Dzmitry Dudko

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Employment

2024– : Associate Professor, Stony Brook University, USA

2019–2024: Assistant Professor, Stony Brook University, USA

2016–2019: Postdoctoral Fellow, Jacobs University Bremen, Germany

Spring 2017, Spring 2018, Spring 2019: Visiting Professor, Stony Brook University, USA

2010–2016: Assistant (research fellow), G.-A.-Universität zu Göttingen, Germany

2008–2010: Stipendiary of the Research Training Group 1493, Deutsche Forschungsgemeinschaft, Germany

2006–2008: Stipendiary of Jacobs University Bremen, Germany

Education

2012: PhD in mathematics, Jacobs University Bremen, Germany
Title: *The Decoration Theorem of the Mandelbrot Set and Applications in Holomorphic Dynamics*

2007: University Diploma, Belarusian State University, Minsk, Belarus

Research Area

Dynamical Systems; in particular, the Renormalization Theory in Complex Dynamics, the Mandelbrot set, the MLC Conjecture, post-critically finite maps, self-similar groups.

Surveys

On the MLC Conjecture and the Renormalization Theory in Complex Dynamics.
Proceedings of the ICM 2026, Vol. 5, pp. 116–135, SIAM, 2026.

Publications

MLC at Feigenbaum points, with Mikhail Lyubich.
Publications Mathématiques de l'IHÉS, 143:97–141, 2026.

Local connectivity of the Mandelbrot set at some satellite parameters of bounded type, with Mikhail Lyubich, *GAFA*, 33(4), 1–136, 2023

Algorithmic aspects of branched coverings III/V. Erasing maps, orbispaces, and the Birman exact sequence, with Laurent Bartholdi, *Groups, Geometry, and Dynamics* 15 (4), 1197–1265, 2021

Pacman renormalization and self-similarity of the Mandelbrot set near Siegel parameters, with Mikhail Lyubich and Nikita Selinger, *Journal of the AMS*, 33 (2020), 653-733

Algorithmic aspects of branched coverings IV/V. Expanding maps, with Laurent Bartholdi, *Transactions of the AMS*, 370, 7679–7714, 2018

Algorithmic aspects of branched coverings II/V. Sphere bisets and their decompositions, with Laurent Bartholdi, Inventiones Math., 223(1):1-100, 2021

Algorithmic aspects of branched coverings I. Van Kampen's Theorem for bisets, with Laurent Bartholdi, *Groups, Geometry, and Dynamics*, 12 (1), 121–172, 2018

Algorithmic aspects of branched coverings, with Laurent Bartholdi, *Ann. Fac. Sci. Toulouse* 26 (5), 1219–1296, 2017

Core entropy of quadratic polymonials, with Dierk Schleicher, *Arnold Mathematical Journal,* (2020) 6: 333-–385

Homeomorphisms between limbs of the Mandelbrot set, with Dierk Schleicher, *Proceedings of the AMS,* electr. published on Sept. 23, 2011

The decoration theorem for Mandelbrot and Multibrot sets, *International Mathematics Research Notices*, 13, 3985–4028, 2017

Preprints

Multicritical pseudo-Siegel bounds and the optimality of the Brjuno condition for all neutral polynomials, with Yusheng Luo and Runze Zhang 2026, available on arXiv:2610.37468

Rigidity of the attractor of neutral renormalization, with Willie Rush Lim and Mikhail Lyubich, 2026, available on arXiv:2609.37383

Uniform bounds for bubbles of neutral quadratic polynomials. with Willie Rush Lim, 2026,available on arXiv:2609.15500

Sierpinski carpet hyperbolic components of disjoint type are bounded, with Yusheng Luo, 2025, available on arXiv:2509.25658

Uniform a priori bounds for neutral renormalization. Variation II: $\psi^\bullet$-ql Siegel maps, with Yusheng Luo, Mikhail Lyubich, 2025, available on arXiv:2509.23031

Correspondences on Riemann surfaces and non-uniform hyperbolicity, with Laurent Bartholdi and Kevin M. Pilgrim, `arXiv:2407.15548`, 2024

Uniform a priori bounds for neutral renormalization, with Mikhail Lyubich, available on `arXiv:2210.09280`, 2022,

A canonical decomposition of postcritically finite rational maps and their maximal expanding quotients, with Mikhail Hlushchanka and Dierk Schleicher, available on `arXiv:2209.02800`, 2022,

Matings with laminations, available on `arXiv:1112.4780v1`, 2011

Awards, Honors, and Grants

2026: Invited Speaker, International Congress of Mathematicians

2026: Michael Brin Prize in Dynamical Systems

2025: Simons Fellowship

2021–25: NSF Award DMS 2055532 "Complex Dynamics: Renormalization, Geometry, and Algebra"

2004–06: First Prizes on International Mathematics Competition for Undergraduate Students (IMC)

2002: Gold Medal, International Mathematics Olympiad (IMO), Glasgow, UK (Glasgow, UK)

Teaching

Spring 2025: Ergodic Theory and Smooth Dynamics (MAT 555)

Spring 2025: Differential Equations: Dynamics and Change (MAT 351)

Fall 2024: Real Analysis I (MAT 532)

Spring 2024: Calculus II (MAT 132), course coordinator

Spring 2024: Applied Complex Analysis (MAT 342)

Spring 2023: Calculus C (MAT 127), course coordinator

Spring 2023: Applied Complex Analysis (MAT 342)

Fall 2022: Puzzles in Complex Dynamics (MAT 655)

Fall 2021: Calculus II (MAT 132), course coordinator

Fall 2021: Introduction to Linear Algebra (MAT 211)

Spring 2021: Ergodic Theory and Smooth Dynamics (MAT 555)

