Curriculum Vitae of Professor Vladimir P. Gerdt

August 22, 2012

Personal Data

Born: January 21, 1947, in Engels, Russia

Married to: Evgenia Almazova

Children: Two sons, Peter and Anton

Citizenship: Russia

Address: Laboratory of Information Technologies (LIT)
Joint Institute for Nuclear Research (JINR)
141980 Dubna
Russia

Telephones: +7-49621-63437 at work; +7-49621-20899 at home

Fax: +7-49621-65145

E-mail: gerdt@jinr.ru

URL: http://compalg.jinr.ru/CAGroup/Gerdt/, http://invo.jinr.ru

Education: M.S. in Theoretical Physics, Saratov State University, 1971.[1]
Ph.D. in Theoretical and Mathematical Physics, JINR, 1976.
D.Sc. in Physics and Mathematics, JINR, 1992.
Prof. in Mathematics and Computer Science by speciality "Application of Computer Techniques, Mathematical Modelling and Mathematical Methods to Scientific Research", JINR, 1997.

Languages: On the scale rudimentary, poor, good, very good and excellent, my written and oral abilities in the following languages are:
Russian: excellent; English: very good; German: poor; French: rudimentary.

Positions: Engineer-Programmer, Dept. of Radiation Safety, JINR, 1971-75.
Junior Research Worker, Dept. of Radiation Safety, JINR, 1975-77.
Research Worker, LIT, JINR, 1977-80.
Senior Research Worker, LIT, JINR, 1980-83.
Head of Computer Algebra Research Group (after 2007: Research Group on Algebraic and Quantum Computation), LIT, JINR, 1983-present.

Research Interests: Computer Algebra, Symbolic and Algebraic Computation, Algebraic Analysis of Nonlinear Differential Equations, Solving Polynomial Equations, Design, Analysis and Implementation of (Algebraic) Algorithms, Computer Algebra Application to Mathematics and Physics, Quantum Computing, Adaptation to High-Performance and Exaflops Computing.

Current Research: Involutive methods and algorithms applied to systems of polynomial and differential equations; computer-algebraic methods in simulation of quantum computation.

[1] I also did graduate studies in Theoretical Physics at the Physical Department of the Moscow State University (1969-1971).

New Methods Developed

1. A computer-aided method for integrability analysis of nonlinear evolution equations, exploring the symmetry approach proposed by a group of Russian mathematicians under leadership A.B.Shabat. The computer-based part of the method was developed in 1984 for one-component equations and generalized in 1987 for multi-component ones together with A.Yu.Zharkov.

2. An algorithmic method for generating and solving linear ordinary differential equation with elliptic coefficients and spectral parameter, which are integrable in terms of the elliptic functions. This method can be considered as generalization of constructive ideas of French mathematicians Hermite and Halphan on the basis of modern, high sophisticated, technique has been elaborated for investigating periodical solutions of integrable nonlinear evolution equations. Developed in 1989 together with N.A.Kostov.

3. A computer algebra tool for integrability analysis, classification and construction of higher order Lie-Bäcklund evolutionary symmetries for multi-parametric families of polynomial-nonlinear evolution equations. This tool designed in the form of two separate modules written in the computer algebra language Reduce. It is the only tool which allows to generate polynomial systems in arbitrary parameters, equivalent to the integrability conditions, and to solve them. Developed in 1990-1991 together with A.Yu.Zharkov.

4. A method of reduction, or splitting, homogeneous multivariate polynomial systems. It is based on a new concept of homogeneity, more general one than the well-known concept of Γ-homogeneity has been intensively used for complexity analysis of Buchberger's algorithm for Gröbner bases construction for a polynomial ideals. The homogeneity reduction combined with the Gröbner bases technique, or with any other algorithmic method for "triangularization" of polynomial systems, increases its efficiency dramatically.

5. An algorithmic approach to construction of Lie algebras and superalgebras given by a finite set of generators and defining relations. In this method a complete set of relations, that is a Gröbner basis, is constructed by means of sequential (Lie-)multiplications of the relations by single generators, first, and reductions modulo the current set of relations, second. The algorithm was developed and implemented in C together with V.V.Kornyak.

