Polina Vytnova   **Curriculum Vitae**

Department of Mathematics   E-mail: p.vytnova@surrey.ac.uk
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PRESENT POSITION	*Lecturer in Mathematics*, University of Surrey	09/2022—present

PUBLICATIONS

- Hausdorff dimension of Gauss–Cantor sets and two applications to classical Lagrange and Markov spectra, with C. Matheus, G. Moreira and M. Pollicott. *Advances in Mathematics*, 409, Part B, paper 108693 arXiv:2106.06572.

- Accurate bounds on Lyapunov exponents for expanding maps of the interval, with M. Pollicott. *Commun. Math. Phys.* 397, pp. 485–502 (2023) (pdf)

- Hausdorff dimension estimates applied to Lagrange and Markov spectra, Zaremba theory, and limit sets of Fuchsian groups, with M. Pollicott. *Trans. Amer. Math. Soc. Ser. B* 9 (2022), 1102–1159 (pdf).

- Uniform lower bounds on the dimension of Bernoulli convolutions, with V. Kleptsyn and M. Pollicott, *Advances in Mathematics* 395, 2022, paper 108090. (pdf)

- How many inflections are there in the Lyapunov spectrum? with O. Jenkinson and M. Pollicott. *Commun. Math. Phys.* 386 (2021), no. 3, 1383–1411.

- Zeros of the Selberg zeta function for symmetric infinite area hyperbolic surfaces, with M. Pollicott. *Geom. Dedicata* (2019) 201:155–186.

- Rigorous computation of diffusion coefficients for expanding maps, with O. Jenkinson and M. Pollicott. *J. Stat. Phys.* 170 (2018), no. 2, 221–253.

- Critical points for the Hausdorff dimension of pairs of pants, with M. Pollicott. *Groups Geom. Dyn.* 11 (2017), no. 4, 1497–1519.

- Heuristic analysis of symmetric tori; in Hu H.(ed) "Statistical Properties of Nonequilibrium Dynamical Systems"; Springer, Singapore (in press).
  Preprint: https://users.mccme.ru/polly/files/holedTorusConjectures.pdf

- The Bowen–Series coding and zeros of zeta functions, with M. Pollicott, in Hu H.(ed) "Statistical Properties of Nonequilibrium Dynamical Systems"; Springer, Singapore (in press). arXiv:2204.08203

- Linear response and periodic points, with M. Pollicott. *Nonlinearity* 29 (2016), no. 10, 3047–3066.

- Estimating singularity dimension, with M. Pollicott. *Math. Proc. Cambridge Philos. Soc.* 158 (2015), no. 2, 223–238.

- On dynamical systems with 2-adic time, with V. Dremov, and G. Shabat. *Proceedings of The Steklov Institute of Mathematics*, 2009, Vol. 265, pp. 101–109

- On the chaotic properties of quadratic maps over non-archimedean fields, with V. Dremov and G. Shabat *AIP Conf. Proc.* — 03/2006, Issue 1, pp.43–54

PREPRINTS

- Groups, drift, and harmonic measures, with M. Pollicott. arXiv:2204.08197
- On the graph of the dimension function of the Lagrange and Markov spectra, with C. Matheus and G. Moreira. arXiv:2212.11371

PREVIOUS POSITIONS		
• *University of Warwick*, Research Fellow	10/2016—08/2022
• *Queen Mary University of London*, Research Assistant	01/2015—09/2016
• *Imperial College London*, LMS Researcher	09/2014—12/2014

VISITING APPOINTMENTS	• *Institute Mittag-Leffler*, Stockholm, Sweden – Program "Fractal Geometry and Dynamics", Visiting Researcher	09/2017
	• *ICERM, Brown University*, Providence, USA – Program "Dimension and Dynamics", Postdoctoral Researcher	02/2016—05/2016
	• *Banach Center*, Warsaw, Poland – Simons Semester "Dynamical Systems", Visiting Researcher	09/2015—12/2015

EDUCATION AND DEGREES	• *University of Warwick, UK*
	  – Ph.D. in Mathematics. Advisor: Dr Oleg Kozlovski (fully funded)
	  – Thesis Title: Kinematic fast dynamo problem
		2014

	• *Utrecht University, Netherlands* – MRI Master Program "Numerical Bifurcation Analysis" (fully funded)	2010

	• *Independent University of Moscow, Russia*
	  – M.Sc. in Mathematics. Advisor: Prof. George Shabat
	  – Thesis Title: On non-archimedean dynamical systems
		2009

AWARDS AND GRANTS	• London Mathematical Society Anniversary Grant, UK	2014
	• Warwick Postgraduate Research Scholarship, UK	2010—2013
	• Mathematical Research Institute Scholarship, Netherlands	2009—2010

