

CURRICULUM VITAE OF YU. S. ILYASHENKO

Born November 4, 1943

Graduated Mechanical Mathematical Department of Moscow State University, 1968.

PhD in Mechanical Mathematical Department of Moscow State University, 1969,

“GENERATION OF LIMIT CYCLES UNDER PERTURBATIONS OF DIFFERENTIAL EQUATIONS $dw/dz = -R_z(z, w)/R_w(z, w)$, WHERE R IS A POLYNOMIAL”.

From May 1968 Assistant Professor, from June 1972 Associated Professor, from August 96 Professor of Mechanical Mathematical Department of Moscow State University,

Dean of the Higher College of Mathematics of the Independent University of Moscow, from November 1994.

Leading Scientist of Steklov Math. Institute of Russian Acad. of Sciences, half position, from June 95,

Professor of the Department of Mathematics of the Cornell University (half time position for the fall semesters, 1997 - 2016)

Member of the Bureau of Moscow Mathematical Society, from September 1993.

Vice-President of the Moscow Mathematical Society, from September 1996.

President of the Independent University of Moscow, from February 2000.

Member of the Editorial boards of the journals:

-Functional analysis and its applications (Nauka, Moscow, 1996 —2003)

-Ergodic theory and dynamical systems (Cambridge Univ. Press, UK, about 2000–2005)

-Proceedings of the Moscow Mathematical Society (Moscow)

-Mathematical Enlightenment (Moscow)

-Editor in Chief of the Moscow Mathematical Journal edited by the Independent University of Moscow

-Bulletin des Sciences Mathematiques (since 2010)

-Journal of Dynamical and Control Systems (Plenum Press, New York and London)

Typeset by $\mathcal{A}\mathcal{M}\mathcal{S}$ - $\mathcal{T}\mathcal{E}\mathcal{X}$

Doctoral thesis "TOPOLOGY OF PHASE PORTRAITS OF DIFFERENTIAL EQUATIONS IN THE REAL AND COMPLEX PLANES", Steklov Institute, November 1994.

AWARDS AND HONORS

Ilyashenko was awarded by the order CHEVALIER DES PALMES ACADEMIQUES of the French Government. The order was handed to him by the French Ambassador in Moscow, January 24, 2005, at the Independent University of Moscow

NSF GRANTS

9970372 07/01/1999 06/30/2002 Hilbert Type Numbers and Related Topics in Analytic Differential Equations

0400945 07/01/2004 06/30/2007 Simplified Versions of Hilbert 16th Problem and Related Topics in Complex Dynamics and Analytic Foliations

0100404 07/01/2001 06/30/2004 Restricted Versions of the Hilbert 16th Problem and Related Topics in the Theory of Analytic Foliations

0700973 07/01/2007 06/30/2012 Hilbert 16th Problem and Related Topics in Complex Analysis and Foliations, no cost extension to 2012

PEDAGOGIC ACTIVITY

Courses for graduate students:

- Analytic theory of differential equations, 3 parts
- Qualitative theory of differential equations (two years course),
- Bifurcation theory (local and nonlocal bifurcations),
- Selected topics in differential equations,
- Selected topics in complex analysis,
- Evolutionary systems and their attractors,
- Complex analysis, Cornell 1996
- Dynamical systems, Cornell, 1996, 97, 98, 99, 01, 03, 06, 07, 09, 11
- Measure theory and Lebesgue integration, Cornell 97,
- Partial Differential Equations, Cornell 99,
- Complex dynamics, Cornell 99, 05, 10
- Various topics in dynamical systems, 6 crash courses in summer schools 98 — 03.

The courses were mostly given several times and permanently modified.

For undergraduate students:

Ordinary differential equations (modification of Arnold's course with relations to complex analysis inserted).

