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Valeriy Mnukhin, MSc, PhD

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Education

- Jan 1988 – Jun 1988* **State University of Belarus**
, Postdoctoral studies in algebra and combinatorics
Minsk, Minskaya Voblasts', Belarus
- Sep 1981 – Dec 1984* **Academy of Sciences of Moldova**
PhD in Pure Mathematics (Algebra). PhD Thesis “Algebras of Invariants and
Reconstruction of k-Orbits of Permutation Groups” ., Algebra and combinatorics
Chisinau, Moldova
- Sep 1974 – Jul 1979* **Taganrog State University of Radio Engineering**
MSc. Title of dissertation: “On some properties of spectra of graphs” .,
Mathematics and computer science
Taganrog, Rostovskaya Oblast', Russia

Thesis

Research Experience

- Sep 2009 – present* **Associate Professor (Docent)**
Southern Federal University, Department of High Mathematics
Taganrog, Russia
- Apr 2009 – Feb 2010* **Senior Researcher**
Southern Federal University, Department of High Mathematics
Taganrog, Russia
- Nov 2004 – Mar 2005* **Postdoctoral Fellow**
University of East Anglia, School of Mathematics
Norwich, United Kingdom
- Jan 2003 – Jun 2003* **Visiting Fellow**
University of East Anglia, School of Mathematics
Norwich, United Kingdom
- Feb 2000 – Dec 2008* **Senior Lecturer in Mathematics**
University of the South Pacific, School of Computing, Information and

Mathematical Sciences

Suva, Fiji

Lecturing in and Abstract Algebra Linear Algebra, Discrete Mathematics.
Postgraduate courses in Graph Theory, Algebraic Combinatorics and Group
Representation Theory. Supervision of MSc students.

Sep 1997 – Dec 1998 **Royal Society/NATO Postdoctoral Fellow**

University of East Anglia, School of Mathematics
Norwich, United Kingdom

Oct 1989 – Jan 2000 **Professor (Associate) in Mathematics**

Taganrog State University of Radio Engineering, Department of High
Mathematics
Taganrog, Russia

Nov 1988 – Sep 1989 **Senior Lecturer**

Taganrog State University of Radio Engineering, Department of High
Mathematics
Taganrog, Russia

Jan 1985 – Oct 1988 **Lecturer**

Taganrog State University of Radio Engineering, High Mathematics
Taganrog, Rostovskaya Oblast', Russia

Statistics

RG Score 14.53

Publications 76

Reads 1,630

Citations 210

Awards & Grants

Skills & Activities

Skills Combinatorics, Graph Theory, Discrete Mathematics, Geometry, Linear Algebra, Group Theory, Matrices, Homological Algebra, Algebraic Combinatorics, Algebra, Graphs, Boolean algebra, Finite Fields, Matrix Theory, Pure Mathematics, Representation Theory, Numbers, GAP, Algebraic (Symbolic) Computation, Lattice Theory, Algebraic Topology, Discrete Geometry, Image Analysis, Fourier Transform, Analytical Geometry, Fast Fourier Transform, Topology, Algebraic Geometry, Image Registration, Algebraic Number Theory, Set Theory, Image Processing, Category Theory, Medical Image Registration, Power Spectrum, FFT, Digital Image Processing, Ranking

Languages English, Russian

Scientific Memberships

Interests

Publication Highlights

- V. B. Mnukhin: *The k -Orbit Reconstruction for Abelian and Hamiltonian Groups*. Acta Applicandae Mathematicae 07/1998; 52(1):149-162., DOI:10.1023/A:1005907024475
- V. B. Mnukhin: *The k -orbit reconstruction and the orbit algebra*. Acta Applicandae Mathematicae 11/1992; 29(1):83-117., DOI:10.1007/BF00053380
- Valery Mnukhin, Johannes Siemons: *On Stanley's Inequalities for Character Multiplicities*. Archiv der Mathematik 10/2011; 97(6)., DOI:10.1007/s00013-011-0321-7
- Valery B. Mnukhin, Johannes Siemons: *On Modular Homology of Simplicial Complexes: Shellability*. Journal of Combinatorial Theory Series A 02/2001; 93(2):350-370., DOI:10.1006/jcta.2000.3114
- V.B. Mnukhin, I.J. Siemons: *On modular homology in projective space*. Journal of Pure and Applied Algebra 07/2000; 151(1):51-65., DOI:10.1016/S0022-4049(99)00053-5

