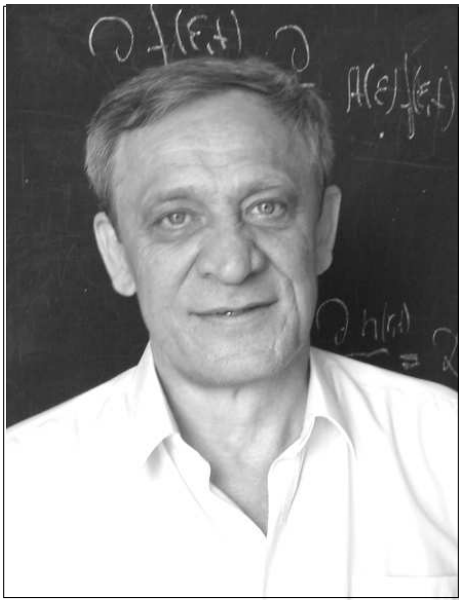
BOHDAN IVANOVYCH LEV
(to the 60-th anniversary of his birthday)



On August 26, 2012, the outstanding Ukrainian physicist Bohdan Ivanovych Lev celebrated the 60-th anniversary of his birthday. Before the consideration of stages of B. I. Lev's scientific carrier, it is important to mention the earlier years of his life. Bohdan Ivanovych's parents were repressed by the Soviet regime and forcibly deported from their motherland to a special settlement situated in the central part of Ural Mountains. In this severe region at the Gubakha village of the Permskii Krai of Russia, Bohdan Ivanovych was born and spent the first years of his life. Later on, the family returned to Ukraine, where Bohdan Ivanovych has graduated from the Starosilsk secondary school as a Gold Medal winner.

In 1974, Bohdan Ivanovych has graduated from the Faculty of Physics of the Chernivtsi State University, where he got his diploma with a distinction. An important part of Bohdan Ivanovych's scientific carrier is closely related to the Institute of Physics of the National Academy of Sciences of Ukraine considered as one of the leading research centers of Ukraine. In 1981, he received the Candidate degree in Phys.-Math. Sci. from this Institute for the thesis "Kinetic phenomena in nematic liquid crystals". Supervised by Professor P.M. Tomchuk, Bohdan Ivanovych has obtained a new important result: he has confirmed the phenomenological theory of nematic liquid crystals from the corresponding microscopical theory. Further results of Bohdan Ivanovych in the physics of liquid crystals have led to the following important contributions to the field: IR-induced periodic phase transitions, rhythmic crystallization of overcooled liquid crystals, low-frequency transformation of nematic drops, noise-induced generation and transformation of dissipative structures, increasing the quantum efficiency of liquid-crystal molecules, and low-frequency stabilization of liquid-crystal structures.

The universal character of Bohdan Ivanovych's knowledge and experience allowed him to make a challenging breakthrough in the semiconductor physics. It is well known that the light-emitting diodes are destroyed due to the action of an electric current. This effect based on the injection-stimulated transformation of defects in semiconductors has been deeply studied by the group of Prof. M.K. Sheinkman in the 1980s. Important results in this field have been obtained with a crucial theoretical contribution from Bohdan Ivanovych together with T.V. Torchins'ka, P.M. Tomchuk, and M.K. Sheinkman.

In 1992, B.I. Lev received the Doctoral degree in in Phys.-Math. Sci. from the Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine for the thesis "Structure formation in nonlinear equilibrium and non-equilibrium media". In the subsequent studies, a new worldwide-recognized field of research, the physics of colloidal liquid crystals, has appeared as a result of the pioneering works by Bohdan Ivanovych and his colleagues. Liquid crystals are characterized by the vector field of a director being the averaged direction of molecules. It turns out that colloidal particles interact with this field similarly to charged particles in electrical fields. Based on such a simple analogy, the corresponding theory has been formulated, which appeared to be the first rigorous description of the colloidal-particle elastic interaction.

Important consequences from this theory have led to theoretical and experimental progress in the physics of liquid crystals. For example, the elastic interactions between colloidal particles result in their self-organization in periodic structures similarly to atoms in crystal lattices. This theoretical prediction of Bohdan Ivanovych and his colleagues has been experimentally confirmed by

many laboratories over the world, including the Institute of Physics of the NAS of Ukraine.

Statistical physics is also a point of Bohdan Ivanovych's special interests. His deep experience in this field has been summarized in the book "Selected Issues of the Physics of Condensed Systems", which is now used by many scientists and students as a guidance in the modern techniques of statistical physics. The contributions of Bohdan Ivanovych to this field consists in the fundamental results related to systems of particles with pairwise attraction and repulsion. An original technique, which was developed by B.I. Lev together with his colleague E. D. Belotsky, resulted in a conclusion that stationary states of such systems can be inhomogeneously structured and form space clusters. Such a behavior is demonstrated by a number of various objects on micro- and macroscales: electrons on the surface of liquid helium, dusty plasma, metagalactic structures, *etc.*

A variety of scientific interests, as well as the strong background in theoretical and mathematical physics, allows Bohdan Ivanovych to get interesting and important results in other fields of research. His famous work about the geometrization of interaction describes an original generalization of the Dirac equation to the case of a curved space-time. The method proposed by Bohdan Ivanovych overcomes the fundamental difficulties inherent in the standard approach. The fundamental questions related to the Higgs boson, cosmology, problem of particle localization, fundamentals of quantum physics, and quantum information processing compose the incomplete list of research topics, to which Bohdan Ivanovych has contributed with certain scientific results.

In 2002, B.I. Lev received the scientific rank of Professor. Starting from 2007, he is the Head of the Department of Synergetics at the Bogolyubov Institute for Theoretical Physics of the NAS of Ukraine. In 2009, B.I. Lev was elected a Corresponding Member of the NAS of Ukraine. A wide background of Bohdan Ivanovych in theoretical and mathematical physics has been recognized by the international scientific community. He is the author of more than 140 scientific publications in high-impact physical journals such as Physical Review Letters, Physical Review A, Physical Review E, *etc.* Bohdan Ivanovych is a permanent participant in the list of top-100 cited scientists in Ukraine. During his scientific carrier, Bohdan Ivanovych has been many times invited as a visiting scientist by leading research centers: York University (Canada), Japan Science and Technology Corporation (Japan), University of Helsinki (Finland).

In addition to his research, Bohdan Ivanovych is involved in the teaching of theoretical physics as a Professor of the Taras Shevchenko National University of Kiev and the National University "Kiev-Mohyla Academy". His fantastic experience includes both standard courses and specially developed courses for bachelor and master students. Bohdan Ivanovych has been the supervisor of 4 candidate dissertations of his disciples, who have successfully defended their theses and now work at Ukrainian and EC research centers.

Among his friends, Bohdan Ivanovych is reputed as a person with sincere and kind heart. Colleagues and students consider Bohdan Ivanovych as a talented ambitious scientist, who seriously contributes to the field of theoretical physics and is still full of energy for implementing his brilliant ideas. His scientific results, knowledge, experience, pedagogical talents, administrative skills, and impressive inspiration make Bohdan Ivanovych a prominent Ukrainian scientist and teacher.

Colleagues, students, and friends of Bohdan Ivanovych Lev heartily congratulate him with the 60-th anniversary of his birthday and wish him good health, scientific inspiration, new challenging results, and new creative and talented students.

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