Fall 2020: Group Theory and Dynamical Systems (MAT 656)

Spring 2020: Applied Complex Analysis (MAT 342)

Fall 2019: Geometry for Teachers (MAT 515)

Spring 2019: Introduction to Linear Algebra (MAT 211)

Fall 2018: Algebraic Topology, Jacobs University Bremen

2012–2016: Teaching duties of a research assistant, University of Göttingen

PhD Students

Jonathan Galvan Bermudez (current)

Willie Rush Lim, 2024

Service

2026- : Math. Department Search Committee

2026- : Math. Department "Mathematics and AI" Committee

2025- : IMS Deputy Director

2019- : IMS hiring committee

2021–25: University Senate, Stony Brook University

2022: Chair Selection Committee

2019-21: Colloquium Committee, Stony Brook University

PhD Committees: Runze Zhang (2024, Toulouse), Timothy Alland (2023, Stony Brook), Matthew Dannenberg (2022, Stony Brook), Anastasia Shepelevtseva (2022, Pisa, Moscow), Sergey Shemyakov (2022, Marseille), InSung Park (2021, Bloomington), Konstantin Bogdanov (2020, Marseille)

Conferences and Programs Organized

Feb 3, 2020 – Mar 19, 2021: Semester Program *Renormalization and Universality in Conformal Geometry, Dynamics, Random Processes, and Field Theory*, Simons Center, Stony Brook University

Mar 5-7, 2021: Workshop *Many faces of renormalization*, Simons Center, Stony Brook University

Sep 21-24, 2021: Conference *Advancing Bridges in Complex Dynamics*, CIRM, Luminy, Marseille

Invited Talks (since 2019)

August 2026 *Fatou in Gorges Workshop*, Cornell University

July 2026 ICM 2026 talk, the Dynamics section, Philadelphia

June 2026: online talk on the "The Long Run – Topics in Ergodic Theory" seminar

May 2026: seminar talk at the University of Chicago

April 2026: colloquium talk at Stony Brook University

April 2026: seminar talk at the University of Rochester

March 2026: *59th Spring Topology and Dynamics Conference*, University of Alabama at Birmingham, plenary talk

October 2025: online talk on the *Pacific Quasiworld seminar*

Aug 2025: *Workshop and Summer School on Transcendental Thurston Theory,* University of Manchester, (remote talk)

Mar 2025: AMS Sectional Meeting, Session: *Current Trends in Complex Dynamics*, Lawrence, KS

Feb 2025: online talk on the *Quasiworld seminar*

Apr 2024: AMS Sectional Meeting, Session: *Complex Dynamics and Related Areas*, Milwaukee, WI

Jan 2024: Conference *International Colloquium. Holomorphic and smooth dynamics.* Mumbai, India

Nov 2023: Colloquium at Alabama University at Birmingham

Oct 2023: *Workshop on Holomorphic Dynamics - MLC and tools for studying*, Søminestationen Holbæk

Aug 2023: Conference *Inaugural CNAM-Fields Nonlinear Days: Renormalization and Friends,* Toronto

Aug 2023: Workshop *NSF-IRES: Advanced Studies Institute in Uzbekistan*, Uzbekistan,

May-June 2023: Conference *Around the Mandelbrot set: celebrating the 60th birthday of Mitsuhiro Shishikura*, Kyoto,

June 2023: Mini-course at *Early Career Complex Dynamics*, Workshop, June 2023, Bloomington, Indiana

Nov 2022: Conference *Complex Dynamics in the Tropics: celebrating the* 60*th birthday of Carsten Lunde Peterson*, Rio de Janeiro

Aug 2022: Conference *On geometric complexity of Julia sets - IV*, Będlewo

June 2022: Colloquium in Saarland University, Germany

May 2022: Workshop *Adventurous Berkeley Complex Dynamics,* MSRI

Feb 2022: *Introductory Workshop: Complex Dynamics - from special families to natural generalizations in one and several variables*, MSRI

Sep 2021: hybrid Conference *On geometric complexity of Julia sets - III*, Będlewo, Poland

Sep 2021: hybrid Conference *Advancing Bridges in Complex Dynamics*, CIRM,

Mar 2021: Workshop *Many faces of renormalization*, Simons Center,

Dec 2020: *4-lecture minicourse* on Renormalization Program, Simons Center,

Nov 2020: online talk on the *Quasiworld seminar*

Nov 2019: Workshop *Algorithms in Complex Dynamics and Mapping Class Groups*, ICERM, Brown University

Oct 2019: Seminar talk at University of Rhode Island,

May-June 2019: Conference *Analytic Low Dymensional Dynamics: a celebration of Misha Lyubich's 60th birthday*, Toronto,

Mar 2019: Dynamical Systems Special Session, *53rd Spring Topology and Dynamical Systems Conference*, University of Alabama at Birmingham,

Visited places (with at least one contributed talk)

Urgench State University (Uzbekistan), IMPA (Rio de Janeiro, Brazil), RIMS in Kyoto (Japan), Chinese Academy of Sciences in Beijing (China), HES in Moscow (Russia), Banach conference center in Bedlevo (Poland), Vienna (Austria), University of Geneva (Switzerland), Uppsala University (Sweden), Søminestationen Holbæk, Copenhagen (Denmark), Saarland University, Jacobs University Bremen, University of Goettingen, Oberwolfach Research Institute (Germany), Paris, Toulouse (France), Barcelona (Spain), Fields Institute in Toronto (Canada), Harvard University, University of Chicago, Cornell University, Stony Brook University, Indiana University Bloomington, ICERM of Brown University, University of Alabama, University of Wisconsin-Milwaukee, University of Kansas, Texas A&M University at College Station (USA)