6. An algorithmic method for the involution analysis of polynomial, linear differential and difference ideals. It is based on a concept of restricted monomial division defined on finite monomial sets. Involutive divisions form an important class of such restricted divisions. Every involutive division provides for each monomial a self-consistent partitioning the whole set of variables into two disjoined subsets called multiplicative and non-multiplicative. Given an admissible ordering, that partitioning is prescribed also to polynomials in terms of their leading monomials. Every specific partition provides its own algorithmic scheme for construction of an involutive Gröbner basis by doing non-multiplicative prolongations and multiplicative reductions. Among the other things the method gives one more efficient algorithm for construction of Gröbner bases. The underlying algorithms for completion to involution of polynomial and linear differential systems have been implemented in Reduce, C/C++ (GINV package) and Maple. The method is under further development and implementation in collaboration with Yu.A.Blinkov and D.Robertz.

7. A computer algebra method for computation and separation of the complete set of constraints for generalized Hamiltonian dynamical systems of polynomial type. The method is based on combining of the classical Dirac method with (involutive) Gröbner bases. This yields the full algorithmization of the constraint computation as well as their separation in the first and second classes.

8. An algorithmic approach to generation of finite difference approximations for partial differential equations and systems of such equations based on combination of the finite volume method with difference elimination by means of Gröbner bases. The method developed in 2005-2006 together with Yu.A.Blinkov and V.V.Mozzhilkin.

9. A computer-algebra based method to analyze consistency of finite difference approximations to systems of partial differential equations. The method combines algorithmic techniques of differential and difference algebra and based on the new notion of strong consistency which means inheritance at the discrete level of algebraic properties of the differential equations. The method developed in 2010 for linear PDE systems together with D.Robertz, and then extended in 2011 to nonlinear systems.

Lecture Courses Given to Students and Young Scientists

1. Analytical Computations by Computer. Karel University, Petrozavodsk, U.S.S.R. Autumn 1981.
2. Analytical Computations by Computer and its Application to High Energy Physics. XY International School on High Energy Physics for Young Scientists, Dubna, U.S.S.R. Nov.-Dec. 1982.
3. Lie Methods in Differential Equations. University of Leipzig, GDR. Spring 1987.
4. Computer Algebra Systems. All-Union School on Analytic Computations in Mechanics, Moscow, U.S.S.R. Autumn 1987.
5. Computer Algebra Application to High Energy Physics. International School on the Problems of Use of Computers in Physical Research, Dubna, U.S.S.R. Autumn 1988.
6. Introduction to Computer Algebra. Far-East University, Vladivostok, U.S.S.R. Autumn 1989.
7. Gröbner Bases. Nankai Institute of Mathematics, Tianjin, China. Spring 1991.
8. Applications of Symbolic Computation. Far-East University, Vladivostok, Russia. Autumn 1991.
9. Perturbation Methods in Mechanics. Department of Mechanics, Royal Institute of Technology, Stockholm, Sweden. Spring 1993.
10. Lie Symmetry Analysis of Partial Differential Equations. Department of Mathematics and Computer Science, University of Greifswald, Germany. Spring 1993.
11. Computer Algebra and Polynomial Equations, University of Limoges, France. Autumn 1994.
12. Computer Algebra and Solving Polynomial Equations, University of Pereslavl. Spring 1997, Russia.
13. Introduction to Programming in C/C++, University of Applied Sciences, Ravensburg-Weingarten, Winter Semester, 2000-2001.
14. Applied Computer Algebra, University of Applied Sciences, Ravensburg-Weingarten, Winter Semester, 2000-2001.
15. Elements of Computer Mathematics, University of Applied Sciences, Ravensburg-Weingarten, Winter Semester, 2000-2001.
16. Introduction to Programming in C, University of Rostock, Winter Semester, 2002-2003.
17. Programming Techniques / Algorithms and Data Structures, University of Rostock, Winter and Summer Semesters, 2002-2003.
18. Elements of Computer Mathematics, University of Rostock, Summer Semester, 2003.
19. Introduction to Quantum Computing, University of Rostock, Summer Semester, 2003.
20. Introduction to Programming in C/C++, University of Applied Sciences, Ravensburg-Weingarten, Winter Semesters, 2004-2005 and 2005-2006.
21. Elements of Computer Mathematics, University of Applied Sciences, Ravensburg-Weingarten, Winter Semester, 2004-2005.
22. Introduction to Quantum Computing, University of Applied Sciences, Ravensburg-Weingarten, Winter Semester, 2004-2005.

