

Inria

2021

CARRICULUM VITAE

Nom¹ : POLYAKOV

Last name

Prénom : Andrey

First name

¹Il s'agit du nom usuel figurant sur vos pièces d'identité
It is the name appearing on your identity cards

Formulaire 1 — PARCOURS PROFESSIONNEL**Form 1 — PROFESSIONAL HISTORY****1) Parcours Professionnel / Professional history**Situation professionnelle actuelle / *Current professional status*Statut et fonction² / *Position and Status*²: **Chargé de Recherche**Etablissement (ville - pays) / *Institution (city - country)*: **Inria (Lille, France)**Expériences professionnelles antérieures / *Previous professional experiences*

Date début <i>Start</i>	Date fin <i>End</i>	Établissement <i>Institutions</i>	Fonction et statut <i>Positions and status</i>
2012	-	Inria Lille - Nord Europe, France	Researcher, Permanent
2010	2014	Institute of Control Sciences, Russian Academy of Sciences, Russia	Leading Researcher, Permanent
2008	2010	Voronezh State University, Russia	Associate Professor, Permanent
2007	2008	CINVESTAV-IPN, Mexico	Postdoc, temporary
2004	2007	Voronezh State University, Russia	Teaching Assistant, Permanent

* A researcher of Russian Academy of Sciences may have one of the following **positions**: Junior Researcher, Researcher, Senior Researcher, Leading Researcher, General Researcher.

- PhD, 15.12.2005, Voronezh State University, Russia, 'Control of Neutral and Unstable Plants by Means of Relay Delayed Feedbacks', Supervisor: Prof. Vadim Strygin
- HDR, 29.11.2018, The University of Lille, France; 'Linear Geometric Homogeneity for Finite-Time Control And Estimation', Garant: Prof. Wilfrid Perruquetti (Centrale Lille)

Nombre d'années d'exercice des métiers de la recherche après la thèse / *Number of years of professional research experience after the PhD* : 15 years

2) Encadrement d'étudiants et de jeunes chercheurs / Supervision of students and early-stage researchers

a) 4 Postdocs:

- Manuel Mera, 07.2014-07.2015, 'Non-asymptotic Attractive Ellipsoids Method', supported by CONACYT, Mexico.
- Joint publications: [IJ51, IJ44, IC65, IC90];
- Nicollas Espitia, 10.2017-10.2019, 'Finite-time control of PDEs', supported by Inria CORDIS (10.2017-02.2019) and CPER ELSAT2020 (02.2019-10.2019)
- Joint publications: [IJ25, IC15, IC25, IC26];
- Tonametl Sanchez, 10.2017-10.2019, 'Active Control of Flow Separation', supported by CPER ELSAT2020 (10.2017-10.2018) and ANR DIGITSLID (10.2018-10.2019).
- Joint publications: [IJ7, IJ12, IJ10, IJ21, IJ24, IC4, IC32, IC35, IC42].
- Gabriele Perozzi, 06.2020-06.2021, 'Discretization of Homogeneous Controllers', supported by ANR DIGITSLID;

b) 7 PhD Students (in France):

- Maxime Feingesicht, 01.01.2015 - 15.12.2017, 'Non-linear Active Control of Turbulent Separated Flows: Theory and Application', supported by Region Hauts-de-France;
 - Director: Prof. Jean-Pierre Richard (EC-Lille); Co-Encadrants: Dr. Andrey Polyakov (Inria Lille) and Dr. Franck Kerherve (EC-Lille);
 - Joint publications: [IJ37, IJ23, IC58, IC46, IC45]; Patent: WO/2018/229442;
- Francisco Lopez Ramirez, 01.10.2015 - 19.11.2018, 'Implicit Lyapunov Function Method for Control and Estimation', supported by Inria CORDIS;
 - Co-Directors: Dr. Denis Efimov (Inria Lille) and Prof. Wilfrid Perruquetti (EC-Lille); Co-Encadrant: Dr. Andrey Polyakov (Inria Lille);
 - Joint publications: [IJ36, IJ29, IJ22, IJ17, IC38, IC54, IC59].
- Tatyana Kharkovskaya, 01.01.2016 - 02.12.2019, "Design of interval observers for systems described by PDE", cotutelle: Centrale Lille – ITMO University, Russia;

- Co-Directors: Prof. Jean-Pierre Richard (EC-Lille) and Dr. Artem Kremlev (ITMO University); Co-Encadrants: Dr. Denis Efimov (Inria Lille) and Dr. Andrey Polyakov (Inria Lille)
 - Joint Publications: [IJ15, IJ33, IC29, IC47, IC55];
 - Siyuan Wang, 01.10.2017 - 15.12.2020, 'Homogeneous Quadrotor Control: Theory and Experiment', supported by CSC, China;
 - Co-Directors: Dr. Gang Zheng (Inria Lille) and Dr. Andrey Polyakov (Inria Lille)
 - Joint publications: [IJ8, IC12, IC20]. Patent: Deposit N: FR2004684
 - Youness Braidiz, 01.10.2017 - 14.12.2020, 'Relaxed Homogeneity Notions for finite-time and fixed-time stability analysis', supported by ANR Finite4SoS;
 - Co-Directors: Prof. Wilfrid Perruquetti (EC-Lille) and Dr. Denis Efimov (Inria Lille), Co-Encadrant: Andrey Polyakov (Inria Lille)
 - Alex dos Reiz de Souza, 10.2018 - 10.2021, 'Control end Estimation of Bioreactors', supported by IPL Cozy,
 - Co-Directors: Dr. Denis Efimov (Inria Lille) and Prof. Jean-Luc Gouze (Inria Sophia Antipolis); Co-Encadrant: Andrey Polyakov (Inria Lille);
 - Artem Nekhoroshikh, 01.2019 - 10.2022, "Homogeneous control of time-delay systems in the presence of perturbations", cotutelle: Centrale Lille – ITMO University, Russia;
 - My involvement: 25%; Co-Directors: Prof. Wilfrid Perruquetti (EC-Lille) and Dr. Igor Furtat (ITMO University); Co-Encadrants: Dr. Denis Efimov (Inria Lille) and Dr. Andrey Polyakov (Inria Lille)
 - Joint Publications: [IC2, IC7, WP2]
 - Yu Zhou, 01.11.2020-01.11.2024, "Generalized homogeneity for analysis of dynamical systems", supported by CSC;
 - Co-Directors: Dr. Andrey Polyakov (Inria Lille) and Dr. Gang Zheng (Inria Lille).
- c) 5 Research Internships of Foreign PhD Students at Inria
- Ivan de Jesus Salgado Ramos, 01.07.2014-30.04.2015, National Polytechnic Institute, Mexico; Publications: [WP7]
 - Konstanin Zimenko, 2015-2018 (1 month per year), ITMO University, Russia; Publications: [IJ9, IJ26, IJ30, IJ39,...]
 - Nadhynee Martinez Fonseca, 01.09.2016-30.04.2017, UPIBI-IPN, Mexico;
 - David Cruz, 01.09.2018 - 30.04.2019, CINVESTAV-IPN, Mexico; Joint Publications: [WP3]
 - Marianna Ballesteros, 01.09.2018-30.04.2019, CINVESTAV-IPN, Mexico; Joint Publications: [IC19, IC19, IJ2]

3) Encadrement de développements technologiques (logiciel, matériel, robotique) / *Supervision of technological development (software, hardware, robotics)*

1 Research Engineer:

- Fiodar Hancharou, 11.2019-05.2021, 'ControlHub Experiment Server', supported by CPER DATA, Project [ControlHub](#).

