Kyiv State University, where he lectured the special course "Physics of Elementary Particles". To a great extent, it was owing to Vitalii Shelest that a democratic, free, and creative working climate was formed from the first days of Institute's existence. It favoured lively discussions among young scientists, the exchange of thoughts on current issues in modern physics at the departmental seminars and in informal discussions. When creating the Institute, several well-known Ukrainian scientists were invited to join the staff. But the main scientific contingent of the Institute consisted of young people who strived to find their place in science. All this determined the subsequent development and formation of the M.M. Bogolyubov Institute for Theoretical Physics of the NASU.

Vitalii Shelest was among a few those (at that time) who understood the importance of the international cooperation in the development of science. Not everybody agreed with his viewpoint and shared it. Nevertheless, Vitalii Shelest paid great attention to the collaboration of scientists of the Institute and the leading research centers throughout the world and in the former Soviet Union. Namely his personal efforts promoted and maintained the permanent scientific exchange between the Institute for Theoretical Physics and some universities in the Western Europe and, as they were then called, in the countries of the socialist camp. It should be emphasized that the ideological doctrine existing in the USSR made it extremely difficult and even almost impossible to establish such contacts and to invite foreign scientists to the Institute. But Vitalii Shelest managed to overcome such obstacles for many years. Foreign scientists invited to the Institute gave lectures on topical issues in physics, worked with young researchers of the Institute, and published joint papers in leading foreign

scientific journals. At the same time, Ukrainian scientists obtained the opportunity to get acquainted with the specific features of the organization of the scientific work abroad. It is worth to note the outstanding role of the foreign contacts established by Vitalii Shelest in the formation of the scientific potential of the ITP and in the development of the physical science in Ukraine on the whole.

To a great extent, it was again owing to Vitalii Shelest that a number of international conferences were held in the newly established Institute for Theoretical Physics. In particular, in 1970, the Institute hosted the 15th Rochester Conference (the International Conference on High-Energy Physics), that is the most prestigious international conference on physics of elementary particles. The conference was attended by leading theorists and experimenters, including Nobel laureates. With the support of Vitalii Shelest the first (in 1971) and second (in 1974) International Conferences on Plasma Theory were held in Kyiv. Later they were called the "Kyiv conferences". Since 1976, analogous conferences have been held in various countries around the world, but under the title "Kyiv Conference". Of course, hosting the conferences of such high level contributed to the international recognition of the newly established Institute.

Vitalii Shelest took active part in the foundation of the international journal *Theoretical and Mathematical Physics* and was a member of its Editorial Board for many years.

In 1973, great changes occurred in Vitalii Shelest's life. After the forced resignation of his father P.Yu. Shelest from the post of the First Secretary of the Central Committee of the Communist Party of Ukraine, Vitalii Shelest was oppressed by the new Ukrainian political leaders and was forced to move to Moscow. In Moscow, he first worked at the Steklov Mathematical Institute of the Academy of Sciences of the USSR (in 1974–1976). In the following years, he was the Deputy Director at the All-Union Scientific-Research Institute for Physico-Technical Radio Measurements (in 1976–1982) and, since 1982, at the Research Center for Studying the Surface and Vacuum Properties.

Being outside his native Ukraine, Vitalii Shelest did not break his close ties with Kyiv even for an instant. He took a keen interest in the scientific life of the Institute. Together with the scientists from the Institute, V. Shelest has published several works on

physics of elementary particles and relativistic nuclear physics. Whenever possible, he visited the ITP, communicated with its management, met with his disciples and former collaborators. As a Corresponding Member of the NASU, Vitalii Shelest took active part in the work of the Department of Nuclear Physics and Power Engineering of the NASU. He founded a prize for the young scientists of the ITP of the NASU, which was solemnly awarded to talented young scientists on his behalf. In 2011, to mark his great contribution to the Institute foundation and for significant achievements in theoretical physics, Vitalii Shelest was awarded the title Doctor Philosophie Honoris Causa of the Bogolyubov Institute for Theoretical Physics.

Vitalii Shelest had a wide scope of interests and inclinations far beyond professional field. He had a

profound knowledge of the history of Ukraine and the world history. He was a highly educated intellectual and very fair person.

The grateful memory of Vitalii Shelest, one of the founders of the Institute for Theoretical Physics of the National Academy of Sciences of Ukraine, a scientist, a talented science organizer, a teacher, and an extremely benevolent individual, will remain forever in our hearts.

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