23. Computer Mathematics and Fuzzy Systems, University of Applied Sciences, Ravensburg-Weingarten, Winter Semester, 2005-2006.

24. Elements of Quantum Computation and Information, University of Applied Sciences, Ravensburg-Weingarten, Winter Semester, 2005-2006.

25. Introduction to Quantum Informatics, University of Applied Sciences, Ravensburg-Weingarten, Summer Semester, 2007.

26. Fuzzy Logics and Fuzzy Control with Mathematica, University of Applied Sciences, Ravensburg-Weingarten, Summer Semester, 2007.

27. Introduction to Quantum Physics, University of Applied Sciences, Ravensburg-Weingarten, Summer Semester, 2007.

28. Applied Computer Algebra, Ravensburg-Weingarten, Summer Semester, 2007.

29. Introduction to Quantum Computation with Application of Computer Algebra, Rheinisch-Westfälische Technische Hochschule, Aachen, Winter Semester, 2008-2009.

30. Fuzzy Logic and Fuzzy Control with Application of Computer Algebra, Rheinisch-Westfälische Technische Hochschule, Aachen, Winter Semester, 2009-2010.

31. Theory and Applications of Involutive Bases, University of Kassel, Winter Semester, 2010-2011.

32. Introduction to Differential Algebra, Winter Semester, 2010-2011.

Advising Students and PhD Theses

Mr.Alexey Yu. Zharkov, Master Project, 1979, Three-Loop Computation of Anomalous Dimension and Renormalization Constant of the Ghost Propagator in Quantum Chromodynamics.

Mr.Valery V. Polyansky, Master Project, 1981, Analytic Calculation of Solution of the Chew-Low Equations with Reduce.

Dr. Alexey Yu. Zharkov, Ph.D., 1985, Methods of Computer Algebra in Investigation of Nonlinear Difference and Evolution Equations.

Ms. Franziska Kohley, Master Practicum, 1988, Symbolic Computation of Jordan Form for a Matrix with Elements from Q.

Mr. Kersten Schöbel, Master Practicum, 1988, Symbolic Computation of Matrix Eigenvalues and Eigenvectors.

Mr. Thomas Henke, Master Practicum, 1989, Algebraic Algorithms for Computation of Characteristic Polynomial of Matrices.

Mr. Sven Muecke, Master Practicum, 1989, Symbolic Computation of the Minimal Matrix Characteristic Polynomial.

Mr. Michael Ohme, Master Practicum, 1989, Symbolic Computation of Functions in Matrices.

Dr. Nikolay A. Kostov, Ph.D., 1990, Investigation of Integrable Models of Interacting Nonlinear Waves.

Mr. Vladimir V. Menkov, Master Project, 1991, Symbolic Computation in Clifford Algebras.

Dr. Nikolay V.Khutornoy, Ph.D., 1994, Algebraic Algorithms for Investigation of Polynomial Equation Systems and their Implementation in REDUCE.

Dr. Yuri A.Blinkov, Ph.D., 1995, Involutive Algorithms for Investigation of Nonlinear Algebraic and Differential Equations.

Dr. Victor N.Robuk, Ph.D., 1995, Algorithms for Construction of Finitely Presented Lie Algebras and their Application to Integrability Analysis of Nonlinear Partial Differential Equations.

Mr. Andrey V.Karol, Ph.D. student since 2003, GRID Computing applied to Solving Polynomial Systems over Finite Fields.

