

Department of Pure Mathematics  
School of Mathematical Sciences  
Tel Aviv University

**Shiri ARTSTEIN-AVIDAN, Ph.D.**

## **CURRICULUM VITAE**

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E-mail:	shiri@post.tau.ac.il
Date and place of birth:	September 28, 1978, Jerusalem
Marital status:	Married
No. of children:	Three

## **EDUCATION**

1997-2000	B.Sc.,	Mathematics, Summa Cum Laude Tel Aviv University Date of award: 2000
2000-2004	Ph.D.	Mathematics, with distinction Tel Aviv University Date of award: 2004 Title of Doctoral Dissertation: Entropy Methods Name of Supervisor: Professor Vitali D. Milman.

## **ACADEMIC AND PROFESSIONAL EXPERIENCE**

1999-2001	Teaching Assistant, Tel Aviv University
2001-2004	Instructor, Tel Aviv University
2004-2006	Veblen Research Instructor, Dep. of Math., Princeton University and School of Math., Institute for Advanced Study, Princeton NJ

2006-2009	Senior Lecturer, School of Math., Tel Aviv University, Tel Aviv, Israel
2009-2014	Professor (assoc.), School of Math., Tel Aviv University, Tel Aviv, Israel
2014-present	Professor (full), School of Math., Tel Aviv University, Tel Aviv, Israel

### ACADEMIC AND PROFESSIONAL AWARDS

1997-2000	The Adi Lautman Program for Outstanding Students, Tel Aviv University.
1998	Dean's list, Tel Aviv University
1999	Dean's list, Tel Aviv University
2000	Rector's list, Tel Aviv University
2000	CheckPoint Com. prize for excellence in studies
2001	Excellent PhD student prize, Tel Aviv University
2001	The Knesset certificate of appreciation for excellent stu- dents
2003	The Wolf foundation research prize for PhD students.
2004/5	Rothschild Fellowship (declined)
2006	Haim Nessayahu Prize in Mathematics of the Israel Math- ematical Union
2006-2009	Alon Fellowship (of the Israeli Academy of Science)
2007	Sackler Cathedra for young faculty, Tel Aviv University.
2008	The Krill Prize for Excellence in Scientific Research, Wolf Foundation
2010	Coxeter Lecture series, Fields institute, September 17, 20 & 21, 2010, Toronto.
2015	Erdős Prize of the Israel Mathematical Union
2016	Tel Aviv University award for commitment to the ad- vancement of women in science
2016	Kadar Family Award for Outstanding Research

**STUDENTS SUPERVISED**

2007–2008	Tal Weisblatt, (M.Sc., joint supervision with Vitali Milman) The Santaló region of a log-concave function
2008–2009	Boaz Slomka, (M.Sc.) Characterizing isomorphisms associated to different convex structures
2008–2010	Dan Florentin (M.Sc., joint supervision with Vitali Milman), Convexity preserving maps
2008–2010	Orit Raz (M.Sc.), Fractional covering numbers
2012–2013	Yoav Nir (M.Sc., joint supervision with Yaron Ostrover) Minimizing closed characteriztics on convex bodies.
2009–2014	Boaz Slomka, (Ph.D.) Asymptotic analysis and convexity
2011–2014	Keshet Gutman-Einhorn (M.Sc.) Godebersen’s conjecture and measures of symmetry.
2010–2015	Dan Florentin (Ph.D., joint supervision with Vitali Milman), Inequalitites in Asymptotic Geometric Analysis.
2014–2016	David Katzin (M.Sc.), Isotropic Measures and Maximizing Ellipsoids: Between John and Loewner.
2017–2019	Shay Sadovsky (M.Sc.), Volume and Mixed Volume Inequalities for Anti-Blocking Bodies.
2017–2019	Pazit Haim-Kislev (M.Sc., joint supervision with Yaron Ostrover), The EHZ capacity of cubes and simplices.

**CURRENT STUDENTS**

2016–present	Hila Barel (M.Sc.)
2019–present	Shay Sadovsky (Ph.D.)
2019–present	Pazit Haim-Kislev (Ph.D., joint supervision with Yaron Ostrover)
2018–present	Eliyahu Putterman (M.Sc.)

**ACTIVE RESEARCH GRANTS**

- 2018-2023 (PI) ERC consolidator grant Title: “Polarity and Symmetry in Geometric Functional Analysis”. Amount: 1.5 Million Euro
- 2015-2019 (PI) Israel Science Foundation personal research grant. Title: “Asymptotic Convex Geometric Analysis”. Amount: 224,000 NIS per year.
- 2017-2021 (PI) United States - Israel Binational Science Foundation research grant, joint with: B. Klartag, J. Solomon and Y. Rubinstein. Title: Applications of Monge-Ampere type equations. Amount: 39,000 US\$ per year.

