

CURRICULUM VITAE

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Current position and past employment history

2009-2014	Member of Academic Council of Faculty of Mechanics and Mathematics, Moscow State University
2007-2013	Member of Experts Council of Superior Certification Commission
2006-Present	Head of Laboratory of Computer Methods in Humanities and Natural Sciences, Faculty of Mechanics and Mathematics, Moscow State University
2006-2008	Visiting Professor in Harbin Institute of Technology, Harbin, China
2000-Present	Full Professor Chair of Differential Geometry and Applications Faculty of Mechanics and Mathematics, Moscow State University
2000-2010	Full Professor Institute of Natural Science and Ecology (now it is a part of Moscow Institute of Physics and Technology)
1997-2000	Associate Professor Chair of Differential Geometry and Applications Faculty of Mechanics and Mathematics, Moscow State University
1994-1997	Teaching Assistant Chair of Differential Geometry and Applications Faculty of Mechanics and Mathematics Moscow State University
Jan.93-Jun.94	Professore Visitante IMECC, UNICAMP, Campinas, SP, Brazil
1992-1993	Teaching Assistant Chair of Differential Geometry and Applications Faculty of Mechanics and Mathematics Moscow State University
1989-1992	Research Assistant Laboratory of Renewable Sources of Energy Moscow State University

Academic qualifications

- 1997 *Doctor Phys.-Math. Science,*
 "Classification of Local Minimal Planar Networks
 with Convex Boundaries"
 Chair of Differential Geometry and Applications
 Faculty of Mechanics and Mathematics
 Moscow State University
- 1990 *Candidate Phys.-Math. Science (Ph.D.)*
 "Morse's Indices of Minimal Surfaces"
 Advisor: Prof. A.T.Fomenko
 Chair of High Geometry and Topology
 Faculty of Mechanics and Mathematics
 Moscow State University
- 1985–1989 *Post-graduate studies*
 Chair of High Geometry and Topology
 Faculty of Mechanics and Mathematics
 Moscow State University
 Scientific advisor: Prof. A.T.Fomenko
- 1980–1985 *Student*
 Faculty of Mechanics and Mathematics
 Moscow State University, Bachelor of Mathematics,
 (red diploma)

The list of courses

- 1992–present Seminars on Classical Differential Geometry
- 1992–2010 Seminars on Differential Geometry and Topology
- 1992–1996 Special Course on Topological Variational Problems
- 1993–1994 Lectures on Mathematical Methods in Economics
- 1996–1997 Lectures on Mathematical Methods in Economics
- 1996–1997 Seminars on Mathematical Methods in Economics
- 1998–2010 Lectures on Classical Differential Geometry
- 1998–2010 Lectures on Differential Geometry and Topology
- 1998–present Special Seminars on Extreme Networks Theory
- 2002–2010 Lectures and Seminars on High Geometry and Topology for
 students of Institute of Natural Science and
 Ecology (now it is a part of **Moscow Institute of
 Physics and Technology**)
- 2002–2004 Special Courses on Mathematical Methods in Biology
- 2003–2004 Lectures on Differential Geometry for Students of
 Bioinformatics Department
- 2006–2008 Lectures and Seminars on Differential Geometry and
 Topology in HIT, Harbin, China
- 2010–2013 Practicum on Computer Geometry
- 2011–2013 Special Course Elements of Metric Geometry
- 2012–present Lectures on Visual Geometry and Topology
- 2012–present Seminars on Visual Geometry and Topology
- 2013–2015 Special Course Metric Geometry and Geometric Theory of
 Graphs
- 2015–2016 Special Course Geometric Measure Theory. Introduction
- 2016–2017 Special Course Elements of Metric Geometry and Geometric
 Graph Theory

2017-2018	Special Course Steiner Problem: Approach of Geometric Measure Theory
2018-2019	Special Course Kantorovich Transportation Problem and Geometry of Probability Measures

Publication

Books

1. A.T.Fomenko, A.A.Tuzhilin, Elements of the geometry and topology of minimal surfaces in three-dimensional space. Translations of Mathematical Monographs, 1992, v. 93.
2. A.O.Ivanov, A.A.Tuzhilin, Minimal Networks: The Steiner Problem and Its Generalizations. CRC Press, N.W., Boca Raton, Florida, 1994.
3. A.O.Ivanov, A.A.Tuzhilin, Branched Geodesics: Geometrical Theory of Local Minimal Networks. The Edwin Mellen Press, Lewinston, NY, USA, 1999 (in Russian).
4. A.O.Ivanov, A.A.Tuzhilin, Branching solutions to one-dimensional variational problems. World Scientific, Singapore-New Jersey-London-Hong Kong, 2000.
5. A.O.Ivanov, A.A.Tuzhilin, Extreme Networks Theory. Moscow-Izhevsk: institute of Computer Investigations, 2003(in Russian).
6. V.V.Trofimov, A.A.Tuzhilin, Mathematical models in economy. 5 lectures. - 2005, http://www.gaudeamus.omskcity.com/PDF_library_economic_5.html.
7. A.O.Ivanov, A.A.Tuzhilin, Lections on Differential Geometry and Topology, Part 1: Classical Differential Geometry. Preprint, 2001-Present (on <http://www.mmonline.ru> or <http://dfgm.math.msu.su>)
8. A.O.Ivanov, A.A.Tuzhilin, Lections on Differential Geometry and Topology, Part 2: Tensor Calculus on Manifolds. Preprint, 2001-Present (on <http://dfgm.math.msu.su>)
9. A.O.Ivanov, A.A.Tuzhilin, Lectures on Classical Differential Geometry, Moscow, Logos, 2008.
10. A.T.Fomenko, A.O.Ivanov, D.P.Il'yutko, G.V.Nosovskij, A.A.Tuzhilin. Computer Geometry: practical work. 2010.
11. I.M.Nikonov, A.A.Tuzhilin, Mathematical Models in Economics. Spring Term. 2012, MSU, Moscow, 120 pp.
12. A.A.Tuzhilin, A.T.Fomenko, Element of Geometry and Topology of Minimal Surfaces. 2014, URSS Moscow, ISBN 978-5-9710-0878-1, 256 pp.
13. A.A.Oshemkov, F.Yu.Popelensky, A.A.Tuzhilin, A.T.Fomenko, A.I.Shafarevich Textbook on Visual Geometry and Topology. 2014, URSS, Moscow, ISBN 978-5-9710-0970-2, 360 pp.
14. A.O.Ivanov, A.A.Tuzhilin, Geometry of Hausdorff and Gromov-Hausdorff Distances: the Case of Compacts. Publishing House of the Board of Trustees of Mechanical-Mathematical Faculty of Lomonosov Moscow State University, 2017, Moscow (in Russian).
15. A.O.Ivanov, A.A.Tuzhilin, Steiner Problem: Approach of Geometrical Measure Theory. Publishing House of the Board of Trustees of Mechanical-Mathematical Faculty of Lomonosov Moscow State University, 2018, Moscow (in Russian).
16. A.O.Ivanov, A.A.Tuzhilin, Geometric Measure Theory, Part 1. Publishing House of the Board of Trustees of Mechanical-Mathematical Faculty of Lomonosov Moscow State University, 2018, Moscow (in Russian).

