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**FOUNDERS. OUR COMPATRIOTS.
ACADEMICIAN VIKTOR GRYGOROVYCH
BARYAKHTAR (Curriculum Vitae)**

Academician of the National Academy of Sciences of Ukraine Viktor Grygorovych Baryakhtar was one of the first students of Academician Alexander Ilyich Akhiezer. He has made his career from a junior researcher at the Kharkiv Physico-Technical Institute to the first Vice-President of the National Academy of Sciences of Ukraine. The Kharkiv Physico-Technical Institute is the basis of his scientific school, which was further developed in Donetsk and Kyiv. V.G. Baryakhtar is our countryman belonging to a cohort of famous scientists who embody a selfless service for the good of Ukraine.

Keywords: Baryakhtar, scientific schools, theoretical physics.

*We've walked the straight path, you and I,
We have not cheated, compromised
Or lived the very slightest lie...*

T.G. SHEVCHENKO "Fate"¹

Viktor Grygorovych Baryakhtar was born on August 9, 1930 in Mariupol, in a family of the chemistry teacher Grygorii Fedorovych Baryakhtar and the physics teacher Ganna Dmytrivna Paranych. Even when a schoolboy, he had unordinary abilities. According to his autobiographical notes,

"... Owing to my good memory, I studied very easily. Never did I execute oral exercises at home. I remembered everything taught at the lessons, and the time at home was spent only on writing works and compositions. As a rule, I solved exercises in mathematics and physics in my mind, when going home from school. At home, I only wrote down the solutions."

In May 1948, Viktor excellently passed his final exams for the secondary school and was awarded a gold medal.

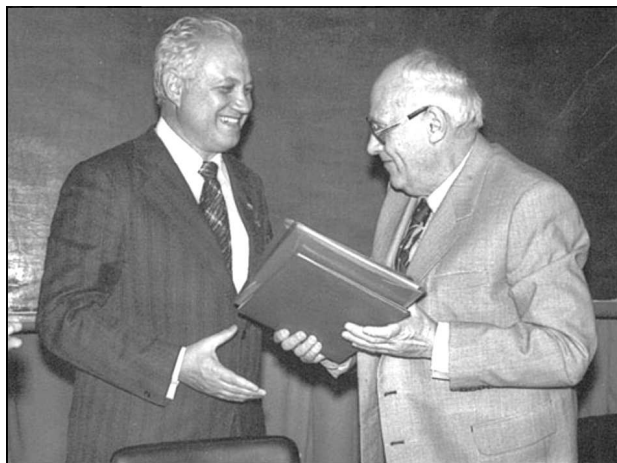
"In July, 1948, I participated in the first 'secret' meeting in my life. A representative of the Fiztekh² told us, the winners of the physical and mathematical Olympiads in Lugansk, about the atomic bomb and that such weapons should also be created in the USSR. He invited us to come to study to Moscow, to the Fiztekh.

Soon thereafter, my school friend Sergei Ermakov gave me, to read for one night, the book by H.D. Smith 'Atomic energy for military purposes'. Immediately, I decided to become a nuclear physicist.

I entered the Faculty of Physics at the Leningrad University. I studied there from September 1948 to November 1951, and I managed to enter the Department of theoretical nuclear physics. Even when a student, I had been working for a year at the Laboratory of nuclear physics headed by Prof. B.S. Dzhelepov. But soon I understood that the experimenter depends very much on many unforeseen circumstances. Actually, as I understand now, the theory was much closer to me...

¹ Translated by John Weir (translator's remark).

² The Moscow Institute of Physics and Technology (translator's remark).



V.G. Baryakhtar congratulates his Teacher Academician O.I. Akhiezer with the 60th anniversary of his birthday (1971)

During the years of my study, I solved a lot of exercises. In particular, I have solved almost all exercises from the 5-volume book of problems in mathematical analysis by Gunter and Kuzmin.”

It was a fortune that, just at that time in accordance with the government decision, the training of a highly skilled personnel in nuclear physics was started at the Kharkiv State University (KhSU). It was done because, in Kharkiv, there was one of the most powerful domestic nuclear physics centers, the Physico-Technical Institute of the Academy of Sciences of the UkrSSR. The best students-physicists from the leading universities of the USSR were transferred to the nuclear department of the Faculty of Physics and Mathematics of the KhSU. In such a way, Viktor Baryakhtar became a student of this university.

