

# Mark W. Meckes

Curriculum vitae — February 17, 2012

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## Employment

2007–present: Assistant Professor, Case Western Reserve University (Case).

2006–07: Visiting Assistant Professor, Cornell University.

2003–06: Lecturer, Stanford University.

## Education

Ph.D. in Mathematics. Case, May 2003.

Dissertation: *Random Phenomena in Finite-Dimensional Normed Spaces*.

Advisors: Stanislaw J. Szarek and Elisabeth M. Werner.

B.S. in Mathematics, *summa cum laude*, with minors in Physics and German. Case, May 1999.

## Grants and Honors

NSF grant DMS-0902203, 2009–2012.

Graduate Dean's Award for Instructional Excellence. Case, 2001.

Max Morris Prize for the outstanding undergraduate in mathematics. Case, 1999.

Phi Beta Kappa, 1999.

## Papers

Concentration and convergence rates for spectral measures of random matrices (with E. Meckes), to appear in *Probab. Theory Related Fields*.

The spectra of random abelian  $G$ -circulant matrices, submitted.

Concentration for noncommutative polynomials in random matrices (with S. Szarek), *Proc. Amer. Math. Soc.* 140 (2012), 1803–1813.

Positive definite metric spaces, submitted.

Another observation on operator compressions (with E. Meckes), *Proc. Amer. Math. Soc.* 139 (2011), 1433–1439.

Some results on random circulant matrices. *High Dimensional Probability V: The Luminy Volume*, 213–223, IMS Collections 5, Institute of Mathematical Statistics, Beachwood, OH, 2009.

- Gaussian marginals of convex bodies with symmetries. *Beiträge Algebra Geom.* 50 (2009) no. 1, pp. 101–118.
- On the spectral norm of a random Toeplitz matrix. *Electron. Comm. Probab.* 12 (2007), 315–325.
- The central limit problem for random vectors with symmetries (with E. Meckes). *J. Theoret. Probab.* 20 (2007), 697–720.
- Some remarks on transportation cost and related inequalities. *Geometric Aspects of Functional Analysis*, 237–244, Lecture Notes in Math. 1910, Springer, Berlin, 2007.
- Sylvester’s problem for symmetric convex bodies and related problems. *Monatsh. Math.* 145 (2005) no. 4, 307–319.
- Volumes of symmetric random polytopes. *Arch. Math.* 82 (2004) no. 1, 85–96.
- Concentration of norms and eigenvalues of random matrices. *J. Funct. Anal.* 211 (2004) no. 2, 508–524.

## Invited Talks

- Mathematics Advanced Study Semester colloquium, Penn State University, Fall 2012.
- Probability seminar, University of Illinois at Urbana-Champaign, November 2011.
- MAA Ohio Section Meeting plenary talk, October 2011.
- High Dimensional Probability VI, BIRS, October 2011.
- Random Matrices, Geometric Functional Analysis and Algorithms, Oberwolfach, May 2011.
- Geometric Probability and Optimal Transportation, Fields Institute, November 2010.
- Probability seminar, University of Cincinnati, November 2009.
- Probability and Mathematical Physics seminar, Courant Institute (NYU), October 2009.
- Probability in Asymptotic Geometry, Texas A&M University, July 2009.
- Advances in Stochastic Inequalities and Applications, BIRS, June 2009.
- AMS Special Session on Concentration Inequalities, San Francisco, April 2009.
- Affine Convex Geometric Analysis, BIRS, January 2009.
- High Dimensional Probability V, CIRM, May 2008.
- Workshop on Random Matrices, DIMACS, March 2008.
- Mathematics colloquium, Kent State University, October 2007.
- Probability Inequalities with Applications to High Dimensional Phenomena, Texas A&M University, August 2007.
- Cornell Probability Summer School, Cornell University, June 2007.
- AMS Special Session on Affine Invariants, Randomness, and Approximation in Convex Geometry, Hoboken, NJ, April 2007.
- AMS Special Session on Random Matrices and Non-commutative Probability, Oxford, Ohio, March 2007.
- AMS Special Session on Recent Trends in Convex and Discrete Geometry, Joint Mathematics Meetings, San Antonio, January 2006.
- Convex Geometry and High Dimensional Phenomena, Vienna, July 2005.
- Conference on Gaussian Measure and Geometric Convexity, Snowbird, Utah, July 2004.
- AMS Special Session on Analytic Convex Geometry, Lawrenceville, NJ, April 2004.
- Analysis seminar, Stanford University, January 2003.

AMS Special Session on Convex Geometry, Boston, October 2002.

Non-commutative Phenomena and Random Matrices, University of British Columbia, August 2002.

## Thesis committees

Omar Rivasplata, Ph.D. in Mathematics, University of Alberta, spring 2012 (external reader).

Umut Caglar, M.S. in Mathematics, Case, May 2010.

Yi-Zen Chu, Ph.D. in Physics, Case, May 2010.

Deping Ye, Ph.D. in Mathematics, Case, May 2009.

## Undergraduate Advising

Class academic advisor for mathematics majors (Case), 2011–present.

Freshman academic advisor (Stanford), 2005–06.

## Other department and university service

Co-organizer of analysis seminar, spring 2012.

Faculty Senate Committee on By-Laws, 2010–present.

Department of Mathematics Graduate Committee, 2008–10 and 2011–present.

Department of Mathematics Colloquium Committee, 2008–10.

Writing and grading Ph.D. qualifying exams in Abstract Algebra, Matrix Theory, and Real Analysis.

## Conference Organization

Local organizer for conference “Perspectives in High Dimensions”, Cleveland, August 2010.

## Refereeing and reviewing

The Annals of Probability.

Institute of Mathematical Statistics Collections.

Journal of Mathematical Analysis and Applications.

Journal of Numerical Analysis, Industrial and Applied Mathematics.

Journal of Theoretical Probability.

Probability Theory and Related Fields.

SIAM Journal on Matrix Analysis and Applications.

Mathematical Reviews (over 30 papers reviewed).

## Courses Taught

### Case: Undergraduate:

Math 101: Precalculus.

Math 125–126: Mathematics I and II (probability, single-variable calculus, and other topics, primarily for life and social sciences).

Math 121: Calculus I.

Math 124: Honors calculus II.

Math 224: Elementary differential equations.

Math 305: Introduction to advanced mathematics.

Math 307: Linear algebra (for mathematics majors).

Math 308: Abstract algebra.

Math 321–322: Real analysis.

### Graduate:

Math 401–402: Abstract algebra.

Math 405: Matrix analysis (new course).

**Cornell:** Math 105: Finite mathematics for life and social sciences.

Math 112: Calculus II.

**Stanford:** Math 41–42: Calculus I and II.

Math 51: Linear algebra and multivariable differential calculus.

Math 53: Differential equations and linear algebra.

Math 103: Matrix theory and applications.

Stanford Summer Engineering Academy mathematics module.