Books

- Valeriy Mnukhin: *An Introduction to Mobius Algebras*. Edited by Johannes Siemons, 04/1994; School of Mathematics, University of East Anglia, Norwich NR4 7TJ.
- Valeriy Mnukhin: *Combinatorial Properties of Partially Ordered Sets and Group Actions*. 1 edited by J. Siemons, 08/1993; School of Mathematics, University of East Anglia, Norwich NR4 7TJ., DOI:10.13140/2.1.1267.5367

Book Chapters

- Alexander Karkishchenko, Valeriy Mnukhin: *Fourfold Symmetry Detection in Digital Images Based on Finite Gaussian Fields*. Proceedings of the First International Scientific Conference "Intelligent Information Technologies for Industry" (IITI'16), 05/2016: pages 153-162; , ISBN: 978-3-319-33815-6, DOI:10.1007/978-3-319-33816-3_16
- Valeriy Mnukhin, I.V. Stankevich, M.I. Skvortsov, V.A. Kolmykov, V.F. Subbotin: *Spectral graph theory in chemistry*. Mathematical Methods in Contemporary Chemistry, 1 edited by S.I. Kuchanov, 03/1996: chapter 2: pages 101-141; Gordon and Breach Publishers, CRC Press., ISBN: 978-2884491259
- Valeriy Mnukhin: *Spectra of graphs under certain unary operations*. Some Topological and Combinatorial Properties of Graphs, 1 edited by N. Khomenko, 01/1980: pages 34-41; Institute of Mathematics, Kiev.

Journal Publications

- Valeriy Mnukhin, Alexander Karkishchenko: *Gaussian rotations for graphic information protection*.
DOI:10.21469/22233792.3.1.05
- Alexander Karkishchenko, Valeriy Mnukhin: *Hexagonal images processing over finite Eisenstein fields*.
Procedia Engineering 09/2017; 201:287-295., DOI:10.1016/j.proeng.2017.09.633
- Alexander N Karkishchenko, Valeriy B Mnukhin: *Reflective symmetrization of images*. Pattern Recognition and Image Analysis 01/2015; 25(1):33-40., DOI:10.1134/S1054661815010071
- Alexander Karkishchenko, Valeriy Mnukhin: *Symmetrization of Feature Points in 2-D Images*. 12/2014; 2(4)., DOI:10.18100/ijamec.85381
- Valeriy Mnukhin, Alexander Karkishchenko: *Topological filtration for digital images recognition and symmetry analysis*.
- Valeriy Mnukhin: *Transformations of Digital Images on Complex Discrete Tori*. Pattern Recognition and Image Analysis 03/2014; 24(4):552-560., DOI:10.1134/S1054661814040142
- Valeriy Mnukhin, Alexander Karkishchenko: *Applications of modular logarithms on complex discrete tori in digital image processing*.
- Valeriy Mnukhin, Alexander Karkishchenko: *Recovery of points symmetry in images of objects with reflectional symmetry*.
- Valeriy Mnukhin: *Integral transform for symmetry recognition of gray-level images*.
- Valeriy Mnukhin: *SYMMETRY RECOGNITION IN GRAY-LEVEL IMAGES BASED ON AN INTEGRAL TRANSFORM*.
- Valeriy Mnukhin: *Digital images on a complex discrete torus*.
- Valery Mnukhin, Johannes Siemons: *On Stanley's Inequalities for Character Multiplicities*. Archiv der Mathematik 10/2011; 97(6)., DOI:10.1007/s00013-011-0321-7
- V.B. Mnukhin, J. Siemons: *Corrigendum to "Saturated simplicial complexes" [J. Combin. Theory Ser. A 109 (2005) 149-179]*. Journal of Combinatorial Theory Series A 04/2007; 114(3):572-574., DOI:10.1016/j.jcta.2006.09.004
- V.B. Mnukhin, J. Siemons: *Corrigendum to "Saturated simplicial complexes"*. Journal of Combinatorial Theory Series A 01/2007; 3(3).
- Valery B. Mnukhin, Johannes Siemons: *Corrigendum to "Saturated simplicial complexes" [J. Combin. Theory Ser. A 109 (2005) 149-179]*.
- V.B. Mnukhin, J. Siemons: *Saturated simplicial complexes*. Journal of Combinatorial Theory Series A 01/2005; 109(1):149-179., DOI:10.1016/j.jcta.2004.08.003
- Valery B. Mnukhin, Johannes Siemons: *On the Livingstone-Wagner Theorem*. The electronic journal of combinatorics 04/2004; 11(1).
- Mnukhin Valeriy, Siemons Johannes: *On Group Actions on 1-Shellable Simplicial Complexes*.
- VALERIY MNUKHIN: *EXTENDED ABSTRACT: SATURATED SIMPLICIAL COMPLEXES*.

