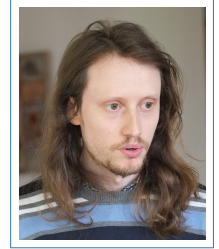


ILYA SCHUROV

Curriculum Vitae

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Research Interests

Machine Learning, Differential Equations, Dynamical Systems.

Academic Experience

- since 2022 **Postdoc**, *Theory of Condensed Matter Group, Faculty of Science, Radboud University, Nijmegen, The Netherlands.*
- 2022 **Associate Professor**, *Faculty of Mathematics, HSE University, Moscow, Russia.*
- 2020 — 2022 **Senior Research Fellow**, *Linguistic Convergence Laboratory, HSE University, Moscow, Russia.*
- 2018 — 2020 **Senior Research Fellow**, *Sport Studies Laboratory, HSE University, Moscow, Russia.*
- 2010 — 2022 **Associate Professor**, *Department of Higher Mathematics, HSE University, Moscow, Russia.*

Education

- 2010 **Ph. D. (Candidate of Sciences), Mathematics**, *Moscow State University.*
Dissertation topic: Canard solutions in slow-fast systems on the two-torus. Advisor: Yulij S. Ilyashenko
- 2006 **M. Sc. (Specialist), Mathematics**, *Moscow State University*, Graduated cum laude.

Textbooks

Calculus. Lecture notes. (Russian) <https://calculus.mathbook.info>
Ordinary differential equations. Interactive textbook. (Russian) <https://ode.mathbook.info>

Publications

- I. V. Schurov. Ducks on the torus: existence and uniqueness. *Journal of Dynamical and Control Systems*, 16(2):267–300, 2010. [DOI] [arXiv].
- I. V. Shchurov. Canard cycles in generic fast-slow systems on the torus. *Trans. Mosc. Math. Soc.*, 2010:175–207, 2010. [DOI].
- P. I. Kaleda and I. V. Shchurov. Cyclicity of elementary polycycles with fixed number of singular points in generic k -parameter families. *St. Petersburg Math. J.*, 22(4):557–571, 2011. [DOI].
- Ilya Schurov. Duck farming on the two-torus: Multiple canard cycles in generic slow-fast systems. *Discrete and Continuous Dynamical Systems*, Supplement 2011:1289–1298, 2011. [DOI] [arXiv].
- O. V. Romaskevich, V. A. Kleptsyn, and I. V. Schurov. Josephson effect and fast-slow systems. *Nanostructures. Mathematical Physics and Modelling*, 8(1):31–46, 2013.
- A. A. Glutsyuk, V. A. Kleptsyn, D. A. Filimonov, and I. V. Schurov. On the adjacency quantization in an equation modeling the Josephson effect. *Funct. Anal. Appl.*, 48(4):272–285, 2014. [DOI] [arXiv].
- V. Kleptsyn, A. Okunev, I. Schurov, D. Zubov, and M. I. Katsnelson. Chiral tunneling through

generic one-dimensional potential barriers in bilayer graphene. *Phys. Rev. B*, 92:165407, Oct 2015. [DOI] [arXiv].

Ilya Schurov and Nikita Solodovnikov. Duck factory on the two-torus: Multiple canard cycles without geometric constraints. *Journal of Dynamical and Control Systems*, 23(3):481–498, 2017. [DOI] [arXiv].

Ilya V. Schurov. Qqmb and indentml: Extensible mathematical publishing for web and paper. In *Proceedings of the 2017 ACM Symposium on Document Engineering, DocEng '17*, page 121–124, New York, NY, USA, 2017. Association for Computing Machinery. [DOI] [code].

Yu. Ilyashenko, Yu. Kudryashov, and I. Schurov. Global bifurcations in the two-sphere: a new perspective. *Inventiones mathematicae*, 213(2):461–506, 2018. [DOI] [arXiv].

Michael Daniel, Ruprecht von Waldenfels, Aleksandra Ter-Avanesova, Polina Kazakova, Ilya Schurov, Ekaterina Gerasimenko, Daria Ignatenko, Ekaterina Makhlina, Maria Tsfasman, Samira Verhees, and et al. Dialect loss in the russian north: Modeling change across variables. *Language Variation and Change*, 31(3):353–376, 2019. [DOI] [code].

Dmitry Dagaev and Ilya Schurov. Bachet’s game with lottery moves. *Discrete Mathematics*, 343(4):111704, 2020. [DOI] [arXiv].

