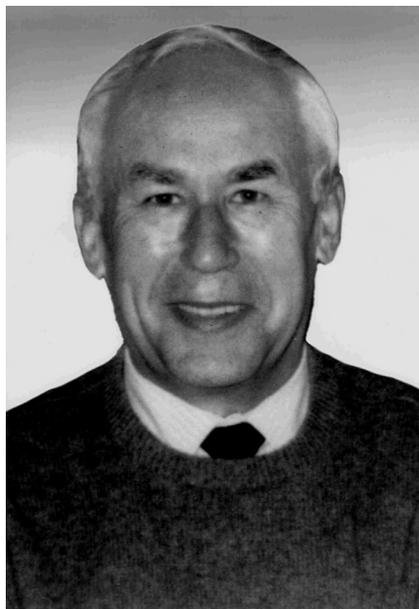

DMYTRO YAKOVYCH PETRINA (to the 75th anniversary of his birthday)



This year, seventy five years passed since Academician of the National Academy of Sciences of Ukraine Dmytro Yakovych Petrina (March 23, 1934–June 20, 2006) – the outstanding Ukrainian scientist in mathematical physics, quantum field theory, and statistical mechanics – was born.

D.Ya. Petrina was a bright representative of the Bogolyubov–Parasyuk scientific school in modern mathematical physics. He enriched the science by outstanding first-class results obtained in the domains of quantum field theory, classical and quantum statistical mechanics, and kinetic theory. Those results include the worldwide known Bogolyubov–Petrina–Khatset theorem on the existence of a thermodynamic limit for the equilibrium states of statistical systems, which makes up the basis of modern mathematical statistical mechanics [3]. D.Ya. Petrina’s works published at the beginning of the 1970s started the mathematical theory of nonequilibrium statistical systems. The classical

theorem by Petrina on the general nature of local commutativity in the axiomatic quantum field theory made the construction of nonlocal quantum theory problematic and determined a whole direction in the development of quantum field theory for a long period. This result is included into every monograph devoted to the axiomatic quantum field theory. The scientist established the validity criteria for spectral representation of scattering amplitudes and derived equations for the coefficient functions of scattering matrix in the quantum field theory, known as Petrina’s equations. He was the first, who solved them in the framework of nonpolynomial Euclidean theory [1]. In his works, such fundamental concepts as the Euclidean operators of creation and annihilation, the Euclidean Fock space, and others have been generalized for the first time.

Statistical mechanics occupies a special place in D.Ya. Petrina’s scientific activity and inheritance. In his pioneer works in this direction, the theory of chains of Bogolyubov equations for infinite dynamic systems was created, and the existence of a thermodynamic limit for nonequilibrium states was proved for the first time [7, 8]. In the comments of known scientists, it was indicated that monographs [7, 8] summarized the results of researches in the Bogolyubov hierarchy theory that were obtained for half a century; therefore, they are recommended as an encyclopedia on those issues. The researches of D.Ya. Petrina in statistical mechanics involved almost all its domains. In last years, he resolved a fundamental problem and substantiated the Boltzmann kinetic equation, which is widely used not only when studying gases, plasmas, and condensed states of many-particle systems, but also to describe various evolution processes in modern technologies and social sciences [9]. He is the author of classical results obtained for the spectra of model Hamiltonians in the spaces of translational-invariant functions introduced by him in the theory of superconductivity and superfluidity

[5, 6]. In a cycle of his last works, D.Ya. Petrina studied the energy spectra of a model Hamiltonian in superconductivity theory. Dmytro Yakovych actively developed this challenge problem till the last days of his life: he began to write a new monograph and left the manuscript of a new article which was published in the Ukrainian Mathematical Journal by his disciples (Ukr. Mat. Zh. **60**, 1243 (2008)).

The body of scientific works by Academician D.Ya. Petrina includes over 170 publications, widely known in the world, among which there are nine monographs and six monographic reviews. The last monograph [9] was prepared by Dmytro Yakovych for publication, but he didn't live to see its release. Here is the summary to this monograph, which well reflects the scientific tendencies of the author: "The monograph is devoted to a challenge direction in the development of modern mathematical physics—the study of evolution equations of many-particle systems in statistical mechanics. The work systematizes rigorous results obtained in this domain within last years and expounds modern methods used to study the evolution equations for systems with an infinite number of particles".

Dmytro Yakovych's course of life – in brief – is as follows. He was born in a village of Torganovychi (the Staryi Sambir district, the Lviv region) in March, 1934, in the family of peasants. After graduating from the secondary school in 1951, he entered the Faculty of Mechanics and Mathematics of the Ivan Franko Lviv State University and graduated from it in 1956, having the scientific specialization "mechanics". At the end of this year, he became a postgraduate student of Prof. O.S. Parasyuk at the Institute of Mathematics of the Academy of Sciences of the UkrSSR. After the termination of the postgraduate study in 1959, he worked at the same institute as a senior research associate. Since 1966 – the year of foundation of the Institute for Theoretical Physics of the Academy of Sciences of the UkrSSR (now, M.M. Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine) – he worked at this institute as a senior research associate. In 1969, D.Ya. Petrina was appointed the head of a laboratory at the Institute for Theoretical Physics. Further, this laboratory became a basis of the Department of Mathematical Methods in Statistical Mechanics founded in 1978. In 1986, the department was transferred to the Institute of Mathematics of the NAS of Ukraine. Dmytro Yakovych remained the head of this department till the last days of his life.

Dmytro Yakovych defended his Ph.D. thesis in 1961, and, in 1969, the thesis for a Doctor's degree at the Institute of Mathematics of the AS of the UkrSSR. In 1988, he was elected Corresponding Member of the AS of the UkrSSR and, in 2006, Academician of the NAS of Ukraine. The scientist's works got a wide scientific recognition; they are marked by the State Prize of Ukraine in the field of science and engineering in 2001 and by the M.M. Krylov and M.M. Bogolyubov Prizes of the NAS of Ukraine.

Science was the main part of Dmytro Yakovych's life. Nevertheless, he was not only an outstanding scientist, but also a born teacher. For thirty years, he had been lecturing on the quantum field theory and the modern mathematical physics at the Faculty of Physics and the Faculty of Mechanics and Mathematics of Taras Shevchenko Kyiv National University. In 1981, he was conferred the scientific rank of Professor at the Chair of Theoretical Physics. Dmytro Yakovych liked to collaborate with his disciples and was able to do it. He founded the scientific school of mathematical statistical mechanics.

The hearts of Dmytro Yakovych's disciples and colleagues keep a blessed memory of him – a talented scientist, teacher, and the patriot of Ukraine.

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