Ordinary differential equations and dynamical systems, Cornell 07

Honors calculus, Cornell 02, 03, 04, 05, 08, 09, 11

PDE and Hilbert spaces, Cornell 01

Topics in analysis, 12

PHD THESIS MADE UNDER THE ADVISORY OF YU. ILYASHENKO:

- B.Muller, Local genericity of the density property for some classes of equations in CP^2 and C^3 , 1974;
- S.Voronin, Some problems of normal forms theory, 1983;
- A.Shcherbakov, Noncommutative groups of germs $(C, 0) \rightarrow (C, 0)$ and generic properties of differential equations in the complex projective plane, 1983;
- P.Elizarov, Some questions of local theory of analytic differential equations, 1986;
- N.Medvedeva, Stability problem for planar monodromic fixed points, 1988;
- S.Trifonov, Divergence of Dulac's series and desingularization in the families of differential equations, 1991;
- L.Ortiz-Bobadilla, Topology of linear foliations in the complex space, 1991;
- A.Glutsuk, Uniformization of leaves of one-dimensional complex foliations, 1996;
- V. Stantso, Classification of generic few-parameter families of smooth vector fields on the two-sphere and bifurcations of "lips", 1997;
- A.Gorodetski, Minimal Attractors and Partially Hyperbolic Invariant Sets of Dynamical Systems, 2001;
- A.Panov, Limit cycles of Abel and Lienard equations, 2002;
- I.Pushkar', Generalization of Ilyashenko's theorem on the generation of limit cycles, 2003;
- V.Kleptsyn, Lyapunov exponents, attractors and foliations, 2005. The Thesis is done under joint advisory of E.Ghys (ENS Lyon) and Yu. Ilyashenko, and defended in the ENS (Lyon);
- V. Moldavskis, New generic properties of real and complex dynamical systems, Cornell 2006;
- A. Borisjuk, Nonlocal bifurcations on the Klein bottle, 2007;
- M. Nalski, Lyapunov exponents in skew products, 2007;
- T. Golenishcheva-Kutuzova, Limit properties of dynamical systems, 2008;
- O. Anosova, Invariant manifolds in slow-fast systems, 2008;
- A. Arkhipov, Properties of solutions of the generalized Kuramoto-Sivashinski equations, 2008.
- N. Dimitrov, Rapid evolution of complex limit cycles, Cornell 2009
- A. Fishkin, Limit cycles of perturbed centers of planar quadratic vector fields, 2010
- G. Kolyutski, Limit cycles of Lienard equation, 2010
- D. Volk, Genericity of some properties of attractors of skew products and analytic foliations, 2010
- D. Filimonov, Chaos and order in systems of low dimension, 2010
- I. Schurov, Canard cycles in generic slow-fast systems on a torus, 2010

- Yu. Kudryashov, Periodic orbits and attractors of dynamical systems, 2010. The Thesis is done under joint advisory of E.Ghys (ENS Lyon) and Yu. Ilyashenko, and defended in the ENS (Lyon)(2010) and MSU, Moscow, 2011
- P. Kaleda, Limit cycles of planar vector fields and relaxation oscillations, 2010
- P. Saltykov, New properties of attractors and invariant sets of dynamical systems, 2011
- D.Ryzhov, Phase locking and special ergodic theorems, 2012
- I.Gorbovitski, Some problems from complex dynamical systems and combinatorial geometry, Cornell 2012

