

TO THE 80-TH ANNIVERSARY
OF PROFESSOR V.I. LENGYEL'S BIRTHDAY (1934–2000)



Volodymyr Ivanovych Lengyel was born on April 17, 1934, in the village of Irshava (the Zakarpattya province) in teacher's family. After finishing the secondary school, he entered the Faculty of Physics and Mathematics of the Uzhgorod State University. Volodymyr Ivanovych began his scientific activity as early as he was a student and devoted it to a promising direction in theoretical physics, the theory of elementary particles. His scientific supervisor was Yu. M. Lomsadze, who later became the Professor of the Chair of Theoretical Physics.

The first results obtained by V.I. Lengyel were devoted to the theory of scattering of elementary particles that participate in strong interactions. The analysis of the results obtained enabled him to draw a conclusion that, besides a pseudoscalar π -meson, a well-known carrier of strong interactions, there must

also exist a scalar σ -meson. The hypothesis concerning the existence of a new elementary particle was put forward by Volodymyr Ivanovych for the first time in 1960 and confirmed in 1961 in his further scientific researches at the Joint Institute for Nuclear Research (JINR, Dubna, Russia) together with Academician, in the future, D.V. Shirkov and Prof. V.O. Meshcheryakov. For today, the whole class (family) of scalar mesons is known, which differ from one another by spectroscopic parameters and, together with other mesons – the “carriers” of nuclear forces – take part in various processes of interaction between elementary particles.

In 1962, the young scientist, the first among the physicists from Zakarpattya, obtained an opportunity to continue his scientific researches at the California Institute of Technology (USA) under the supervision of Prof. M. Gell-Mann, the future Nobel winner. His scientific results obtained together with the well-known Prof. J. Mathews were devoted to the so-called sum rules for the amplitudes of elementary particle scattering. His residency in the United States allowed V.I. Lengyel not only to expand the scope of scientific interests, but it also gave him an opportunity to get acquainted with the history, literature, culture, and life of American people more closely.

In 1964, V.I. Lengyel, being an already recognized scientist, was invited to lecture a course of quantum mechanics at the University of Cape Coast (Ghana). From 1965, he continued the scientific and pedagogical activity at his alma mater, occupying the posts of Head of the Chair of General Engineering Disciplines, the Dean of the General-Engineering Faculty, Head of the Chair of Theoretical Physics, and, from 1980 to 1988, Rector of the Uzhgorod University. In 1980–1989, Volodymyr Ivanovych was the scientific supervisor of the Department of the Theory of Elementary Interactions.

The scope of scientific researches carried out by Volodymyr Ivanovych included a number of directions in the theory of nuclear forces. Together with his disciples, he published a series of works that covered all main processes of elastic and inelastic scattering ($\pi\pi \rightarrow \pi\pi$, $\pi N \rightarrow \pi N$, $NN \rightarrow NN$), which form the basis for the theory of nuclear forces.

In 1974, V.I. Lengyel successfully defended his thesis for the Doctoral degree at the Scientific Council of the JINR. The dissertation was devoted to the development of the theory of nucleon-nucleon interaction in the framework of one-boson model. Within that period, three disciples of Volodymyr Ivanovych—namely B.M. Ernst, Ju.M. Maryna, and E.V. Tovtyn—successfully defended their Ph.D. theses devoted to the interaction of π -mesons and nucleons. Further researches dealt with the unification and improvement of various methods in the quantum field theory, among which there were nonlinear chiral Lagrangians, dispersion relations, and the superpropagator regularization method. The results of those researches were summarized in the Ph.D. theses, which his disciples M.I. Gaisak and M.A. Salak (Kosice, Poland) successfully defended at the Specialized academic council of the M.M. Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine.

Further interest of V.I. Lengyel aimed at researches in a wide range of atomic physics problems. The study of the processes of resonance electron, photon, and ion scattering by atomic systems made it possible to substantiate theoretically and initiate experimental researches carried out by Uzhgorod physicists-experimenters. The main results of those researches were published in four monographies and a number of scientific papers in such journals as *Uspekhi Fizicheskikh Nauk*, *Yadernaya Fizika*, *Fizika Elementarnykh Chastits i Atomnogo Yadra*, *Ukrainskyi Fizychnyi Zhurnal*, and others.

Being a person of vast erudition, Volodymyr Ivanovych Lengyel played a large role in the formation and development of theoretical physics in Zakarpattya. He published more than two hundred scientific works, including two textbooks and five books. One of which was published in English by the authoritative publishing house Springer (Germany) and reflected the current state in the development of the theory of electron-atom collisions. Within last ten

years of his life, Volodymyr Ivanovych actively worked in the editorial board of the *Ukrainskyi Fizychnyi Zhurnal* (the Ukrainian Journal of Physics).

What was said above is not a complete summary of the intensive scientific activity of Prof. V.I. Lengyel. However, Volodymyr Ivanovych's merits in the development of science are not reduced to his personal contribution. The works of his numerous disciples are based on his ideas, his style of scientific thinking, and his approach to the solution of scientific problems. The main feature in the scientific style of Prof. Lengyel consisted in his ability to estimate the key character of the problem. The choice of principal research subjects was typical of his attitude to science. Those features of V.I. Lengyel formed the basis of his large recognition by the scientific community.

Our state highly appreciated the scientific merits of Volodymyr Ivanovych. He was a winner of the State Prize in Science and Engineering, the Honored worker of Science and Engineering of Ukraine, Academician of the Higher School Academy of Ukraine.

On September 1, 1999, Volodymyr Ivanovych finished his managerial and pedagogical activity. However, he did not stop his scientific researches: he was unable to rest, because it would contradict the principles and traditions of his life. He continued, on a voluntary basis, to supervise the scientific work of two post-graduate students, who were at the final preparation stage of their Ph.D. theses. On the proposition of Prof. Ben Bederson, the Editor-in-Chief of Physical Review, Volodymyr Ivanovych had written his last, as turned out, book "Electron Scattering on Complex Atoms (Ions)" (jointly with O. Zatsarinny and E. Remeta) published by Nova Science (New York) in 2000.

On January 21, 2000, Volodymyr Ivanovych died. The talented scientist and expert, who was known all over the world and left his mark in theoretical physics, perished. He was the teacher, the public figure, the person of high scientific intelligence, one of the outstanding personalities, whose name is associated with a whole epoch in the formation and development of theoretical physics in Zakarpattya and in our state.

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