“I was fortunate again, because I turned out a ‘student’ of the school of theoretical physics headed by L.D. Landau, whom everybody simply called Dau.

The lectures on physics at the KhSU were given by O.I. Akhiezer, I.M. Lifshitz, L.N. Rosentzweig, Ya.B. Fainberg, and L.M. Pyatigorskii; in mathematics, by O.Ya. Povzner, Ya.B. Blank, B.Ya. Levin, and V.O. Marchenko. As one can see, I had an opportunity to obtain a good education, and I believe that I got it.”

When Viktor Baryakhtar was a fifth-year student, Academician Alexander Ilyich Akhiezer offered the talented student to become his gradu-

ate student. In 1953, V.G. Baryakhtar obtained a diploma of theoretical physicist and, according to the assignment, was directed to the theoretical department of the Kharkiv Physico-Technical Institute headed by his Teacher, Alexander Ilyich Akhiezer. Recalling those times, Viktor Grygorovych emphasizes that “since then – actually, from 1954 to 1972 – I was united through a creative collaboration with a great Man and Master, Alexander Ilyich Akhiezer.”

Alexander Ilyich created the “team” Akhiezer–Baryakhtar–Peletinskii that worked for 16 years in friendship and harmony (1956–1972) and achieved a generally recognized success. I do not know another team, so skilled, that would work so consistently and for so long. From a large number of the results obtained by them together, I selected the following ones:

- the theory of magnetoacoustic resonance in magnets (a discovery certificate in 1956 and the State Prize of Ukraine in 1987);
- the theory of exchange relaxation and magnetic moment relaxation in ferromagnets;
- the quantum-mechanical theory of thermogalvanomagnetic phenomena in metals and semiconductors at low temperatures;
- the formulation of operators for the surface electric current and the surface heat flux;
- the theory of relaxation in rarefied plasma in ultra-strong magnetic fields;
- the theory of beam instability in magnets;
- the theory of high-frequency susceptibility in ferroelectrics.

The same team wrote the monograph “Spin Waves” (the Russian edition was published in 1967, and the English edition in 1968), which remains relevant till now, being widely cited in the scientific literature.

Here are the further milestones of Academician V.G. Baryakhtar’s scientific career in the chronological order:

- 1954–1973: a researcher, the head of the laboratory at the Kharkiv Physico-Technical Institute;
- 1972: the Corresponding Member of the Academy of Sciences of the UkrSSR;
- 1973–1982: the Head of a department, the Deputy Director on scientific work at the Donetsk Physico-Technical Institute of the Academy of Sciences of the UkrSSR;

- 1978: Academician of the Academy of Sciences of the UkrSSR, the member of the Presidium of the Academy of Sciences of the UkrSSR;
- 1980: the member of the American Physical Society;
- 1978–1982: the Head of the Donetsk Scientific Center of the Academy of Sciences of the UkrSSR;
- 1982–1985: the head of the department at the Institute for Theoretical Physics of the Academy of Sciences of the UkrSSR;
- 1982–1989: Academician-Secretary of the Division of Physics and Astronomy of the Academy of Sciences of the UkrSSR;
- 1985–1989: the Director of the Institute of Metal Physics of the Academy of Sciences of the UkrSSR, the head of the Department of theoretical physics at the Institute of Metal Physics of the Academy of Sciences of the UkrSSR;
- 1989–1990: the acting Vice-President of the Academy of Sciences of the UkrSSR;
- 1990–1991: the Vice-President of the Academy of Sciences of the UkrSSR;
- 1991–1993: the Vice-President of the Academy of Sciences of Ukraine;
- 1990–1994: the founder and the first President of the Ukrainian Physical Society;
- 1993–1998: the first Vice-President of the National Academy of Sciences of Ukraine;
- 1995: the founding Director of the Institute of Magnetism of the National Academy of Sciences of Ukraine.

It is also worth emphasizing the eloquent fact that the tactful exactingness and the moral criterion consisting in the attitude to the performed work, which are inherent to Baryakhtar, were introduced at the period of his management.

“One day Landau eloquently explained to me that there is such a phenomenon as a fool in the scientific community. The fool will definitely occupy an executive position and begin to ‘govern scientists’ (Landau’s expression) and ‘drink their blood’.