PARTICIPATION IN INTERNATIONAL CONGRESSES AND CONFERENCES

- International Congress of Mathematicians, Helsinki, 1978, 45-minute invited talk "Global and local aspects of the theory of complex differential equations" in the section of ordinary differential equations;
- International Congress of Mathematicians, 1990, 45-minute invited talk "Finiteness theorems for limit cycles" in the section of ordinary differential equations;
- One or two-hour addresses in the conferences:
 - Periodic orbits and their bifurcations, Lumini, 1989,
 - Resurgent functions, Paris, 1990,
 - Dynamical systems, Nagoya, 1990,
 - Dynamics days, Berlin, 1991,
 - Colloque de Geometrie, Strasbourg, 1991,
 - Equadiff, Barcelona, 1991, Plenary lecture,
 - Complex analytic methods in dynamical systems, Rio de Janeiro, 1992,
 - Dynamical systems, Trieste, 1992,
 - Geometrical colloquium, Moscow, 1993,
 - Kolmogorov memorial conference, StPetersburg, 1993,
 - Dynamical systems, Rio de Janeiro, 1993,
 - Maryland-Penn State conference in Dynamical systems, College Park, 1994,
 - Dynamical systems, Stony Brook, 1994,
 - Dynamical systems, Moscow, 1994,
- Member of the Organizing Committee for the last conference.
- International Congress in Dynamical systems, Montevideo, 1995,
- Ergodic Theory and Dynamical Systems (subject, not title), Jerusalem, May 1995
- Dynamical Systems, Trieste, May 1995,
- The Stokes Phenomenon and Hilbert's 16th Problem, Groningen, June 1995,
- Geometrie complex et Systems dynamique, Paris, July 1995,
- Dynamical Systems and Limit cycles (subject, not title), Lumini, September 1995,
- Symposium on Dynamical Systems (subject, not title), Delft September 1995,
- Workshop on Dynamical Systems, Warsaw, October 1995,
- Annual Meeting of AMS, Orlando, January 1995,

- Contemporary problems in the Theory of dynamical systems, Nizhny Novgorod, July 1996,
- 20th Congress of A.M.A.S.E.S., Urbino, September 1996,
- Iterates of maps, Urbino, September 1996,
- Contemporary problems in mathematics, Samarkand, October 1996,
- Symposium on Planar vector fields, Leida, November 1996,
- Conference on Dynamical systems, Taejon, Korea, February 1997,
- International Congress in Dynamical systems, Guernavaca, Mexico, June 97,
- Arnoldfest (The conference in honour of V.I.Arnold's 60th birthday), Toronto, Canada, June 97,
- International Conference in Dynamical systems, Rio de Janeiro, Brasil, August 97.
- Conference on Polynomial vector fields, Lumini, France, October 97,
- Conference: Multiple time-scaled dynamical systems, Minneapolis, USA, October 97,
- Workshop on Laminations and Foliations, Stony Brook, USA, May 98,
- Conference dedicated to the Novikov's 60th birthday, Moscow, May 98,
- Local differentiable Dynamics and Applications to Bifurcation theory, LUC Diepenbeek, Belgium, June 98,
- Workshop on Dynamical Systems, Trieste, Italy, September 98,
- Memorial conference dedicated to the Pontriagin's 90th birthday, Moscow, August 98, joint talk presented by A.Gorodetski,
- Penn State Dynamical Systems workshop, October 99.
- International conference on Diff. Equat. Moscow, (MAI), August 99, joint talk presented by A.Gorodetski,
- Conference on geometric theory of planar vector fields, Lumini, France, October 99.
- Meeting of Canadian Mathematical Society, Montreal, December 99.
- Workshop on asymptotic series, differential algebra and finiteness problems in nonlinear Dynamical systems, June 19 - July 7, 2000, Montreal.
- International conference on dynamical systems, July 19-28, 2000, IMPA, Rio-de-Janeiro.
- Dynamical Systems and Related Topics, Workshop, October 26-29, 2000, Penn State University, US.
- Global Invariant Manifolds in Dynamical Systems, Workshop, December 10-16, 2000, Oberwolfach, Germany.
- 2 talks at Petrovskii Centennial Conference, May 22-27, 2001, Moscow, Russia.
- Processes in nonlinear sciences, International conference dedicated to the 100th anniversary of A.A.Andronov, Nuzhniy Novgorod, Russia, July 2-6, 2001
- Fundamental mathematics today, Conference dedicated to the 10 anniversary of the Independent University of Moscow, December 26-29, 2001
- Yu. Ilyashenko was a chairmen of the Organizing Committee for the latter conference
- 'Rencontres Mathematiques': Le 16eme probleme de Hilbert et sujets relies en theorie de formes normales, bifurcations, feuilletages et integrales Abeliennes, 3 lectures: Centennial history of Hilbert's 16th problem , May 24-25, Lyon, France
- International Conference "Differential and functional-differential equations", Moscow, August 11-17, 2002,