Articles in Journals

1. A.A.Tuzhilin, A.T.Fomenko, Multivalued mappings, minimal surfaces and soap films. Moscow Univ. Math. Bull., 1986, v. 41, N 3, Translation from Russian.
2. A.A.Tuzhilin, On bifurcation of some minimal surfaces under 2-parameter variation of the contour. Geometry, Differential Equations and Mechanics, MSU, Moscow, 1986, pp. 140-145, In Russian.
3. A.A.Tuzhilin, Minimal surfaces bifurcations under a variation of the contour. Modern Problems of Mechanics and Machine-Building Technology, VINITI, Moscow, 1986, p. 61, In Russian.
4. A.A.Tuzhilin, Indices of minimal surfaces. Geometry and Theory of Singularities in Non Linear Equations, Voronezh. SU, Voronezh, 1987, pp. 170-176, In Russian.
5. A.A.Tuzhilin, Indices of two-dimensional minimal surfaces in R^3 . Selected Problems of Algebra, Geometry and Discrete Mathematics, MSU, Moscow, 1988, pp. 123-128, In Russian.
6. A.O.Ivanov, A.A.Tuzhilin, On the deformations of a manifold that lowers the volume with maximum speed. Moscow Univ. Math. Bull., 1989, v. 44, N 3, Translation from Russian.
7. A.A.Tuzhilin, Two-dimensional minimal surfaces and their indices. Mathematical Methods in Mechanics, MSU, Moscow, 1990, pp. 89-92, In Russian.
8. A.O.Ivanov, V.V.Trofimov, A.A.Tuzhilin and A.T.Fomenko, Computer Calculations in Geometrical Problems of CAD. Trudy Seminara Vect. Tens. Anal., 1990, v. 24, pp. 70-80, In Russian.
9. A.O.Ivanov, A.A.Tuzhilin, Solution of the Steiner Problem for convex boundaries. Russian Mathematical Surveys, 1990, v. 45, N 2, pp. 214-215.
10. A.O.Ivanov, A.A.Tuzhilin, The Steiner problem in the plane or in plane minimal nets. Matem. Sbornik, 1991, v. 182, N 12, pp. 1813-1844, In Russian.
11. A.A.Tuzhilin, Morse Type indices of two-dimensional minimal surfaces in R^3 and H^3 . Math. USSR Izvestiya, 1992, v. 38, N 3, pp. 575-598.
12. A.O.Ivanov, A.A.Tuzhilin, Geometry of minimal networks and the one-dimensional Plateau problem. Russian Mathematical Surveys, 1992, v. 47, N 2, pp. 59-131.
13. A.O.Ivanov, I.V.Ptitsyna and A.A.Tuzhilin, Classification of closed minimal networks on flat 2-dimensional tori. Selected Problems of Algebra, Geometry and Discrete Mathematics, MSU, Moscow, 1992, pp. 47-53, In Russian.
14. A.O.Ivanov, A.A.Tuzhilin, Algorithmic Problems of Variational Calculus. Steiner Problem and Minimal Networks on the Plane and Surfaces. Handbook on Discrete Mathematics, 1992.

15. A.A.Tuzhilin, On the Index of Minimal Surfaces. Proc. Of the Steklov Institute of Math., 1993, no. 3, pp.203-208.
16. Tuzhilin A.A., Global properties of minimal surfaces in R^3 and H^3 and their Morse type indices. Advances in Soviet Mathematics, 1993, v. 15, pp. 193-233.
17. A.O.Ivanov, A.A.Tuzhilin, The Steiner problem for convex boundaries, general case. Advances in Soviet Mathematics, 1993, v. 15, pp. 15-92.
18. A.O.Ivanov, A.A.Tuzhilin, The Steiner problem for convex boundaries, the regular case. Advances in Soviet Mathematics, 1993, v. 15, pp. 93-131.
19. A.O.Ivanov, I.V.Iskhakov and A.A.Tuzhilin, Minimal networks on regular polygons: realization of linear tilings. Vestnik MGU, 1993, N6, pp. 77-80.
20. A.O.Ivanov, A.A.Tuzhilin, The Steiner problem in the plane or in plane minimal nets. Sbornik: Mathematics, 1993, v. 74, N 2, pp. 555-582.
21. A.O.Ivanov, A.A.Tuzhilin, Topologies of locally minimal planar binary trees. Russian Mathematical Surveys, 1994, v. 49, N 6, pp. 201-202.
22. A.O.Ivanov, I.V.Ptitsina, A.A.Tuzhilin, Classification of closed minimal networks on flat two-dimensional tori. Sbornik: Mathematics, 1994, v. 77, N 2, pp. 391-425.
23. A.O.Ivanov, A.A.Tuzhilin, Some problems concerning minimal networks. International Journal of Shape Modeling, 1994, v. 1, N 1, pp. 81-107.
24. A.O.Ivanov and A.A.Tuzhilin, Weighted minimal binary trees. Russian Mathematical Surveys, 1995, v. 50, N 3, pp. 623-624.
25. A.O.Ivanov, A.A.Tuzhilin, On minimal binary trees with a regular boundary. Russian Mathematical Surveys, 1996, v. 51, N 1, pp. 144-145.
26. A.O.Ivanov, A.A.Tuzhilin, The geometry of plane linear trees. Russian Mathematical Surveys, 1996, v. 51, N 2, pp. 329-330.
27. A.O.Ivanov, A.A.Tuzhilin, Structure of the set of planar minimal networks with given topology and boundary. Russian Mathematical Surveys, 1996, v. 51, N 3, pp. 553-554.
28. A.O.Ivanov, A.A.Tuzhilin, The classification of minimal skeletons with a regular boundary. Russian Mathematical Surveys, 1996, v. 51, N 4, pp. 734-735.
29. A.O.Ivanov, A.A.Tuzhilin, The twist number of planar linear trees. Sbornik: Mathematics, 1996, v. 187, N 8, pp. 1149-1195.
30. A.A.Tuzhilin, Minimal binary trees with regular boundary: the case of skeletons with four ends. Sbornik: Mathematics, 1996, v. 187, N 4, pp. 581-622.
31. A.A.Tuzhilin, Complete classification of local binary trees with regular boundaries. The case of skeletons. Fundamentalnaya i prikladnaya matematika, 1996, v. 2, N2, pp. 511-562.