According to the terminology of Lev Davidovich, this is an abomination, and it has to be fought. The life repeatedly and convincingly demonstrated to me that Landau was absolutely right.”

At present, the academic and managerial activities of Academician V.G. Baryakhtar is an example of the selfless service to Science and Motherland. As



International conference on nonlinear phenomena at the Institute for Theoretical Physics of the Academy of Sciences of the UkrSSR (Kyiv, 1984). From left to right: M.M. Bogolyubov, O.I. Akhiezer, Ya.B. Zel’dovich, V.G. Baryakhtar

an illustrative example, here is a fragment from his autobiographical notes:

“April 26, 1986.

At that time, B.E. Paton was in Hungary. He took me with himself. About the accident³, we have learned from our ambassador. Our Academy of Sciences acted promptly. Already on April 29, 1986, immediately after our return, on the initiative of B.E. Paton, an operative group was organized at the Academy: Academician of the Academy of Sciences of the UkrSSR V.I. Trefilov was its head, V.G. Baryakhtar and V.P. Kukhar were his deputies, and V.D. Novikov was the secretary of the group.

We worked very much and very active. On our own initiative, we began to prepare proposals for the government. One of the problems was the pollution of the Dnieper, the other was the protection of the Kyiv population, and the third one concerned the pollution of the territories adjacent to the Chernobyl NPP and the protection of the people from the iodine attack.

On May 3, 1986, when we obtained a request from O.P. Lyashko, the Chair of the Council of Ministers of Ukraine, about the measures against the consequences of the accident, we already had a prepared document. He was developed under the direct supervision of B.E. Paton. That same day, the proposals of the Academy were sent to the government.

³ The accident at the Chernobyl Nuclear Power Plant (A.T.’s remark).

I want to emphasize that the whole Academy was engaged into the work associated with the Chernobyl accident, actively and vigorously. Especially a lot of work and with the initiative was done by the employees of the Institute for Nuclear Research and the E.O. Paton Institute of Electric Welding, as well as by the Institutes of Physics, Cybernetics, Metal Physics, and chemical institutes. Borys Yevgenovych Paton was undoubtedly the soul and the driving force of all measures...

We worked from 8 am to 9–10 pm from May 29 to October, 1986. We did not feel any fatigue, although we did not take care of ourselves... Every morning at 8:00, B.E. Paton entered Trefilov's office, where our headquarters was located. 'Well, report what has happened during this period (the night was meant),' he asked, and the work started...

Borys Yevgenovych never moralized, this was not his style. However, when mistakes occurred, he spoke with such intonation that it became shameful and regrettable for us."

Now, it is worth reconstructing some little-known pages in the scientific biography of Viktor Grygorovych Baryakhtar associated with the global catastrophe of the 20th century:

"It happened so that, since the eighties, I 'had luck' to deal – at first occasionally, and afterward permanently – with issues of nuclear power engineering: at first in Donetsk, when I was the Head of the Donetsk Scientific Center of the Academy of Sciences of Ukraine, and later in Kyiv. In Donetsk, the issue concerning whether a nuclear power plant could be built in that region was considered on behalf of the regional committee of the Communist Party of Ukraine. In Kyiv, Academician B.E. Paton charged me to analyze a possibility to built 12 blocks of RBMK-1000 at the Chernobyl NPP site. The time was complicated, and the cautious standpoint of our Academy in the intricate issue of where nuclear power plants should be located was not always understood, because it was the time when the nuclear power engineering was rapidly developed.

The situation was even more complicated because of the lack of capacities in the European part of the country to produce electricity for industrial and domestic needs. One of the main energy resources of Ukraine, coal, is concentrated in the Donbass, but its mining became a more and more complicated dangerous task. The ecological situation there became more

and more aggravated. From those viewpoints, we substantiated a necessity to build nuclear power plants.

On the other hand, the nuclear power plants still required a lot of attention, because their safety was not sufficiently high. It was an opinion of the Academy of Sciences of Ukraine. However, officially, the NPPs were declared to be safe. We had to explain permanently the necessity of a balanced approach to the arrangement of nuclear power plants to highest-rank officials, which sometimes were not enough qualified in those issues. But, unfortunately, we could not affect the situation and remained, at first, only the observers of centrally adopted decisions. We had no possibility to perform our own active policy because of all-Union laws and government decisions...