- Workshop "Differential equations" dedicated to the memory of Vladimir Lazutkin, St.Petersburg, Russia, August 18-20, 2002.
- Conference In honor of the 60th birthday of J.Mather (Princeton, October 2002).
- member of the Programm Commitee and a speaker at the Conference "MODERN THEORY OF DYNAMICAL SYSTEMS AND APPLICATIONS TO THEORETICAL CELESTIAL MECHANICS" dedicated to the memory and the 70th birthday of V.M. Alexeev, Moscow, December 2002.
- Conference in honor of the 100th birthday of A.Kolmogorov, Moscow, June 2003.
- two talks at the Equadiff-03, Husselt, Belgium, 22–26 July 2003,
- Ramis Conference, Toulouse, 22–26 Sep-tember 2003,
- Dynamical systems workshop, Penn State, October 23–26, 2003,
- Hilbert's sixteenth and related problems in dynamics, geometry and analysis, In honor of the 60-th anniversary of Yulij Sergeevich Ilyashenko, Moscow, December 26–29
- Bifurcations, Limit Cycles and Analytic Foliations, held in the C.I.R.M. (Centre International de Rencontres Mathematiques) in Marseille-Luminy (France) from June 7 - 11th, 2004.
- Differential equations and dynamical systems, Suzdal', Russia, July 5-10, 2004
- Recent Progress in Dynamics, MSRI, Berkeley, US, September 27-October 1, 2004.
- Singularities of differential equations and integrable systems in memory of our late colleague Andrey Bolibrukh, in Strasbourg, November 23-27, 2004.
- Extremal Problems and Approximation dedicated to the 70th birthday of Professor Vladimir Tikhomirov, Moscow, December, 16-18, 2004
- Lyapunov exponents and related topics in dynamics and geometry, Moscow, Jan 24 – 28, 2005
- Dynamics, Bifurcations and Chaos, dedicated to 70th birthday of Professor L.P.Shilnikov, Nizhni Novgorod, Russia, Jan 31 – Feb 04, 2005
- workshop " Modern Mathematics", Dubna, July 19-30, 2005
- "WORKSHOP IN DYNAMICAL SYSTEMS AND RELATED TOPICS " at Penn State, Conference in honor of MICHAEL JAKOBSON's sixtieth birthday, October 14-17, 2005
- Barcelona Conference on Planar Vector Fields, CRM, February 13 to 17, 2006
- workshop " Modern Mathematics", Dubna, July 19-30, 2006
- 7th Workshop on Nonlinear Dynamics and Chaos at the Courant Institute, Oct. 6-8, 2006.
- Laminations and Group actions in dynamics, Moscow, February 19-23, 2007
- Petrovski memorial conference, Differential Equations and related topics, Moscow, May 21–26, 2007
- Lyapunov Memorial Conference, Kharkov, June 24–30, 2007
- Workshop in Dynamical Systems, Maryland–Penn State, October 18-21, 2007
- Pontryagin memorial conference, Moscow, June 17 – 23, 2008
- Singularities of Planar Vector Fields, Bifurcations and Applications, CIRM, Luminy (France), 11 – 15 May 2009

