
60th birthday of Mykola Korynevskii

On January 18, 2008 member of the Editorial Board of “Condensed Matter Physics”, Leading Researcher of the Institute for Condensed Matter Physics, Doctor of Sciences in physics and mathematics Mykola Korynevskii celebrates his 60th birthday. M. Korynevskii is a renowned Ukrainian physicist working in the field of solid state physics, physics of ferroelectrics and disordered systems.

Mykola Korynevskii was born in the village of Movchaniv in the Volyn' province. In 1970 he graduated from Physics Department of the Ivan Franko State University of Lviv receiving a diploma with highest honours. After two years of the GI military service, he started to work in the Lviv Department of the Bogolyubov Institute for Theoretical Physics (Kyiv). His further career was altogether connected with this institution. He worked here first as a junior researcher. In 1977 under the supervision of I. Yukhnovskii and R. Levytskii



he defended his candidate degree (Ph.D.) thesis “Towards a theory of ferroelectric compounds of orthophosphate type” and in 1998 he defended a doctoral thesis entitled “Theory of a ferroelectric transition in systems of interacting clusters” (scientific consultant I. Yukhnovskii). In 1985 he received a scientific title of a senior researcher. During the years 1990–1996 as a deputy director of the Institute for Condensed Matter Physics he considerably contributed to its setting-up and further development.

Dr. Sci. M. Korynevskii belongs to the school of a prominent Ukrainian physicist, academician Ihor Yukhnovskii. A distinctive feature of his research is the analysis of ferroelectrics by a collective variables method, which was elaborated in the context of quantum statistics and successfully applied by I. Yukhnovskii and his followers in various fields. First papers by M. Korynevskii were written in collaboration with Ihor Stasyuk. Together with Roman Levytskii they developed and analyzed the cluster approximation in the theory of ferroelectrics with hydrogen bonds; they were the first to describe the antiferroelectric phase transition as well as to establish the crucial role that long-range intercluster correlations play in implementing this transition. The studies of dynamical properties of ferroelectric systems with the fundamental accounting for short-range cluster-like interactions turned out to be of major priority in the scientific papers throughout the world. These research works originated a methodological basis for utilizing the cluster approximation, which thereafter became the foundation for an important direction of scientific activity at the ICMP, particularly, in the study of thermodynamic, structural and dynamic properties of the crystals of KDP-type.

M. Korynevskii studied the peculiarities of ferroelectric phase transitions in crystals with competing short- and long-range interparticle interactions. In particular, he obtained functional representation of a partition function for the system of interacting clusters and analyzed thermodynamical features of a phase transition.

In order to explain an anomalous behavior of thermodynamic functions in isomorphic crystals of sodium-ammonium sulphur dihydrate, M. Korynevskii proposed a new theoretical model, which generalizes Mitsui model and takes into account the non-equivalency of the active structure elements and their short-range interactions. He analyzed microscopic mechanisms of formation of the low- and high-temperature anomalies in the behaviour of spontaneous polarization, dielectric susceptibility, specific heat. Recently such anomalies were discovered experimentally and a quantitative

agreement between theoretical predictions and experimental data has been established.

Another direction of studies performed by M. Korynevskii is an analysis of structural properties of ferroelectric-antiferroelectric mixtures. Within replica formalism he has obtained phase diagrams, defined regions of existence of paraelectric, ferroelectric, antiferroelectric and spin-glass-like phases. The obtained results may be used in order to interpret physical properties of mixed crystals of $K_x(NH_4)_{1-x}H_2PO_4$ type.

In the best traditions of European science, M. Korynevskii pays much attention to training a younger generation of scientists. He delivers courses to the students of the University of Szczecin (Poland) and Lviv Polytechnic National University (Ukraine) and has written a textbook for students.

Dr. Sci. Mykola Korynevskii is a member of the Scientific Council for defending doctoral dissertations at the Institute for Condensed Matter Physics, member of the Coordination Bureau of the West-Ukrainian Physical Society. He is the author of over 110 publications. On the eve of his 60-ies anniversary he is full of energy, creative plans and enthusiasm. The Editorial Board of the journal "Condensed Matter Physics", his colleagues and collaborators from the Institute for Condensed Matter Physics congratulate him on the occasion of the jubilee and wish him many more years of fruitful scientific activities.