Then the Chernobyl NPP exploded. Of course, it is easy now to talk about what should be done; but, at that time, one had to possess courage in order to take quick and optimal decisions that were really necessary, rather than those according to the established order. In particular, by having adopted – on April 26, 1986 – the decision to evacuate the people from Prypyat to save them, the Central Committee of the Communist Party of Ukraine and the Council of Ministers of Ukraine violated the order, according to which a decision of this kind could only be taken by the Union authorities.

There was no time for thinking. In effect, having executed the decision of the Union authorities, the people were evacuated on April 27. At that time, the opinion of the Union authorities had a priority in everything, including in the issues concerning the arrangement of nuclear power facilities. Here is one of bright episodes, which demonstrates that the authorities completely ignored the scientifically substantiated conclusions of scientists.

Long before the Chernobyl disaster, the President of the Academy of Sciences gave a commission to solve the issue concerning the building of the NPP Chernobyl-2 with 12 blocks. The created committee, which included E.V. Sobotovich and V.M. Shestopalov (today, they are Academicians of the National Academy of Sciences of Ukraine), made a conclusion that 12 blocks-"millionaires" must not be built in one place by any means. The conclusion was pronouncedly substantiated. It was discussed at the meeting of the Presidium of the Academy, and it was supported by the president of the Academy of Sciences of the UkrSSR B.E. Paton. I took the corre-

sponding documents to Moscow. There, a high-rank official from the Minsredmash⁴ told me, 'Your arguments are sound. But the decision has already been made, and it will be fulfilled.' A year later, I met him in Chernobyl and asked, 'Is it worth building Chernobyl-2?' The answer was, 'You found time to settle a score! Now, it is not the time to recall the offenses.' This person got a high irradiation dose in Chernobyl and died early.

Here is another typical episode. One day, I was summoned to the Council of Ministers to report about the post-emergency situation. One of the deputy ministers began to worm information out of me: How could I prove that the situation is very serious? I was talking about the radiation background, about the fuel that left in the destroyed reactor. But he demanded that I should declare them that everything was fine; otherwise, I was a simple panic-monger. Naturally, I flared up, 'Ultimately, you will accuse me of hiding the real situation, so that your children and grandchildren could suffer. Hence, either believe me or do not consult me!' At first, I regretted that I did not restrain myself. But later I realized that only scientists and specialists could significantly help in the elimination of the disaster consequences. So, the real work or, as was said in those days, the war was begun.

The organizing role of the Operational commission, which was urgently created by the Presidium of the Academy of Sciences, can hardly be overestimated. Immediately after the accident, it was an island of confidence in that the looming danger can be prevented. The heads of the republic ministries and departments, as well as the Academy employees, came to us and proposed their solutions of various issues.

The operational commission more or less monitored the situation in whole and entrusted the solution of specific issues to immediate executors, the members of the Academy, to whom we are grateful for their contribution to the struggle for the future of Ukraine. A tribute must also be paid to our ministries that quickly sent us specialists that were absent in the Academy. We fought together. We worked much and selflessly, quickly and courageously. The participation in the elimination of the accident consequences was the same by devotion, irrespective of whether it was the president of the Academy of Sciences or an em-

ployee of an institute, being different only in the level of decision-making...

At the same time, the total amount and the list of works that were performed, while eliminating the consequences of the accident, the role of science in solving the problems posed by the radiation catastrophe, the significance of interaction between the government, scientists, and political forces, as well as the role of socio-psychological factors, remain unknown not only to the world community, but even to the population of aggrieved countries.

Immediately after the accident, the Academy of Sciences of the Ukrainian SSR did everything possible. But it worked under high-stress conditions, which was associated with the lack of data required for making a decision within extremely short terms. I am deeply convinced that the basis of serious successes achieved while eliminating the consequences of the Chernobyl catastrophe was formed by the system of the Academy of Sciences created by B.E. Paton, which united large forces that were unique by their acquaintance in the fundamental and applied science. However, the complex character of the problem and the high situational stress gave rise to a number of mistakes and failures in summer-autumn 1986. In my opinion, the main of them are as follows.