4) Responsabilités collectives / *Responsibilities*

a) Research evaluation/expertise:

Actual activities

- [Member of Editorial Board of Automation and Remote Control](#) ("*Automatika i Telemekhanika*"), 2014-Now

Former activities

- [IPC member of 15th International Workshop on Variable Structure Systems, Graz, Austria, 2018](#)
- Member of Editorial Board of Journal of Optimization Theory and Applications, 2014-2018 (withdrawn by my request)
- Subject Editor of International Journal of Robust and Nonlinear Control, 2014-2018 (withdrawn by my request)
- Associate Editor of Journal of The Franklin Institute, 2014-2016 (withdrawn by my request)

b) Scientific groups and committees:

- [IFAC Technical Committee \(TC\) 2.3: "Non-Linear Control Systems"](#)

5) Enseignement (si pertinent) / *Teaching (if relevant)*

a) More than 3000 hours of teaching during my work at Voronezh State University (2004-2010):

- Computational Mathematic (for bachelors of 3rd and 4th years);
- Linear Matrix Inequalities (for masters of 2nd year);
- Algebra and Analytical Geometry (for bachelors of 1st year);
- Algorithms for Sparse Matrices (for bachelors of 3rd year);
- Programming Languages and Algorithms (for bachelors of 1st and 2nd years);
- Algorithms of Computer Graphics (for bachelors of 4th year);
- Relational Database Management Systems (for bachelors of 4th year);
- Internet Programming (for masters of 1st year); Mathematical Software (for bachelors of 3th year).

b) Tutorial courses at conferences and schools:

- 4 hours, "Method of Discontinuous Lyapunov Functions", International Conference on Electrical Engineering, Computing Science and Automatic Control, 10-13 November 2009, Toluca, Mexico
- 2 hours, "On Differential Inclusions and Discontinuous Lyapunov Functions", [The Seventh Traditional school "Control, Information, Optimization"](#), 14-20 June 2015, Solnechnogorsk, Russia
- 2 hours, "Implicit Lyapunov Function Method", "Discretization of Homogeneous Systems", [Workshop "Finite-, Fixed-, and Prescribed-Time Stabilization and Estimation"](#), IEEE Conference on Decision and Control, 2019

6) Autre(si pertinent) / Other (if relevant)

a) Prizes and distinctions:

- [Letov Prize, Institute of Control Sciences, Russian Academy of Sciences, 2011.](#)
- [Outstanding reviewer of Automatica, 2016](#)

b) Invited talks:

- "Robust Stabilization with Time Constraints: Implicit Lyapunov Function Approach", International Conference "Optimization And Applications in Control and Data Science", Moscow, Russia, 13-15 May 2015
- "Sliding mode control of flow separation", [2nd Workshop on Machine Learning Control, Valenciennes, France, July 5th-6th, 2017](#)
- "Active Flow Control: Sliding Mode Control Approach", Workshop on [Active Drag Reduction Aachen](#), Germany, 15-16 March 2018
- "Updrading Linear PID Controllers: Method of Generalized Homogeneity", [QYOUser Webinar of Quanser Company, Canada, November 3rd, 2020](#)

1. Publications

1.1 Revues internationales / International journals

Below the following abbreviation "IF=Impact Factor" is utilized. I have authored and co-authored more than 80 articles in international journals. Most of them are in the field of Automation & Control Theory. The most recognized (the top 1-2) journals in this field are Automatica (18 papers) and IEEE Transactions in Automatic Control (13 papers), respectively. The International Journal of Robust and Nonlinear Control (12 papers) is the main journal completely dedicated to nonlinear control systems (my main specialization).

- IJ1. [A. Polyakov, Input-to-State Stability of Homogeneous Infinite Dimensional Systems with Locally Lipschitz Nonlinearities, Automatica, 2021, \(IF: 5.541\).](#) - accepted as regular paper
- IJ2. [M. Ballesteros, A. Polyakov, D. Efimov, I. Chairez, A. Poznyak, Non-parametric Identification of Homogeneous Dynamical Systems, Automatica, 2021, \(IF: 5.541\).](#) - accepted as brief paper.
- IJ3. [Y. Braidiz, A. Polyakov, D. Efimov, W. Perruquetti, On finite/fixed-time stability analysis based on sup/sub-homogeneous extensions, Systems & Control Letters, 2021, \(IF: 2.762\).](#) - accepted.
- IJ4. [J. A. Mercado, J.A. Moreno, A. Polyakov, D. Efimov, MIMO Homogeneous Integral Control Design using the Implicit Lyapunov Function Approach, Int. J. of Robust and Nonlinear Control, 2021,\(IF: 3.503\).](#) - accepted.
- IJ5. [A. Polyakov, Homogeneous Lyapunov Functions for Homogeneous Infinite Dimensional Systems with Unbounded Nonlinear Operators, Systems & Control Letters, 2021, \(IF: 2.762\).](#)
- IJ6. [A. Tapia, D. Efimov, M. Bernal, A. Polyakov, L. Fridman, A polytopic strategy for improved non-asymptotic robust control via implicit Lyapunov functions, Nonlinear Analysis: Hybrid Systems, 2021.](#)
- IJ7. [T. Sanchez, A. Polyakov, D. Efimov, Lyapunov-based Consistent Discretisation of Stable Homogeneous Systems, International Journal of Robust and Nonlinear Control, 2020, \(IF: 3.503\).](#)
- IJ8. [S. Wang, A. Polyakov, G. Zheng, Generalized Homogenization of Linear Controllers: Theory and Experiment, International Journal of Robust and Nonlinear Control, 2020, \(IF: 3.503\).](#)
- IJ9. [K. Zimenko, A. Polyakov, D. Efimov, W. Perruquetti, Robust Feedback Stabilization of Linear MIMO Systems Using Generalized Homogenization, IEEE Transactions on Automatic Control, 2020, \(IF: 5.625\).](#)
- IJ10. [T. Sanchez, A. Polyakov, J.-P. Richard, A sliding mode controller for a model of flow separation in boundary layers, International Journal of Robust and Nonlinear Control, 2020, \(IF: 3.503\).](#)
- IJ11. [Y. Braidiz, D. Efimov, A. Polyakov, W. Perruquetti, On robustness of finite-time stability of homogeneous affine nonlinear systems and cascade interconnections, International Journal of Control, 2020, \(IF: 2.780\).](#)
- IJ12. [T. Sanchez, D. Efimov, A. Polyakov, Discrete-Time Homogeneity: Robustness and Approximation, Automatica, 2020, \(IF: 5.541\).](#)
- IJ13. [S. Zhuk, O. V. Iftime, J. P. Epperlein, A. Polyakov, Minimax Sliding Mode Control Design for Linear Evolution Equations with Noisy Measurements and Uncertain Inputs, Systems & Control Letters, 2020, \(IF: 2.762\)](#)
- IJ14. [V. Utkin, A. Poznyak, Y. Orlov, A. Polyakov, Conventional and High Order Sliding Mode Control, Journal of The Franklin Institute, 2020, \(IF: 4.036\).](#)
- IJ15. [T. Kharkovskaya, D. Efimov, E. Fridman, A. Polyakov, J.-P. Richard, Interval observer design and control of uncertain non-homogeneous heat equations, Automatica, 2020, \(IF: 5.541\).](#)