32. A.A.Tuzhilin, Minimal binary trees with regular boundary: the case of 5-ends skeletons. *Matem. Zametki*, 1997, v.61, no.6.
33. A.O.Ivanov, A.A.Tuzhilin, The geometry of minimal networks with a given topology and a fixed boundary, *Izvestiya: Mathematics*, 1997, v. 61, N 6, pp. 1231-1263.
34. A.O.Ivanov and A.A.Tuzhilin, Planar Local Minimal Binary Trees with Convex, Quasiregular, and Regular Boundaries. Preprint, 1997, Sonderforschungsbereich 256, 490.
35. A.O.Ivanov, A.A.Tuzhilin, Geometry and Topology of Local Minimal 2-Trees. *Bol. Soc. Bras. Mat.*, 1997, v.28, no.1, pp. 103-139.
36. A.O.Ivanov, A.A.Tuzhilin, Linear Networks and Convex Polyhedra, *Trudy SPOMI*, St-Petersburg, 1998.
37. A.O.Ivanov, A.A.Tuzhilin, Geometry of convex polygons and locally minimal binary trees spanning these polygons. *Sbornik: Mathematics*, 1999, v. 190, N 1, pp. 71-110.
38. A.O.Ivanov, A.A.Tuzhilin, The space of parallel linear networks with a fixed boundary. *Izvestiya: Mathematics*, 1999, v. 63, N 5, Pages 923-962.
39. A.O.Ivanov, Hong Van Le, and A.A.Tuzhilin, Planar Manhattan Minimal and Critical Networks. Leipzig, MPI fur Mathematik in den Naturwissenschaften, 1999, preprint 46/99.
40. A.O.Ivanov, Hong Van Le, and A.A.Tuzhilin, Nontrivial critical Networks. Singularities of Lagrangians and Criticality Criteria. Leipzig, MPI fur Mathematik in den Naturwissenschaften, 1999, preprint 45/99.
41. A.O.Ivanov, A.A.Tuzhilin, D. Cieslik. Steiner ratio for Riemannian manifolds. *Russian Mathematical Surveys*, 2000, v. 55, N 6, pp. 1150-1151.
42. A.O.Ivanov, A.A.Tuzhilin, Differential calculus on the space of Steiner minimal trees in Riemannian manifolds. *Sbornik: Mathematics*, 2001, v. 192, N 6, pp. 823-841.
43. A.O.Ivanov, Hong Van Le, A.A.Tuzhilin, Non-trivial critical networks. Singularities of lagrangians and criticality criterium. *Mat. Zametki*, 2001, v. 69, No.4., pp. 566-580.
44. A.O.Ivanov, A.A.Tuzhilin, Extreme Networks. *Acta Appl. Mathemat.*, 2001, v. 66, pp. 251-317.
45. A.O.Ivanov, Hong Van Le, A.A.Tuzhilin, Planar Manhattan Local Minimal and Critical Networks. *Educational Internet-Journal "Computer Graphics & Geometry"*, 2001, v. 1, N 11, <http://www.cgg.ru/4/mathz1.html>
46. A. Fomenko, A.O.Ivanov, A.A.Tuzhilin, Low Dimensional Geometrical Variational Problems in Large. *Educational Internet-Journal "Computer Graphics & Geometry"*, 2001, v. 3, N 2, <http://www.cgg.ru/may/ivanov/FOM-ART.html>
47. A.O.Ivanov, A.A.Tuzhilin. Steiner ratio. The Modern State. *Mathematical Questions in Cybernetics*, 2002, v. 11, pp.27-48 (in Russian).