Mr. Denis A.Yanovich, Ph.D., 2004, Algorithms and Programs of Computing Involutive Bases and their Application to Solving Nonlinear Algebraic Systems.

Mr. Mikhail V.Zinin, Ph.D. student since 2005, Algorithms for Computing Boolean Gröbner Bases and their Applications.

Mr. Semyon A.Evlakhov, Ph.D. student since 2007, Computation and Analysis of Invariants for the Two-Qubit Density Matrix.

Mr. Sergei N.Tychkov, Master Project, 2008, Computer Algebra Approaches to Computing Hyperdeterminants.

Consulting Theses for Doctorship of Sciences

Dr. Yuri A.Blinkov. 2009. Involutive Methods to Analyze Models Described by Systems of Algebraic and Differential Equations.

Research and Teaching Visits

Nov.-Dec. 81. Invited Lecturer, Department of Mathematics and Physics, Karel University, Petrozavodsk, U.S.S.R.

May-June 87. Invited Lecturer, Department of Computer Science, University of Leipzig, GDR.

Sept. 89. Invited Docent, Department of Mathematics and Computer Science, Far-East University, Vladivostok, U.S.S.R.

Apr.-May 91. Invited Professor, Nankai Institute of Mathematics, Tianjin, China.

Sept. 91. Invited Professor, Far-East University, Vladivostok, Russia.

Jun.-Jul. and Sept.-Oct. 91. Senior Research Visitor, Department of Computer Science, University of Leipzig, Germany.

Nov.92-May 93. Senior Visiting Scientist and Lecturer, Department of Mechanics, Royal Institute of Technology, Stockholm, Sweden.

Jun. 93. Invited Professor, Department of Mathematics and Informatics, University of Greifswald, Germany.

Sept.-Dec. 94. Invited Professor, Department of Mathematics, University of Limoges, France.

Jan.-Mar. 95. Invited Professor, Computer Science Laboratory, University Lille I, France.

Sept.-Oct. 96. Invited Professor, Institute of Physics, University of Liege, Belgium.

Apr.-Jun. 97. Invited Professor, Institut für Algorithmen und Kognitive Systeme, University of Karlsruhe, Germany.

Sept.-Nov. 97. Invited Professor, Department of Mathematics and Informatics, University of Greifswald, Germany.

Mar. 99. Invited Professor, Department of Mathematics, University of Catania, Italy.

Apr.-July 99. Invited Professor, Department of Mathematics and Informatics, University of Greifswald, Germany.

Oct.00-Apr.01. Invited Professor, University of Applied Sciences, Ravensburg-Weingarten, Germany.

Sept.02-Aug.03. Invited Professor, Department of Computer Science, University of Rostock, Germany.

Oct.04-Apr.05. Invited Professor, University of Applied Sciences, Ravensburg-Weingarten, Germany.

Oct.05-Apr.06. Invited Professor, University of Applied Sciences, Ravensburg-Weingarten, Germany.

Mar.-Aug.07. Invited Professor, University of Applied Sciences, Ravensburg-Weingarten, Germany.

Oct.08-Mar.09. Invited Professor, Rheinisch-Westfälische Technische Hochschule, Aachen, Germany.

Oct.09-Mar.10. Invited Professor, Rheinisch-Westfälische Technische Hochschule, Aachen, Germany.

Oct.10-Mar.11. Invited Professor, University of Kassel, Kassel, Germany.

May 11. Invited Professor, Laboratory if Informatics (LIP6), Pierre and Marie Curie University (UPMC), Paris, France.

Professional Activity

Sept. 79. Organizing Committee of International Conference on Computer Algebra, Dubna, U.S.S.R.

Sept. 82. Organizing Committee of the 2nd International Conference on Computer Algebra, Dubna, U.S.S.R.

Sept. 85. Organizing Committee of the 3rd International Conference on Computer Algebra, Dubna, U.S.S.R.

June 87. Program Committee of EUROCAL'87, Leipzig, GDR.

July 88. Program Committee of ISSAC-88, Rome, Italy.

May 90. Organizing Committee of the 4th International Conference on Computer Algebra, Dubna, U.S.S.R.

