

Curriculum Vitae

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ADDRESS

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PERSONAL DATA

Date of birth: January 26, 1973
Place of birth: Athens, Greece

RESEARCH INTEREST

High dimensional probability and its applications to Data Science, Asymptotic Geometric Analysis, Convex Geometry

ACADEMIC QUALIFICATIONS:

2004, January : Ph.D. in Mathematics, University of Crete, Greece.

1999, November: M.Sc. in Mathematics, University of Crete, Greece.

1998, December: B.Sc. in Mathematics, University of Athens, Greece.

Ph.D. Thesis: Inequalities for the Volume of Sections and Projections of Convex Bodies. Ph.D. Thesis. 2004, Department of Mathematics, University of Crete, Greece. Thesis advisor: A. Giannopoulos.

M.Sc. Thesis: The hyperplane conjecture for convex bodies. M.Sc. Thesis. May 1999, Department of Mathematics, University of Crete, Greece. Thesis advisor: A. Giannopoulos.

PROFESSIONAL APPOINTMENTS:

- Fall 2014–present: Professor of Mathematics at Texas A&M University,
- Fall 2012–Spring 2014: Associate Professor of Mathematics at Texas A&M University,
- Fall 2008–Spring 2012: Assistant Professor of Mathematics at Texas A&M University, Texas, U.S.A.
- September 2007–August 2008: Assistant Professor of Mathematics/Courant Instructor at Courant institute of Mathematical Sciences, New York, U.S.A.
- December 2005–August 2007: Post-doctoral researcher at Université de Marne-la-Vallée, Paris, France.
- September 2005–November 2005: Post-doctoral researcher at University of Athens, Athens, Greece.
- March 2005–September 2005: Post-doctoral researcher at Université de Marne-la-Vallée, Paris, France.

VISITING POSITIONS:

- Visiting Professor, Université Paris VI, France, Summer 2011.
- Visiting Professor, Université Paris VI, France, Summer 2013.
- Eisenbud professorship, MSRI, Berkeley, Fall 2017.

GRANTS, FELLOWSHIPS AND AWARDS

Awards:

- **A. Sloan Fellow**, 2011 (\$ 50,000.00)
- **NSF CAREER**: (2012-2017), Award number 1151711: “Geometry of measures in high dimensions”. (\$ 400,000.00)

Fellowships:

- 2005, December-2007 : Université de Marne-la-Vallée, **Intra-European Marie-Curie Fellowship**. Postdoctoral Grant.

Grants:

- 2009–2012 : **NSF Grant**, “Measure- theoretic aspects of Convex bodies. (Award Number 0906150, \$129,000)
- 2011–2015: **BSF Grant** (with E. Milman), “The Hierarchy of Mass Concentration on Convex Bodies”, (Award number 2010288, \$76,000)
- 2015 **NSF Grant**: (with P. Pivovarov, M. Rudelson and A. Zvavitch), “Analytic and probabilistic techniques in modern convex geometry”, (Award number DMS-1546974, \$40,000).
- 2017–2022 **Simons Foundation collaboration Grant**: “Inequalities in high dimensional probability”, (Award number: 527498 \$42,000). (Ended August 2018)
- 2018–2020. **NSF Grant**, “Concentration, Convexity, and Structure”, (Award number 1812240, \$150,000)

