Leonid Shemetkov.
His entire life devotion

A. N. Skiba, V. S. Monakhov, M. V. Selkin, N. T. Vorob'ev, V. N. Semenchuk, A. F. Vasil'ev

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Abstract.

It is given a short scientific biography of Professor L. A. Shemetkov.

Leonid Alexandrovich Shemetkov was born on July 3rd 1937 in Gomel. He presented his Doctor's thesis in Mathematics at the age of thirty-one. The thesis presentation was held in Kiev at the Institute of Mathematics of the Academy of Sciences of Ukraine. The opponents were corresponding member of the Academy of Sciences of the USSR M. I. Kargapolov (Novosibirsk), corresponding member of the Academy of Sciences of the Ukrainian SSR S. N. Chernikov (Kiev) and Professor B. I. Plotkin (Riga), all of them being outstanding algebraists. Doctor's degree at a young age, and even in Mathematics is an uncommon phenomenon. No wonder that even during his thesis presentation L. A. Shemetkov was invited to head the department in the University of Kiev. But he stayed in Gomel. After all, here he was born, left school, graduated from the Institute, got his Master's, became a scientist.

Science knows a number of cases when a rare mathematical genius of a man is already in his youth, allowing one to achieve great results. But all these happy occasions, as a rule, are not only due to capabilities of young mathematicians, but the favorable external circumstances, i.e. the atmosphere of scientific research surrounding them since childhood (not coincidentally among the prominent mathematicians there are often members of several generations of the same family), studying at university with long mathematical traditions.

In the family of Leonid Shemetkov there were hereditary peasants, his grandfather was a worker, and his father was a military. In the late

1950s there were no famous scientists who taught at Gomel Pedagogical Institute. "I never saw a single live professor for five years of my study," recollected Leonid.

The turning point in the fate of L. Shemetkov was his acquaintance with Professor S. A. Chunihin who had moved to Gomel from Tomsk and headed the Department of Higher Mathematics in the newly created Belarusian Institute of Railway Engineers. S. A. Chunihin graduated from Moscow University, was a disciple of legendary academician O. Yu. Schmidt. A great scientist, a man of high culture and education, Academician of Belarusian Academy of Sciences S. A. Chunihin became for L. A. Shemetkov a real university. Postgraduate studies (1959-1962) under the leadership of S. A. Chunihin were successful, two research papers of a young scientist were presented by Academician A. I. Maltsev for publication in the journal "Proceedings of the Academy of Sciences of the USSR", he performed his scientific message at the All-Union Algebra Conference in Kiev. Post-graduated, in 1962 L. A. Shemetkov became a juniour research assistant in Gomel laboratory of the theory of finite groups of the Institute of Mathematics of the Academy of Sciences of the BSSR. The laboratory was set up by S. A. Chunihin. In 1964 L. A. Shemetkov became a Candidate of Sciences (Physics and Mathematics), the thesis presentation was held in Ural University, Sverdlovsk.

Having presented his Doctoral thesis the research activity of L. A. Shemetkov increased dramatically. In 1966 he participated in the International Congress of Mathematicians in Moscow, published a number of major works in the most prestigious journals ("Mathematical Sbornik", "Isvestiya AN USSR", "DAN AN SSSR"). A. G. Kurosh, the leader of Soviet algebraists and Head of the Department of Algebra in Moscow State University, called L. A. Shemetkov worthy of a doctoral degree. Finally, in 1969 five years after his Candidate thesis presentation L. A. Shemetkov presented his Doctoral thesis. Then he continued working in the same laboratory but as a seniour research assistant and giving lectures to the students of Gomel University, founded in 1969 on the basis of the former Pedagogical Institute named after V. P. Chkalov.

The name of L. A. Shemetkov became well-known far beyond the borders of our country. It is known that one of the engines of mathematics is that one scholar sets a task, and another one solves it. In 1947 corresponding member of the Academy of Sciences of the USSR D.K. Faddeev in the journal "Reports of the USSR" set a problem of listing finite biprimary groups with a Sylow subgroup of prime order. Since then, many algebraists tried to find the solution, but of no result. And 21 years after it was solved by L. A. Shemetkov. Another achievement of Leonid Shemetkov's, which brought him widespread international acclaim, is

connected with the problem of existence of additions to normal subgroups. That issue had a long history, and the first important result here was obtained at the beginning of the 20th century by I. Schur, a native of Belarus, who became Professor at Berlin University. In 1952 German mathematician W. Gaschutz solved the problem of additions in the commutative case; in 1958 another German mathematician H. Wielandt in his report to the International Congress of Mathematicians in Edinburgh drew attention to the importance and difficulty of the problem of additions in the non-commutative case. The solution to this problem was obtained by L. A. Shemetkov. His theorem entered the monographic literature and is widely used by mathematicians all over the world, in particular, it has found accurate applications in the doctoral theses of A. Yu. Olshansky and D. I. Zaitsev, and is quoted in many publications.