July 91. Program Committee of ISSAC'91, Bonn, Germany.

June 93. Scientific Committee of the IMACS Symposium on Symbolic Computation, Lille, France.

July 93. Co-Chair of ISSAC'93, Kiev, Ukraine.

March 94. Program Committee of International Conference on Interval and Computer-Algebraic Methods in Science and Engineering, St-Petersburg, Russia.

July 94. Program Committee of International Workshop on New Computer Technologies in Control Systems, Pereslavl-Zalessky, Russia.

Aug. 95. Program Committee of 2nd International Workshop on New Computer Technologies in Control Systems, Pereslavl-Zalessky, Russia.

July 96. Program Committee of 3rd International Workshop on New Computer Technologies in Control Systems, Pereslavl-Zalessky, Russia.

May 97. Scientific Committee of International Symposium on Differential Algebraic Equations, Grenoble, France.

June 97. Co-chair of International Workshop on Symbolic-Numeric Analysis of Differential Equations, Prague, Chech Republic.

July 1997. Program Committee Co-chair of the 3rd IMACS-ACA Conference on Application of Computer Algebra, Maui, Hawaii, USA.

Feb. 1998. Program Committee of International Conference on Gröbner Bases, Linz, Austria.

March 1998. Program Committee of the 6th Rhein Workshop on Computer Algebra / RWCA-1998, St-Augustin, Germany.

Apr. 1998. Co-chair of the 1st International Workshop on Computer Algebra in Scientific Computing / CASC-1998, Saint-Petersburg, Russia.

May-June 1999. Co-chair of the 2nd International Workshop on Computer Algebra in Scientific Computing / CASC-1999, Munich, Germany.

Oct. 2000. Co-chair of the 3rd International Workshop on Computer Algebra in Scientific Computing / CASC-2000, Samarkand, Uzbekistan.

June 2001. Chair of the 5th International Workshop on Computer Algebra and its Application to Physics, Dubna, Russia.

Sept. 2001. Co-chair of the 4th International Workshop on Computer Algebra in Scientific Computing / CASC-2001, Konstanz, Germany.

March 2002. Program Committee co-chair of the International Workshop on Under- and Over-Determined Systems of Algebraic or Differential Equations , Karlsruhe, Germany.

March 2002. Program Committee of the 8th Rhein Workshop on Computer Algebra / RWCA-2002, Mannheim, Germany.

Sept. 2002. Co-chair of the 5th International Workshop on Computer Algebra in Scientific Computing / CASC-2002, Foros, Crimea, Ukraine.

Sept.-Oct. 2002. Organizing Committee of the 5th International Congress on Mathematical Modelling, Dubna, Russia.

Oct. 2002. Program Committee of the International Symposium "Logic, Mathematics and Computer Science", Linz, Austria.

July-Aug. 2003. Organizing Committee of the 2nd International Workshop "Quantum Physics and Information / QPC-2003", Dubna, Russia.

Sept. 2003. Co-chair of the 6th International Workshop on Computer Algebra in Scientific Computing / CASC-2003, Passau, Germany.

July 2004. Co-chair of the 7th International Workshop on Computer Algebra in Scientific Computing / CASC-2004, St.Petersburg, Russia.

July 2004. Program co-chair of the 10th International Conference on Applications of Computer Algebra / ACA-2004 , Beaumont, Texas, U.S.A.

April 2005. Program Committee of the International Conference "Algorithmic Algebra and Logic 2005", Passau, Germany.

May 2005. Advisory Committee of the 10th International Workshop on Advanced Computing and Analysis Techniques in Physics Research / ACAT-2005, Zeuthen, Germany.

June 2005. Organizing Committee of the International Workshop "Symbolic Calculations and Exact Methods in Mathematical Physics", Kyiv, Ukraine.

June-July 2005. Organizing Committee of the 3rd International Workshop "Quantum Physics and Information / QPC-2005", Dubna, Russia.

Sept. 2005. Co-chair of the 8th International Workshop on Computer Algebra in Scientific Computing / CASC-2005, Kalamata, Greece.