PUBLICATIONS

1. *On the isotropic constant of non-symmetric convex bodies*, Geometric Aspects of Functional Analysis (Milman-Schechtman eds.), Lecture Notes in Mathematics **1745**, Springer, Berlin (2000), 238-243 .
2. *On a local version of the Aleksandrov-Fenchel inequality for the quermassintegrals of a convex body*, with A. Giannopoulos and M. Hartzoulaki, Proc. Amer. Math. Soc. **130** (2002), 2403-2412.
3. Ψ_2 -*estimates for linear functionals on zonoids*, Geometric Aspects of Functional Analysis (Milman-Schechtman eds.), Lecture Notes in Mathematics **1807**, Springer, Berlin (2003), 211-222.
4. *Quermassintegrals of a random polytope in a convex body*, with M. Hartzoulaki, Arch. Math. **80** (2003), 430-438.
5. *On the ψ_2 -behavior of linear functionals on isotropic convex bodies*, Studia Math. **168** (2005), 285-299.
6. *Concentration of mass and central limit properties of isotropic convex bodies*, Proc. Amer. Math. Soc. **133** (2005), 565-575.
7. *Concentration of mass on the Schatten classes*, with O. Guédon, Ann. I. H. Poincaré - PR **43** (2007), 87-99.
8. *Concentration of mass on isotropic convex bodies* , Comptes Rendus Mathématique, **342** (2006), 179-182.
9. *Concentration of mass in convex bodies*, Geom. Funct. Anal. Vol. **16** (2006) 1021-1049.
10. *A note on subgaussian estimates for linear functionals on convex bodies*, with A. Giannopoulos and A. Pajor, Proc. Amer. Math. Soc. **135** (2007), 2599-2606.
11. *A stability result for mean width of L_p -centroid bodies*, with B. Fleury and O. Guédon, Advances in Mathematics, **214** (2007) 865-877.
12. *High dimensional random sections of isotropic convex bodies*, with D. Alonso, J. Bastero and J. Bernués. Journal of Mathematical Analysis and Applications, **361**, (2010), 431-439.
13. *Small ball probability estimates for log-concave measures*. Trans. Amer. Math. Soc. **364** (2012), 287-308.
14. *Small ball probability estimates, ψ_2 -behavior and the hyperplane conjecture* with N. Dafnis, Journal of Functional Analysis **258** (2010), 1933-1964
15. *Simplices in the Euclidean ball*, with M. Fradelizi and C. Schütt. Canad. Math. Bull. (**55**), (2012) 498-508.
16. *Relative entropy of cone measures and L_p centroid bodies* , with E. Werner. Proc. London Math Soc. (2011) doi: 10.1112/plms/pdr030.
17. *On the existence of supergaussian directions on convex bodies*. Mathematika, **58**, 389-408.

18. *On the existence of subgaussian directions for log-concave measures*, with A. Giannopoulos and P. Valettas. *Contemporary Mathematics* **545** (2011), 103–122.
19. Ψ_α -*estimates for marginals of log-concave probability measures*, with A. Giannopoulos and P. Valettas. *Proceedings of the American Mathematical Society* **140** (2012), 1297–1308.
20. *On the distribution of the ψ_2 -norm of linear functionals on isotropic convex bodies*, with A. Giannopoulos and P. Valettas, *Lecture Notes in Mathematics*, **2050** (2012) 227–253.
21. *Isomorphic properties of intersection bodies*, with A. Koldobsky and M. Zymonopoulou, *Journal of Functional Analysis*, **261** (2011) 2697–2716.
22. *A probabilistic take on isoperimetric inequalities*, with P. Pivovarov, *Advances in Mathematics*, **230**, (2012), 1402–1422.
23. *Estimates for the affine and dual affine quermassintegrals of convex bodies*, with N. Dafnis, *Illinois Journal of Mathematics* **56** (2012), no 4, 1005–1021.
24. *Comparing the M -position with some classical positions of convex bodies*, with E. Markessinis and Ch. Saroglou, *Math. Proc. Cambridge Philos. Soc.* **152** (2012), 131–152.
25. *On the isotropic constant of marginals*, *Studia Math.* **212** (2012), 219–236.
26. *A remark on the slicing problem*, with A. Giannopoulos and B-H. Vritsiou, *Journal of Functional Analysis* **262** (2012), 1062–1086.
27. *On the approximation of a polytope by its dual L_p -centroid bodies*, with E. Werner, *Indiana Univ. Math. J.* **62** (2013), no 1, 235–248.
28. *On generic chaining and the smallest singular value of random matrices with heavy tails*, with S. Mendelson, *Journal of Functional Analysis* **262** (2012), 3775–3811.
29. *Intrinsic volumes and linear contractions*, with P. Pivovarov, *Proc. Amer. Math. Soc.* **141** (2013), no. 5, 1805–1808.
30. *The isotropic position and the reverse Santalo inequality*, with A. Giannopoulos and B-H. Vritsiou, *Israel J. Math.* **203** (2014), no 1, 1–22.
31. *Complex Intersection Bodies*, with A. Koldobsky and M. Zymonopoulou, *Journal of the London Mathematical Society* (2) **88** (2013), no 2, 538–562.
32. *Small ball probabilities for the volume of random convex sets*, with P. Pivovarov, *Discrete Comput. Geom.* **49** (2013), no. 3, 601–646.
33. *On the singular value of random matrices*, with S. Mendelson, *J. Eur. Math. Soc. (JEMS)* **16** (2014), no 4, 823–834.
34. *A central limit theorem for projections of the cube*, with P. Pivovarov and J. Zinn, *Probab. Theory Related Fields* **159** (2014), No 3-4, 701–719.
35. *Shadow systems and the volume of the polar of random sets*, with D. Cordero-Erausquin, M. Fradelizi and P. Pivovarov, *Math. Ann.* **362** (2015), no 3-4,