- Plenary talk at the conference Topology, Geometry, and Dynamics dedicated to Vladimir Rokhlin, StPetersburg, 11 – 16 January, 2010
- 15th Anniversary of the Niznii Novgorod Mathematical Society, 17–18 March 2010
- Sofia ”Bifurcation Theory, Integrable Systems, and the Bispectral Problem” in honor of Emil Horozov, Sofia (May 15-19 2010).
- Algebraic Methods in Dynamical Systems Conference, Bedlewo, Poland, May 16 – 22, 2010
- The 8th AIMS Conference on Dynamical Systems, Differential Equations and Applications, Dresden, Germany May 25 - 28, 2010
- Academic Diaspora and the Future of Russian Science, St. Petersburg, Russia, June 24 – 25, 2010
- Differential Equations and Related Topics, dedicated to the 110th anniversary of I.G.Petrovski, Moscow, May 21–25, 2011
- Equadiff 2011, Loughborough, Great Britain, August 1 - 5, 2011
- School and Conference on Algebraic Methods in Geometry: Commutative and Homological Algebra in Foliations and Singularities, in honor of Xavier Gomez-Mont on the occasion of his 60th birthday, Guanajuato, Mexico, August 22 – September 2, 2011
- Midwest Dynamical Systems Seminar, Indianapolis, October 14-16th 2011
- International conference “Differential equation and control theory, in Honor 90th anniversary of E.F.Mischenko , Moscow, April 16-17, 2012
- Plenary talk at the International conference “Partial Differential Equations and Applications” in Honor of Mark Vishik on the occasion of his 90th birthday IITP, Moscow, Russia June 4-7, 2012
- Opening plenary talk at the International conference “Holomorphic foliations and complex dynamics”, Moscow, Independent University June 11-15, 2012
- Organizer and principle lecturer at the Summer School “Dynamical Systems”, Dubna, June 23–July 5, 2012
- Plenary talk at the International conference “Henri Poincaré: from mathematician to philosopher”, Paris, November 19 – 24, 2012
- International conference “Analysis and singularities”, in Honor of the 75th birthday of Vladimir Arnold, Moscow, December 17–21, 2012
- Organizer and principle lecturer at the Summer School “Dynamical Systems”, Dubna, June 20–July 2, 2013
- Shilnikov memorial conference, Nizhnii Novgorod, July 2 – 7, 2013
- Invited sectional talk at the international conference ”Mathematical Congress of Americas”, August 5 – 9, 2013, Guanajuato, Mexico
- 2 talks, 45 minutes each, at the conference “Attractors, Foliations and Limit Cycles”, from 13 to 17 January 2014, celebrating Yulij Ilyashenko’s 70th birthday
- Invited talk at the international conference ”Topological and geometric methods in low-dimensional dynamical systems”, Moscow, May 11 - 16, 2014
- Organizer and principle lecturer at the Summer School “Dynamical Systems”, Dubna, June 28–July 8, 2014

Invited talk at Workshop in Dynamical Systems and Related Topics, Penn State, October 16 - 19 2014

Invited talk at the Conference "Legacy of Vladimir Arnold", Toronto, November 24-28 2014

Invited talk at the Workshop on Singularities in Geometry, Topology, Foliations and Dynamics, Celebration of the 60s Anniversary of Jose Seade, Merida, Mexico, 8 - 19 December 2014

COURSES IN INTERNATIONAL WORKSHOPS AND SCHOOLS

- Local dynamics, 5 lectures in Nice, 1990,
- Finiteness theorems for limit cycles, 5 lectures in Guanajuato, Mexico, 1991,
- Finiteness theorems for limit cycles, 5 lectures in IMPA, Brazil, February 1992.
- Analytic theory of differential equations, 14 lectures in Trieste, 1991, 1992.
- Local dynamics and nonlocal bifurcations, 5 lectures in Montreal, 1992,
- Analytic theory of differential equations, new course, 12 lectures in Mexico, and Guanajuato 1993,
- Nonlinear Stokes Phenomena, new course, 12 lectures in Mexico, 1995,
- Normal forms and Nonlocal bifurcations, 11 lectures in Mexico and Guanajuato, 1996,
- Normal forms, limit cycles, desingularization and bifurcations, 9 lectures, Toronto, January 1997.
- Co-Organizer and lecturer (4 lectures) in the Summer School "Normal Forms, Bifurcations and Finiteness Problems in differential Equations", Montreal, 8-19 July 2002
- Selected Topics in Differential Equations with Real and Complex Time, 3 lectures at the conference MODERN ANALYSIS AND MOSCOW UNIVERSITY, Jerusalem, May 31 - June 3, 2004

-From 1998 to 2013 organized 16 Summer Schools "Dynamical Systems", the last five international. They took place at Stola, Slovakia, June 24 — July 10, 2009 and June 26 — July 9, 2010, and in Dubna, Russia, June 23 – July 7, 2011, June 23 – July 5, 2012, June 20 – July 2, 2013 . Materials of two Schools, 1998 and 2008 formed a book [122].