1. Hiding of the information about the disaster scale from the people by the country's authorities and the Minsredmash (i.e. the Ministry of Nuclear Industry of the USSR). As an argument in favor of the necessity to hide the information about the accident, the reasons about the prevention of a panics among the population were put forward. Those reasons really had ground. But the disaster scope turned out so tremendous that it was impossible to secrete it. The resettlement of the population from Prypyat (April 27, 1986) and Chernobyl (May 6, 1986) became instantly known to the people in Ukraine, Belarus, and Russia. At the same time, up to mid-May 1986, the physicians from the Ministry of Health and the mass media were forbidden to inform the population of the USSR about the works carried out to eliminate the consequences of the accident, the accident scale, and the corresponding methods of personal hygiene. The maps of radiation contamination and radiation levels had been classified till 1990. The hiding of the information about the Chernobyl disaster invoked incredible rumors about its possible consequences. As a

⁴ The Ministry of Medium Machine-Building Industry of the USSR (translator's remark).

result, there arose a socio-psychological stress among the population, which could not be estimated quantitatively or qualitatively, as well as a distrust of official information.

2. The authorities of the USSR rejected propositions of the international cooperation to overcome the consequences of the nuclear disaster. Only in 1989, the USSR government applied to the IAEA for an expert assessment of the actions performed to eliminate the consequences of the Chernobyl accident...

The building of a large number of dams at the bottom of the Kyiv Sea (the scientists believed that those dams would delay the propagation of radionuclides) turned out useless. The dams worked inefficiently, and radionuclides were absorbed by the sea mud and suspension. That was why the "dirty" water did not reach Kyiv.

After the people had been evacuated, the buildings in the city of Prypyat should not be decontaminated. Like the wooden cottages in the villages belonging to the thirty-kilometer zone, they had to be destroyed and buried.

Surely, the safety level of modern nuclear reactors is an order of magnitude higher than that of WWERs in the 1980s. However, even at the present development stage, the nuclear power engineering remains a potentially dangerous industry. Therefore, a close cooperation of the government (the decision-making officials) with the scientific and engineering forces of the country is a necessary condition for effective measures to be applied both in the case of normal reactor operation regime and in the case of accident...

Having analyzed the Chernobyl problems, I came to the following conclusions.

1. Superpower natural forces that are used in the nuclear power engineering demand that the working staff at the NPPs should possess a high culture. This term includes not only a deep knowledge of nuclear facilities and nuclear physics, but also a high moral level of the personnel.

2. Any country that applies nuclear energy should possess a system of training and retraining of a skilled personnel for this industry. The nuclear power engineering as a branch of the national economy requires the availability of high-skilled scientific and engineering forces."

In 1989, the Ukrainian scientific community elected Viktor Grygorovych Baryakhtar the Vice-President of the Academy of Sciences of the Ukrainian SSR

and, in 1993, the first Vice-President of the National Academy of Sciences of Ukraine.

In 1991, the Academician organized the Ukrainian Physical Society.

"The matter is that, in every country, the work of physicists at the national (state) and high-school laboratories is coordinated by the Physical society.

We had not such a society, because this function was performed by the Division of Physics and Astronomy of the Academy of Sciences. Our country stood aside of world's organizational structure...

Today, the society has gained strength. The scientists both in Europe and in the USA know about it."

Viktor Grygorovych Baryakhtar always takes care of the training of the young cohort of theoretical physicists in Ukraine.

"Since 1957, on the proposal of Alexander Ilyich, I have been lecturing. First, it was special courses for the students of the Kharkiv University. My first special course was physical kinetics. My lecturing at the KhSU terminated when I moved to Donetsk. At the Donetsk University, I lectured from 1972 to 1982.

On the proposal of the President of the National Academy of Sciences of Ukraine B.E. Paton, I moved to Kyiv. Here, in 1983, I began lecturing at the Faculty of Physics of the Kyiv State University (KSU). I was hired to work at the University not formally, but following all the rules: at the Faculty of Physics, I gave a lecture on physics in the presence of a large number of lecturers and the Dean. Only afterward, I was enrolled in the faculty.

In 1985, I was invited by M.G. Nakhodkin, the Dean of the Faculty of Radiophysics of the KSU (at that time, he was the Corresponding Member, and now he is Academician of the National Academy of Sciences of Ukraine) to lecture at this faculty. I was happy to accept his proposition. Not only a Chair of theoretical radiophysics was created for me, but I was also able to invite those lecturers, whom I would like.