1305–1325.

36. *Improved Holder and reverse Holder inequalities for Gaussian random vectors*, with W-K. Chen and N. Dafnis, *Adv. Math.* 280 (2015), 643–689.
37. *Neighborhoods on the Grassmannian of marginals with bounded isotropic constant*, with P. Valettas, *J. Funct. Anal.* 267 (2014), no 9, 3427–3443.
38. *Bounding marginal densities via affine isoperimetry*, with S. Dann and P. Pivovarov, *Proc. Lond. Math. Soc.* 113 (2016), 140–162.
39. *Tropical Varieties for Exponential Sums and their Distance to Amoebae*, with A. Ergür and M. Rojas, to appear in *Math. Ann.* , 16pp.
40. *On sharp bounds for marginal densities of product measures* with G. Livshyts and P. Pivovarov, *Israel J. Math.* 216 (2016), 877–889
41. *Random version of Dvoretzky’s theorem in ℓ_p^n* , with P. Valettas and J. Zinn. *Stochastic Process. Appl.* 127 (2017), no 10, 3187–3227.
42. *On Dvoretzky’s theorem for subspaces of L_p* , with P. Valettas, *J. Funct. Anal.* **275** (2018), (8), 2225–2252.
43. *Random ball-polyhedra and inequalities for intrinsic volumes*, with P. Pivovarov, *Monatsh. Math.* 182 (2017), 709–729.
44. *Generalized dual Sudakov minoration via dimension-reduction—a program*, with S. Mendelson and E. Milman, *Studia Math.* 244 (2019), no. 2, 159–202.
45. *An inequality for moments of log-concave functions on Gaussian random vectors*, with N. Dafnis, *GAFA seminar notes*, 107–122, *Lecture Notes in Math.*, 2169, Springer, Cham, 2017.
46. *Randomized Isoperimetric Inequalities*, with P. Pivovarov, *Convexity and concentration*, 391–425, *IMA Vol. Math. Appl.*, 161, Springer, New York, 2017.
47. *An interpolation proof of Ehrhard’s inequality*, with J. Neeman, Preprint. 15pp.
48. *Probabilistic Condition Number Estimates For Real Polynomial Systems I: A Broader Family Of Distributions*, with A. Ergur and M. Rojas, *Found. Comput. Math.* 19 (2019), no. 1, 131–157.
49. *A Gaussian small deviation inequality for convex functions*, (with P. Valettas), *Ann. Probab.* 46 (2018), no. 3, 1441–1454.
50. *On a quantitative reversal of Alexandrov’s inequality* with P. Pivovarov and P. Valettas, *Trans. Amer. Math. Soc.* 371 (2019), no. 5, 3309–3324.
51. *Variance estimates and almost Euclidean structure*, with P. Valettas, *Adv. Geom.* 19 (2019), no 2, 165–189.
52. *Dichotomies, structure, and concentration in normed spaces*, with P. Valettas, *Adv. Math.* 332 (2018), 438–464.
53. *Gaussian convex bodies: a non-asymptotic approach* , with P. Pivovarov and P. Valettas, *Zapiski Nauchnykh Seminarov POMI* 457 (2017), 286–316.
54. *Probabilistic Condition Number Estimates for Real Polynomial Systems II:*

- Structure and Smoothed Analysis*, with A. Ergür and M. Rojas, Submitted.
55. *Hypercontractivity and lower deviation estimates in norms spaces*, with K. Tikhomirov and P. Valettas, Preprint.
56. *Affine isoperimetric inequalities on flag manifolds*, with S. Dann and P. Pivovarov, Preprint.
57. *A Faster Solution to Smale’s 17th Problem I: Real Binomial Systems*, with K. Phillipson and J. M. Rojas. Preprint.
58. *Stable recovery and the coordinate small-ball behaviour of random vectors*, with S. Mendelson. Preprint.
59. *Remarks on the Rényi Entropy of a sum of IID random variables*, with B. Jaye, G. Livshyts, P. Pivovarov. Preprint.
60. *Measure comparison and distance inequalities for convex bodies*, with A. Koldobsky and A. Zvavitch. Preprint.

