

## ANATOLII VADYMOVYCH SVIDZYNSKYI (on his 80th birthday)



On March 1, the known Ukrainian physicist-theorist and public figure, Doctor of Science in Physics and Mathematics, Professor Anatolii Vadymovych Svidzynskyi was 80 years of age.

Anatolii Vadymovych was born in a town of Mogyliv-Podil'skyi (the Vinnytsya region) in a family of well-educated persons: his father worked as an economist, and his mother was a physics teacher. In 1946, he entered the Lviv Institute of Building-Materials Technology, but, in 1949, transferred to the Faculty of Physics and Mathematics of the Lviv University as a second-year student.

In 1952, Anatolii Svidzynskyi graduated with the first-class honors degree from the physical branch of the Faculty of Physics and Mathematics and became a postgraduate student at the Lviv University. Some part of his post-graduate training passed at the Moscow University under the supervising of the outstanding physicist-theorist and mathematician, Academician M.M. Bogolyubov. Here, he prepared his dissertation entitled "Method of functional integration in the Green's function theory" and defended it in February 1956. It should be noted that never did Anatolii Vadymovych interrupt regular scientific relations with his teacher.

After defending the dissertation, A.V. Svidzynskyi was assigned to work at the Kharkiv Polytechnical

Institute as an assistant at the Chair of Theoretical and Mathematical Physics, where he lectured the basic courses on higher mathematics and mathematical physics. In February 1961, he accepted a new job at a new Institute of Low Temperature Physics and Engineering (ILTPE) of the Academy of Sciences of the UkrSSR. Here, he was elected to and held the position of the senior research associate at the Department of Mathematical Physics. At the ILTPE, A.V. Svidzynskyi carried out a number of important theoretical works in the domain of superconductivity and superfluidity theory. In 1973, he defended the thesis in superconductivity theory for the Doctor's degree. Simultaneously with his work at the ILTPE, Anatolii Vadymovych lectured at the Kharkiv Polytechnical Institute and the Kharkiv University. In 1982, he published the monograph "Spatially Nonuniform Problems in Superconductivity Theory". The book got a high popularity both in the USSR and abroad.

In 1975, A.V. Svidzynskyi passed to the Simferopol University. Here, he was elected to the position of Head of the Chair of Theoretical Physics. During his work in the Crimea, he was engaged to expertize the building of the Crimean atomic power station. After A.V. Svidzynskyi's report on the results of examination, the Presidium of the Academy of Sciences of the UkrSSR made a recommendation to build a thermal power station rather than an atomic one.

In 1993, A.V. Svidzynskyi was appointed Rector of the Lesya Ukrainka Volynsk State University which was formed at that time; nowadays, it is the Lesya Ukrainka Volynsk National University. From 1993 to May 1995, he fulfilled a large work, dealing with the organization of new faculties at the University. In 1995, owing to the state of his health, Anatolii Vadymovych occupied the position of Head of the Chair of Theoretical and Mathematical Physics, where he has been working till now.

The scope of scientific works of Anatolii Vadymovych includes the quantum field theory, the superconductivity and superfluidity theory, statistical physics of condensed systems. His first work was devoted to studying the exact solution of the Bloch–Nordsieck model which approximates the infra-red asymptote of a Green's electron function in quantum electrodynamics. This

model attracted attention of researchers since 1937, but could not be solved mathematically: all known methods turned out inapplicable. In his paper dated by 1956, Anatolii Vadymovych used the method of functional integration, which was new at that time, and obtained a non-analytic dependence of a Green's function on the coupling constant, which allowed the nature of infrared divergences to be revealed. This result was included into a famous monograph by N.N. Bogolyubov and D.V. Shirkov "Introduction to the Theory of Quantized Fields". Later on, the method of functional integration was used by A.V. Svidzynskyi to study the gradient invariance in quantum electrodynamics.

A lot of theorists in Europe and the USSR tried to construct the equations of magnetic hydrodynamics for superconductors. In 1967, Anatolii Vadymovych together with his disciple V.A. Slyusarev found a correct solution of this problem.

The researches of superconducting junctions by Anatolii Vadymovych are widely known in the world. He developed a special quasiclassical method which allowed a number of problems belonging to this direction to be solved. Later on, this method became popular and was used in many works dealing with superconductivity theory.

The author of the method succeeded in applying the quasiclassical equations to study the current states in superconductors. In particular, the problem of the current states in junctions superconductor–normal metal–superconductor remained unresolved for some time and was included into the list of the most challenging and difficult problems composed by the twice Nobel laureate John Bardin. Anatolii Vadymovych solved this problem using an elegant and transparent method. By the way, later on (with a year delay), Bardin and his disciple gave an approximate solution of this problem with the help of numerical methods. But Anatolii Vadymovych's solution was not only easier

methodically, but also exact. It was a "pattern" for a lot of other works executed by various authors.

Anatoly Svidzinsky pays a large attention to the creation of modern textbooks for students of physical and mathematical specialities. It is "Mathematical Methods of Theoretical Physics", three editions of which were published, and now the fourth – much more expanded and amended – edition is to be published. New results obtained by him and his school in superconductivity theory were generalized in a number of textbooks published in 2001 and 2003. The textbooks "Lectures on Thermodynamics", "Introduction to the Special Theory of Relativity", "Lectures on the Physics of Superconductivity" are also ready for publication. Anatolii Vadymovych has scientific interests in the study of culture, to which he devoted the monographs "Self-Organization and Culture" and "Synergetic Concept of Culture". He was a member of two qualifying councils and worked as an expert of the Higher Certification Commission of Ukraine in Physics. He trained eight Ph.D's in Physics and Mathematics.

To mark the scientific merits in theoretical physics, A.V. Svidzynskyi was elected a Honorable Doctor of Science at the M.M. Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine.

The scientific community, the Division of Physics and Astronomy of the NAS of Ukraine, and the Editorial Board of the Ukrainian Journal of Physics wish Anatolii Vadymovych good health, welfare, and new creative successes.

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