In 1995, the Rector of the National Technical University 'Kyiv Polytechnic Institute' (KPI), Academician of the National Academy of Sciences of Ukraine M.Z. Zgurovskyi invited me to lecture general physics. I recalled that my teacher O.I. Akhiezer also graduated from this renowned engineering university and gladly agreed. At first, I lectured at the Faculty of Physics and Technology. But in 1996, I obtained a proposal from M.Z. Zgurovskyi to organize and head a new, for the KPI, faculty of physics and

mathematics. According to the main idea, this faculty should not only prepare specialists in physics, whose level would correspond to the university one, but also provide a modern level of fundamental training for graduates from all engineering faculties of the KPI. I also agreed to this proposal with pleasure. Now, I have been a Dean of the Faculty of Physics and Mathematics of the KPI for four years, and I lecture a course on general physics...”.

A disciple of Academician V.G. Baryakhtar, the Corresponding Member of the Academy of Pedagogical Sciences of Ukraine Yurii Ivanovych Gorobets agreed to characterize, in more or less details, the results of the scientific, pedagogical, and scientific-managerial activity of his Teacher:

“Viktor Grygorovych Baryakhtar is a prominent Ukrainian scientist, who is known for his excellent results in the physics of magnetic phenomena, solid state physics, and in the solution of ecological problems that arose as a result of the Chernobyl accident.

He began his scientific career in Kharkiv in 1953 under the supervision of O.I. Akhiezer, who was already well-known to world’s scientific community. His first papers were devoted to the calculations of emission processes of gamma-quanta that arise, when atomic nuclei collide with one another and with electrons, and to the problem of vacuum polarization. At that time, those problems were among the most important in quantum electrodynamics.

In 1955, V.G. Baryakhtar together with O.I. Akhiezer and S.V. Peletminskii began to study the spectra of coupled magnetoelastic waves in ferromagnets. They obtained world-level results. It was shown that, in a vicinity of the magnetoacoustic resonance, where the frequencies and the wave vectors of the unperturbed spectra of magnon and phonon vibrations coincide, the magnon and phonon spectral branches undergo a substantial modification.

The further development of those studies stimulated their authors to develop a phenomenological theory, in which the concepts of deformation tensor and magnetization density were applied. This theory generalized and developed further the available phenomenological theory of L.D. Landau and E.M. Lifshitz concerning the magnetism in magneto-ordered crystals. The fundamentals of the theory were expounded by O.I. Akhiezer, V.G. Baryakhtar, and S.V. Peletminskii in their book “Spin Waves”. Today,

this is a classical book in the domain of magnetic phenomena, which is well-known both in our country and throughout the world. It has been cited in hundreds of scientific works that were published in the most prestigious physical journals.

Throughout his life, Viktor Grygorovych was interested in magnetic phenomena in whole and, in particular, in the study of magneto-elastic processes and phenomena. For instance, together with his disciple D.A. Yablonskyi, he showed that the magnetoelastic gap emerges due to the spontaneous symmetry violation. Together with V.M. Loktev and S.M. Ryabchenko, the scientist proved that the magnetoelastic interaction can substantially modify the vibrational spectra of thin magnetic films.

Viktor Grygorovych together with his disciples I.M. Vitebskyi, Yu.G. Pashkevych, V.L. Sobolev, and V.V. Tarasenko created the theory of coupled magnetoelastic oscillations in vicinities of the magnetic spin-orientation phase transitions. In particular, it was shown that, in definite cases, owing to the coupling between magnetic and elastic oscillations, the “softening” of the elastic moduli and the emergence of a magnetoelastic gap in the vibrational spectrum are possible.

In the 1960s, Viktor Grygorovych Baryakhtar together with O.I. Akhiezer and S.V. Peletminskii developed a macroscopic theory of magnetic moment relaxation in ferromagnets.

In the 1980s, he formulated a generalized approach to the construction of relaxation terms in the Landau–Lifshitz equation for the motion of a magnetization in ferromagnets with regard for the exchange spin-spin and spin-lattice interactions. On the basis of this approach, Viktor Grygorovych built an exchange relaxation term, which was called the Baryakhtar relaxation term. Those results helped Viktor Grygorovych to explain a substantial difference between experimental data obtained in the framework of different methods concerning the magnetization relaxation in ferromagnetic thin films with the domain structure, in particular, the mobility of magnetic domain boundaries obtained within the ferromagnetic resonance method.