- IJ16. A. de Souza, D. Efimov, [A. Polyakov](#), J.-L. Gouze, Robust Stabilization of Competing Species in the Chemostat, *Journal of Process Control*, 2020.
- IJ17. F. Lopez-Ramirez, D. Efimov, [A. Polyakov](#), W. Perruquetti, Finite-time and fixed-time input-to-state stability: Explicit and implicit approaches, *Systems & Control Letters*, 2020, (IF: 2.172).
- IJ18. [A. Polyakov](#), D. Efimov, B. Brogliato, Consistent Discretization of Finite-time and Fixed-time Stable Systems, *SIAM Journal of Control and Optimization*, 2019, (IF: 2.172).
- IJ19. B. Brogliato, [A. Polyakov](#), D. Efimov, The implicit discretization of the super-twisting sliding-mode control algorithm, *IEEE Transactions on Automatic Control*, 2019, (IF: 5.625).
- IJ20. D. Efimov, [A. Polyakov](#), A. Aleksandrov, Discretization of homogeneous systems using Euler method with a state-dependent step, *Automatica*, 2019, (IF: 5.541).
- IJ21. T. Sanchez, [A. Polyakov](#), L. Hetel, E. Fridman, A Switching Controller for a class of MIMO Bilinear Systems with Time-Delay, *IEEE Transactions on Automatic Control*, 2019, (IF: 5.625).
- IJ22. F. Lopez-Ramirez, D. Efimov, [A. Polyakov](#), W. Perruquetti, Conditions for fixed-time stability and stabilization of continuous autonomous systems, *Systems & Control Letters*, 2019, (IF: 2.762).
- IJ23. C. Chovet, M. Feingesicht, B. Plumjeau, M. Lippert, L. Keirsbulck, F. Kerhervé, [A. Polyakov](#), J.-P. Richard, W. Abassi, J.-M. Foucaut, Sliding mode control applied to a square-back Ahmed body, *Europ. J. of Mechanics/Fluids*, 2019.
- IJ24. T. Sanchez, D. Efimov, [A. Polyakov](#), J.A. Moreno, W. Perruquetti, A homogeneity property of discrete-time systems: Stability and convergence rates, *International Journal of Robust and Nonlinear Control*, 2019, (IF: 3.503).
- IJ25. N. Espitia, [A. Polyakov](#), D. Efimov, W. Prruquetti, Boundary time-varying feedbacks for fixed-time stabilization of constant-parameter reaction-diffusion systems, *Automatica*, 2019, (IF: 5.541).
- IJ26. K. Zimenko, D. Efimov, [A. Polyakov](#), A. Kremlev, Independent of delay stabilization using implicit Lyapunov function method, *Automatica*, 2019, (IF: 5.541).
- IJ27. [A. Polyakov](#), J.-M. Coron, L. Rosier, On Homogeneous Finite-Time Control for Linear Evolution Equation in Hilbert Space, *IEEE Transactions on Automatic Control*, 2018, (IF: 5.625).
- IJ28. [A. Polyakov](#), Sliding Mode Control Design Using Canonical Homogeneous Norm, *International Journal of Robust and Nonlinear Control*, 2018, (IF: 3.503).
- IJ29. F. Lopez Ramirez, D. Efimov, [A. Polyakov](#), W. Perruquetti, Fixed-Time Output Stabilization and Fixed-Time Estimation of a Chain of Integrators, *International Journal of Robust and Nonlinear Control*, 2018, (IF: 3.503).
- IJ30. K. Zimenko, [A. Polyakov](#), D. Efimov, W. Perruquetti, On simple scheme of finite/fixed-time control design, *International Journal of Control*, 2018, (IF: 2.780).
- IJ31. B.H. Du, [A. Polyakov](#), G. Zheng, Q. Quan, Quadrotor trajectory tracking by using fixed-time differentiator, *International Journal of Control*, 2018, (IF: 2.780).
- IJ32. D. Efimov, A. Levant, [A. Polyakov](#), W. Perruquetti, Convergence acceleration for observers by gain commutation, *International Journal of Control*, 2018, (IF: 2.780).
- IJ33. T. Kharkovskaya, D. Efimov, [A. Polyakov](#), J.-P. Richard, Design of interval observers and controls for PDEs using finite-element approximations, *Automatica*, 93(7), 2018, p. 302-310, (IF: 5.541).
- IJ34. Y. Dvir, A. Levant, D. Efimov, A. Levant, [A. Polyakov](#), W. Perruquetti, Acceleration of finite-time stable homogeneous systems, *International Journal of Robust and Nonlinear Control*, 2018, 28(5), p. 1757-1777 (IF: 3.503).
- IJ35. G. Zheng, [A. Polyakov](#), A. Levant, Delay estimation via sliding mode for nonlinear time-delay systems, *Automatica*, 2018, 89 (3), p. 266-273, (IF: 5.541).
- IJ36. F. Lopez Ramirez, [A. Polyakov](#), D. Efimov, W. Perruquetti, Finite-time and fixed-time observer design: Implicit Lyapunov function approach, *Automatica*, 2018, 87, p. 52-60, (IF: 5.541).
- IJ37. M. Feingesicht, [A. Polyakov](#), F. Kerherve, J.-P. Richard, SISO model-based control of separated flows: Sliding mode and optimal control approaches, *International Journal of Robust and Nonlinear Control*, 2017, (IF: 3.503).

- IJ38. D. Efimov, A. Levant, A. Polyakov, W. Perruquetti, Supervisory Acceleration of Convergence for Homogeneous Systems, *International Journal of Control*, 2017, (IF: 2.780)
- IJ39. K. Zimenko, D. Efimov, A. Polyakov, W. Perruquetti, A note on delay robustness for homogeneous systems with negative degree, *Automatica*, 2017, 79(5), p. 178-184, (IF: 5.541).
- IJ40. D. Efimov, A. Polyakov, A. Levant, W. Perruquetti, Realization and Discretization of Asymptotically Stable Homogeneous Systems, *IEEE Transactions on Automatic Control*, 2017, 62(11), p. 5962 - 5969, (IF: 5.625).
- IJ41. D. Efimov, A. Levant, A. Polyakov, W. Perruquetti, Supervisory Acceleration of Convergence for Homogeneous Systems, *International Journal of Control*, 2017, 27(18), p. 5008-5027 (IF: 2.780).
- IJ42. A. Polyakov, L. Hetel, Relay Control Design for Robust Stabilization in a Finite-Time, *IEEE Transactions on Automatic Control*, 2017, 62(4), p. 1985-1991 (IF: 5.625)
- IJ43. S. Zhuk, A. Polyakov, O. Nakonechnyi, Note on Minimax Sliding Mode Control Design for Linear Systems, *IEEE Transactions on Automatic Control*, 2017, 62(7), p. 3395 - 3400 (IF: 5.625)
- IJ44. H. Rios, M. Mera, D. Efimov, A. Polyakov, Robust output control for uncertain linear systems: Homogeneous differentiator-based observer approach, *Int. J. of Rob. and Nonlin. Contr.*, 2017, 27(11), p.1895-1914 (IF: 3.503)
- IJ45. K. Zimenko, A. Polyakov, D. Efimov, A. Kremlev, Feedback sensitivity functions analysis of finite-time stabilizing control system, *International Journal of Robust and Nonlinear Control*, 2017, 27(15), p. 2475-2491 (IF: 3.503)
- IJ46. M. Defoort, G. Demesure, Z. Zuo, A. Polyakov, M. Djemai, Fixed-time stabilisation and consensus of non-holonomic systems, *IET Control Theory & Applications*, 2016, 10(18), p. 2497 - 2505, (IF: 3.343.)
- IJ47. D. Efimov, E. Fridman, A. Polyakov, W. Perruquetti, J.-P. Richard, On design of interval observers with sampled measurement, *Systems & Control Letters*, 2016, 96(10), p. 158-164 (IF: 2.762)
- IJ48. A. Polyakov, D. Efimov, E. Fridman, W. Perruquetti, Homogeneous Distributed Parameters Systems, *IEEE Transactions on Automatic Control*, 2016, 61(11), p. 3657 - 3662 (IF: 5.625)
- IJ49. H. Rios, D. Efimov, A. Polyakov, W. Perruquetti, Homogeneous Time-Varying Systems: Robustness Analysis, *IEEE Transactions on Automatic Control*, 2016, 61(12), p. 4075 - 4080, (IF: 5.625)
- IJ50. D. Efimov, E. Fridman, A. Polyakov, W. Perruquetti, J.-P. Richard, Linear interval observers under delayed measurements and delay-dependent positivity, *Automatica*, 2016, 72(10), p. 123-130, (IF: 5.541)
- IJ51. M. Mera, A. Polyakov, W. Perruquetti, Finite-time attractive ellipsoid method: implicit Lyapunov function approach, *International Journal of Control*, 2016, 89(6), p. 1079-1090, (IF: 2.780)
- IJ52. D. Efimov, A. Polyakov, L. Fridman, W. Perruquetti, J.-P. Richard, Delayed sliding mode control, *Automatica*, 2016, 64(2), p. 37-43, (IF: 5.541)
- IJ53. A. Polyakov, D. Efimov, W. Perruquetti, Robust stabilization of MIMO systems in finite/fixed time, *International Journal of Robust and Nonlinear Control*, 2016, 26(1), p. 69-90. (IF: 3.503)
- IJ54. D. Efimov, A. Polyakov, W. Perruquetti, J.-P. Richard, Weighted Homogeneity for Time-Delay Systems: Finite-Time and Independent of Delay Stability, *IEEE Transactions on Automatic Control*, 2016, 61(1), p. 210-215,(IF: 5.625)
- IJ55. A. Polyakov, D. Efimov, W. Perruquetti, J.-P. Richard, Implicit Lyapunov-Krasovski Functionals For Stability Analysis and Control Design of Time-Delay Systems, *IEEE Transactions on Automatic Control*, 2015, (IF: 5.625)
- IJ56. M. Defoort, A. Polyakov, G. Demesure, M. Djemai, K. Veluvolu, Leader-follower fixed-time consensus for multi-agent systems with unknown non-linear inherent dynamics, *IET Control Theory & Applications*, 2015, (IF: 3.343.)
- IJ57. A. Polyakov, D. Efimov, W. Perruquetti, Finite-time and Fixed-time Stabilization: Implicit Lyapunov Function Method, *Automatica*, 2015, 51(1), p.332-340, (IF: 5.541)
- IJ58. A. Polyakov, Time-Suboptimal Feedback Design via Linear Matrix Inequalities, *Automation and Remote Control*, 2015, 76 (5), *Special Issue Dedicated to 80th Anniversary of Prof. Boris T. Polyak*, (IF: 0.591)
- IJ59. D. Efimov, A. Polyakov, J.-P. Richard, Interval Observer Design for Estimation and Control of Time-Delay Descriptor Systems, *European Journal of Control*, 2015, 23 (5), pp.26-35, (IF: 1.540)

