

VOLODYMYR VASYLYOVYCH SHARKO



On 7 October, 2014, at the age of 65, Volodymyr Vasylyovych Sharko passed away. He was an outstanding mathematician, talented teacher, and had a very attractive and charismatic personality inspiring many mathematicians.

V. V. Sharko was born on September 25, 1949 in the town of Ottynia in the Ivano-Frankivsk region. In 1963 he entered the Faculty of Mechanics and Mathematics of Taras Shevchenko Kyiv University and, after having graduated it in 1973, became a postgraduate student at the Institute of Mathematics of the Academy of Sciences of USSR. His scientific adviser was Yu. Yu. Trokhimchuk. From that time on, the Institute was an inseparable part of Volodymyr Vasylyovych' life.

Primary mathematical interests of V. V. Sharko were connected with Morse theory that links topology, differential geometry, dynamical systems, algebra, mathematical physics, and other branches of mathematics. His early results describe path components of spaces of exact Morse functions on high-dimensional manifolds. V. V. Sharko also developed a K -theory approach to study minimal Morse functions on non-simply connected manifolds. On the one hand, this extended S. Smale's theorems on existence of minimal Morse functions on simply connected manifolds and, on the other hand, exposed deeper

interrelations between the structure of Morse and Bott functions on a manifold and its homological invariants.

Volodymyr Vasylyovych defended his Candidate Dissertation “On exact Morse functions” in 1976 and the Doctor of Science Dissertation “Minimal Morse functions” in 1988.

Later, in connection with the progress in Hamiltonian dynamics of low dimensions, V. V. Sharko has obtained many results on topological classification of Morse-Smale flows and Morse functions on surfaces.

In 2001, V. V. Sharko became the head of a newly created topology department. From that time he started to develop L^2 -theory and its applications to Morse theory and dynamical systems, and made a significant contribution into these theories. While the Morse inequalities claim that the number of critical points of the index λ of a Morse function on a compact manifold is bounded from below by the corresponding λ -th Betti number, V. V. Sharko has introduced, for a manifold, certain L^2 -invariants that adjust the Betti numbers and turn the Morse inequalities into equalities. These results are well-known worldwide.

For his significant scientific achievements, V. V. Sharko was awarded with the Mykola Ostroviskiy Prize (1980), Krylov Prize and Lavrentyev Prizes of the National Academy of Sciences of Ukraine (2005 and 2010, respectively), and the State prize of Ukraine in science and technology (2006).

Volodymyr Vasylyovych wrote nearly 100 mathematical papers and 2 books, 20 of his students defended Candidate theses and 3 of them also defended Doctor of Science dissertations. From 1987 he was also a professor in Taras Shevchenko Kyiv National University.

In 2006 V. V. Sharko was elected a Corresponding Member of the National Academy of Sciences of Ukraine, and in 2008 became a Deputy director in charge of scientific work at the Institute of Mathematics.

Volodymyr Vasylyovych was very active and enthusiastic, and made a lot of efforts for developing mathematics in Ukraine. He was a Deputy of Academician-Secretary of Mathematical Section of the National Academy of Sciences of Ukraine, Deputy Editor-in-Chief of Ukrainian Mathematical Journal, a member of Editorial board of Methods of Functional Analysis, Proceedings of the International Geometry Center, and Mathematical Bulletin of the Shevchenko Scientific Society.

Even in his last day, he presided over the defense of two Candidate theses.

The memory of Volodymyr Vasylyovych Sharko will always live with all who knew and loved him.

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