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***Personalia***

# On 80th anniversary of Vadym Loktev

The prominent Ukrainian scientist, theoretical physicist, renowned organizer of scientific activities, Full member of the National Academy of Sciences of Ukraine, Professor Vadym Loktev turned 80. He faces this anniversary full of strength, energy, new ideas and plans both in physics and in organizing scientific research in Ukraine.

Vadym Loktev was born on May 3, 1945 in Kyiv. He graduated from the secondary school No. 100 in Kyiv where he already settled on his future path — to become a physicist. In 1968, he graduated from the Physical Department of the Taras Shevchenko State University of Kyiv. All of Loktev's scientific activities have been associated with the Bogolyubov Institute for Theoretical Physics of the National Academy of Sciences of Ukraine, where he works since 1967, practically from the very foundation of the Institute itself (the Institute was founded in 1966). He passed all the way from a postgraduate student to the head of the Department of Theory of Nonlinear Processes in Condensed Matter. His supervisor at the institute was Professor Alexander Davydov, and his first research was focused on the photoconductivity of molecular crystals with strong electron-phonon interaction. In general, Vadym Loktev's field of activity covers solid-state theory, in particular, the theory of cryocrystals, magnetic phenomena in solids, disordered systems, and the theory of superconductivity with a special emphasis on the high-temperature superconductivity.

Prof. Loktev suggested a new approach to describing the magnetic crystals with strong single-ion anisotropy, predicted phenomena of biexciton splitting and polarization of spectral lines in the two-particle light absorption region, and a new field-dependent linear magneto-optic effect. He developed a consistent quantitative theory of the absorption spectra of solid phases of oxygen and predicted a non-collinear magnetic structure for one of its low-temperature phases. He also constructed a theory of magnetic impurity systems, in which the local level is located near the edge of the spin-wave zone. Later, he contributed to the Ivanov-Loktev-Pogorelov theory, which predicted anomalous enhancement of infrared absorption in

disordered magnets. V. M. Loktev proposed a quantum theory of linear and nonlinear magnetic properties of magnets with strong spin-orbit interaction. Together with V. G. Baryakhtar and S. M. Ryabchenko, he discovered a new type of magnetoelastic excitation, magneto-bending waves, and developed their theoretical description. He also made significant contributions to the study of high-temperature superconductors, having developed a complete phenomenological theory of their static and resonance properties, calculated critical fields of magnetic phase transitions, and investigated spin excitation spectra. A non-phonon pairing mechanism, the Gaididei-Loktev-Weber mechanism, was substantiated, and together with V. P. Gusynin and S. Sharapov, Vadym Loktev generalized the BCS theory to metals with an arbitrary carrier density. He also proposed a Jahn-Teller pairing mechanism for superconducting fullerites. He developed a theory of high-temperature spatially inhomogeneous Bose-Einstein condensation of magnons. He advanced the theory of domain formation in antiferromagnets, demonstrating that the emergence of equilibrium domain structures in antiferromagnetic systems is a direct consequence of magnetoelastic deformations and boundary conditions of the sample surface. Furthermore, he proved the possibility of impurity level formation in graphene as well as the existence of spintronic properties in non-magnetic systems with helical symmetry.

For over twenty years, V. M. Loktev has served as the Academician Secretary of the Department of Physics and Astronomy of the National Academy of Sciences of Ukraine. His scientific potential, knowledge, experience, and charisma have proven to be highly effective in managing this reputable institution. His proactive efforts, convincing actions, insightful writings, and forward-thinking speeches have brought a much-needed positive trends in the Academy's life. These efforts have helped elevate the status and influence of the Academy within Ukraine's state structure and increased its visibility and recognition in the national information space.

An important aspect of Prof. Loktev's activities is his teaching accomplishments. His pedagogical talent has been evident for decades in training students and postgraduate researchers at the Department of General and Theoretical Physics of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute". His efforts in defending a comprehensive physics curriculum in secondary schools, a critical matter of worldview in today's conditions, are also invaluable. Vadym Loktev's significant contribution to the popularization of science is further reflected in his work with the Great Ukrainian Encyclopedia, where he heads the Editorial board. His esteemed reputation as a highly qualified scientist and brilliant science propagator and communicator, along with his long-standing efforts to comprehensively build up Ukrainian academic science, are widely recognized and appreciated by the state and both national and international academic communities.

Vadym Loktev is a long-standing member of the Editorial board of the Condensed Matter Physics journal and author of highly cited articles published therein. The Editorial board cordially congratulates him on his birthday anniversary and wishes him to continue his success in all areas of his activities.