

Paata Ivanisvili

Curriculum Vitae

Employment

Upcoming

7/2018 – **Assistant Professor**, *University of California, Irvine*.

2017-2018 **Postdoctoral Researcher**, *Princeton University*, Algorithms & Geometry.

Current and Past

Fall 2017 **Postdoctoral Fellow**, *Mathematical Sciences Research Institute (MSRI)*.
Geometric Functional Analysis and Applications

Summer 2017 **Postdoctoral Researcher**, *Kent State University (KSU)*.

Spring 2017 **Postdoctoral Fellow**, *MSRI*.
Harmonic Analysis.

2015-2016 **Postdoctoral Researcher**, *KSU*.

2011-2013 **Research Engineer**, *Chebyshev Laboratory at Saint Petersburg State University*,
Russia.

Visiting positions

Summer 2014 **Hausdorff Research Institute for Mathematics**, *Bonn, Germany*.
Visiting scholar position.

Education

2013-2015 **Ph.D**, *Michigan State University (MSU)*, Mathematics.

2011-2014 **Ph.D**, *Saint Petersburg State University*, Mathematics.

2006-2011 **B.S., M.S.**, *Saint Petersburg State University*, Mathematics.
Diploma with honor.

Research interests

Analysis, PDE, probability and geometry.

Publications

1. **Correction up to a function with sparse spectrum and uniformly convergent Fourier series**, *with S. Kislyakov*.
Journal of Mathematical Sciences, Vol 172, 2, pp. 195–206, (2011).

2. **On Bellman function for extremal problems in BMO**, with *N. N. Osipov, D. M. Stolyarov, V. I. Vasyunin and P. B. Zatitskiy*.
Comptes Rendus Mathematique, Vol. 350, 11-12, pp. 561–564 (2012).
3. **J-closed finite collections of Hardy-type subspaces**.
Journal of Mathematical Sciences, Vol 194, 6, pp. 645–650 (2013).
4. **Sharp estimates of integral functionals on classes of functions with small mean oscillation**, with *N. N. Osipov, D. M. Stolyarov, V. I. Vasyunin and P. B. Zatitskiy*.
Comptes Rendus Mathematique, Vol. 353, 12, pp. 1081–1085 (2015)
5. **Hessian of Bellman functions and uniqueness of Brascamp–Lieb inequality**, with *A. Volberg*.
J. London Math. Soc., Vol. 92, 3, pp. 657–674 (2015).
6. **Inequality for Burkholder’s martingale transform**.
Analysis & PDE, Vol. 8, No. 4, pp. 765–806 (2015).
7. **Bellman VS Beurling: sharp estimates of uniform convexity for L_p spaces**, with *P. B. Zatitskiy and D. M. Stolyarov*.
St. Petersburg Math. J., Vol. 27, pp. 333–343 (2016).
8. **Bellman function for extremal problems in BMO**, with *N. N. Osipov, D. M. Stolyarov, V. I. Vasyunin and P. B. Zatitskiy*.
Trans. Amer. Math. Soc., Vol. 368, pp. 3415–3468 (2016).
9. **Bellman function for extremal problems in BMO II: evolution**, with *D. Stolyarov, V. Vasyunin and P. Zatitskiy*.
127 pages, to appear Memoirs of the AMS (2016).
10. **Bellman function approach to the sharp constants in uniform convexity**.
Advances in Calculus of Variations, ISSN (Online) 1864–8266, ISSN (Print) 1864–8258, DOI: <https://doi.org/10.1515/acv-2016-00008>
11. **Lower bounds for uncentered maximal function in any dimensions**, with *B. Jaye and F. Nazarov*.
Int. Math. Res. Notices, (2017) Vol. 8, pp. 2464–2479.
12. **Improving Beckner’s bound via Hermite functions**, with *A. Volberg*.
Analysis & PDE, Vol. 10 (2017), No. 4, 929–942
13. **On weak and strong sharp weighted estimates of square function**, with *F. Nazarov and A. Volberg*.
(2015) [preprint].
14. **Bellman partial differential equation and the hill property for classical isoperimetric problems**, with *A. Volberg*.
arXiv:1506.03409, (2015) [submitted].
15. **Isoperimetric functional inequalities via the maximum principle: the exterior differential systems approach**, with *A. Volberg*, To appear in Linear and Complex Analysis, V. P. Havin volume.
arXiv:1511.06895, (2015)
16. **A bundling problem revisited**.
arXiv:1602.00983, (2016) [preprint].

