Alexey Podobryaev

Date of birth: 06.07.1978.   Citizenship: Russia.   Languages: Русский, English, Türkçe.

Office:	room 118, A. K. Ailamazyan Program Systems Institute of RAS.
Address:	4a ul. Petra-I, s. Veskovo, Pereslavl district, Yaroslavl region, 152021, Russia.
Phone:	+7 916 926-30-85.
e-mail:	alex@alex.botik.ru
Skype:	alexey.podobryaev

Research interests

Geometric control theory, sub-Riemannian geometry, sub-Lorentzian geometry

Education

2020	PhD	Steklov Mathematical Institute of RAS, Moscow,
		thesis: *Symmetries and optimal synthesis in left-invariant optimal control problems*,
		adviser: prof. Yu. L. Sachkov,
		referees: prof. A. G. Kushner, prof. L. A. Manita, prof. V. N. Berestovskii.
2001	MSc	Lomonosov Moscow State University, diploma with honor,
		thesis: *Invariant algebras of functions*
		on spherical homogeneous spaces of simple Lie groups,
		adviser: prof. È. B. Vinberg, referee: prof. I. V. Arzhantsev.

Professional experience

since 2009	A. K. Ailamazyan Program Systems Institute of RAS, Pereslavl-Zalesskiy, Russia, junior researcher, senior researcher.
2001–2009	Parascript L.L.C., Advanced R&D, researcher and software engineer in pattern recognition, machine learning.
2000–2001	Moscow Center of Continuous Mathematical Education, Laboratory for Pattern Recognition, researcher.

Teaching experience

2024–	Pereslavl Gymnasium, math club,
2009–2017	University of Pereslavl, Russia, Lecturer: algebra, linear algebra and geometry, theory of recursive functions.
1997–2002	Moscow School #1543, math teacher, geometry, special course of mathematics for gifted students.

Reviewer

Journal of Dynamical and Control Systems,
Mathematical Notes,
Proceedings of Steklov Mathematical Institute,
Regular and Chaotic Dynamics,
Analysis and Mathematical Physics,
Journal of Geometry and Physics,
MathSciNet.

Program Systems: Theory and Applications,
Instruments and Experimental Techniques,
Journal of Computational and Applied Mathematics,
Transformation Groups,
Int. J. of Geometric Methods in Modern Physics,
Sbornik: Mathematics,

Grants

RFBR 19-07-00991 A, 19-07-00779 A, 15-07-05277 A, 13-07-00307 A, 12-07-31101 mol_a.
RSF 22-11-00140, 22-21-00877, 17-11-01387-P, 17-11-01387.

Programming skills

Wolfram Mathematica, C++, Python.

Sport activities

Whitewater kayaking,	winner of several local races,
whitewater kayak/canoe slalom,	Word Masters Games, Ivrea 2013, K1m-35 3d place,
	European Masters Games, Ivrea 2019, K1m-40 2d place,
	ICF World Masters Championship, Krakow 2021, $3 \times$ C1m team race 3d place,
	local coach in Pereslavl kayak club,
crosscountry skiing.	

Publications

GEOMETRIC CONTROL THEORY

[1] A. V. Podobryaev. *Sub-Lorentzian extremals defined by an antinorm* // Differential Equations. 60, 3, 361–373 (2024) arXiv:2402.04687

[2] L. V. Lokutsievskiy, A. V. Podobryaev. *Existence theorem for sub-Lorentzian problems* // Journal of Dynamical and Control Systems. 30, 10 (2024) arXiv:2401.07975

[3] A. V. Podobryaev. *Homogeneous geodesics in sub-Riemannian geometry* // ESAIM: Control, Optimisation and Calculus of Variations. 29, 11 (2023) download arXiv:2202.09085

[4] A. Podobryaev. *Attainable set for rank 3 step 2 free Carnot group with positive controls* // 16th International Conference on Stability and Oscillations of Nonlinear Control Systems (Pyatnitskiy's Conference). 1–4, DOI: 10.1109/STAB54858.2022.9807600, IEEE (2022) arXiv:2203.02267