- IJ60. [A. Polyakov, L. Fridman, Stability Notions and Lyapunov Functions of Sliding Mode Systems, Journal of the Franklin Institute, 2014, 351\(4\), p. 1831-1865, \(IF: 4.036\).](#)
- IJ61. [D. Efimov, A. Polyakov, E. Fridman, W. Perruquetti, J.-P. Richard, Comments on Finite-Time Stability of Time Delay Systems, Automatica, 2014, 50\(7\), p. 1944-1947, \(IF: 5.541\).](#)
- IJ62. [V. Azhmyakov, A. Polyakov, A. Poznyak, Consistent approximations and variational description of some classes of sliding mode control processes, Journal of The Franklin Institute, 2014, 351\(4\), P. 1964-1981, \(IF: 4.036\)](#)
- IJ63. [E. Bernuau, D. Efimov, W. Perruquetti and A. Polyakov, On Homogeneity and Its Application in Sliding Mode Control, Journal of the Franklin Institute, 2014, 351\(4\), p. 1866-1901, \(IF: 4.036\)](#)
- IJ64. [A. Polyakov, D. Efimov, W. Perruquetti, J.-P. Richard, Output Stabilization of Time-Varying Input Delay Systems Using Interval Observation Technique, Automatica, 2013, 49\(11\), p. 3402-3410, \(IF: 5.541\)](#)
- IJ65. [E. Bernuau, A. Polyakov, D. Efimov and W. Perruquetti, Verification of ISS, iISS and IOSS properties applying weighted homogeneity, System & Control Letters, 2013, 62\(12\), p. 1159-1167, \(IF: 2.762\)](#)
- IJ66. [A. Polyakov, Nonlinear feedback design for fixed-time stabilization of Linear Control Systems, IEEE Transactions on Automatic Control, 2012, 57\(8\), p. 2106-2110, \(IF: 5.625 \)](#)
- IJ67. [A. Polyakov, A. Poznyak, Unified Lyapunov function for a finite-time stability analysis of relay second-order sliding mode control systems, IMA J. of Mathematical Control and Information, 2012, 29\(4\), p. 529-550, \(IF: 1.034\).](#)
- IJ68. [A. Polyakov, Minimization of disturbances effects in time delay predictor-based sliding mode control systems, Journal of The Franklin Institute, 2012, 349\(4\), p. 1380-1396, \(IF: 4.036\)](#)
- IJ69. [A. Polyakov, A. Poznyak, Invariant Ellipsoid Method for Minimization of Unmatched Disturbances Effects in Sliding Mode Control, 2011, Automatica, 47\(7\), p. 1450-1454, \(IF: 5.541\)](#)
- IJ70. [A. Poznyak, A. Polyakov, V. Strygin, Analysis of finite-time convergence by the method of Lyapunov functions in systems with second-order sliding modes, J. of Applied Mathematics and Mechanics, 2011, 75\(3\), p. 289-303.](#)
- IJ71. [S. Gonzalez-Garcia, A. Polyakov, A. Poznyak, Using the Method of Invariant Ellipsoids for Linear Robust Output Stabilization of Spacecraft, Automation and Remote Control, 2011, 72\(3\), p.540-555, \(IF: 0.591\)](#)
- IJ72. [A. Polyakov, A. Poznyak, Method of Lyapunov Function for Systems with Higher-order Sliding Modes, Automation and Remote Control, 2011, 72\(5\), p.944-963, \(IF: 0.591\)](#)
- IJ73. [A. Polyakov, On Practical Stabilization of the Systems with Relay Delay Control, Automation and Remote Control, 2010, 71\(11\), p. 2331-2344, \(IF: 0.591\)](#)
- IJ74. [A. Polyakov, A. Poznyak, Lyapunov Function Design for Finite-Time Convergence Analysis: "Twisting" Controller for Second Order Sliding Mode Realization, Automatica, 2009. 45\(2\), , p. 444-448, \(IF: 5.541\)](#)
- IJ75. [V. Azmyakov, R. Galvan-Guerra, A. Polyakov, On the Method of Dynamic Programming for Linear-Quadratic Problems of Optimal Control in Hybrid Systems, Automation and Remote Control, 2009, 70\(5\), p. 787-799, \(IF: 0.591\)](#)
- IJ76. [A. Polyakov, A. Poznyak, Reaching Time Estimation for "Super-Twisting" Second Order Sliding Mode Controller via Lyapunov Function Designing, IEEE Transaction on Automatic Control, 2009, 54\(8\), p. 1951-1955, \(IF: 5.625 \)](#)
- IJ77. [M. Yefremov, A. Polyakov, V. Strygin, An active stabilization algorithm for a spacecraft with viscoelastic elements under uncertainties, Journal of Applied Mathematics and Mechanics, 2006, 70\(5\), p. 800-811.](#)
- IJ78. [M. Yefremov, A. Polyakov, V. Strygin, A new tracking algorithm for certain mechanical systems, Journal of Applied Mathematics and Mechanics, 2005, 69\(1\), p. 27-37.](#)
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- IJ81. [L. Fridman, V. Strygin, A. Polyakov, Stabilization of Oscillations Amplitudes via Relay Delay Control, International Journal of Control, 2003, 76\(8\), p. 770-780, \(IF: 2.780\)](#)

1.2 Conférence internationales avec comité de lecture / *Reviewed international conferences*

I have more than 100 publications in proceeding of reviewed international conferences. The top 1-2 conferences in the field of Automation & Control Theory are IFAC World Congress (*18 papers*) and IEEE Conference on Decision and Control (*36 papers*).