-Attractors and limit cycles, 10 lectures in the Spanish Winter School, "Recent Trends in Nonlinear Science", 25–29 January 2010

-Limit cycles in the complex perspective, 10 lectures in the School of holomorphic foliations and dynamical systems, Mexico-City, Mexico, August 2–6, 2010

INVITED SEMINAR TALKS (NEW SECTION)

"Bony and thick attractors", Dynamical Systems seminar at the University of California at Irvine, December 7, 2010

"Attractors", Colloquium talk at the Chebyshev Laboratory, St Petersburg, June 21, 2011

"Limit cycles and complex foliations", Colloquium talk at the Chebyshev Laboratory, St Petersburg, June 22, 2011

PRINCIPAL SCIENTIFIC ACHIEVEMENTS

1. Proof of the Dulac's conjecture: Polynomial vector field in the real plane has but a finite number of limit cycles. The proof of this short statement requires a book [44] published by AMS in 1991; it was the subject of the talk in the ICM-1990. This proof was obtained in the competition with the French team: Ecalle, Martinet, Moussu, Ramis. The proof of the same conjecture given by Ecalle and based on the ideas of the four authors appeared in a book published in 1992. Preliminary studies: [30], [32], [36], [41].

2. Investigation of generic properties of polynomial vector fields in the complex plane (talk in the ICM-1978) [16], [17], [57].

Absolute rigidity of complex foliations was discovered in [16]. A related property of total rigidity was found in [106], [119], [120].

3. Solvability of local problems of ODE:

- algebraic unsolvability of the center focus problem [7],
- analytic unsolvability of the Liapunov stability problem [12],
- general investigation of algebraically and analytically solvable problems of local dynamics [37].

4. Geometric theorems on divergence of normalizing series and related topics in complex analysis [19],[20],[22],[24].

5. Upper estimate of the Hausdorff and box counting dimensions for attractors of dissipative systems, with applications to Navier-Stokes and Kuramoto-Sivashinsky equations: [17], [18] (prolonged by Babin-Vishik),[29], [48], [49], [64].

6. Nonlinear Stokes Phenomena: advisorship of the investigations of Voronin, Elizarov, Shcherbakov, summarized in [51], including [52], [53], [54].

7. Generation of limit cycles under perturbation of planar Hamiltonian systems. Related study of zeroes of Abelian integrals by means of the theory of Riemann surfaces and other tools of complex analysis (like Riemann–Roch and Picard–Lefschetz theorems). Initiated in [2], [3], prolonged [5], [14], [61], [63], [91], [101], [102].

8. Normal forms for local families and nonlocal bifurcations. A complete list of finitely smooth integrable normal forms for local families of vector fields and maps [46], [54]. Solution of the Hilbert–Arnold problem for elementary polycycles [55], [60] (together with Yakovenko). Systematic exposition of the nonlocal bifurcations theory in the multidimensional space (together with Li Weigu) [73]. The book [73] contains new proofs of classical theorems and many new results.

9. Relations between random and smooth dynamical systems. New robust properties of attractors are found (joint work with A. Gorodetski, [78], [81]). Robustness of nonhyperbolic invariant measures for partially hyperbolic dynamical systems was discovered in [96] (with A. Gorodetski, V. Kleptsyn and M.Nalski).

10. Hilbert type numbers for Abel equation: an upper estimate of the number of limit cycles for a polynomial nonautonomous equation with periodic coefficients on the line is obtained [80]). Similar estimates for Lienard equations and quadratic vector fields are obtained in [84] (with A. Panov) and [111] (with J. Llibre) respectively. A review of the investigations in the theory of planar polynomial dynamical systems may be found in [85].