48. A.O.Ivanov, A.A.Tuzhilin, D. Cieslik. Melzak algorithm in phylogenetic spaces. Vestnik MGU, ser. 1, Matematika, Mehanika, 2002, N3.
49. A.O.Ivanov, A.A.Tuzhilin, Branching geodesics in normed spaces, Izvestiya: Mathematics, 2002, v. 66, N 5, pp. 905-948.
50. A.O. Ivanov, Hong Van Le, A.A. Tuzhilin, Planar Manhattan Local Minimal and Critical Networks. European J. of Combinatorics, 2002, v. 23, N 8, pp. 949-967.
51. A.O.Ivanov, A.A.Tuzhilin, D.Cieslik, Steiner Ratio for Manifolds. Mathematical Notes, 2003, v. 74, N 3-4, pp. 367-374.
52. A.T.Fomenko, A.O.Ivanov, A.A.Tuzhilin, Visual Topology and Variational Problems on Two-Dimensional Surfaces. In book: "Visual Perfection: Mathematics and Creativity", ed.: Michele Emmer, 2004.
53. A.O.Ivanov, A.A.Tuzhilin, Non-trivial example of a boundary set in Generalized Steiner Problem constructed with the help of Computer Geometry and Visualization. Computer Graphics and Geometry internet journal, v. 6 N 1, 2004, <http://www.elibrary.ru/cgg>
54. A.O.Ivanov, I.M.Nikonov, A.A.Tuzhilin, The geometry of finite length trees in metric spaces. Trudy seminara po vektornomu i tenzornomu analizu s ikh prilozheniyami k geometrii, mekhanike i fizike, 2005, v. 26, pp. 178-200 (in Russian).
55. A.O.Ivanov, A.A.Tuzhilin, V.K.Bojenko, A.M.Shishkin, T.S.Belle, Simulation of processes of cell proliferation control as search of effective anti-tumor substances. Vestnik RNCRR, 2005, N 4, http://vestnik.rncrr.ru/vestnik/v4/papers/belle_v4.htm
56. Ivanov A.O., Nikonov I.M., Tuzhilin A.A. Sets permitting connection by graphs of finite length. Mat. Sbornik, 2005, v.196, N 6, pp.71-110 (in Russian).
57. Ivanov A.O., Tuzhilin A.A. Uniqueness of Steiner minimal trees on boundaries in general position, Sbornik: Mathematics, 2006, v. 197, N 9, pp. 55-90 (in Russian).
58. Ivanov A.O., Mishchenko A.S., Tuzhilin A.A. Geometry of space curves and applications to polymers' conformations investigation, Computer Graphics and Geometry internet journal, 2007, v. 9, N 2, pp. 43-63.
59. Ivanov A.O., Tuzhilin A.A. Immersed polygons and their diagonal triangulations, Izvestiya: Mathematics, 2008, v. 72, N 1, pp. 67-98 (in Russian).
60. Ivanov A.O., Tuzhilin A.A., Fomenko A.T Computer modeling of curves and surfaces. Fundament i prikl. matematika, 2009, 15:5, pp. 63-94.
61. Ivanov A.O., Tuzhilin A.A. Stabilization of locally minimal trees, Matematicheskie Zametki, 2009, v. 86, N 4, pp. 512-524 (in Russian).
62. Ivanov A.O., Tuzhilin A.A. Length of minimal tree of given topology: generalized Maxwell formula, Vestnik MSU, 2010 (in print).

63. Ivanov A.O., Tuzhilin A.A. The Length of a Minimal Tree with a Given Topology: generalization of Maxwell Formula. arXiv:1101.2117v1 [math.MG] (<http://arxiv.org>).
64. A.O.Ivanov, O.A.S'edina, A.A.Tuzhilin, Structure of Steiner Minimal Trees in Neighborhoods of Edges Lunes. Sbornik: Mathematics (in print).
65. Ivanov A.O., Tuzhilin A.A. One-dimensional Gromov problem on minimal fillings. Matem. Sbornik, in print.
66. Ivanov A.O., Tuzhilin A.A. One-dimensional Gromov minimal filling. arXiv:1101.0106v2 [math.MG] (<http://arxiv.org>)
67. Ivanov A.O., Tuzhilin A.A The geometry of inner spanning trees for planer polygons. Izvestiya RAN, in print.
68. Ivanov A.O., Ovsyannikov Z.N., Strelkova N.P., Tuzhilin A.A. One-dimensional minimal fillings with negative edge weights. arXiv:1101.3014v1 [math.MG] (<http://arxiv.org>)
69. Bozhenko V.K., Ivanov A.O., Mishchenko A.S., Tuzhilin A.A., Shishkin A.M. Determination of Different Biological Factors on the Base of Dried Blood Spot Technology, arXiv:1101.2576v1 (<http://arxiv.org>)
70. Ivanov A.O., Tuzhilin A.A., Eremin A.Yu., Erokhovets E.S., Ovsyannikov Z.N., Pakhomova A.S., Rublyeva O.V., Strelkova N.P., Filonenko E.I. Minimal fillings of pseudometric spaces. Trudy seminara po vektornomu i tenzornomu analizu i ikh prilozheniyam k geometrii, mekhanike i fizike. 2011, vyp. XXVII, mekhaniko-matematicheskij, MSU, pp. 81-10.
71. Ivanov A.O., Tuzhilin A.A., Ovsyannikov Z.N., Strelkova N.P. One-dimensional minimal fillings with edges of negative weight. Vestnik MSU, in print.
72. Ivanov A.O., Tuzhilin A.A. The Steiner Ratio Gilbert-Pollak Conjecture Is Still Open. Clarification Statement. Algorithmica, 2012, v. 62, N 1-2, pp. 630-632.
73. Ivanov A.O., S"edina O.A., Tuzhilin A.A. The structure of minimal Steiner trees in the neighborhoods of the lunes of their edges. Mathematical Notes, 2012, v. 91, N 3, pp. 339-353.
74. Ivanov A.O., Tuzhilin A.A. The geometry of inner spanning trees for planar polygons. Izvestiya. Mathematics, 2012, v. 76, N 2, pp. 215-244.
75. Ivanov A.O., Tuzhilin A.A. One-dimensional Gromov minimal filling problem. Sbornik Mathematics, 2012, v. 203, N 5, pp. 677-726
76. Ivanov A.O., Ovsyannikov Z.N., Strelkova N.P., Tuzhilin A.A. One-dimensional minimal fillings with negative edge weights. Moscow University Mathematics Bulletin, 2012, v. 67, N 5-6, pp. 189-194.
77. Oganessian A.A., Tuzhilin A.A. A new valve design. Valve World Magazine, 2013, v. 18, N 6, pp. 61 - 66.
78. Ivanov A.O., Tuzhilin A.A. Gromov Minimal Fillings for finite metric spaces. Publications de l'institut Mathematique, Nouvelle serie, 2013, t. 94, N 108, 3-15.
79. Ivanov A.O., Tuzhilin A.A. Optimal networks. First Yaroslavl Summer School on Discrete and Computational Geometry, YarSU, v. 1, pp. 60-110.
80. Ivanov A.O., Tuzhilin A.A. Du-Hwang Characteristic Area: Catch-22. 2014, ArXiv:1402.6079 [math.MG] (<http://arxiv.org>).