June 2006. Co-chair of the 12th International Conference on Applications of Computer Algebra / ACA-2006, Varna, Bulgaria.

Sept. 2006. Co-chair of the 9th International Workshop on Computer Algebra in Scientific Computing / CASC-2006, Chisinau, Moldova.

February 2007. Program Committee of the International Workshop on Computer Algebra and Differential Equations / CADE-2007, Turku, Finland.

July 2007. Chair of the Poster Committee of ISSAC'07, Waterloo, Canada.

Sept. 2007. Co-chair of the 10th International Workshop on Computer Algebra in Scientific Computing / CASC-2007, Bonn, Germany.

Oct. 2007. Organizing Committee of the 4th International Workshop "Quantum Physics and Information / QPC-2007", Dubna, Russia.

March 2008. Co-chair of the International Conference on Differential Algebra and Related Computer Algebra / DARCA-2008, Catania, Italy.

April 2008. Program Committee of the International Workshop on Polynomial Computer Algebra / PCA-2008, St.Petersburg, Russia.

July 2008. Co-chair of the 14th International Conference on Applications of Computer Algebra / ACA-2008, RISC, Castle of Hagenberg, Austria.

November 2008. Advisory Committee of 11th International Workshop on Advanced Computing and Analysis Techniques in Physics Research / ACAT-2008, Sicily, Italy.

April 2009. Program Committee of the 2nd International Workshop on Polynomial Computer Algebra / PCA-2009, St.Petersburg, Russia.

July 2009. Organizing Committee of the 4th International Conference "Mathematical Modelling and Computational Physics / MMCP-2009", Dubna, Russia.

September 2009. Co-chair of the 11th International Workshop on Computer Algebra in Scientific Computing / CASC-2009, Kobe, Japan.

October 2009. Program Committee of the 2nd International Workshop on Computer Algebra and Differential Equations / CADE-2009, Pamplona, Spain.

April 2010. Program Committee of the 3rd International Workshop on Polynomial Computer Algebra / PCA-2010, St.Petersburg, Russia.

July 2010. Program Committee of the International Conference on Symbolic Computation and its Applications, Maribor, Slovenia.

September 2010. Co-chair of the 12th International Workshop on Computer Algebra in Scientific Computing / CASC-2010, Tsakhkadzor, Armenia.

Coordination of International Research Projects

1. Adjoint coordinator of the INTAS-93-0030 project "Computer Algebra, Symbolic and Combinatorial Tools in Differential Algebra and Differential Equations, with impact in Fundamental Physics and Control Theory" with 10 research teams from EC countries and 7 research team from NIS countries.

2. Scientific coordinator of the claster A: Computer Assisted Mathematics of the INTAS-93-0893 project "ERSIM-FSU Cooperative Network in Informatics and Applied Mathematics" with 10 research teams EC countries and 10 research teams from NIS countries.

Coordination of National Research Projects

1. RFBR 98-01-00101 (1998-2000) "Involutivity Analysis of Constrained Dynamical Systems".

2. RFBR 01-01-00708 (2001-2003) "Computer methods for involutivity analysis of differential equations and their application to gauge field theories".

3. RFBR 04-01-00784 (2004-2006) "Computer-based completion of nonlinear systems to involution and its application to generalized Hamiltonian dynamics and to generation of finite-difference schemes for partial differential equations".

4. RFBR 07-01-00660 (2007-2009) "Computer-based compatibility analysis of equation syetems with application to quantum computation, gauge models of field theory and numerical solving of partial differential equations".

5. RFBR 10-01-00200 (2010-2012) "Computer algebra modeling of quantum computation and discrete systems".

Memberships

ACM - Association for Computing Machinery.
SIGSAM - ACM Special Interest Group on Symbolic and Algebraic Manipulation.
Editorial Board of Journal of Symbolic Computation.
Advisory Board of Computer Science Journal of Moldova.
Special Computer Algebra Group of German Societies on Computer Science.

Referee - Reviewer

Journal of Symbolic Computation.
Programming and Computer Software.
Russian Foundation for Basic Research.