11. Persistence of heteroclinic points of polynomial automorphisms of the complex plane was discovered in [87] (together with G. Buzzard and S. Hruska). At the same paper genericity of the Kupka–Smale property for these automorphisms is proved. Relation between persistence properties of complex foliations and simultaneous uniformization of leaves for such foliations is discovered in [100]. New persistence properties of complex limit cycles located in a neighborhood of a hyperbolic polycycle are found in [126].

12. New robust properties of attractors of closed manifolds and manifolds with boundary were discovered (together with A. Negut, V. Kleptsyn, P. Saltykov and D. Volk). For closed manifolds this new property is *invisibility of large parts of attractors* [112], [113]. For manifolds with boundary the new properties are: *genericity of diffeomorphisms with intermingled attracting basins*, [110], [111], [113], and *existence of thick attractors*, [115], [117], that is, attractors that have positive Lebesgue measure together with their complement. These genericity results are based on the new perturbation technics that may be called *overcoming the Fubini nightmare* [121]. New types of attractors, namely, multidimensional bony and relatively unstable attractors are found, [123], [124].

LIST OF PUBLICATIONS

1. Regular polygones in E^n , Vestnik MGU, ser. mat. mech., 1962, no 8, p. 18-24.
2. Generation of limit cycles under the perturbation of the equation $dw/dz = -R_z/R_w$, where $R(z, w)$ is a polynomial, Math. Sbornik, 1969, v.78, N 3, p.360-373.
3. Example of equations $dw/dz = P(z, w)/Q(z, w)$ having infinite number of limit cycles and arbitrary high Petrovskii-Landis genus, Math. Sbornik, 1969, v.80, N 3, p.388-404.
4. Multivalued functions on commutative normed rings, Vestnik MGU, ser. mat., 1969, no. 5, p. 8-11.
5. Nonalgebraicity of the set of differential equations with the rational right hand side having multiple limit cycles, Math. Sbornik, 1970, v.83, N3, p.452-456.
6. Distraction of cycles in the foliations to analytic curves, Math. Sbornik, 1972, v.67, N 1, p.58-66.
7. Algebraic nonsolvability and almost algebraic solvability of the center-focus problem., Funct. Anal. Appl., 1972, v.6, N 3, p. 30-37.
8. Foliation by analytic curves, Math. Sbornik, . 1972, v.88 N 4, p.558-577.
9. On the problems of rectification and cycle formation, Math. Sbornik, 1973, vol.90, no.2, p.184-195.
10. Nondegenerate B -groups, Docl. Acad. Nauk SSSR, vol 208 (1973), no 3, 207-209.
11. (with Khovanskii) Galois theory for Fuchsian systems of differential equations with small coefficients, Preprint of the Institute of applied mathematics, no 117, 1974, Moscow.
12. Analytic nonsolvability of the problem of Liapunov stability and topological classification for singular points of analytic systems of differential equations, Math. Sbornik, 1976, v.99, N.2, p.162-175.
13. Some remarks on the topology of singular points of analytic differential equations in the complex domain and the theorem of Ladis, 1977, v.11, N 2, p.28-38.

