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### **IVAN YURIYOVYCH KRIVSKY** (to the 80-th anniversary of his birthday)

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Ivan Yuriyovych Krivsky was born on January 30, 1932 at a town of Khust (the Zakarpats'ka region). In 1950, he finished the secondary school No. 2 at Khust and started his labor activity as a teacher at primary classes of the seven-year school at a village of Iza (the Khust district). In 1956, he graduated with a Honors Diploma from the Faculty of Physics and Mathematics of the Uzhgorod State University (UzhSU). Ivan Yuriyovych was left to work at the University, and, in 1956–1958, he worked as an assistant at the Chair of Substance Structure and Theoretical Physics of the UzhSU. In 1958–1961, he was a postgraduate student at the Chair of Theoretical Physics of the UzhSU, with the Head of the chair and the senior lecturer Yu.M. Lomsadze being his scientific supervisor. After the completion of postgraduate

studies, I.Yu. Krivsky worked at the Chair of Theoretical Physics of the UzhSU. In 1964–1965, he was a senior lecturer at the Chair of General Engineering Disciplines of the General Technical Faculty of the UzhSU and, in 1965–1969, a junior research scientist at the I.M. Frantsevich Institute for Problems of Materials Science of the NAS of Ukraine (Kyiv).

In February 1967, Ivan Yuriyovych Krivsky defended his Ph.D. thesis in physics and mathematics at the Lviv State University. The thesis was entitled “On a possible generalization of modern quantum-mechanical theory”. The first scientific results of the scientist presented in his dissertation consisted in a generalization of quantum mechanics and quantum field theory by sharpening their fundamental statistical character. The author introduced the concept of “truly secondary quantization”. In this generalization, the degree of probabilistic essence of the above-mentioned theories was enhanced by the introducing the concept of probability amplitude for the quantum-mechanical state of a particle. As a result, the model contains the concept of “absolute vacuum” as a state, in which the probability to find something, including ordinary vacuum (i.e. a space without any particles), is identically equal to zero. Today, those fundamental results become challenging again, in particular, in the quantum-mechanical theory of gravitation.

Since January 1969, Ivan Yuriyovych held a position of the senior research scientist at the Problem Laboratory of Physics of Electron Collisions of the UzhSU. In September of that year, he was appointed the Head of the theoretical department at the indicated laboratory.

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In July 1970, I.Yu. Krivsky started his fruitful creative activity as the senior research scientist at the Uzhgorod Department of Hadron Theory of M.M. Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine, where he is working till now and have obtained a lot of new scientific results irrespective of the changes in the title of the department, the scope of problems the department deals with, and its organizational subordination. In 1958–1978, Ivan Yuriyovych actively participated in the organization and the holding of six all-Union and a number of republican scientific conferences on the quantum field theory and the physics of elementary particles in Uzhgorod. In 1979–1981, he worked as the senior research scientist at the Department of Theory of Elementary Interactions at the Uzhgorod Division of the Institute for Nuclear Research of the NAS of Ukraine. This institute served as a basis for the creation of the Institute of Electron Physics of the NAS of Ukraine in 1992. In 1981, Ivan Yuriyovych won a competition for the position of the Head of this department, and managed its activity for 25 years till April 2005. In November 1992, the scientist, together with the whole department headed by him, was transferred to a newly created Institute of Electron Physics (IEP) of the NAS of Ukraine.

The period when he have headed the Department of Theory of Elementary Interactions at the IEP of the NAS of Ukraine for two and a half decades is characterized the most successful scientific, creative, and managerial activity of Ivan Yuriyovych. In February 1983, he was awarded the scientific rank of Senior research scientist. In February 1990, he successfully defended the dissertation “Axiomatic construction of the local and nonlocal field theory and electrodynamics in terms of field strength tensor” for the scientific degree of Doctor of Science in Physics and Mathematics. The dissertation was defended at the Institute of Physics of the Academy of Sciences of the Belarus Soviet Socialist Republic (Minsk). It was a mature scientific work, with the main directions of researches aimed at developing the Wightman axiomatic approach to the quantum field theory and constructing the quantum electrodynamics making no use of the concept of vector potentials, the latter direction remaining challenging till now. In 1992, the publishing house “Naukova Dumka” (Kyiv) published the monograph “Fundamentals of Quantum Electrodynamics in Terms of Field Strengths”, where I.Yu. Krivsky was one of the co-authors. This monograph repre-

sents quite completely the results of I.Yu. Krivsky that develop the fundamental concepts of classical and quantum electrodynamics and form the basis of an original approach to the models in quantum field theory. Ivan Yuriyovych has trained three Ph.D’s; he was also a scientific adviser of one thesis for the Doctoral degree. Under the guidance of I.Yu. Krivsky, the Department of Theory of Elementary Interactions of the IEP of the NAS of Ukraine considerably improved the qualification of its scientific staff. Three Doctors of Science and four Ph.D’s worked successfully and fruitfully at the Department during that period. The department collaborator O.P. Sabad won the State Prize of Ukraine in science and engineering in 1995; two collaborators won the grant “Scientists and teachers” in the framework of the J. Soros International scientific and educational program “Vidrodzhennya” (“Renaissance”). The collaborators of the department successfully mastered and developed a new theme, namely, the theoretical description of electron–atom and ion–atom collisions and elementary processes in atomic shells. It is important that the previous direction of basic researches in the quantum field theory, which had been a well-known visit card of the department since the times of Prof. Yu.M. Lomsadze, was preserved as well. The scientific projects proposed by I.Yu. Krivsky won twice the grants of the State Fund for Fundamental Researches of Ukraine.