IC1.	S. Zhuk, A. Polyakov , Homogeneous Observers for Projected Quadratic Partial Differential Equations, IEEE Conference on Decision and Control, 2020.
IC2.	A Nekhoroshikh, D Efimov, A Polyakov, W Perruquetti, I Furtat , On finite-time stabilization of a class of nonlinear time-delay systems: Implicit Lyapunov-Razumikhin approach, IEEE Conference on Decision and Control, 2020.
IC3.	A. Polyakov , On Homogeneous Lyapunov Function Theorem for Evolution Equations, IFAC World Congress, 2020.
IC4.	T. Sanchez, A. Polyakov, D. Efimov , A Consistent Discretisation method for Stable Homogeneous Systems based on Lyapunov Function, IFAC World Congress, 2020.
IC5.	K. Zimenko, A. Polyakov, D. Efimov , Robust Stabilization of Control Affine Systems with Homogeneous Functions, IFAC World Congress, 2020.
IC6.	K. Zimenko, A. Polyakov, D. Efimov , Homogeneous Observer Design for Linear MIMO Systems, IFAC World Congress, 2020.
IC7.	A. Nekhoroshikh, D. Efimov, A. Polyakov, I. Furtad, E. Fridman , On output-based accelerated stabilization of a chain of integrators: Implicit Lyapunov-Krasovskii functional approach, IFAC World Congress, 2020.
IC8.	A. dos Reis de Souza, D. Efimov, A. Polyakov, J.-L. Gouze , Observer-Based Robust Control of a Continuous Bioreactor with Heterogeneous Community, IFAC World Congress, 2020.
IC9.	Y. Braidiz, D. Efimov, A. Polyakov, W. Perruquetti , On finite-time stability of sub-homogeneous differential inclusions, IFAC World Congress, 2020.
IC10.	Y. Braidiz, A. Polyakov, D. Efimov, W. Perruquetti , On fixed-time stability of a class of nonlinear systems, IFAC World Congress, 2020.
IC11.	M. Ballesteros-Escamilla, A. Polyakov, D. Efimov, I. Chairez, A. S. Poznyak , Adaptive Discontinuous Control for Homogeneous Systems Approximated by Neural Networks, IFAC World Congress, 2020.
IC12.	S. Wang, A. Polyakov, G. Zheng , On Generalized Homogenization of Linear Quadrotor Controller, IEEE International Conference on Robotics and Automation (ICRA), 2020.
IC13.	A. Polyakov , Characterization of Finite/Fixed-time Stability of Evolution Inclusions, 58th IEEE Conference on Decision and Control, 2019.
IC14.	A. Polyakov, S. Zhuk , Generalized Lyapunov Exponents of Homogeneous Systems, 58th IEEE Conference on Decision and Control, 2019.
IC15.	N. Espitia, A. Polyakov, E. Fridman , On Local Finite-Time Stabilization of the Viscous Burgers Equation Via Boundary Switched Linear Feedback , 58th IEEE Conference on Decision and Control, 2019.
IC16.	K. Zimenko, D. Efimov, A. Polyakov , On Condition for Output Finite-Time Stability and Adaptive Finite-Time Control Scheme , 58th IEEE Conference on Decision and Control, 2019.
IC17.	A.Reis, D. Efimov, A. Polyakov, J.-L. Gouze , Robust Control of a Competitive Environment in the Chemostat Using Discontinuous Control Laws, 58th IEEE Conference on Decision and Control, 2019.
IC18.	J. A. Mercado, J.A. Moreno, A. Polyakov, D. Efimov , Integral Control Design Using the Implicit Lyapunov Function Approach, 58th IEEE Conference on Decision and Control, 2019.
IC19.	M. Ballesteros, A. Polyakov, D. Efimov, I. Chairez, A. Poznyak , Differential Neural Network Identification for Homogeneous Dynamical Systems, NOLCOS, 2019.
IC20.	S. Wang, A. Polyakov, G. Zheng , Quadrotor Control Design under Time and State Constraints: Implicit Lyapunov Function Approach, European Control Conference, 2019.
IC21.	Y. Braidiz, W. Perruquetti, A. Polyakov, D. Efimov , On finite-time stability of homogeneous systems with multiplicative bounded function, European Control Conference, 2019.
IC22.	Y. Braidiz, D. Efimov, A. Polyakov, W. Perruquetti , Robust Finite-time stability of homogeneous systems with respect to multiplicative disturbances, European Control Conference, 2019.

- IC23. K. Zimenko, D. Efimov, [A. Polyakov](#), A. Keremlev, On Notions of Output Finite-Time Stability, European Control Conference, 2019.
- IC24. [A. Polyakov](#), D. Efimov, B. Brogliato, M. Reichhartinger, Consistent Discretization of Locally Homogeneous Finite-time Stable Control Systems, European Control Conference, 2019.
- IC25. N. Espitia, [A. Polyakov](#), D. Efimov, W. Perruquetti, Some characterizations of boundary time-varying feedbacks for fixed-time stabilization of reaction-diffusion systems, IFAC/IEEE Workshop on Con. of Sys. PDEs, 2019.
- IC26. N. Espitia, [A. Polyakov](#), D. Efimov, W. Perruquetti, On continuous boundary time-varying feedbacks for finite-time stabilization of coupled reaction-diffusion systems, 57th IEEE Conference on Decision and Control, 2018.
- IC27. K. Zimenko, [A. Polyakov](#), D. Efimov, On dynamical feedback control design for generalized homogeneous differential inclusions, 57th IEEE Conference on Decision and Control, 2018.
- IC28. F. Loperz-Ramirez, D. Efimov, [A. Polyakov](#), W. Perruquetti, On Implicit Finite-Time and Fixed-Time ISS Lyapunov Functions, 57th IEEE Conference on Decision and Control, 2018.
- IC29. T. Kharkovskaya, D. Efimov, [A. Polyakov](#), E. Fridman, J.-P. Richard, Interval estimation for second-order delay differential equations with delayed measurements and uncertainties, 57th IEEE Conf. on Decision and Contr., 2018.
- IC30. J. P. Epperlein, O. V. Iftime, S. Zhuk, [A. Polyakov](#), Asymptotic Output-Feedback Stabilization of Linear Evolution Equations with Uncertain Inputs via Equivalent Control Method, 57th IEEE Conf. on Decision and Control, 2018.
- IC31. D. Efimov, [A. Polyakov](#), A. Aleksandrov, On State-dependent Discretization of Stable Homogeneous Systems, 57th IEEE Conference on Decision and Control, 2018.
- IC32. T. Sanchez, [A. Polyakov](#), L. Hetel, E. Fridman, A switching controller for a class of MIMO bilinear time-delay systems, IEEE International Conference on the Science of Electrical Engineering, 2018.
- IC33. [A. Polyakov](#), D. Efimov, B. Brogliato, Consistent Discretization of Finite-time Stable Homogeneous Systems, 15th Workshop on Variable Structure Systems, 2018.
- IC34. B. Brogliato; [A. Polyakov](#), D. Efimov, The implicit discretization of the super-twisting sliding-mode control algorithm, 15th Workshop on Variable Structure Systems, 2018.
- IC35. T. Sanchez, [A. Polyakov](#), J.-P. Richard, D. Efimov, A robust Sliding Mode Controller for a class of SISO bilinear delayed systems, 15th Workshop on Variable Structure Systems, 2018
- IC36. K. Zimenko, [A. Polyakov](#), D. Efimov, Finite-Time and Fixed-Time Stabilization for Integrator Chain of Arbitrary Order, European Control Conference, 2018.
- IC37. K. Zimenko, [A. Polyakov](#), D. Efimov, Generalized Feedback Homogenization and Stabilization of Linear MIMO Systems, European Control Conference, 2018.
- IC38. F. Lopez-Ramirez, D. Efimov, [A. Polyakov](#), W. Perruquetti, On Necessary and Sufficient Conditions for Fixed-Time Stability of Continuous Autonomous Systems, European Control Conference, 2018.
- IC39. K. Zimenko, D. Efimov, [A. Polyakov](#), A. Kremlev, Control of Systems with Arbitrary Bounded Input Delay Using Implicit Lyapunov Function Technique, European Control Conference, 2018.
- IC40. [A. Polyakov](#), Quadratic-like Stability of Nonlinear Homogeneous Functions, 56th IEEE Conference on Decision and Control, 12-15 December 2017.
- IC41. [A. Polyakov](#), L. Hetel, C. Fiter, Relay Control Design using Attractive Ellipsoids Method, 56th IEEE Conference on Decision and Control, 12-15 December 2017.
- IC42. T. Sanchez, D. Efimov, [A. Polyakov](#), J. Moreno, W. Perruquetti, A homogeneity property of a class of discrete-time systems, 56th IEEE Conference on Decision and Control, 12-15 December 2017.
- IC43. [A. Polyakov](#), D. Efimov, E. Fridman, W. Perruquetti, J.-P. Richard, On Hyper Exponential Stabilization of Linear State-Delay Systems, 56th IEEE Conference on Decision and Control, 12-15 December 2017.
- IC44. [A. Polyakov](#), J.-M. Coron, L. Rosier, On Boundary Finite-Time Feedback Control for Heat Equation, IFAC World Congress, 9-14 July 2017.
- IC45. M. Feingesicht, [A. Polyakov](#), F. Kerherve, J.-P. Richard, Sliding Mode Control for Turbulent Flows, IFAC World Congress, 9-14 July 2017.