81. Ivanov A.O., Tuzhilin A.A. Minimal Spanning Trees on Infinite Sets. 2014, ArXiv:1403.3831 [math.MG] (<http://arxiv.org>).
82. Ivanov A.O., Melnikova A.E., Tuzhilin A.A. Stabilization of a locally minimal forest. *Sbornik Mathematics*, 2014, v. 205, N 3, 1-32.
83. Ivanov A.O., Mishchenko A.S., Tuzhilin A.A. Geometry of polygonal lines and polypeptides. *Nanostructures. Mathematical Physics and Modelling*, 2014, 10 (1), pp. 39-47.
84. Ivanov A.O., Mishchenko A.S., Tuzhilin A.A. Geometry of amino acids and polypeptides. *Nanostructures. Mathematical Physics and Modelling*, 2014, 10 (1), pp. 49-76.
85. Vilkul E.A., Tuzhilin A.A. Geometry of amino acids and polypeptides: X-ray case. *Nanostructures. Mathematical Physics and Modelling*, 2014, 11 (2), pp. 5-27.
86. Ivanov A.O., Tuzhilin A.A. Branched Coverings and Steiner Ratio. 2014, ArXiv e-prints, arXiv:1412.5433.
87. Ivanov A.O., Mishchenko A.S., Tuzhilin A.A. Critical Analysis of Amino Acids and Polypeptides Geometry. *Continuous and Distributed Systems: Theory and Applications*, Springer, 2015, v. 2, pp. 29-74.
88. Ivanov A.O., Tuzhilin A.A. Minimal fillings of finite metric spaces: The state of the art. *Discrete Geometry and Algebraic Combinatorics*, ser. Contemporary Mathematics, AMS Press (United States), 2014, v. 625, pp. 9-35.
89. Ivanov A.O., Tuzhilin A.A. Analytic Deformations of Minimal Networks. 2015, ArXiv e-prints, 1506:07140.
90. Ivanov A.O., Tuzhilin A.A. Branched Coverings and Steiner Ratio. *International transactions in operational research: The International Federation of Operational Research Societies*, Blackwell Publishers (Oxford, UK, England), 2015, pp. 1-8.
91. Ivanov A.O., Nikolaeva N.K., Tuzhilin A.A. The Gromov-Hausdorff Metric on the Space of Compact Metric Spaces is Strictly Intrinsic. 2015, ArXiv e-prints, arXiv:1504.03830.
92. Ivanov A.O., Tropin A.M., Tuzhilin A.A. Fermat-Steiner Problem in the Metric Space of Compact Sets endowed with Hausdorff Distance. 2016, ArXiv e-prints, arXiv:1601.03852.
93. Tuzhilin A.A. Let us continue to clean the Protein Data Bank. 2016, in print.
94. Ivanov A.O., Iliadis S., Tuzhilin A.A. Realizations of Gromov-Hausdorff Distance. 2016, ArXiv e-prints, arXiv:1603.08850.
95. Ivanov A.O., Tuzhilin A.A. Gromov-Hausdorff Distance, Irreducible Correspondences, Steiner Problem, and Minimal Fillings. ArXiv e-prints, arXiv:1604.06116, 2016.
96. Ivanov A.O., Iliadis S., Tuzhilin A.A. Local Structure of Gromov-Hausdorff Space, and Isometric Embeddings of Finite Metric Spaces into this Space. 2016, ArXiv e-prints, arXiv:1604.07615.
97. Ivanov A.O., Tuzhilin A.A. Steiner Ratio and Steiner-Gromov Ratio of Gromov-Hausdorff Space. 2016, ArXiv e-prints, arXiv:1605.01094.
98. Tuzhilin A.A. Calculation of Minimum Spanning Tree Edges Lengths using Gromov-Hausdorff Distance. 2016, ArXiv e-prints, arXiv:1605.01566.

99. Ivanov A.O., Tuzhilin A.A. Geometry of Compact Metric Space in Terms of Gromov-Hausdorff Distances to Regular Simplexes. 2016, ArXiv e-prints, arXiv:1607.06655.
100. Ivanov A.O., Tuzhilin A.A. Local Structure of Gromov-Hausdorff Space near Finite Metric Spaces in General Position. 2016, ArXiv e-prints, arXiv:1611.04484.
101. Tuzhilin A.A. Who Invented the Gromov-Hausdorff Distance? 2016, ArXiv e-prints, arXiv:1612.00728.
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103. Ivanov A.O., Nikolaeva N.K., Tuzhilin A.A. The Gromov-Hausdorff Metric on the Space of Compact Metric Spaces is Strictly Intrinsic. *Mathematical Notes*, 2016, v. 100, N 6, pp. 171-173.
104. Ivanov A.O., Tropin A.M., Tuzhilin A.A. Fermat-Steiner Problem in the metric space of compact sets endowed with Hausdorff distance. *Journal of Geometry*, Birkhauser Verlag, Switzerland, 2017, v. 108, N 2, pp. 575-590.
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107. Ivanov A.O., Tuzhilin A.A. Minimal Spanning Trees on Infinite Sets. *Journal of Mathematical Sciences*, Plenum Publishers, United States, 2017, v. 223, N 6, pp. 711-719.
108. Tuzhilin A.A. Hausdorff Measure: Lost in Translation. 2017, ArXiv e-prints, arXiv:1710.08272.
109. Vilkul E.A., Ivanov A.O., Mishchenko A.S., Popelensky Th Yu, Tuzhilin A.A., Shaitan K.V. Analyzing the Data Bank of Proteins Space Structures (PDB): A Geometrical Approach. *Journal of Mathematical Sciences (United States)*, 2017, v. 225, N 4, pp. 555-564.
110. Ivanov A.O., Tuzhilin A.A. Local Structure of Gromov-Hausdorff Space Around Generic Finite Metric Spaces. *Lobachevskii Journal of Mathematics*, 2017, v. 38, N 6, pp. 998-1006.
111. Vedyushkina V.V., Ivanov A.O., Tuzhilin A.A. Fomenko A.T. Computer Models in Geometry and Dynamics. *Intellectual Systems. Theory and Applications*, 2017, v. 21, N 2 (In Russian).
112. Ivanov A.O., Tuzhilin A.A. Isometry Group of Gromov-Hausdorff Space. 2018, ArXiv e-prints, arXiv:1806.02100.
113. Ivanov A.O., Tuzhilin A.A. Analytic Deformations of Minimal Networks, *Fundamentalnaya i prikladnaya matematika*, 2018, v. 21, N 5, pp. 159-180.
114. Ivanov A.O., Tuzhilin A.A. Hausdorff Realization of Linear Geodesics of Gromov-Hausdorff Space. 2019, ArXiv e-prints, arXiv:1904.09281.