In the 1960s the science of algebra undertook great changes connected with the emergence of a set of new research directions, in particular, the theory of classes of finite groups and its branches, i.e. theory of formations, Fitting classes and Shunk classes. Having caught that trend after his Doctoral thesis presentation, L. A. Shemetkov along with his disciples began to develop that algebra trend, which was new for the USSR, and first of all the theory of formations of finite groups. At the very beginning of his work in that area he achieved remarkable results, i.e. he solved the well-known problem of formation stability taking its routes from classical results of F. Hall, L. A. Kaluzhnin and R. Baer, obtained delicate characterization of supersoluble groups, found the conditions for complementarity of coradicals, spread the theory of formation normalizers over arbitrary finite groups, etc. During that period (the year of 1974) L. A. Shemetkov developed the most common method of building formations with the help of group functions. Within that method he introduced compositional formations into mathematical practice for the first time, those formations along with Gaschutz local formations became the main objects of research, being of high importance for applications. It should be noted that subsequently compositional formations were named Baer local formations, which was unfair, after the publication of Doerk and Hawkes's monograph "Finite soluble groups" in 1992 on the basis of an unpublished paper of Baer's. Throughout his scientific career L. A. Shemetkov came back to the problem of functional method of building of classes of groups many times, and along with his disciples A. N. Skiba and N. T. Vorob'ev brought it to perfection and maximum applicability. In 2010 in the article published in the journal "Fundamental and Applied Mathematics" (Moscow State University) L. A. Shemetkov finished the development of the method of functional formations task.

A new period in the life of L. A. Shemetkov began in 1977 when Rector of Gomel University B. V. Bokut invited him to work as a Vice-Rector. More than 12 years he worked in this position, giving his strength and knowledge to the development of the University. At the same time L. A. Shemetkov made a series of reports at major algebraic conferences. He continued carrying out his research, supervised post-graduate students and the work of the seminar "Theory of classes of finite groups", and whenever he had a minute (mostly during nights) he was working on a long-planned book "The formations of finite groups". Immediately after the publication of the book "The formations of finite groups" in "Nauka" (Moscow, 1978), it caught the attention of many foreign scholars and was discussed at algebraic seminars in Germany, England, Spain, and China. On issuing the monograph L. A. Shemetkov revealed such a peculiarity of his scientific talent as generating new ideas and setting new problems stimulating the developmet of algebra. In his monograph "Formations of finite groups" L. A. Shemetkov set 26 unsolved problems. We should mention that later solving those problems formed the basis of Doctoral theses and many Candidate theses of soviet and foreign algebraists. The results obtained gave way to the development of a set of new branches of the theory of classes of finite groups, i.e. algebra of formations, the theory of generalized subnormal subgroups, minimal non-F-groups, the generalized Frattini theory and the subgroup functors theory. They also enriched Algebra with a set of new terms (H-critical, lattice formations, Shemetkov formations, superradical formations and others).

In the 1980s L. A. Shemetkov revealed another peculiarity of his scientific talent that characterized him as a great scientist. That was his ambition to broaden the theme of the research, to find the applications of the results and methods obtained not only to the studies of finite groups but also to algebraic systems of an arbitrary nature. During this period L. A. Shemetkov with A. N. Skiba created a new trend in Algebra, i.e. the theory of formations of algebraic systems, the foundations of which are presented in the book "The formations of algebraic systems", published in "Nauka" (Moscow, 1989). The ideas and results of this book have been used in many authors' studies on the theory of formations of finite-dimensional Lie algebras, multirings, the theory of n-groups, Ω-groups and on the theory of formal languages (A. Ballester-Bolinches, Ch. Behle, A. Krebs, S. Reifferscheid, J.-E. Pin, X. Soler-Escriva and others).

In 1980 L. A. Shemetkov was elected Corresponding Member of the Academy of Sciences of the BSSR, in 1989 he became Rector.