- IC46. M. Feingessicht, A. Polyakov, F. Kerherve, J.-P. Richard, Model-Based Feedforward Optimal Control applied to a Turbulent Separated Flow, IFAC World Congress, 9-14 July 2017.
- IC47. T. Kharkovskaya, D. Efimov, E. Fridman, A. Polyakov, J.-P. Richard, On design of interval observers for parabolic PDEs, IFAC World Congress, 9-14 July 2017.
- IC48. D. Efimov, A. Polyakov, A. Levant, W. Perruquetti, Switched gain differentiator with fixed-time convergence, IFAC World Congress, 9-14 July 2017.
- IC49. S. Zhuk, A. Polyakov, O. Nakonechnyi, Sliding Mode Control Design for Linear Evolution Equations with Uncertain Measurements and Exogenous Perturbations, IFAC World Congress, 9-14 July 2017.
- IC50. A. Polyakov, J.-M. Coron, L. Rosier, On Finite-Time Stabilization of Evolution Equations: A Homogeneous Approach, IEEE Conference on Decision and Control, Las Vegas, USA, 12-14 December 2016.
- IC51. D. Efimov, A. Polyakov, A. Levant, W. Perruquetti, Discretization of asymptotically stable homogeneous systems by explicit and implicit Euler methods, IEEE Conf. on Decision and Control, Las Vegas, USA, 12-14 December 2016.
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- IC53. D. Efimov, A. Levant, A. Polyakov, W. Perruquetti, On Acceleration of a Class of Asymptotically Stable Homogeneous Systems, IEEE Conference on Decision and Control, Las Vegas, USA, 12-14 December 2016.
- IC54. F. Lopez-Ramirez, D. Efimov, A. Polyakov, W. Perruquetti, Fixed-Time Output Stabilization of a Chain of Integrators, IEEE Conference on Decision and Control, Las Vegas, USA, 12-14 December 2016.
- IC55. T. Kharkovskaya, D. Efimov, A. Polyakov, J.-P. Richard, Interval observers for PDEs: approximation approach, NOLCOS, Monterey, USA, 22-25 August 2016
- IC56. K. Zimenko, D. Efimov, A. Polyakov, W. Perruquetti, Time-delay Robustness Analysis for Systems with Negative Degree of Homogeneity, NOLCOS, Monterey, USA, 22-25 August 2016
- IC57. K. Zimenko, A. Polyakov, D. Efimov, A. Kremlev, Frequency Domain Analysis of Control System Based on Implicit Lyapunov Function, European Control Conference, Aalborg, Denmark, 29 June-1 July 2016
- IC58. M. Feingessicht, C. Raibaud, A. Polyakov, F. Kerherve, J.-P. Richard, A bilinear input-output model with state-dependent delay for separated flow control, European Cont. Conf., Aalborg, Denmark, 29 June-1 July 2016
- IC59. F. Lopez-Ramirez, A. Polyakov, D. Efimov, W. Perruquetti, Finite-Time and Fixed-Time Observers Design via Implicit Lyapunov Function, European Control Conference, Aalborg, Denmark, 29 June-1 July 2016
- IC60. D. Efimov, E. Fridman, A. Polyakov, W. Perruquetti, J.P. Richard, On Design of Sampled-Data Interval Observers, European Control Conference, Aalborg, Denmark, 29 June-1 July 2016
- IC61. A. Polyakov, L. Hetel, On Finite-Time Stabilization Via Relay Feedback Control, IEEE Conference on Decision and Control, 2015, Osaka, Japan, p. 4098 - 4102
- IC62. A. Polyakov, Y. Orlov, H. Oza, S. Spurgeon, Robust Finite-time Stabilization and Observation of a Planar System Revisited , IEEE Conference on Decision and Control, 2015, Osaka, Japan, p. 5689-5694
- IC63. K. Zimenko, A. Polyakov, D. Efimov, Stabilization of Chain of Integrators with Arbitrary Order in Finite-Time , IEEE Conference on Decision and Control, 2015, Osaka, Japan, p. 4637 - 4641
- IC64. B. Brogliato, A. Polyakov, Globally Stable Implicit Euler Time-Discretization of a Nonlinear Single-Input Sliding-Mode Control System, IEEE Conference on Decision and Control, 2015, Osaka, Japan, p. 5426 - 5431
- IC65. M. Mera, A. Polyakov, W. Perruquetti, G. Zheng, Finite-Time Attractive Ellipsoid Method Using Implicit Lyapunov Functions, IEEE Conference on Decision and Control, 2015, Osaka, Japan, p. 6892-6896
- IC66. A. Polyakov, D. Efimov, E. Fridman, W. Perruquetti, Homogeneous Evolution Equation in a Banach Space, European Control Conference, 2015, Linz, Austria, p.2469-2474
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- IC68. D. Efimov, A. Polyakov, E. Fridman, W. Perruquetti, J.-P. Richard, Delay-Dependent Positivity: Application to Interval Observers, European Control Conference, 2015, Linz, Austria, p. 2079-2083