- Valery B. Mnukhin, Johannes Siemons: *On Modular Homology of Simplicial Complexes: Saturation*. Journal of Combinatorial Theory Series A 05/2002; 98(2):377-394., DOI:10.1006/jcta.2001.3247
- Valery B. Mnukhin, Johannes Siemons: *On Modular Homology of Simplicial Complexes: Shellability*. Journal of Combinatorial Theory Series A 02/2001; 93(2):350-370., DOI:10.1006/jcta.2000.3114
- V.B. Mnukhin, I.J. Siemons: *On modular homology in projective space*. Journal of Pure and Applied Algebra 07/2000; 151(1):51-65., DOI:10.1016/S0022-4049(99)00053-5
- V. B. Mnukhin: *The k -Orbit Reconstruction for Abelian and Hamiltonian Groups*. Acta Applicandae Mathematicae 07/1998; 52(1):149-162., DOI:10.1023/A:1005907024475
- Valery B. Mnukhin: *Some relations for the lengths of orbits on k -sets and $(k - 1)$ -sets*. Archiv der Mathematik 10/1997; 69(4):275-278., DOI:10.1007/s000130050121
- Valeriy Mnukhin, Maxim Chernusov: *On the spectra of graphs under edge extensions*.
- Valeriy Mnukhin, Johannes Siemons: *Group Actions on Desarguesian Geometric Lattices*.
- V. B. Mnukhin: *On Homological Sequences Arising from Boolean Algebras*.
- Valery B. Mnukhin, Johannes Siemons: *The Modular Homology of Inclusion Maps and Group Actions*. Journal of Combinatorial Theory Series A 05/1996; 74(2):287-300., DOI:10.1006/jcta.1996.0051
- Valeriy Mnukhin: *Some Remarks on Applications of the Homological Algebra to Combinatorics. III: Kernels of Incidence Maps in Product Posets*.
- Valery Mnukhin, Johannes Siemons: *On Modular Homology in the Boolean Algebra*. Journal of Algebra 01/1996; 179(1):191-199., DOI:10.1006/jabr.1996.0009
- Valeriy Mnukhin: *On the Peckness and Amplicity of Projective Spaces over Finite Fields*.
- Mnukhin Valeriy: *Some Remarks on Applications of the Homological Algebra to Combinatorics. II: Tensor Products and Peck Sequences*.
- V B Mnukhin: *Some Remarks on Applications of the Homological Algebra to Combinatorics. I: Theorem of Livingstone and Wagner*.
- Valeriy Mnukhin: *The reconstruction of oriented necklaces*.
- V. B. Mnukhin: *The k -orbit reconstruction and the orbit algebra*. Acta Applicandae Mathematicae 11/1992; 29(1):83-117., DOI:10.1007/BF00053380
- V. B. Mnukhin: *Construction of $(k + 1)$ -orbits of permutation groups from their k -orbits*. Mathematical Notes 04/1992; 51(4):382-384., DOI:10.1007/BF01250550
- Valeriy Mnukhin: *The Mobius algebra for a Desarguesian geometric lattice (In Russian)*.
- Valeriy Mnukhin: *Reconstruction of disconnected k -orbits of a permutation group (In Russian)*. 01/1989;
- Valeriy Mnukhin: *Actions of groups on lattices and the reconstruction problem*. 01/1988; 105:120-128.
- V. B. Mnukhin: *Reconstruction of k -orbits of a permutation group*. Mathematical Notes 11/1987; 42(6):975-980., DOI:10.1007/BF01137455
- Valeriy Mnukhin: *The order of the automorphism group of a subgraph*. 01/1985;