17. **Boundary value problem and the Ehrhard inequality.**
arXiv:1605.04840, (2016) [submitted].
18. **Poincaré inequality $3/2$ on the Hamming cube, with A. Volberg.**
arXiv:1608.04021, (2016) [submitted].
19. **On the failure of lower square function estimates in the non-homogeneous weighted setting, with K. Domelevo, S. Petermichl, S. Treil, A. Volberg.**
arXiv:1705.08376, (2017) [submitted].
20. **Convolution estimates and number of disjoint partitions.**
The Electronic Journal of Combinatorics, Volume 24, Issue 2 (2017), Paper #P2.43
21. **Square function and the Hamming cube: duality, with F. Nazarov, A. Volberg.**
arXiv:1705.08529, (2017) [submitted].

Teaching experience

- Fall 2016 Analytic Geometry and Calculus III, KSU.
- Spring 2016 Analytic Geometry and Calculus I, KSU.
- Fall 2015 Linear Algebra with Applications, KSU.
- 2014-2015 Differential Equations, MSU.
- 2013-2014 Multivariable Calculus, MSU.

Talks

2017

- Apr. Mathematical Sciences Research Institute, Postdoc Seminar, "*Poincaré inequality $3/2$ on the Hamming cube*"

2016

- Feb. University of Wisconsin-Madison, Analysis Seminar, "*Torsion, developable surfaces and BMO space*"
- Mar. AMS sectional meeting, Athens, GA, "*Isoperimetric functional inequalities via maximum principle: the exterior differential systems approach*"
- Jul. Texas A&M University, Workshop in Analysis and Probability, "*Improving Beckner's bound via Hermite functions*"
- Sep. Michigan State University, Analysis and PDE Seminar, "*Boundary value problem and the Ehrhard inequality*"
- Sep. University of Missouri (2 talks). 1) Analysis Seminar, "*Lower bounds for uncentered maximal functions in any dimension*". 2) Convex Geometry Seminar, "*Boundary value problem and the Ehrhard inequality*"
- Oct. The University of Akron, PDE and Applied mathematics seminar, "*Monge-Ampere type equations and their applications to functional isoperimetric inequalities*"

2015

- Jan. University of Helsinki, Analysis Seminar, "*Lerner's inequality in high dimensions*".
- Feb. Cincinnati, the 5th Ohio River Analysis Meeting, "*Lerner's inequality in high dimensions*".

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- Apr. Chebyshev Laboratory at St. Petersburg State University, Russia, "*Lerner's inequality in high dimensions*".
- Sep. Kent State University, Measure Theory Seminar, "*Semigroups, maximum principles, and isoperimetric inequalities*" (series of talks).
- Nov. Kent State University, Measure Theory Seminar, "*The Gaussian correlation conjecture and related problems*".

2014

- Jun. Hausdorff institute of mathematics, Trimester program in harmonic analysis and PDE, Germany, "*Bellman functions and Young's inequality*".
- Jun. XXIII St.Petersburg Summer Meeting in Mathematical Analysis, Russia, "*Burkholder's martingale transform*".
- Nov. Kent State University, Measure Theory Seminar, "*Minimal concave functions*" (series of talks).

2013

- Oct. SUMMER SCHOOL, Optimal Transport and Applications, UCLA, "*An Elementary Introduction to Monotone Transportation*".
- Dec. Michigan State University, Analysis and PDE seminar, "*Brascamp–Lieb inequality and Bellman function*".

2012

- Mar. Harmonic and Complex Analysis and its Applications, Tenerife, Canary Islands, "*Bellman function for extremal problems in BMO*".

2011

- Jun. XX St.Petersburg Summer Meeting in Mathematical Analysis, Russia, "*Geometrical evolution of the solution of homogeneous Monge–Ampère equation*".

Professional service

- 2015–present Reviewer for "*Israel Journal of Mathematics*", "*Transactions of the AMS*", "*Studia Mathematica*", "*The IMA Volumes in Mathematics and its Applications*"
- 2012 Organized seminars "Harmonic measure" and "Bellman function" at Chebyshev Laboratory, Saint Petersburg State University.

Languages

- English: Fluent
- Georgian: Native speaker
- Greek: Basic
- Russian: Fluent