- IC69. D. Efimov, [A. Polyakov](#), L. Fridman, W. Perruquetti, J.-P. Richard, A Note on Continuous Delayed Sliding Mode Control, European Control Conference, 2015, Linz, Austria, p. 2401-2406
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- IC71. [A. Polyakov](#), D. Efimov, W. Perruquetti, J.-P. Richard, Implicit Lyapunov-Krasovski Functionals for time delay systems, IEEE Conference on Decision and Control, 15-17 December 2014, Los Angeles, USA, 2014, p. 1191-1196.
- IC72. D. Efimov, [A. Polyakov](#), W. Perruquetti, J.-P. Richard, Stability Analysis for Nonlinear Time-Delay Systems Applying Homogeneity, IEEE Conference on Decision and Control, 15-17 December 2014, Los Angeles, USA, p. 37-42.
- IC73. [A. Polyakov](#), I. Chairez, A New Homogeneous Quasi-Continuous Second Order Sliding Mode Control, Latinamerican Congress on Automatic Control, 14-17 October 2014, Cancun, Mexico.
- IC74. [A. Polyakov](#), Discontinuous Lyapunov Functions for Nonasymptotic Stability Analysis, IFAC World Congress, 24-29 August 2014, Cape Town, South Africa, p. 5455-5460.
- IC75. [A. Polyakov](#), J.-P. Richard, Suboptimal LMI-based Solution of Minimum Time Control Problem, IFAC World Congress, 24-29 August 2014, Cape Town, South Africa, p. 2475-2480.
- IC76. S. Zhuk, [A. Polyakov](#), On Output-based Sliding Mode Control Design Using Minimax Observer, 13th International Workshop on Variable Structure Systems, 29 June-2 July 2014, Nantes, France.
- IC77. M. Kryachkov, [A. Polyakov](#), Graph-based field automata for modeling of sliding mode systems, 13th International Workshop on Variable Structure Systems, 29 June-2 July 2014, Nantes, France.
- IC78. [A. Polyakov](#), D. Efimov, W. Perruquetti, Sliding Mode Control Design for MIMO Systems: Implicit Lyapunov Function Approach, European Control Conference, 24-27 June 2014, Strasburg, France, p. 2612-2617.
- IC79. [A. Polyakov](#), D. Efimov, W. Perruquetti, Homogeneous Differentiator Design using Implicit Lyapunov Function Method, European Control Conference, 24-27 June 2014, Strasburg, France, p. 288-293.
- IC80. D. Efimov, [A. Polyakov](#), J.-P. Richard, Interval estimation for systems with time delays and algebraic constraints, European Control Conference, 24-27 June 2014, Strasburg, France, p.678-683.
- IC81. S. Govindaswamy, L. Hetel, [A. Polyakov](#), T. Floquet, On relay control for discrete time systems using linear matrix inequalities, European Control Conference, 24-27 June 2014, Strasburg, France, p. 2225-2230.
- IC82. [A. Polyakov](#), A. Poznyak, J.-P. Richard, Robust Output Stabilization of Time-Varying Input Delay Systems using Attractive Ellipsoid Method, IEEE Conference on Decision and Control, 10-13 December 2013, Florence, Italy.
- IC83. S. Parsegov, [A. Polyakov](#), P.S. Scherbakov, Fixed-Time Consensus Algorithm for Multi-Agent Systems with Integrator Dynamics, 4th IFAC Workshop on Distributed Estimation and Control in Networked Systems, 2013, p. 110-115.
- IC84. [A. Polyakov](#), D. Efimov, W. Perruquetti, Finite-time Stabilization Using Implicit Lyapunov Function Technique, 9th Symposium on Non-linear Control Systems, Toulouse, France, 4-6 September 2013, p. 140-145.
- IC85. [A. Polyakov](#), D. Efimov, W. Perruquetti, J.-P. Richard, Interval Observer Approach to Output Stabilization of Time-Varying Input Delay System, European Control Conference, Zurich, 17-19 July 2013, p. 4412- 4417.
- IC86. E. Bernuau, D. Efimov, W. Perruquetti, [A. Polyakov](#), On an extension of homogeneity notion for differential inclusions, European Control Conference, Zurich, 17-19 July 2013, p. 2204-2209.
- IC87. E. Bernuau, [A. Polyakov](#), D. Efimov, W. Perruquetti, On ISS and iISS properties of homogeneous systems, European Control Conference, 17-19 July 2013, Zurich, Switzerland, p. 1705-1710.
- IC88. E. Bernuau, [A. Polyakov](#), D. Efimov, W. Perruquetti, Robustness of finite-time stability property for sliding modes, 5th Symposium on System Structure and Control, 4-6 February 2013, Grenoble, France, p. 391-396.
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- IC90. M. Mera, A. Poznyak, V. Azhmyakov, [A. Polyakov](#), A Robust Dynamic Controller for a Class of Nonlinear Systems with Sample-Data Outputs, 9th Int. Conf. on Electrical Engineering, Comp. Science and Autom. Control, 2012
- IC91. [A. Polyakov](#), Fixed-Time Stabilization via Second Order Sliding Mode Control, Analysis & Design of Hybrid Systems, 6-8 June 2012, Eindhoven, Netherlands, P. 254 - 258.

- IC92. [A. Polyakov](#), Fixed-Time Stabilization of Linear Systems via Sliding Mode Control, 12th International Workshop on Variable Structure Systems, 12-14 January 2012, Mumbai, India, P. 1- 6.
- IC93. [A. Polyakov](#), On Settling Time Function and Stability of Vector Relay Systems, 12th International Workshop on Variable Structure Systems, 12-14 January 2012, Mumbai, India, P. 149-154.
- IC94. [A. Polyakov](#), [A. Poznyak](#), The Lyapunov Function Design for the Stability Analysis of the "Italian Version" of the Second Order Sliding Mode Controllers, IFAC World Congress, 28 August - 2 September 2011, Milan, Italy.
- IC95. [A. Polyakov](#), Invariant Ellipsoid Method for Time-Delayed Predictor-Based Sliding Mode Control System, 11th International Workshop on Variable Structure Systems, 26-28 June 2010, Mexico D.F., P. 95-99.
- IC96. [M. Kryachkov](#), [A. Polyakov](#), [V. Strygin](#), Finite-time stabilization of an integrator chain using only signs of the state variables, 11th International Workshop on Variable Structure Systems, 26-28 June 2010, Mexico D.F.
- IC97. [S. Gonzalez-Garcia](#), [A. Polyakov](#), [A. Poznyak](#), Linear feedback spacecraft stabilization using the method of invariant ellipsoids, 41st Southeastern Symposium on System Theory, Tullahoma, TN, USA, March 15-17, 2009.
- IC98. [S. Gonzalez-Garcia](#), [A. Polyakov](#), [A. Poznyak](#), Output Linear Controller for a Class of Nonlinear Systems Using the Invariant Ellipsoid Method, American Control Conference, St. Louis, Missouri, USA, 10-12 June 2009.
- IC99. [A. Polyakov](#), [A. Poznyak](#), Minimization of the Unmatched Disturbances in the Sliding Mode Control Systems via Invariant Ellipsoid Method, IEEE Multi Conference on Systems and Control, 2009
- IC100. [A. Polyakov](#), [A. Poznyak](#), Lyapunov Function Design for Finite-Time Convergence Analysis of "Twisting" and "Super-Twisting" Second Order Sliding Mode Controllers, 10th IFAC Workshop on Variable Structure Systems, 2008
- IC101. [S. Gonzalez-Garcia](#), [A. Polyakov](#), [A. Poznyak](#), Output linear feedback for a class of nonlinear systems based on the invariant ellipsoid method, 5th Int. Conf. on Electr. Engineering, Comp. Science and Autom. Control, 2008
- IC102. [A. Polyakov](#), Practical Stabilization via Relay Delayed Control, IEEE Conference on Decision and Control, 8-11 December 2008, Cancun, Mexico, P. 5306-5311.
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- IC108. [L. Fridman](#), [V. Strygin](#), [A. Polyakov](#), Algorithm of Nonlocal Stabilization via Delayed Control Gain Adaptation, IEEE Workshop on Variable Structure Systems, Sarajevo, 17-19 July 2002, pp. 47-56.
- IC109. [L. Fridman](#), [V. Strygin](#), [A. Polyakov](#), Stabilization of Oscillations Amplitudes via Relay Delay Control, IEEE Conference on Decision and Control, Orlando, Florida, 4-7 December 2001, pp.3704-3709.
- IC110. [L. Fridman](#), [P. Acosta](#), [A. Polyakov](#), Robust eigenvalue assignment for uncertain delay control systems, IFAC Workshop on Time Delay Systems, Santa Fe, New Mexico, USA, 8-10 December 2001, pp.239-244.
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1.3 Livres et chapitres de livre / *Books and book chapters*

B1. [A. Polyakov](#), Generalized Homogeneity in Systems and Control, Springer, 2020.