Valeriy Mnukhin: *On matrices associated with permutation groups*. 01/1984;
Valeriy Mnukhin: *A basis of the algebra of graph invariants (In Russian)*.
V.B. Mnukhin: *On the Möbius algebra of a Desarguesian geometric lattice*.
V B Mnukhin, I J Siemons: *Kernels of Incidence Maps in Product Posets*.
V. B. Mnukhin: *Group actions on posets and a theorem of Livingstone and Wagner*.

Patents

Conference Proceedings

Alexander Karkishchenko, Valeriy Mnukhin: *Threefold Symmetry Detection in Hexagonal Images Based on Finite Eisenstein Fields*. International Conference on Analysis of Images, Social Networks and Texts; 02/2017, DOI:10.1007/978-3-319-52920-2_26

Valeriy Mnukhin: *Fourier-Mellin Transform on a Complex Discrete Torus*. 11th International Conference on Pattern Recognition and Image Analysis: New Information Technologies (PRIA-11-2013)., Russia, Samara, September 23-28, 2013.; 09/2013, DOI:10.13140/RG.2.1.4366.4086

Alexander Karkishchenko, Valeriy Mnukhin: *Symmetry recognition in the frequency domain (in Russian)*. 9th International Conference on Intelligent Information Processing (IIP-2012), Montenegro, Budva; 09/2012

Valeriy Mnukhin, Alexander Karkishchenko: *Continuous symmetry transform of periodic patterns in the frequency domain*. 15th All-Russian Conference on Mathematical Methods in Image Recognition (MMIR-15), Russia, Petrozavodsk, September 11-17, 2011.; 09/2011

Valeriy Mnukhin: *Kernels of Differentiation on Truncated Polynomial Rings*. Symposium on Algebraic Geometry and its Applications (SAGA 2007), Sheraton Hotel, Papeete, Tahiti, French Polynesia; 05/2007

Valeriy B Mnukhin, Johannes I Siemons: *On modular homology of 1-shellable simplicial complexes*. First South Pacific Conference on Mathematics, Noumea, New Caledonia, 29 August – 2 September 2005, Noumea, New Caledonia; 08/2005, DOI:10.13140/RG.2.1.4910.9202

Valeriy Mnukhin: *Saturated simplicial complexes*. Formal Power Series and Algebraic Combinatorics (FPSAC-2002), The University of Melbourne, Australia; 07/2002, DOI:10.13140/2.1.2357.0884

Valeriy Mnukhin: *On the k -orbit reconstruction*. The 1st International Conference on Algebraic Combinatorics (ALCOM-91), Vladimir, USSR; 08/1991

Valeriy Mnukhin: *Some sufficient conditions for edge reconstruction of a graph*. Methods and Programs for Solution of Optimization Problems on Graphs and Networks, Tashkent; 08/1984

Valeriy Mnukhin: *On reconstruction of graph polynomials*. Proceedings of 27 Internat. Wiss. Kolloq., (Ilmenau, 25-29 Okt.1982), Ilmenau, Germany; 10/1982

Technical Reports