SELECTED PLANERY/INVITED TALKS:

- Phenomena in High Dimensions , Centre Emile Borel at IHP, Paris, France, June 2006.
- Perspectives in High Dimensions, Cleveland, August 2010.
- Conference on “Phenomena in high dimensions in geometric analysis, random matrices, and computational geometry”, Roscoff, France, June 2012.
- “Conference on Convex Geometry”, Centro Interacional de Encuentros Matemáticos, Castro Urdiales, Spain, September 2013.
- “Convexity, Probability and Discrete Structures, a Geometric Viewpoint”, October 2015, University Paris-Est Marne-La-Valle, France.
- “Geometric functional analysis and application”, main conference, MSRI, Berkeley, October 2017.
- Workshop on “Modern Challenges of Learning Theory”, Montreal, Canada, April 2018.
- Workshop on “Concentration of measure and its applications, Institute D’etudes scientifiques de Cagrese, Cagrese, France, May 2018.
- Asymptotic Geometric Analysis Satellite Conference ICM 2018, Rio, Brazil, July 2018.
- Planary Lecture Talk at 2019 Canadian Mathematical Society meeting in Regina, 2019.

In addition, in the last 15 years I have given more than 60 talks at conferences/meeting/workshops and departmental seminars all over the world.

SERVICES AND TEACHING

Conference organization:

- “Concentration week in Probability in Asymptotic Geometry”. (Together with A. Naor and R. Lalata). College Station, Texas, USA, July 2009.
- “Invariances in convex geometry and Banach space theory” (Together with C. Schutt and E. Werner), AIM, Palo Alto, August 2012.
- “Interplay of convex geometry and Banach space theory” (Together with C. Schutt, E. Werner and D. Ye), Banff, Canada, March 2013.
- Analytic and probabilistic techniques in modern convex geometry, (together with P. Pivovarov, M. Rudelson and A. Zvavitch) November 7-9, 2015, University of Missouri, USA.
- Concentration week in “Asymptotic Geometric Analysis” (together with B. Johnson and M. Rudelson). College Station, Texas, USA, July 2016.
- “Emerging trends in Geometric Functional Analysis”, Banff, Canada, March 2018. (together with A. Litvak, P. Pivovarov and E. Werner)
- Special section in ”Probabilistic Methods in Geometric Functional Analysis and Convexity”, CMS summer meeting in Regina 2019. (together with A. Stancu, B. Vritsiou and V. Yaskin)

Supervision of Postdoctoral Researchers:

- Peter Pivovarov (January 2011- July 2012). Supported by NSERC Postdoctoral Fellowship. Current position: Associate Professor at the University of Missouri/Columbia.
- Nikos Dafnis (April 2012-April 2014). Supported by a Hellenic-EU Postdoctoral Fellowship. Current position: Assistant Professor at the University of Aegean, Greece.
- Petros Valettas (September 2012- June 2015), Current position: Assistant Professor at the University of Missouri/Columbia.

- Christos Saroglou (September 2012-June 2015). Supported by the CAREER NSF grant DMS115171. Current position: Associate Professor at the University of Ioannina, Greece.

Supervision of Graduate Students:

- Ryan Causey (co-chair with Thomas Schlumprecht). Graduated Summer 2014. Current position: Visiting assistant professor at the Miami University.
- Alperen Elgur (co-chair with Maurice Rojas) (Graduated Spring 2016). Current position: Einstein Visiting Fellow at the Technische Universität Berlin.

Graduate and undergraduate teaching:

Over the years, I have taught undergraduate courses on Linear Algebra, Calculus, Differential Equations, Combinatorics, Probability Theory as well as graduate level courses in Real Analysis, Functional Analysis, Probability theory and various topics courses.