B2. [V. Utkin](#), [A. Poznyak](#), [Y. Orlov](#), [A. Polyakov](#), Roadmap for Sliding Mode Control Design, Springer Briefs, 2020.

B3. [A. Poznyak, A. Polyakov, V. Azhmyakov, Attractive Ellipsoids in Robust Control, Birkhauser, 2014.](#)

B4. [A. Polyakov, Fast Control Systems: Nonlinear Approach, in New Perspectives and Applications of Modern Control Theory \(Editors: J. B. Clempner and W. Yu\). - Springer, 2017. - pp. 287-316.](#)

B5. [S. Zhuk, A. Polyakov, Minimax Observer for Sliding Mode Control Design, in Recent Trends in Sliding Mode Control \(Editors L. Fridman, J.-P. Barbot, F. Plestan\). - London, IET, 2016. - pp. 119-130.](#)

B6. [E. Bernuau, D. Efimov, W. Perruquetti, A. Polyakov, Homogeneity of Differential Inclusions, in Recent Trends in Sliding Mode Control \(Editors L. Fridman, J.-P. Barbot, F. Plestan\). - London, IET, 2016. - pp. 103-118.](#)

B7. [L. Fridman, V. Strygin, A. Polyakov, Semiglobal Stabilization of Linear Uncertain System via Delayed Relay Control, in Variable Structure Systems : from Principles to Implementation. - London, 2004. - pp. 377-400.](#)

1.4 Autres publications internationales (posters, short papers) / *Other international publications (posters, short papers)*

OC1. [C. Raibaud, A. Polyakov, F. Kerhervé, J.P. Richard, M. Stanislas, Experimental closed-loop control of a detached boundary layer at high Reynolds number, 10th EUROMECH Fluid Mechanics Conference. 2014.](#)

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1.5 Revues nationales / *National journals*

NJ1. [K. A. Zimenko, A. S. Kremlev, A. E. Polyakov, D. V. Efimov, Robust stabilization of two-rotor MIMO plant, Scientific and Technical Journal of Information Technologies, Mechanics and Optics, Vol.18, N. 3, 2018, p. 392-398](#)

NJ2. [K. A. Zimenko, A. E. Polyakov, Convergence speed increase of a finite-time stable control system, Scientific and Technical Journal of Information Technologies, Mechanics and Optics, Vol. 17 \(6\), 2017, p. 1018-1024.](#)

NJ3. [K. A. Zimenko, A. E. Polyakov, D. V. Efimov, A. S. Kremlev, Finite-time Stability of System of Series-Connected Integrators, Izvestiya Vysshikh Uchebnykh Zavedeniy. Priborostroenie, 2015, 58 \(9\), p. 681-686 \(in Russian\).](#)

NJ4. [S. Parsegov, A. Polyakov, P. Shcherbakov, Nonlinear fixed-time control protocol for uniform allocation of agents on a segment, Doklady Mathematics, Vol. 87\(1\), 2013, p. 133-136. \(Translated from Proc. of the Russian Acad. of Sci.\)](#)

NJ5. [V. Strygin, M. Yefremov, A. Polyakov, S. Prosin, The Algorithm of Angular Stabilization of Spacecraft with Flexible Dynamical Elements under Uncertain Conditions, Proceedings of Voronezh State University, No.1, 2006.\(in Russian\)](#)

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1.6 Conférence nationales avec comité de lecture / *Reviewed national conferences*

NC1. [M. Kryachkov, A. Polyakov, V. Strygin, Stabilization of uncertain system without quantitative information on system state, Control in Technical Systems, Saint-Petersburg, 2010 \(in Russian\).](#)

NC2. [A. Polyakov, A. Poznyak, Lyapunov Function Design for Finite-Time Convergence Analysis of The Second Order Sliding Mode Controllers, X International Workshop "Stability and Oscillations of Nonlinear Control Systems", 3 - 6 of June, Moscow, 2008 \(in Russian\).](#)

NC3. [S.A. Prosin, A. Polyakov, V.V. Strygin, Modeling, control and realization of an Aircraft Landing, X International Workshop "Stability and Oscillations of Nonlinear Control Systems", 3-6 June 2008, Moscow \(in Russian\).](#)

NC4. [M. Yefremov, A. Polyakov, S. Prosin, V. Strygin, An Universal Algorithm of Semiglobal Stabilization of Mechanical Systems with Uncertainties, Proc. of 9-th All-Russian Congress on Theoretical and Applied Mechanics, 22 - 28 August 2006, N. Novgorod, Russia \(in Russian\).](#)

NC5. [V. Strygin, A. Polyakov, M. Yefremov, S. Prosin, Stabilization of Angle Position of Spacecraft with Springing Elements and Uncertainties via Relay Delayed Feedback Control, Proc. of International Seminar on Nonlinear Modeling and Control, 27 June - 1 July 2005, Samara, Russia \(in Russian\).](#)

1.7 Rapports de recherche et articles soumis / *Research reports and publications under review*

- WP1. [M.R.Mojallizadeh, B. Brogliato, A. Polyakov, S. Selvarajan, L. Michel, F. Plestan, M. Ghanes, J.-P. Barbot, Y. Aoustin, Discrete-time differentiators in closed-loop control systems, Control Engineering Practice, 2021.](#) - under review.
- WP2. [A. Nekhoroshikh, D. Efimov, E. Fridman, W. Perruquetti, A. Polyakov, I. Furtat, Practically fixed-time ISS of neutral time-delay systems, Automatica, 2020, \(IF: 5.541\).](#) - under review.
- WP3. [D. Cruz, M. Ballesteros, A. Polyakov, D. Efimov, I. Chairez, A. Poznyak, Practical Realization of Implicit Homogeneous Controllers for Linearized Systems, IEEE Trans. on Industrial Electronics, 2020, \(IF: 5.541\).](#) - under review
- WP4. [A. Polyakov, On Galerkin Method for Homogeneous Infinite-Dimensional Systems, working paper, 2020.](#)
- WP5. [A. Polyakov, On Optimal Control Problems for Generalized Homogeneous Systems, Report, 2018.](#)
- WP6. [A. Polyakov, On Expansion of Regularity of Nonlinear Evolution Equations by Means of Dilation Symmetry, Report, 2019.](#)
- WP7. [Ivan de Jesus Salgado Ramos, A. Polyakov, Signal differentiation by means of algebraic technique and sliding mode technique, Report, Inria, 2016.](#)

2. Développements technologiques : logiciel ou autre réalisation / *Technology development : software or other realization*

- [ControlHub](#) Experiment Server (<http://valse-pendulum.lille.inria.fr:5000> - only through the Inria VPN or local network)

3. Impact socio-économique et transfert / *Socio-economic impact and transfer*

Patents:

- [WO/2018/229442](#) - Device for active control of the readhesion of a flow on a profile
- Deposit N: FR2004684 - Upgrade of PID controller using Generalized Homogeneity.

The submission of this patent is motivated by a possible implementation of the proposed methodology to the QDrone platform of the Quanser Company, Canada. Recently, I was invited to promote this methodology in my talk for the webinar [QYUser](#) organized by Quanser, the 3rd of November 2020.