It should be noted that Viktor Grygorovych pays a particular attention to the physics of static and dynamic phenomena in spatially inhomogeneous ferro-, ferri-, and antiferromagnets. Those studies brought about results that have already become classical: the

research of the so-called intermediate state of antiferromagnets in vicinities of phase transitions of the first kind (the State Prize in 1972). This issue was dealt in a large cycle of works carried out by Viktor Grygorovych together with O.O. Galkin, A.E. Borovik, V.O. Popov, E.P. Stefanovskyi, V.F. Klepikov, and others.

V.G. Baryakhtar paid also a much attention to the study of thin magnetic films with the perpendicular anisotropy. In such films, there may exist cylindrical magnetic domains (CMDs). In many aspects, they are similar to two-dimensional interacting particles and are characterized by an effective mass. They can move along the magnetic film. They can be controllably created and destroyed at the required places of the film. Those CMD features are used to record and read data in information systems. In Donetsk, Viktor Grygorovych created a team of enthusiasts, who, under his supervision and with his direct participation, made a lot to develop the physics of such magnetic structures and the practical implementation of films with CMDs.

A pioneering study was the study of the properties of magnetic solitons carried out together with B.O. Ivanov and O.L. Sukstanskyi. Among the most important results obtained in this direction, we should mark the development of the theory of Cherenkov sound emission by domain boundaries moving at sufficiently high velocities.

Viktor Grygorovych together with Igor Viktorovych Bar'yakhtar was the first who formulated the idea of describing the gas of domain boundaries in magnets with the help of nonequilibrium thermodynamics. They also constructed the kinetic theory of a soliton gas, which is undoubtedly a priority achievement at the world level in modern nonlinear physics.

The scientific activity of Viktor Grygorovych is very versatile. He made a significant contribution to the development of plenty of physical domains, both personally and together with his teacher O.I. Akhiezer. To understand this, it is sufficient to mention some of the brightest results of the world level. Among them, there is the method of calculating collision integrals in plasma in a strong magnetic field, the microscopic theory of thermogalvanomagnetic phenomena in metals and semiconductors, the thermodynamic properties of superconductors (thallium, indium, rhenium) at a phase transition of the 2.5 kind, the specific features in the electron state density at

a change in the Fermi surface topology, the further development of the pseudopotential concept for normal and superconducting metals, relaxation processes in superconductors, and the theory of cylindrical domains in ferrofluid films. This list of physical domains and outstanding scientific results obtained by Viktor Grygorovych is far from being complete. For instance, it is worth mentioning his role in solving the ecological problems of the Chernobyl zone, the study of metals in electrolytes in the magnetic field, and so forth. The clearness of problem formulations and the choice and application of modern theoretical and mathematical approaches and models that are adequate to a specific research characterize him as a comprehensively talented explorer.

When talking about such a person as Viktor Grygorovych, his scientific activity cannot be considered separately from the pedagogical one. His whole life is a combination of researching and lecturing at the universities: first in Kharkiv, then in Donetsk and Kyiv, and at present at the National Technical University of Ukraine "Kyiv Polytechnic Institute".

He developed an effective system aimed at the selection of talented students, with whom he begins to work even at the university. At the third year, the students are proposed to try to pass the Ph.D. exams within the scope of the course of theoretical physics by Landau and Lifshitz, to solve a problem that is really available today in that or another area of physics and, of course, requires more knowledge than the student possesses at that time. This approach enabled Viktor Grygorovych to attract young people and engage them into serious scientific works.

The effectiveness of those methods is confirmed by the fact that many disciples of his scientific school achieved significant scientific results already at the young age (among them, there are dozens of Dr.Sci.'s and half a hundred of Ph.D.'s, including academicians and the correspondent members of the National Academy of Sciences of Ukraine). Those achievements were favored by the atmosphere of benevolence, humanity, and creative search, which always surrounded those scientists who worked earlier and work today together with V.G. Baryakhtar.