115. Ivanov A.O., Tuzhilin A.A. Dual Linear Programming Problem and One-Dimensional Gromov Minimal Fillings of Finite Metric Spaces. 2019, ArXiv e-prints, arXiv:1904.10216.
116. Ivanov A.O., Tuzhilin A.A. Steiner type ratios of Gromov-Hausdorff space. European Journal of Combinatorics, 2019, v. 80, pp. 172-183.
117. Grigor'ev D.S., Ivanov A.O., Tuzhilin A.A. Gromov-Hausdorff Distance to Simplexes. 2019, ArXiv e-prints, arXiv:1906.09644.
118. Ivanov A.O., Tuzhilin A.A. Solution to Generalized Borsuk Problem in Terms of the Gromov-Hausdorff Distances to Simplexes. 2019, ArXiv e-prints, arXiv:1906.10574.

Articles in Proceedings of Conferences

1. A.A.Tuzhilin, Minimal surfaces indices calculation. Conference on Geometry "in Large", Novosibirsk, 1987, p. 123.
2. A.O.Ivanov, A.A.Tuzhilin, On the deformations of a manifold that lowers the volume with maximum speed and application to theory of Gravity, in the book Conference on Geometry "in Large", Novosibirsk, 1987, p.50, in Russian.
3. A.A.Tuzhilin, About indices of minimal surfaces. Baku International Topological Conference, Baku, 1987, p. 201.
4. A.O.Ivanov, A.A.Tuzhilin, Some problems concerning minimal networks, International Journal of Shape Modeling, v.1, no.1, (1994) 81-107.
5. A.O.Ivanov, A.A.Tuzhilin, Geometry of planar trees, whose edges are straight segments, Vestnik MGU, 1998.
6. A.A.Tuzhilin, Planar local minimal networks with convex boundaries, Proc. of ICM-98, Berlin, 1998, p.286.
7. A.A.Tuzhilin, Steiner ratio for Riemannian manifolds. Proceedengs of International Petrovskii Centenary Conference "Differential Equations and related topics", May 22-27, 2001.
8. A.O.Ivanov, A.A.Tuzhilin, Minimal trees in phylogenetic spaces, Proceedings of the Third International Conference on Bioinformatics of Genome Regulation and Structure, 2002, Novosibirsk.
9. A.Tuzhilin, Calculus for Steiner minimal spanning trees. In Proceedeings of Second Russian-German Geometry Meeting dedicated to 90-anniversary of A.D.Alexandrov, St.-Petersburg, June 16-23, 2002.
10. A.O.Ivanov, A.A.Tuzhilin, V.K.Bojenko, A.M.Shishkin, T.S.Belle, Adaptive discrete dynamic maps of gene-protein networks for search of critical factors of cell proliferation control. 3rd Congress of CIS Oncologists, Minsk, Belorussia, 2004.
11. A.A.Tuzhilin, The Steiner ratio of Riemannian manifolds. International Conference "Differential Equations and Topology"

dedicated to the Centennial Anniversary of L. S. Pontryagin, Moscow, 2008.

12. A.O.Ivanov, A.A.Tuzhilin, Problem on optimal connection. In book Festschrift for V.A.Sadovnichij, 2009.
13. V.K.Bojenko, A.O.Ivanov, A.S.Mischenko, A.A.Tuzhilin, A.M.Shishkin, Geometrical Modeling in Biology: search of new approaches. In book Festschrift for V.A.Sadovnichij, 2009.
14. A.A.Tuzhilin, Infinite subsets of metric spaces, which can be spanned by finite length trees. International Conference C*-algebras and elliptic theory, III, 2009.
15. A.O.Ivanov, A.A.Tuzhilin, Optimality Principle in Nature, Mathematical Methods of Investigation, and Minimal Networks as Illustration. Conference Lomonosov-2009, section Mathematics.
16. A.A.Tuzhilin, Some recent results in minimal networks theory. Special Session Dedicated to Professor Andrey Borisovich, Gdansk, Poland, 2010.
17. Ivanov A.O., Tuzhilin A.A. One-dimensional branched minimal fillings of finite metric spaces. 2010 International conference on topology and its applications, June 26-30, 2010, Nafpaktos, Greece, pp. 129-131.
18. A.O.Ivanov, A.A.Tuzhilin, Minimal fillings in the sense of M.Gromov for finite metric spaces, International Conference "Metric Geometry of surfaces and polyhedra" dedicated to 100th anniversary of N.V.Efimov, 2010.
19. A.A.Tuzhilin, Computational Geometry and Optimization, Mini-Course, 3^oEIAGIME - encontro internacional dos alunos de graduação do Instituto de Matemática e Estatística, University of São Paulo, 2010, August-September, <http://www.ime.usp.br/~eiagime/programacao.html>
20. A.A.Tuzhilin, Stabilization theorems for minimal networks. 4th Conference in Discrete Geometry and Algebraic Combinatorics, South Padre Island, Texas, USA, April 16-30, 2012, South Padre Island, Texas, USA.
21. A.A.Tuzhilin, One-dimensional Gromov minimal fillings. XVII Geometrical Seminar, Zlatibor, Serbia, 2012.
22. A.O.Ivanov, A.A.Tuzhilin, Minimal fillings of finite metric spaces, International topological conference "Alexandroff readings", Moscow, Russia, 2012.
23. M.A.Mironova, A.A.Tuzhilin, Stabilization along a regular curve, Conference "Lomonosov readings", Moscow, Russia, 2013.
24. N.P.Strelkova, A.A.Tuzhilin, On configuration space for shortest networks, Conference "Lomonosov readings", Moscow, Russia, 2013.
25. E.A.Melnikova, A.A.Tuzhilin, Partial stabilization of a finite number of local minimal trees in finite-dimensional Euclidean space, Moscow, Russia, 2013.
26. A.A.Tuzhilin, Geometrical optimization problems with one-dimensional branching extremals, Workshop "Probability, Analysis and Geometry", Ulm, Germany, 2013.
27. A.O.Ivanov, A.A.Tuzhilin, Optimal Networks: applications to different networks models. Conference "Application of mathematical methods to investigation of the Earth", Moscow State University, Moscow, November 17-19, 2014.