Editorial Works

1. (With E.W.Mayr and E.V.Vorozhtsov) *Computer Algebra in Scientific Computing / CASC 2009*, Lecture Notes in Computer Science, 5743, Springer-Verlag, 2009.

2. (With W.Koeppf, E.W.Mayr and E.V.Vorozhtsov) *Computer Algebra in Scientific Computing/ CASC 2010*, Lecture Notes in Computer Science, 6244, Springer-Verlag, 2010.

Publications

Articles in Books, Journals, Proceedings

1. (With V.E.Aleinikov and M.M.Komochkov) *Neutron Spectra Outside the Proton Accelerator Shielding*, Neutron Monitoring for Radiation Protection Purposes, Vol.I, IAEA, Vienna, 1973, 31-46.

2. (With V.A.Meshcheryakov and V.I.Zhuravlev) *πN - Scattering S Waves and the Value of the σ Commutator in the Static Model*, Sov. J. Nucl. Phys. (Yad. Fiz. 20, 4, 1974, 756-761), 20 (4), 1975, 405-407.

3. (With V.E.Aleinikov and M.M.Komochkov) *Neutron Energy Spectra Outside the Shielding of High Energy Proton Accelerators*, Proceedings of All-Union Meeting on Accelerators of Charged Particles, Vol.II, Nauka Publishers, Moscow, 1975, 240-242.

4. (With V.A.Meshcheryakov) *Local Form of the Solution of the Chew-Low Equations*, Teor. Mat. Fiz., 24, 2, 1975, 155-163.

5. (With V.E.Aleinikov and G.N.Timoshenko) *Measurement of the Spectra of High Energy Protons from the Shielding of 680 Mev Synchrocyclotron*, Sov. Atomic Energy, 41, 5, 1976, 332-334.

6. (With V.I.Inozemtsev and V.A.Meshcheryakov) *Uniformization of the Forward-Scattering Amplitude at High Energy*, Lettere al Nuovo Cimento, 15, 1976, 321-328.

7. (With V.E.Aleinikov and M.M.Komochkov) *Some Regularities in Formation of the Neutron Spectra Outside the Shielding of Proton Accelerators*, Sov. Atomic Energy, 42, 4, 1977, 305.

8. (With V.A.Meshcheryakov) *Uniformization of the Forward Scattering Amplitude in the Quark Model*, In: "Processes of Multiple Production and Inclusive Reactions at High Energy", Institute of High Energy Physics, Serpukhov, 1977, 333-340.

9. *On Application of Computer Algebra Systems for Computation of Feynman Integrals*, Proceedings of International Meeting on Programming and Mathematical Methods for Solving the Physical Problems, (Dubna, September 20-23, 1977), JINR D10,11-11264, Dubna, 1978, 166-174.

10. *Analytical Computation of the Invariant Curve of the Chew-Low Equations*, U.S.S.R. Comput. Maths. Math. Phys. (Zh. Vychisl. Mat. & Mat. Fiz., 19, 6, 1979, 1602-1608), 19, 6, 1979, 257-266.

11. *Local Construction of General Solution of the Chew-Low Equation by Computer*, Proceedings of International Conference on Systems and Techniques of Analytical Computing and Their Applications to Theoretical Physics (Dubna, September 18-21, 1979), JINR D11-80-13, 1980, 159-169.

12. (With O.V.Tarasov and D.V.Shirkov) *Analytic Calculations on Digital Computers for Applications in Physics and Mathematics*, Sov. Phys. Usp. (Usp. Fiz. Nauk, 130, 1980, 113-147), 23(1), 1980, 59-77.

13. (With A.Karimkhodzhaev and R.N.Faustov) *Hadronic Vacuum Polarization and Test of Quantum Electrodynamics at Low Energies*, In: "Problems in Theory of Gravity and Elementary Particles", K.P.Staniukovich (Ed.), Atomizdat Publishers, Moscow, 1980, 172-181.

14. *Analytical Calculations in High Energy Physics by Computer*, Computer Physics Communications, 20, 1980, 85-90.