TEACHING EXPERIENCE	• *University of Surrey, Module leader* – Data science for dynamical systems, (4th year/MSc);	2022/23
	• *University of Warwick, Module leader*	
	– Hyperbolic geometry, (3rd year);	2021/22
	– Metric Spaces, (2nd year);	2018/19
	– Complex Function Theory, (4th year/PhD)	2017/18
	– Invitation to non-archimdean dynamics;	2012/13
	(Informal lecture course, 8 hours).	
	• *University of Warwick, Project Supervisor* – Essay (a 3rd year undergraduate project).	2018/19
	• *University of Warwick, Teaching Assistant* Running problems sessions, marking assignments; between 15 and 150 students.	2010—2014
	– Ergodic Theory, MA427 – Complex Analysis, MA3B8 – Fractal Geometry, MA3D4 – Spinors, Tensors, and Rotations, MA3J1 – Differentiation, MA225 – Math by Computer, MA124 – Experimental Mathematics, MA122	
	• *Independent University of Moscow, Teaching Assistant*	2007—2009
	– Algebra, Calculus, Topology (1st and 2nd year modules)	

ADMINISTRATIVE EXPERIENCE	• *Warwick Ergodic Theory and Dynamical Systems Seminar*, weekly; Coorganiser;	2018/19
	• *British Society for the History of Mathematics Christmas Meeting*; Coorganizer.	2021

OUTREACH	• *Summer School "Contemporary Mathematics"*, Russia, yearly; about 100 participants (school/six form students and 2nd year undergraduates), about 50 lecturers; a member of the organising team;	2007—present

INVITED TALKS	• Bristol, Ergodic Theory and Dynamical Systems Seminar	01/2023
	• Bedlewo, Poland, Conference "Geometric Complexity of the Julia Sets"	08/2022
	• Leiden, France, Workshop "Multidimensional Continued Fractions and Euclidean Dynamics"	07/2022
	• UK One Day Ergodic Theory and Dynamical Systems Meeting	02/2022
	• Selected Topics in Mathematics Seminar, Liverpool (online)	10/2021
	• Zoominar in Dynamical Systems in Porto (online)	06/2021
	• Avignon — Marseille Dynamical Systems Day (online)	06/2021
	• One World Numeration Seminar (online)	06/2021
	• Workshop "Linear Response: Rigorous Results and Applications" (online)	01/2021
	• Moscow seminar in Diophantine Analysis (online)	01/2021
	• Penn State Dynamical Systems Workshop (online)	10/2020
	• Ergodic Theory and Dynamical Systems Seminar, Bristol (online)	10/2020
	• IMPAN, Poland, Dynamical Systems Seminar	04/2019
	• Manchester, Analysis and Dynamics Seminar	12/2018
	• Berkeley Analysis Seminar	09/2018
	• Rennes, France, Géométrie Analytique Seminar	09/2018
	• SusTech, ShenZhen, China, Conference on Dynamical Systems, (Celebrating the 50 years of the Berkeley school)	06/2018
	• Institute Mittag-Leffler, Stockholm, Fractal Geometry Seminar	10/2017
	• QMUL, London, Workshop "Ergodic Theory & Symbolic Dynamics"	09/2017
	• Warwick, "Ergodic Theory, Algorithms and Rigorous Computations"	04/2017
	• Bedlewo, Poland, Conference "Ergodic theory of dynamical systems"	11/2015
	• Bedlewo, Poland, Conference "Fractal Geometry and Dynamics"	10/2015
	• Birgham Young University, Utah, USA, Conference "Rocky Mountains Dynamical Systems"	06/2015
	• CIRM, France, Conference "Analysis and geometry of resonances"	03/2015
	• UK One Day Ergodic Theory and Dynamical Systems Meeting	12/2014
	• Beijing University, China, Dynamical Systems Seminar	08/2014
	• Independent University of Moscow, Russia, Conference "Topological and geometric methods in low-dimensional dynamical systems"	05/2014
	• Reading, UK, Conference "Non-Equilibrium Statistical Mechanics and The Theory of Extreme Events"	01/2013

IT EXPERIENCE AND SKILLS	• *Programming languages*: C/C++, Fortran, PHP, Python.
	• *Mathematical software*: Matlab, Mathematica, Maxima.
	– *Specialised software for analysis of dynamical systems*: Auto, DDE-Biftool, Content, DStools, Matcont
	• *System Administration:* 2006—2009
	– Worked as a system administrator at the Landau Institute of Theoretical Physics; Linux, Windows, email server support, security, software & hardware installation.

PAPERS IN PREPARATION	• Drift and dimension of the hitting measure for random walks on $PSL(2, \mathbb{R})$, with M. Pollicott. *48pp*
	• Themodynamics and dimensions of Bernoulli convolutions, with V. Kleptsyn. *10pp*
	• Lyapunov exponents for random matrix products, with M. Pollicott. *25pp*