

Alexey Balitskiy

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EMPLOYMENT

INSTITUTE FOR ADVANCED STUDY

Sep 2021 – present | Member
School: Mathematics

EDUCATION

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

Sep 2016 – Jun 2021 | PhD
Department: Mathematics
Advisor: Larry Guth
Thesis: bounds on Urysohn width

MOSCOW INSTITUTE OF PHYSICS AND TECHNOLOGY

Sep 2014 – Jun 2016 | Master
Sep 2010 – Jun 2014 | Bachelor
Department: Control and Applied Mathematics
Advisor: Roman Karasev
Thesis: shortest closed billiard trajectories in convex bodies in connection with Viterbo's conjecture

LANGUAGES

Russian | mother-tongue
English | fluent
C++/C#/Unity | modest

HOBBIES

Choral singing
Playing piano four hands
Gongfu tea
Kintsugi
Metamodern arts & crafts
Indie games
Virtual & augmented reality

RESEARCH

FIELDS OF INTEREST

Metric, convex, discrete, symplectic geometry

SELECTED PAPERS AND PREPRINTS

- *Systolic almost-rigidity modulo 2* (with H. Alpert and L. Guth), arXiv:2206.01968 preprint
- *Macroscopic scalar curvature and codimension 2 width* (with H. Alpert and L. Guth), to appear in J. Topol. Anal.
- *Systolic inequalities for the number of vertices* (with S. Avvakumov, A. Hubard and R. Karasev), to appear in J. Topol. Anal.
- *Waist of maps measured via Urysohn width* (with A. Berdnikov), Trans. Am. Math. Soc. 375.2 (2022): 1261–1279
- *Local-to-global Urysohn width estimates* (with A. Berdnikov), J. für die Reine und Angew. Math. (Crelles) 2021.780 (2021): 265–274
- *A multi-plank generalization of the Bang and Kadets inequalities*, Isr. J. Math. 245 (2021): 209–230
- *Flip cycles in plabic graphs* (with J. Wellman), Selecta Math. (N.S.) 26.1 (2020): 1–29
- *Equality cases in Viterbo's conjecture and isoperimetric billiard inequalities*, Int. Math. Res. Not. 2020.7 (2020): 1957–1978
- *On the circle covering theorem by A. W. Goodman and R. E. Goodman* (with A. Akopyan and M. Grigorev), Discrete Comput. Geom. 59.4 (2017): 1001–1009
- *Shortest closed billiard trajectories in the plane and equality cases in Mahler's conjecture*, Geom. Dedicata 184.1 (2016): 121–134
- *Billiards in convex bodies with acute angles* (with A. Akopyan), Israel J. Math. 216.2 (2016): 833–845
- *Elementary approach to closed billiard trajectories in asymmetric normed spaces* (with A. Akopyan, R. Karasev and A. Sharipova), Proc. Am. Math. Soc. 144.10 (2016): 4501–4513
- *Another Ham Sandwich in the Plane* (with A. Garber and R. Karasev), Ann. Comb. 19.2 (2015): 235–242

DISTINCTION

Mar 2015 Laureate of Simons stipend for students in Moscow
Nov 2014 2nd place in 18th All-Russian Möbius Contest
Jul 2014 First Prize at International Mathematics Competition for University Students | Bulgaria
Apr 2010 Winner at All-Russian Mathematical Olympiad

TEACHING & MENTORING

SPUR MENTOR | MASSACHUSETTS INSTITUTE OF TECHNOLOGY

2020 E. Bullock and K. Gravel | *Higher secondary polytopes for 2D zonotopes*
2018 J. Wellman | *Flips in reduced plabic graphs*

TEACHING ASSISTANT | MASSACHUSETTS INSTITUTE OF TECHNOLOGY

2017–present recitation teacher: Convex optimization
grader: Probability | Linear Algebra | Functional analysis |
Quantum computation | Combinatorial optimization

TEACHING ASSISTANT | MOSCOW INSTITUTE OF PHYSICS AND TECHNOLOGY

2014–2016 Combinatorics | Analysis | Algorithms | Discrete geometry