[5] A. Mashtakov, A. Podobryaev. *Geodesic flow of the sub-Riemannian structure of Engel type with strictly abnormal extremals* // 16th International Conference on Stability and Oscillations of Nonlinear Control Systems (Pyatnitskiy's Conference), 1–3, DOI: 10.1109/STAB54858.2022.9807528, IEEE (2022)

[6] A. V. Podobryaev. *Construction of Maxwell points in left-invariant optimal control problems* // Proceedings of the Steklov Institute of Mathematics. 315, 190–197 (2021)

[7] A. V. Podobryaev. *Casimir functions of free nilpotent Lie groups of steps three and four* // Journal of Dynamical and Control Systems. 27, 625–644 (2021) arXiv:2006.00224

[8] A. V. Podobryaev. *Coadjoint orbits of three-step free nilpotent Lie groups and time-optimal control problem* // Doklady Mathematics. 102, 1, 293–295 (2020)

[9] A. V. Podobryaev. *Symmetries in left-invariant optimal control problems* // Sbornik: Mathematics. 211, 2, 275–290 (2020) arxiv:1807.09145

[10] A. V. Podobryaev. *Symmetric extremal trajectories in left-invariant optimal control problems* // Russian Journal of Nonlinear Dynamics. 15, 4, 569–575 (2019) download

[11] A. V. Podobryaev. *Antipodal points and diameter of a sphere* // Russian Journal of Nonlinear Dynamics. 14, 4, 579–581 (2018) download

[12] A. V. Podobryaev. *Diameter of the Berger Sphere* // Mathematical Notes. 103, 5, 846–851 (2018) arXiv:1710.02945

[13] A. V. Podobryaev, Yu. L. Sachkov. *Symmetric Riemannian Problem on the Group of Proper Isometries of Hyperbolic Plane* // Journal of Dynamical and Control Systems. 24, 3, 391–423 (2018) arXiv:1701.00825

[14] A. V. Podobryaev, Yu. L. Sachkov. *Left-Invariant Riemannian Problems on the Groups of Proper Motions of Hyperbolic Plane and Sphere* // Doklady Mathematics. 95, 2, 176–177 (2017)

[15] A. V. Podobryaev, Yu. L. Sachkov. *Cut locus of a left invariant Riemannian metric on SO(3) in the axisymmetric case* // Journal of Geometry and Physics. 110, 436–453 (2016) arXiv:1504.05472

[16] A. N. Vinogradov, N. Vlasova, E. P. Kurshev, A. Podobryaev. *Modern Approaches to the Language Data Analysis. Using Language Analysis Methods for Management and Planning Tasks* // Cyber-Physical Systems and Control. D. G. Arseniev, L. Overmeyer, H. Kalviainen, B. Katalinic eds. Lecture Notes in Networks and Systems. Springer. 95, 470–481 (2020)

[17] A. N. Vinogradov, N. Vlasova, E. P. Kurshev, A. Podobryaev. *Information extraction tasks in public administration domain ISIDA-T natural language processing system* // ACM International Conference Proceeding Series. 1CSIS'2019: Proceedings of the XI International Scientific Conference Communicative Strategies of the Information Society. 15, 1–10 (2019)

[18] I. Trofimov, E. Suleymanova, N. Vlasova, A. Podobryaev. *Disambiguation between eventive and non-eventive meaning of nouns* // Program Systems: Theory and Applications. 9, 4(39), 3–33 (2018) (in Russian). download

[19] N. Vlasova, A. Podobryaev. *Automatic noun phrases extraction using preliminary segmentation and CRF with semantic features* // Program Systems: Theory and Applications. 8, 4(35), 21–30 (2017) (in Russian). download

[20] N. Vlasova, A. Podobryaev. *To the noun phrase recognition problem in application to automatic information extraction from Russian texts* // Program Systems: Theory and Applications. 7, 1(28), 153–170 (2016) (in Russian). download

[21] N. Vlasova, A. Podobryaev. *Complex time expressions recognition problem in application to automatic information extraction from Russian texts* // Program Systems: Theory and Applications. 7, 4(31), 177–195 (2016) (in Russian). download

[22] A. N. Vinogradov, N. A. Vlasova, E. P. Kurshev, A. V. Podobryayev, E. A. Suleymanova. *Specifics of ontology editor's user interface* // Program Systems: Theory and Applications. 4, 4(18), 33–44 (2013) (in Russian). download