As a result, the academic, scientific, and managerial activities of Academician Viktor Grygorovych Bar'yakhtar were deservedly evaluated by the scientific community both in Ukraine and in the world; in particular,

- 1972: the State Prize of Ukraine in science and engineering for the cycle of works “Discovery, theoretical and experimental study of the intermediate state of antiferromagnets”;
- 1971: the order of the Red Banner of Labor;
- 1978: laureate of the K.D. Sinelnikov Prize of the Academy of Sciences of the UkrSSR;
- 1980: the title of the Honored Scientist of Ukraine;
- 1985: the winner of the M.M. Krylov Prize of the Academy of Sciences of the UkrSSR;
- 1986: the order of Lenin, the State Prize of Ukraine in science and engineering for the cycle of works “Discovery and study of dynamic phenomena associated with phonon interactions in magnetic crystals”;
- 1993: the laureate of the M.M. Bogolyubov Prize of the National Academy of Sciences of Ukraine;
- 1994 and 2000: the honorary award of the President of Ukraine;
- 1994: the memorial medal of the Pope John Paul II;
- 1998: the order of Prince Yaroslav the Wise of the V degree, the Miner’s Glory order of the I degree;
- 1999: the State Prize of Ukraine in science and engineering for the creation of the ecopolis of Slavutych as a way to radiation-economic rehabilitation of the territories contaminated owing to the Chernobyl disaster, ensuring the trouble-free operation of the plant, its decommissioning, and bringing the Shelter object to an ecologically safe state;
- 1999: the M.M. Bogolyubov International Prize of the Joint Institute for Nuclear Research (Dubna, Russia);
- 2000: the Prize of the International Federation of Scientists and the Saint Valentine Catholic Foundation (Italy);
- 2010: the title of the Hero of Ukraine.

However, Viktor Grygorovych Baryakhtar is not only an educated specialist with an encyclopedic knowledge, but he is also an intellectual with a high internal culture, for whom to bring good is a sincere need of his soul. He knows well the world and national history, being interested very much in the history of science. When being young, his hobby was the mountaineering and boating.

Till today, Viktor Grygorovych remains to be a modest person sensitive and democratic in communication.

In his opinion, “there were four people who played a very important role in my life after the student years. First of all, this was Alexander Ilyich Akhiezer. In Hebrew, his name means ‘the brother of help’. He always helped me as if I were his son. Still for a long time, I will check my actions with his moral standards.

Academician Landau. Although I communicated with him during only three years, he had a great influence on myself. As I already mentioned, he liked teaching not only to what is important in science, but also to how to “live” and what to do to be happy. Our conversations with him about science and about life still remain in my memory.

In 1961, the scientific fate led me to Academician N.N. Bogolyubov. Everybody knows that he was one of the most prominent physicists and mathematicians of the 20th century. He did not like sermonizing and never made long reprimands. He demonstrated with his own example how to live and how to work. From our first meeting and till the last days of his life, Bogolyubov gave me a lot of attention and support.

The lessons from Borys Yevgenovych Paton are of particular importance for me: in science, in civic stand, and in personal behavior. First of all, I would like to note that he never lectured me. In this sense, Paton is a direct opposite to Landau, he is closer to Bogolyubov. Boris Yevgenovych propagates his viewpoints not at lectures, but in practice, in the process of solving specific problems...

All those lessons are undoubtedly very important to me.”

Hence, the fortune of Viktor Grygorovych Bar’yakhtar not only gave him the talents of a researcher and a science manager, but it also met him with outstanding teachers, the remarkable persons of the 20th century.

NB: In 2010, a jubilee monograph “Viktor Grygorovych Baryakhtar. Life in Science” was published with the assistance of the National Academy of Sciences of Ukraine and the National Science Center “Kharkiv Institute of Physics and Technology” of the NAS of Ukraine. In this book, the important scientific contribution made by Academician V.G. Bar’yakhtar to the world treasury of knowledge and the development of physical science in Ukraine was discussed by the members of the Presidium of the National Academy of Sciences of Ukraine, his disciples, colleagues, and the members of his family.

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ФУНДАТОРИ. НАШІ СПІВВІТЧИЗНИКИ.
АКАДЕМІК ВІКТОР ГРИГОРОВИЧ БАР'ЯХТАР
(Curriculum vitae)

Резюме

Академік Національної академії наук України Віктор Григорович Бар'яхтар – один із найперших учнів академіка Олександра Ілліча Ахієзера – пройшов шлях від молодшого наукового співробітника Харківського фізико-технічного інституту до першого віце-президента Національної академії наук України. У Харківському фізико-технічному інституті – підмурівок його наукової школи. У Донецьку та Києві наукова школа академіка В.Г. Бар'яхтара набула розбудови. Наш співвітчизник зі когорти славетних учених, котрі уособлюють безкорисливе подвижництво на добро України.