15. *Global Structure of the General Solution of the Chew-Low Equations*, Sov. Theor. Math. Phys. (Teor. Mat. Fiz., 48, 3, 1981, 346-355), 48, 3, 1982, 790-796.

16. (With A.Yu.Zharkov) *Solution of Chew-Low Equations in the Quadratic Approximation*, Sov. Theor. Math. Phys. (Teor. Mat. Fiz., 52, 3, 1982, 384-392), 52, 3, 1983, 868-874.

17. (With A.B.Shvachka and A.Yu.Zharkov) *Investigation of Nonlinear Evolution Equations Using Analytical Calculation Systems*, Proceedings of the Second International Conference on Systems and Techniques of Analytical Computing and Their Applications in Theoretical Physics (Dubna, September 21-23, 1982), JINR D11-83-511, Dubna, 1983, 114-119.

18. (With A.Yu.Zharkov) *A REDUCE Package for Solving of Ordinary Differential Equations*, Proceedings of the Second International Conference on Systems and Techniques of Analytical Computing and Their Applications in Theoretical Physics (Dubna, September 21-23, 1982), JINR D11-83-511, Dubna, 1983, 171-177.

19. (With A.Yu.Zharkov) *Iterative Method of Construction of General Solution of the Chew-Low Equation*, Proceedings of the Second International Conference on Systems and Techniques of Analytical Computing and Their Applications in Theoretical Physics (Dubna, September 21-23, 1982), JINR D11-83-511, Dubna, 1983, 232-241.

20. (With A.P.Kryukov, A.Ya.Rodionov and A.Yu.Zharkov) *An Algorithm of Elementary Fraction Decomposition of Rational Functions and Its Implementation in System REDUCE*, Proceedings of the Second International Conference on Systems and Techniques of Analytical Computing and Their Applications in Theoretical Physics (Dubna, September 21-23, 1982), JINR D11-83-511, Dubna, 1983, 178-182.

21. (With O.V.Tarasov) *Analytical Computations by Computer and its Application to High Energy Physics*, Proceedings of the XY International School on High Energy Physics for Young Scientists (Dubna, November 23 - December 2, 1982), JINR D2,4-83-179, Dubna, 1983, 481-504.

22. (With V.K.Mitrjushkin) *Phase Transitions in the Euclidean and Hamiltonian Approaches to Lattice Gauge Theories at a Finite Temperature*, JETP Lett. (Pis'ma Zh. Eksp. Teor. Fiz. 37, 8, 1983, 400-403), 37, 8, 1983, 474-478.

23. (With A.Yu.Zharkov) *Cubic Approximation and Local Limitations on the Functional Arbitrariness in the General Solution of the Chew-Low Equations*, Sov. Theor. Math. Phys. (Teor. Mat. Fiz., 55, 3, 1983, 469-474), 52, 3, 1983, 626-639.

24. (With A.S.Ilchev and V.K.Mitrjushkin) *Phase Transitions in Abelian Higgs Models on a Lattice*, Sov. J. Nucl. Phys. (Yad. Fiz., 40, 1984, 1097-1104), 40, (4), 1985, 698-702.

25. (With A.Yu.Zharkov) *Methods of Investigating and Solving Differential Equations by Means of Algebraic Computation*, In: "Systems for Analytical Transformations in Mechanics", Gorky, 1984, 16-19.

26. (With A.B.Shvachka and A.Yu.Zharkov) *FORMINT - a Program for the Classification of Integrable Nonlinear Evolution Equations*, Computer Physics Communications, 34, 1985, 303-311.

27. (With A.S.Ilchev, V.K.Mitrjushkin and A.M.Zadorozhny) *$SU(2)$ Lattice Gauge – Higgs Model*, Zeitschrift für Physik C - Particles and Fields, 29, 1985, 363-369.

28. (With A.B.Shvachka and A.Yu.Zharkov) *Computer Algebra Application for Classification of Integrable Non-Linear Evolution Equations*, Journal of Symbolic Computation, 1, 1, 1985, 101-107.

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