Tomasz Tkocz

PERSONAL INFORMATION

Address Department of Mathematical Sciences, Carnegie Mellon University, Pittsburgh, PA 15213, USA

E-mail ttkocz@math.cmu.edu

Website http://www.math.cmu.edu/~ttkocz/

Citizenship Polish

EMPLOYMENT

2018 - present Assistant Professor, Carnegie Mellon University

Fall 2017 Berlekamp Postdoctoral Fellow, Mathematical Sciences Research Institute

2015 - 2017 Postdoctoral Research Associate, Princeton University

EDUCATION

2012 - 2015 Mathematics Institute, University of Warwick; PhD degree in Mathematics (18 June 2015), thesis *High-dimensional phenomena: dilations, tensor products and geometry of L_1*, supervised by Prof. Keith Ball

2011 - 2012 PhD student at the Mathematics Institute, University of Warsaw, supervised by Prof. Rafał Latała

2006–2011 University of Warsaw, Faculty of Mathematics, Informatics and Mechanics; MSc degree in Mathematics (with Honours), thesis *Gaussian measure of dilations of convex rotationally invariant sets in $\mathbb{C}^n$*

PUBLICATIONS

- H. Huang, B. A. Slomka, T. Tkocz, B-H. Vritsiou, Improved bounds for Hadwiger's covering problem via thin-shell estimates, preprint.
- P. Nayar, T. Tkocz, On a convexity property of sections of the cross-polytope, preprint
- A. Frieze, W. Pegden, T. Tkocz, On random multi-dimensional assignment problems, submitted.
- M. Madiman, P. Nayar, T. Tkocz, Sharp moment-entropy inequalities for symmetric log-concave distributions, submitted.
- A. Frieze, W. Pegden, T. Tkocz, On the cover time of the emerging giant, submitted.
- A. Frieze, T. Tkocz, A note on log-concave random graphs, submitted.
- R. Latała, P. Nayar, T. Tkocz, Bounds on moments of weighted sums of finite Riesz products, submitted.
- P. Ivanisvili, T. Tkocz, Comparison of moments of Rademacher chaoses, to appear in Ark. Mat.
- W. Bednorz, T. Tkocz, Stochastic dominance and weak concentration for sums of independent symmetric random vectors, to appear in IMRN.
- A. Eskenazis, P. Nayar, T. Tkocz, Sharp comparison of moments and the log-concave moment problem, *Adv. Math.* 334 (2018) 389–416.

- A. Eskenazis, P. Nayar, T. Tkocz, Gaussian mixtures: entropy and geometric inequalities, *Ann. of Prob.* 46(5) 2018, 2908–2945.
- P. Nayar, T. Tkocz, A multidimensional analogue of the Rademacher-Gaussian tail comparison, *Proc. Amer. Math. Soc.* 146 (2018), no. 1, 413–419.
- M. Strzelecka, M. Strzelecki, T. Tkocz, On the convex infimum convolution inequality with optimal cost function, *ALEA Lat. Am. J. Probab. Math. Stat.* 14 (2017), no. 2, 903–915.
- K. Ball, P. Nayar, T. Tkocz, A reverse entropy power inequality for log-concave random vectors, *Studia Math.* 235 (2016), no. 1, 17–30.
- R. Latała, T. Tkocz, A note on suprema of canonical processes based on random variables with regular moments, *Electron. J. Probab.* 20 (2015), no. 36, 1-17.
- E. Damek, R. Latała, P. Nayar, T. Tkocz, Two-sided bounds for L_p-norms of combinations of products of independent random variables, *Stochastic Process. Appl.* 125 (2015), no. 4, 1688–1713.
- W. Johnson, A. Nasseri, G. Schechtman, T. Tkocz, Injective Tauberian operators on L_1 and operators with dense range on ℓ_∞, *Canad. Math. Bull.* 58 (2015), no. 2, 276–280.
- P. Nayar, T. Tkocz, A note on certain convolution operators, *Geometric aspects of functional analysis*, 405–412, Lecture Notes in Math., 2116, Springer, Cham, 2014.
- O. Guédon, P. Nayar, T. Tkocz, Analytical and Probabilistic Methods in the Geometry of Convex Bodies, *IM PAN Lecture Notes*, Vol. 2, Warsaw 2014.
- P. Nayar, T. Tkocz, S-inequality for certain product measures, *Math. Nachr.* 287 (2014), No. 4, 398–404.
- M. Smaczyński, T. Tkocz, M. Kuś, K. Życzkowski, Extremal spacings between eigenphases of random unitary matrices and their tensor products, *Phys. Rev. E* 88, 052902 (2013).
- T. Tkocz, A note on the tensor product of two random unitary matrices, *Electron. Commun. Probab.* 18 (2013), no. 16, 1–7.
- P. Nayar, T. Tkocz, The unconditional case of the complex S-inequality, *Israel J. Math.* 197 (2013), no. 1, 99–106.
- P. Nayar, T. Tkocz, A Note on a Brunn-Minkowski Inequality for the Gaussian Measure, *Proc. Amer. Math. Soc.* 141 (2013), no. 11, 4027–4030.
- T. Tkocz, M. Smaczyński, M. Kuś, O. Zeitouni, K. Życzkowski, Tensor Products of Random Unitary Matrices, *Random Matrices: Theory and Applications*, Vol. 1, No. 4 (2012) 1250009, 26 pp.
- P. Nayar, T. Tkocz, On a Loomis-Whitney type inequality for permutationally invariant unconditional convex bodies, *Geometric Aspects of Functional Analysis*, 327–333, Lecture Notes in Math., Vol. 2050, *Springer, Heidelberg*, 2012.
- T. Tkocz, An Upper Bound for Spherical Caps, *Amer. Math. Monthly* 119 (2012), no. 7, 606–607.
- T. Tkocz, Gaussian measures of dilations of convex rotationally symmetric sets in $\mathbb{C}^n$, *Elect. Comm. in Probab.* 16 (2011), 38–49.