28. A.A.Tuzhilin, Steiner ratio problem and infinite boundaries. International Workshop "Probability, Analysis and Geometry", Moscow State University, Moscow, Russia, 2014.
29. A.A.Tuzhilin, Geometrical applications in molecular biology. International Conference "Mathematics in Social Life: Advantages, Problems, Perspectives", MSU, April 23-25, 2015.

Conferences and Workshops in Which the Works Were Presented

Name and place	Year
Lomonosov Workshop, MSU, Moscow, Russia	1986-2005
Baku International Topological Conference (Baku, Azerbaijan), USSR	1987
Conference on Geometry "in Large" in Novosibirsk, Russia	1987
Winter school in Voronezh, Russia	1988, 89, 90
Workshop on Geometry of Manifolds Invariants (Tashkent, Uzbekistan)	1992
Lobachevskii Workshop, St.Piterburg, Russia	1992
Workshop on Geometric Visualization in Tokyo University, Prof. T. Kunii (Tokyo, Japan)	1993
Aleksandrov Workshop, MSU, Moscow, Russia	1994, 95, 96
International Congress of Math. in Zurich, Switzerland (ICM-95)	1995
Workshop on Partial Differential Equations and their applications to Geometry, St.Piterburg, Russia	1995
Chebyshev's workshop on Numerical Analysis and Applications, MSU, Moscow, Russia	1996
International conference on Differential Geometry, Rio de Janeiro, Brazil	1996
Bochum-Dortmund-Topologie-Seminar, Germany	1996
International Congress of Math. in Berlin, Germany (ICM-98)	1998
International Petrovskii Centenary Conference "Differential Equations and related topics"	2001
Third International Conference on Bioinformatics of Genome Regulation and Structure, Novosibirsk, Russia	2002
Russian-German Geometry Meeting dedicated to 90-anniversary of A.D.Alexandrov, St.-Petersburg	2002
Phylogenetic Trees and Networks II, Greifswald, Germany	2003
3rd Congress of CIS Oncologists, Minsk, Belorussia	2004.
Mathematical Methods and Models in Biology and Medicine, Bedlewo, Poland	2005
International Conference "Differential Equations and Topology" dedicated to the Centennial Anniversary of L.S.Pontryagin, Moscow	2008
International Conference C*-algebras and elliptic theory, III, Bedlewo, Poland	2009
International Conference dedicated to anniversary of V.A.Sadovnichij, Moscow	2009

Conference Lomonosov-2009	2009
Special Session Dedicated to Professor Andrey Borisovich, Gdansk, Poland	2010
International conference on topology and its applications, June 26-30, Nafpaktos, Greece	2010
International Conference "Metric Geometry of surfaces and polyhedra" dedicated to 100 th anniversary of N.V.Efimov	2010
4th Conference in Discrete Geometry and Algebraic Combinatorics, South Padre Island, Texas, USA, April 16-30, 2012, South Padre Island, Texas, USA	2012
XVII Geometrical Seminar, Zlatibor, Serbia	2012
International topological conference "Alexandroff readings", Moscow, Russia	2012
Conference "Lomonosov readings", Moscow, Russia	2013
Workshop "Probability, Analysis and Geometry", Ulm, Germany	2013
Conference "Application of mathematical methods to investigation of the Earth", Moscow State University, Moscow, November 17-19, 2014	2014
International Workshop "Probability, Analysis and Geometry", Moscow State University, Moscow, Russia	2014
International Conference "Mathematics in Social Life: Advantages, Problems, Perspectives", MSU, April 23-25, 2015	2015
International Conference "Glances at Manifolds II, Group actions, K-Theory, C*-algebras and Topology of Manifolds", Krakow, Poland, August 8-12	2016
International Conference "XIX Geometrical seminar", Zlatibor (Serbia), August 28 - September 4	2016
4-th International Workshop on Analysis, Probability and Geometry, Moscow, Russia, September 26 - October 1	2016
Joint Meeting of Federal Educational and Methodical Association in Mathematics and Mechanics, and Federal Educational and Methodical Association in Computer Science, MSU, Russia, October 9-12	2017
International Conference "XX Geometrical Seminar", Vrnjacka Banja, Serbia, May 20-24	2018
International Conference on Topology and its Applications, Nafpaktos, Greece, July 7-11	2018
International Conference «Days of Geometry in Novosibirsk – 2018», Mathematical Institute named for S.L.Sobolev, Novosibirsk State University, Russia, September 19-22	2018
International conference "Classical and modern geometry" in honor of Vyacheslav Timofeevich Bazylev on his 100th birthday, Moscow Pedagogical State University, Moscow, Russia, April 22-25	2019

Participation in Conferences

Name and place	Year
Workshop on Partial Differential Equations and their Applications to Geometry and Physics, ICTP, Trieste, Italy	1995
Fourth International Conference on Bioinformatics of Genome Regulation and Structure, Novosibirsk, Russia	2004