After obtaining a scientific pension in April 2005, Ivan Yuriyovych continued to work by contract as a senior research scientist at the Department of Theory of Elementary Interactions of the IEP of the NAS of Ukraine. In December 2009, he was awarded the academic rank of Professor in the speciality “theoretical physics”. In April 2010, the Presidium of the NAS of Ukraine awarded him the decoration of the NAS of Ukraine “For professional achievements”.

At the Uzhgorod State University, I.Yu. Krivsky was engaged into the scientific and educational activity; he lectured on the theory of complex-variable functions, methods of mathematical physics, various general courses in physics, and special courses in quantum field theory. In 1989, Ivan Yuriyovych, as a visiting Professor at the Johann Wolfgang Goethe University (Frankfurt am Main, Germany), lectured a course of lectures in the theoretical physics for post-graduate students and lecturers of that university.

On his way to scientific summits, I.Yu. Krivsky had a chance to work together with many scientists, who

were non-ordinary persons and represented different schools and viewpoints in scientific researches. In particular, these were the Corresponding Member of the NAS of Ukraine V.I. Fushchych, Profs. V.A. Shkoda-Ulyanov, I.P. Zapisochnyi, A.N. Kushnirenko, and G. Draizler. Nevertheless, it was Prof. Yurii Melitonovych Lomsadze who left the brightest trace in the formation of I.Yu. Krivsky as a scientist. Ivan Yuriyovych considers him as the scientific mentor. It was just owing to the creative cooperation with Y.M. Lomsadze that the basic directions of scientific researches by I.Yu. Krivsky had been formed. Moreover, Ivan Yuriyovych managed to preserve, multiply, and transfer to his disciples those principles, which were characteristic of Yu.M. Lomsadze's Uzhgorod scientific school in the quantum field theory and the physics of elementary particles.

The scientific results obtained by Prof. I.Yu. Krivsky comprise his main scientific heritage. The scope of his scientific interests includes the quantum field theory, including the axiomatic one, classical electrodynamics, atomic physics, problems dealing with the relativistic equations of motion and their symmetry, applied mathematics, gnosiological problems of the quantum-mechanical theory of measurements, philosophical and methodological issues of quantum mechanics. As the most deep and valuable of his results, the scientist considers those obtained during last years. These are the introduction of a 29-dimensional extended real Clifford–Dirac algebra and its application to prove the Fermi–Bose dual character of the Dirac, Maxwell, and Dirac–Kähler equations at the level of symmetry of both the equations themselves and their solutions.

The scientific results belonging to I.Yu. Krivsky are well-known in Ukraine, as well as in the near and far abroad, which is evidenced by more than 200 publications, a monograph, and positive citations of those works by other authors. It is important that more than 90 works were published in leading international peer-reviewed and abstracted journals, such as *Physics Letters*, *Nuclear Physics*, *Reports on Mathematical Physics*, *Nuovo Cimento*, *Annales de la Fondation Louis de Broglie*, *Advances in Applied Clifford Algebras*, *Zhurnal Eksperimental'noi i Teoreticheskoi Fiziki* (*Journal of Experimental and Theoretical Physics*), *Teoreticheskaya i Matematicheskaya Fizika* (*Theoretical and Mathematical Physics*), *Yadernaya Fizika* (*Nuclear Physics*), *Atom-*

*naya Energiya* (*Atomic Energy*), *Voprosy Filosofii* (*Philosophical Issues*), *Izvestiya VUZov* (*Bulletin of Higher Schools*), *Dopovidi NAN Ukrainy* (*Reports of the NAS of Ukraine*), *Ukrainskyi Fizychnyi Zhurnal* (*Ukrainian Journal of Physics*), and many others. *Thirty of them were published in the Ukrainian Journal of Physics.*

The papers by I.Yu. Krivsky are widely cited in monographs published in Ukraine and abroad, in various domestic and foreign issues, in particular, *Physical Review*, *Journal of Physics*, *International Journal of Modern Physics*, *Foundations of Physics*, *Annales de la Fondation Louis de Broglie*, *Advances in Applied Clifford Algebras*, *Classical and Quantum Gravity*, *IEEE Proceedings*, *Ukrainian Journal of Physics*, and many others.

Ivan Yuriyovych is now full of new creative plans. He prepares a number of monographs for publication, generates, as usual, original ideas, and produces new more profound and more fundamental results. The 80-th anniversary of the scientist's birthday coincided with the 55 year's anniversary of his scientific activity. Today, a year after his 80-th jubilee, Ivan Yuriyovych enthusiastically continues his fruitful scientific activity. During the last year, he published 18 scientific works, six of which are full-length articles in leading professional journals and collections of works.

Ivan Yuriyovych has always been a humane and affable person, delicate with respect to his colleagues at the Institute and the Department, whom he charges with his vital optimism and creative energy. All his colleagues mark that tolerance and democratism are the main features of his character.

The staff of the IEP of the NAS of Ukraine, the colleagues, disciples, and pupils of Ivan Yuriyovych congratulate him with his birthday. We wish him a sound health, happy family life, joyful relations with his son, grandsons, and great-grandson, the long scientific activity, and the creative enthusiasm for a long time.

On behalf of the staff of the IEP of the NAS of Ukraine, the disciples and collaborators of Ivan Yuriyovych from the Department of Theory of Elementary Interactions and the Uzhgorod National University,

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the leading research scientist  
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