14. On zeros of special Abelian integrals in the real domain, *Funct. Anal. and Pril.* 1977, v.11, N 4, p.78-79.
15. Multiplicity of limit cycles occurring under the perturbation of the Hamiltonian equations of the class P_2/Q_1 in the real and complex plane, *Trudy sem. im. I.G.Petrovskogo*, v.3, 1978, p. 29-40.
16. The topology of phase portraits of analytic differential equations in the complex projective plane, *Trudy sem. im. I.G.Petrovskogo*, v.4, 1978, p.83-136 , English transl. *Selecta Math. Sov.*, v.5, 1986, 141-199.
17. Global and local aspects of the theory of complex differential equations. *Proceedings of International Congress of Mathematicians. Helsinki, 1978*, p.821-826.
18. Divergence of the series that transform an analytic differential equation to the linear normal form at a singular point, *Funct. Anal. and Pril.* 1979, v.13, N 3, p.87-88.
19. (with Piartli) Zero type neighborhoods of embedded complex tori, *Trudy sem. im. I.G.Petrovskogo*, 1979, v. 5, p.85-95.
20. (with Piartli) Materialization of Poincare resonances and divergence of normalizing series, *Trudy sem. im. I.G.Petrovskogo*, 1981, v.7, p.3-49.
21. In the normal forms theory under breaking of A.D.Brjuno conditions divergence is a rule and convergence is an exception, *Vestnik MGU, ser. mat.*, 1981, no. 5, p. 10-16.
22. (with Piartli) Materialization of Poincare resonances and divergence of normalizing series for polynomial differential equations, *Trudy sem. im. I.G.Petrovskogo*, 1982, v 8, p.111-127.
23. (with Chetaev) On the dimension of attractors of some dissipative systems, *Appl. Math. Mech.*, 1982, v.46, N 3, p.374-381.
24. Positive type embeddings of elliptic curves to complex surfaces, *Trudy MMO*, 1982, v.46, p. 37-67.
25. Weakly contracting systems and attractors of Galiorkin approximations of the Navier-Stokes equations on the two-torus, *International Mech. Surveys*, 1982, v.5, N 1, p.31-63, transl. in *Selecta Math. Sov.*, v. 11 N 3, p. 203-239.
26. Singular points and limit cycles of differential equations in the real and complex plane, *Preprint NIVTS AN SSSR, Pushchino*, 1982, 38 p.
27. (with Piartli) A polynomial vector field with singular points of Poincaré type only, *Funct. Anal. Appl.*, 1983, v.17, N.4, p.84-85.
28. (with Elizarov) Remarks on orbital analytic classification of germs of vector fields, *Math. Sbornik*, 1983, v. 121, N 3 p.111-126.
29. On the dimension of attractors of k-contracting evolutionary systems in infinite dimensional spaces, *Vestnik MGU, ser. math.*, 1983, N 3, p. 52 - 59.
30. Limit cycles of polynomial vector fields with nondegenerated singular points in the real plane, *Funct. Anal. Appl.*, 1984, v.18, N.3, p.32-42.
31. The finiteness problem for limit cycles of polynomial vector fields on the plane, germs of saddle resonant vector fields and nonHausdorff Riemann surfaces. In *Lecture Notes in Math; 1060*, 1984.
32. Dulac's memoir "On limit cycles" and related topics of the theory of differential equations, *Russian Math. Surveys*, 1985, v.40, N.6, p.41-78.

33. (with Arnold) Ordinary differential equations. In Encyclopedia of Mathematical Sciences, v 1, Moscow 1985, Springer 1986.
34. (with Arnold, Afraimovich, Shil'nikov) Bifurcation theory. In Encyclopedia of Mathematical Sciences, v 5, Moscow 1986, Springer 1994.
35. A criterion of steepness for analytic functions, Russian Math. Surveys, 1986, v.41, N.1, p.193-194.
36. Separatrix bilaterals for planar vector fields, Vestnik MGU, ser. Math., 1986, N 4, p.25-31.
37. Algebraically and analytically solvable local problems in theory of ordinary differential equations, Trudy sem. im. I.G.Petrovskogo, 1987, v 12, p. 118-136.
38. Singular points of vector fields (scientific commentary), in the book: I.G.Petrovskii, Selected papers, Moscow, Nauka, 1987, 373-402.
39. Limit cycles in real and complex planes (scientific commentary), in the book: I.G.Petrovskii, Selected papers, Moscow, Nauka, 1987, 402-418.
40. (with Khovanskii) Galois groups, Stokes operators and Ramis theorem, Funct. Anal. and Appl., 1990, v.24, N 3, p.31-42.
41. Finiteness theorems for limit cycles, Russian Math. Surveys, 1990, v.45, N 2, p.143-200.
42. Stability of the equilibrium points in hamiltonian systems with two degrees of freedom. Publication de l'Institut de Recherche Mathematique Avancee, 1990, 437, 11p.
43. Finiteness theorem for limit cycles. Proceedings of International Congress of Mathematicians, Kyoto, 1990, v.11, p.1259-1270.
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