Michael Daniel, Alexey Koshevoy, Ilya Schurov, and Nina Dobrushina. Can recall data be trusted? evaluating reliability of interview data on traditional multilingualism in highland dagestan. *Field Methods*, 34(4):288–302, 2022. [DOI].

Invited Talks

- 2019 **Variational Autoencoders beyond Euclidian Spaces**, *Seminar of Laboratory of Applied Geometry and Topology*, HSE University, Moscow, October 18, 2019.
- 2016 **Duck factory on the two torus**, *International Conference Topological Methods in Dynamics dedicated to 70th birthday of V. Z. Grines*, HSE University, Nizhny Novgorod, December 11-13, 2016.
- 2011 **Canard cycles in generic slow-fast systems on the two-torus**, *International Workshop on Hysteresis and Slow-Fast Systems*, Wittenberg, Germany, December 12-14, 2011.

Teaching Experience

Online Courses

Probability theory, *HSE Data Science online master program at Coursera*.

Course design and lecturing

Statistics basics, *HSE Data Science online master program at Coursera*.

Course design and lecturing

Probability theory, statistics and exploratory data analysis, *HSE / Coursera*.

Course design and lecturing

Recent Teaching

Machine learning, *HSE, Faculty of Mathematics*.

Course design and lecturing. Bachelor and Master programs

Ordinary differential equations, *HSE University/New Economics School (HSE/NES) joint Programme in Economics*.

Course design and lecturing. Bachelor program

Calculus – 1, *HSE/NES Programme in Economics*.

Course design and lecturing. Bachelor program

Data science, *HSE/NES Programme in Economics*.

Course design and lecturing. Bachelor program

Linguistic data: quantitative analysis and visualisation, *HSE, School of Linguistics*.

Course design and lecturing. Master programs. (English)

Applied differential equations, *HSE, Faculty of Computer Science*.

Course design, lecturing and exercises. Bachelor program

Previous Teaching

More than 20 different courses in mathematics, data science, statistics, game theory and programming, *HSE, Faculties of Social Sciences, Humanities, Economics, Communication and Design*.

Lectures and practical lessons, Bachelor and Master programs

Dynamical systems, *MIPT, Department of Innovations and High Technology*.

Practical lessons

Ordinary differential equations, *Math in Moscow program, Independent University of Moscow*.

Lectures and practical lessons. (In English)

Industry Experience

- 2022 **Joint HSE — Tinkoff Bank project group on Data Generation**, Co-supervising students solving data science problems given by Tinkoff Bank.
- 2021 **Joint HSE — Tinkoff Bank project group on Graph Data**, Co-supervising students solving data science problems given by Tinkoff Bank.

Grants

- 2013 **Dynamics of Josephson junction and slow-fast systems**, Research project 12-01-0227, HSE Science Fund.
- 2013 **Limit sets in slow-fast systems, piecewise translations and skew products**, Grant for young researchers with Ph.D. degree, research project MK-7567.2013.1.
- 2012 **Invariant manifolds and asymptotic behaviour of slow-fast mappings**, Research project 11-01-0239, HSE Science Fund.
- 2012 **Partially hyperbolic and slow-fast systems: stable effects, bifurcations and applications**, RFBR project 12-01-31241-mol-a.

Fellowships & Awards

- 2012, 2014, **Best teacher award**.
- 2016 — 2022 Nominated by students vote
- 2019 **Honorary mention**, *HSE, Faculty of Computer Sciences*.
- 2013 **Best young mathematician award**, *Dynasty Foundation*.

Conference Organization

- 2018 **Member of the organizing committee**, *Real and Complex Dynamical Systems. International conference on the occasion of Prof. Yulij Ilyashenko's 75th birthday*, Independent University of Moscow, HSE University and Steklov Institute.
- 2014 **Coordinator of the organizing committee**, *International conference "Attractors, Foliations and Limit Cycles"*, Independent University of Moscow, HSE University and Steklov Institute.
- 2005 **Member of the organizing committee**, *Lyapunov Exponents and Related Topics in Dynamics and Geometry, French-Russian International Conference*, Independent University of Moscow, Laboratoire Jean-Victor Poncelet.

Service

- 2022 **Reviewer**, Topology, Algebra, and Geometry in Machine Learning, A Workshop at the 39th International Conference on Machine Learning (ICML 2022).
- 2016 – 2022 **Member of the academic council**, HSE/NES Programme in Economics.
Supervising mathematical courses
- 2016 – 2019 **Member of jury**, *Russian National Olympiad on Economics for Highschoolers*.
- 2021 **Member of jury**, *Data Analysis National Olympiad (Russia)*.