As the head L. A. Shemetkov did a lot for the development of Scoryna Gomel State University. We should mention, in particular, "French-Belarusian Institute of Management" (which is unique for Belarus), foun-

ded in 1995 in conjunction with the University of Clermont-Ferrand (France). The essence of this institute, L. A. Shemetkov took personal part in its development and implementation, is that the best students complete two curricula: GSU curriculum and the University of Clermont-Ferrand curriculum. These students are trained each year in France, attend lectures given by French professors (in French) both in Gomel and in Clermont-Ferrand, and graduate with two diplomas - Belarusian and French.

L. A. Shemetkov created the world-known scientific algebraic school in Gomel. Since 1968 Gomel has hosted international algebraic conferences with the participation of foreign mathematicians. Famous German mathematician Professor Gaschutz from Kiel after his retirement presented his scientific mathematical library to Gomel University. This was done in recognition of Gomel algebra school. Gomel scientific school headed by L. A. Shemetkov has trained more than 70 Candidates and Doctors of Sciences. Due to this mathematical departments of many universities of Gomel and other cities in Belarus are staffed with teachers of Mathematics of higher qualification. Students of the scientific school of L. A. Shemetkov also work at universities in Jordan, Turkey, China, Russia and Kazakhstan. They have published more than a dozen books on the theory of group classes and other algebras.

Among students of L. A. Shemetkov there are 34 Candidates and 10 Doctors of Sciences (A. N. Skiba (1993), S. F. Kamornikov (1995), V. S. Monakhov (1997), M. V. Selkin (1997), N. T. Vorob'ev (1998), V. N. Semenchuk (2000), W. Guo (2002), V. N. Tutianov (2002), A. F. Vasil'ev (2007), A. M. Galmak (2011)). Professors A. N. Skiba, V. S. Monakhov, N. T. Vorob'ev and W. Guo (China) have created and are developing their own scientific schools, each of them has over ten Candidates of Sciences, and three students of A. N. Skiba (V. G. Safonov, V. M. Selkin, N. N. Vorob'ev) presented their Doctoral theses. L. A. Shemetkov believed that for studying Mathematics one needs not only inborn abilities. In studying Mathematics as well as any other science it is very important to love what you are doing, to have an open and friendly attitude to your students. He was against stamps in mathematical research. He saw the power of his science in great variety of methods and ways of achieving the goals.

He is the author of many scientific publications and monographs, which brought him international fame. He regularly gave lectures at universities and at international conferences in different countries. He was invited as a visiting professor by the universities in the UK, Spain, Germany, China many times.

Up to his last days he remained an actively working mathematician, two months before his death he wrote and presented for publication two remarkable scientific articles "On complements to normal subgroups of finite groups" and "On F-coradical of direct product of finite groups" on the theory of compound finite groups.

Scientific, educational and social activities of L. A. Shemetkov were recognized with high honors: the Order of the Labour Red Banner, the Order of Holy Apostolic Great Prince Vladimir, the Order of Francisk Skoryna, Commemorative Mark of "2000 years of Christianity", diplomas.

For the merits in the development of higher education and science, L. A. Shemetkov was awarded the title "Honored Worker of Science of the Republic of Belarus", "Excellence in Education of the Republic of Belarus", "Honorary Citizen of the city of Gomel".

Mathematics is the work to which, without exaggeration, L. A. Shemetkov devoted his entire life. But there was always a special place for his loving family: his wife Alla Mihailovna, two daughters and five grandchildren. In addition, all his life was accompanied by music. He was an excellent pianist, both a performer and an accompanist. "Performances are almost a professional quality of mathematicians", the scientist stated. He opened it in Academician Maltsev, performed together with Professor Gaschutz, everybody remembers his virtuoso piano duo with Professor Chenevoix (France), and the recordings of the performances with Honoured Artist of Belarus G. Pavlenok filled the entire disc.

Such a Person, Leonid Alexandrovich Shemetkov will be in our memory forever.

Contact information

A. N. Skiba, Department of Mathematics, Francisk Skorina
V. S. Monakhov, Gomel State University, Sovetskaya str., 104,
M. V. Selkin, 246019, Gomel, Belarus
V. N. Semenchuk, *E-Mail:* `alexander.skiba49@gmail.com,`
A. F. Vasil'ev   `victor.monakhov@gmail.com,`
      `formation56@mail.ru`

N. T. Vorob'ev Department of Mathematics, Vitebsk State University named after P. M. Masherov, Moscow Avenue, 33, 210038, Vitebsk, Belarus