Seminars

Name and place	Year
Seminars in Moscow State University Moscow, Russia	1983–2010
Seminar in Kharkov State University Kharkov, Ukrainian	1989
Seminar in Steklov Mathematical Institute Leningrad, Russia	1989
Seminar of Prof. J. Jost in Ruhr University, (Bochum, Germany)	1993
Seminar of Prof. F. Mercury, IMECC, UNICAMP, Campinas, Brazil	1993
Seminar of Prof. R. Asperty, USP, Sao Paulo, Brazil	1994
Topological Seminar in Dortmund, Germany	1996
Seminar of Prof. S. Hildebrandt, Bonn, Germany	1996
Seminar of Prof. Yu. Manin, Bonn, Germany	1996
Seminar of Prof. F. Tomi, Heidelberg, Germany	1996
Seminar of Prof. H. Zieschang, Bochum, Germany	1996
Seminar of Prof. Yu. Reshetnyak, Novosibirsk, Russia	1997
Seminar of Prof. F. Morgan, Princeton, USA	1997
Seminar of Dr. D. Cieslik, Bochum, Germany	2000
Seminar of Prof. N. Bokan, Belgrad, Serbia	2001
Seminar of Prof. H. Flenner, Bochum, Germany	2002
Seminar of Prof. J. Jost, Leipzig, Germany	2002
Seminar in Moscow Center for Continuous Mathematical Education	2005
Seminar of Prof. Hong You, Harbin, China	2005
Seminar of Prof. V.M.Buchstaber and prof. A.V.Chernavskij, Moscow	2006
Seminar of Prof. G. Knipper, Bochum, Germany	2006
Seminar in Moscow Center for Continuous Mathematical Education	2007
Seminar in NIE, Singapore	2008
Seminar in USP, Sao Paulo, Brazil	2010
Seminar of Prof. G. Knipper, Bochum, Germany	2011

Research interests

Differential geometry and its applications, variational problems, minimal networks, graph theory, metric geometry, geometric measure theory, minimal fillings theory, geometry of Gromov-Hausdorff space, Kantorovich Transportation Problem, mathematical modeling and visualization in investigations and education, molecular biology

Recent awards

1. State gratuity for young scientists, 1996, Moscow, Russia
2. Shuvalov premium, 2000, Moscow, Russia
3. Russian Federation President Grant "Young doctors of science", 2001, Moscow, Russia
4. Euler gratuity, 2002, Bochum, Germany

Current and previous grant support

1. International Scientific Fund of J.Soros (1992, 1993-94)
2. INTAS (1995-1997, 1996-1997, 1997-2000)
3. Ministry of Culture and Science, France (1991-1993)
4. Russian Foundation for Fundamental Investigations (1994-1995, 1995-1996, 1996-1998, 1998-2000, 2001-2003, 2003-2005, 2005-2007, 2007-2009, 2010-2012)
5. FAPESP (1992-1993)
6. Ministry of Science and Technical Politics, Russia (1996-1998)
7. Russian Federation President Grant for young scientists support (2001-2003)
8. Russian Federation President Grant for leading scientific schools support (2003-2005)
9. Universities of Russian Grant (2000-2005)
10. Russian-French Grant (biology, 2005-2007)
11. Geometry and Topology of Manifolds and Dynamical Systems, RFBR (1993-2018)
12. Scientific basis for creating a bank-depository of living beings, RSF (2015-2018)
13. Geometry and Topology of Manifolds and Dynamical Systems (2016-2018)
14. Differential Geometry and Applications (2016-2017)
15. Geometry and Topology of Manifolds, Dynamical Systems, and Hamiltonian Systems (2019-2021)

The List of Students and Post-Graduates under Scientific Advising

1. I.V.Ptitsina (co-advising), defended PhD
2. L.Sarycheva
3. D.Ablyayev
4. G.Karpunin, defended PhD
5. M.Pronin
6. D.Ilyutko, defended PhD
7. N.Gusev (co-advising)
8. D.Chertov
9. D.Dorofeev
10. E.Snegova
11. M.Samsonova (co-advising)
12. K.Gvozdeva
13. N.Goryacheva

14. L. Borisova (co-advising)
15. A. Chervova
16. O. S'edina
17. I. Postoyuk
18. N. Strelkova
19. A. Melnikova
20. M. Polonovskaya
21. E. Philinenko
22. A. Eremin (co-advising)
23. A. Vasina (co-advising)
24. V. Mischenko (co-advising)
25. V. Salnikov (co-advising)
26. E. Zavalnyuk (co-advising)
27. Z. Ovsyannikov (co-advising)
28. I. Laut (co-advising)
29. M. Gortinskij (co-advising)
30. N. Pakhomova (co-advising)
31. O. Kochina (co-advising)
32. E. Abdulaeva (co-advising)
33. Yu. Akasheva (co-advising)
34. V. Gromazin
35. A. Kondakova
36. E. Erokhovets (co-advising)
37. E. Shil'nikova (co-advising)
38. O. Rubleva (co-advising)
39. A. Mosolova (co-advising)
40. D. Smirnova (co-advising)
41. A. Tropin
42. A. Kondakova (co-advising)
43. A. Kislovskaya
44. N. Nikolaeva
45. V. Chikin
46. A. Tulyakova
47. D. Timonina (co-advising)
48. S. Lipatov
49. M. Zhitnaya
50. S. Borzov (co-advising)
51. A. Feklina
52. V. Magerram-Zade
53. A. P. Kruchinina (co-advising)
54. N. P. Vaganov (co-advising)
55. R. A. Tsvetnikov
56. K. S. Morozov (co-advising)
57. O. S. Malysheva
58. V. A. Kuznetsov (co-advising)
59. D. P. Klibus
60. I. A. Mikhailov
61. A. Galstyan
62. D. Grigor'ev
63. O. Borisova

64. D.Knyazev

65. E.Lychagina

66. L.Mollaev

67. V.Khachaturov

Languages

Russian, English, Portugues (curso basico, one term), German (the beginners level)