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## IN MEMORY OF IVAN VASYLYOVYCH SIMENOG

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On May 27, 2014, Ivan Vasylyovych Simenog, the known physicist-theorist, Dr. Sci. in physics and mathematics, Professor, the Head of the Department of Applied Problems in Theoretical Physics at the M.M. Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine (NASU), the winner of the O.S. Davydov Prize of the NASU, died after a grave illness.

Ivan Vasylyovych Simenog was born on January 17, 1939, in the village of Kyseli of the Oleksiivsk, now Pervomaisk, district of the Kharkiv region. As early as at school, he revealed extreme abilities to mathematics and the keen interest to physics. After finishing the school, Ivan Vasylyovych entered the V.N. Karazin University of Kharkiv and graduated from it in 1961. He attracted attention of the known physicist-theorist Oleksii Grygorovych Sitenko, who invited the talented student to Kyiv. In 1962–1968, Ivan Vasylyovych worked at the Institute of Physics of the Academy of Sciences of the UkrSSR, and, from 1968, at the Department of Nuclear Theory and Nuclear Reactions of the M.M. Bogolyubov Institute for Theoretical Physics of the NASU, where he successfully defended his thesis for the doctoral degree. Since 1993, he held the position of the Head of the Department of Applied Problems in Theoretical Physics.

The scientific interests of Ivan Vasylyovych covered a wide range of problems in theoretical physics: from plasma theory and nuclear physics to superconductivity theory. His special attention was concentrated on the fundamental problems in the quantum theory of many-body systems with strong and Coulomb interactions, in particular, on the theoretical basis of nuclear physics. Even an incomplete list of the results obtained by him testifies to the scope of his scientific interests; these are the development of the theory of fluctuations in superconductors, the substantiation of the mean-field approximation for Bose and Fermi systems, the development of the strong coupling approximation, the establishment of universal properties for the energy states in many-body systems, and so on. Ivan Vasylyovych elaborated a model-free approach to few-nucleon systems, where the small radius of nuclear forces was substantially used, and, on the basis of this approach, obtained important analytical results. He built the stability diagrams for many-body systems with the strong and Coulomb interactions depending on the interaction intensities and the particle masses and found structural features for the states of the three-particle Efimov effect. He found an exact soliton solution for the Schrödinger equation with a nonlocal nonlinearity and obtained solutions in the low-dimensional cases. Ivan Vasylyovych developed a gas approximation for systems with a finite particle number and, on its basis, carried out the qualitative and quantitative analyses of the structure of few-nucleon systems, analyzed the possibility for multineutron drops and a hypothetical tetraneutron to exist, formulated non-perturbative relativistic equations; developed the isospin-free representation for the problems of theoretical nuclear physics, which essentially facilitates the study of few-nucleon and light nuclei. He studied the structural features of few-nucleon nuclei and multicluster systems in detail, in particular, the lightest halo-type nuclei. A considerable part of his attention was paid by Ivan Vasylyovych to the improvement of the variational methods in precise numerical calculations for systems of particles with various types of interaction. He always tried to confirm his analyti-

cal results by numerical calculations. In due time, in connection with the Chernobyl disaster, he studied the problems of the radioactive pollution migration in soils and water.

Ivan Vasylyovych was not only an outstanding scientist, but also an innate educator. He devoted a lot of time to the pedagogical activity and the training of scientific staff. In 1999, I.V. Simenog was elected the Professor of the Taras Shevchenko National University of Kyiv. He was a supervisor of a doctoral and several PhD theses. His disciples work in various countries of the world. For many years, he lectured in theoretical physics to senior students at the Faculty of Physics of the University.

Ivan Vasylyovych was a man of wide erudition. At various times, he was a member of the scientific council on nuclear physics of the Branch of nuclear physics and power engineering of the NASU, a member of the expert council on physics of the High Attestation Commission of Ukraine (HACU), and a chairman of the expert council on nuclear physics of the HACU. A lot of efforts was put by Ivan Vasylyovych,

while working in the Editorial Board of the Ukrainian Journal of Physics. For his tireless work, he was awarded the decorations of the NASU “For professional achievements” and “For training the scientific youth”.

Ivan Vasylyovych completely devoted himself to science, which was the sense of his life. Till his last days, he has been working with inspiration, spending all the time to obtaining new results. His death is a severe loss for the Ukrainian science and for all who knew and respected him. The blessed memory of Ivan Vasylyovych Simenog – a talented scientist, an educator, an unordinary person, and a faithful citizen of Ukraine – will be kept in our hearts forever.

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