TALKS

- *On a certain convexity property for sections of the cross-polytope*, Analysis Seminar, University of California Irvine, Nov 6, 2018.

- *On the cover time of the emerging giant*, Combinatorics and Probability seminar, Ohio State University, Oct 25, 2018.
- *On a certain convexity property for sections of the cross-polytope*, Measure Theory Seminar, Kent State University, Oct 3, 2018.
- *Log-concave random graphs*, AMS Sectional Meeting, Apr 19, 2018.
- *Stochastic dominance for sums of independent symmetric random vectors*, Stochastics Seminar, Georgia Tech, Apr 19, 2018.
- *Stochastic dominance for sums of independent symmetric random vectors*, Probability Seminar, University of Alberta, Mar 14, 2018.
- *A Khnitchine inequality with sharp constants*, SUMIRFAS, Texas A&M University, Jul 22, 2017.
- *The entropy and moments of sums of certain iid random variables*, High Dimensional Probability, Oaxaca, May 29, 2017.
- *Entropy inequalities*, Probability Seminar, University of Warsaw, Apr 6, 2017.
- *Gaussian mixtures*, Probability Seminar, Technion, Mar 21, 2017.
- *A multidimensional analogue of the Rademacher-Gaussian tail comparison*, Workshop in Analysis and Probability, Texas A&M University, Jul 28, 2016.
- *Upper and lower bounds for suprema of canonical processes*, Chaining Methods and their Applications to Computer Science, Harvard, Jun 22, 2016.
- *A multidimensional analogue of the Rademacher-Gaussian tail comparison*, Inverse Problems and Analysis Seminar, University of Delaware, Apr 20, 2016.
- *A reverse entropy power inequality*, 50th Annual Conference on Information Sciences and Systems (CISS), Princeton, Mar 18, 2016.
- *A reverse entropy power inequality for log-concave random vectors*, Algorithms and geometry collaboration meeting, Simons Foundation, New York, Jan 29, 2016.
- *A reverse entropy power inequality for log-concave random vectors*, Probability Seminar, Princeton University, Sep 30, 2015
- *Tensor products of random unitary matrices*, 4th Joint British Mathematical Colloquium & British Applied Mathematics Colloquium, Cambridge, Mar 31, 2015
- *Expanders and local vs global invertibility of certain operators*, Combinatorics Seminar, University of Warwick, Jan 16, 2015
- *On some strange operators acting on L_1*, PIMS Summer School in Probability, Jun 5, 2014
- *Probability theory at Warwick*, Research in the UK afternoon, Cambridge, Nov 21, 2013
- *Tensor products of random unitary matrices*, CNRS-PAN Mathematics Summer Institute, Cracow, Jul 5, 2013
- *Tensor products of random unitary matrices*, Young Researchers in Mathematics 2013, Edinburgh, Jun 19, 2013
- *Gaussian measures and inequalities*, Postgraduate Seminar, University of Warwick, May 29, 2013
- *De Bruijn integrals*, Stochastic Integrable Systems Reading Seminar, University of Warwick, May 21, 2013
- *Certain convolution type operators on L_1 are nicely invertible*, Probability Seminar, University of Warsaw, March 21, 2013
- *A large deviation principle for Wigner random matrices I and II*, Stochastic Integrable Systems Reading Seminar, University of Warwick, Feb 12 and 19, 2013

- *The concentration of measure*, Graduate Student Meeting, London Mathematical Society, London, Nov 16, 2012 (awarded the prize for the best presentation)
- *S-inequality*, Groupe de Travail "Convexité et Probabilités", Institut de Mathématiques de Jussieu, Feb 16, 2012
- *1-symmetric case of the complex S-inequality*, Probability Seminar, University of Warsaw, Oct 6, 2011
- *Volumes of Projections of Permutationally Invariant Convex Bodies*, Asymptotic Geometric Analysis seminar, Tel-Aviv University, Jul 24, 2011
- *A Loomis-Whitney type inequality for permutationally invariant unconditional convex bodies*, Probability Seminar, University of Warsaw, Apr 7, 2011

TEACHING EXPERIENCE

- Lecturer for graduate courses: Asymptotic Convex Geometry (21-801, Fall 2018), Carnegie Mellon University
- Lecturer for undergraduate courses: Probability (21-325, Spring 2018), Carnegie Mellon University
- Instructor for 1st year undergraduate courses: Introduction to Linear Algebra (MAT202, Spring 2016), Calculus I (MAT103, Fall 2016), Princeton University
- Supervision of 1st year undergraduate students (small groups), University of Warwick, 2012/13, 2013/14, 2014/15
- TA in 2012/13 for Analysis II, in 2013/14 for Combinatorial Optimization, Functional Analysis I & II, and in 2014/15 for Combinatorics, Functional Analysis I & II, Brownian Motion, Combinatorial Optimisation and Analysis II, University of Warwick
- Problem Solving Seminar for undergraduates (preparation for *International Mathematical Competition*), University of Warwick, 2013/14
- Team leader: *International Mathematics Competition 2013*, Blagoevgrad, Bulgaria, Aug 6-12, 2013
- Support classes for Analysis I & II, University of Warsaw, 2011/12