**OTHER ACTIVITIES**

- 1999 Summer student at the Weizmann Institute, 1999 (research in combinatorics under the supervision of Professor Aviezri S. Fraenkel).
- 2002 Visiting PhD student, University College London, February-March and June 2002 (research in collaboration with Prof. Keith M. Ball).
- 2002 Attended the ICMS Instructural Conference on Combinatorial Aspects of Functional Analysis, Edinburgh, March 26 - April 4, 2002.
- 2002 Visiting PhD student, Universities Paris 6 and Paris 7, April-May 2002 (research in collaboration with Prof. Franck Barthe).
- 2003 Participated in Geometrie der Banachraume Workshop in Oberwolfach, April 13-19, 2003.
- 2003 Visiting PhD student, University Paris 6, June-August 2003.
- 2005 Summer guest of the Weizmann Institute, June and August 2005.
- 2006-present Co-organizer of the Asymptotic Geometric Analysis seminar at Tel Aviv University.

- 2008 Seville, Spain, part of the organizing committee of the 4th Annual Conference of the Phenomena in High Dimensions network, June 23-27, 2008.
- 2009 Member of the organizing committee of “The state of Geometry and Functional Analysis”, an international conference in honor of the 70<sup>th</sup> anniversary of Prof. Vitali Milman, June 24-30, 2009.
- 2012-2015 Speaker at “From Gauss to Google” - a program for the introduction of high school mathematics teachers to current research topics in mathematics.
- 2012 Eilat and Haifa, organizer of “ISF Workshop on Interactions Between Asymptotic Geometric Analysis and Mathematical Physics” and of the “Conference on Interactions Between Asymptotic Geometric Analysis and Mathematical Physics” May 3-10, 2012.
- 2014 Local organizer of the joint IMU-AMS meeting held at Bar-Ilan and Tel Aviv Universities, June 16-20, 2014.
- 2015,16,17 Organizer of the First/Second/Third Israeli conference for Women in Mathematics held at Tel Aviv University, August 2015, IAS Jerusalem, September 2016 and September 2017.
- 2015-2016 Member of the Tel Aviv University team of the qualifying program for high school mathematics teachers.
- 2016 Organizer of the Asymptotic Geometric analysis workshop at Oberwolfach, February 22-27, 2016.
- 2017 MSRI Research professor in the program “Geometric Functional Analysis and Applications” August–December, 2017 (and organizer of the Connections for Women: geometry and probability in high dimensions conference for this program).
- 2018 Organizer and delivering one of the two mini-courses at the Fourth Israeli workshop for women in mathematics, October 7-14, 2018.
- 2019-present Member of the editorial board of GAFA journal

2019 Organizer of the conference “AGA 2019” celebrating the 80th anniversary of Prof. V. Milman.

### ACTIVE PARTICIPATION IN SCIENTIFIC MEETINGS

2001 Oberwolfach, Workshop on Convex Geometry, April 22-28, 2001

2001 Rehovot, Functional Analysis Meeting of the Israel Mathematical Union, May 21, 2001

2001 Crete, Workshop on Convex Geometric Analysis, August 19-23, 2001

2002 Biarritz, European Mathematical Union Meeting on Analysis, May 7-12, 2003

2002 Paris, Geometry and Functional Analysis Day, May 31, 2002

2002 Cambridge, Probability Seminar, June 18, 2002

2002 Vancouver, Thematic Programme on Asymptotic Geometric Analysis, Summer 2002.

2002-2004 Tel Aviv, GAFA seminar: November 8, 2002; March 28, 2003; December 5, 2003; February 19, 2004; December 24, 2004

2003 Kiel, Conference on Banach Spaces and Convex Geometric Analysis, April 7-11, 2003

2003 Zikhron-Yaakov, Israel Mathematical Union meeting, May 8-9, 2003

2003 Jerusalem, Combinatorics and Convexity Seminar at the Hebrew University, May 26, 2003

2003 Cortona, Workshop on Convex Geometry, June 9-14, 2003

2003 Paris, Geometry and Functional Analysis Day, June 27, 2003.

2004 Banff, Conference in Convex Geometric Analysis, July 10-15, 2004.

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- 2004 Snowbird, Conference in Gaussian Measure and Geometric Convexity, July 18-23, 2004.
- 2004,2005 New York, Colloquium at Polytech. Uni., October 28, 2004; November 3, 2005.
- 2004 Princeton, Princeton University, Analysis Seminar, November 22, 2004.
- 2004 Princeton, Institute for Advanced Study, Discrete Math. Seminar, December 6, 2004.
- 2005 Jerusalem, Hebrew University, IAS Workshop “Contemporary Ramifications of Banach Space Theory”, June 22, 2005.
- 2005 Vienna, Asymptotic Theory of the Geometry of Finite Dimensional Spaces School at the ESI, July 13.  
<http://shrimp.bayou.uni-linz.ac.at/Vienna2005/pdf/artstein.pdf>
- 2005 New York, Columbia University, Probability seminar, October 14, 2005.
- 2005 Cleveland Ohio, Case Western Reserve University, Colloquium talk, November 18, 2005.
- 2006 Canberra Australia, Australian National University, Analysis and PDE seminar, March 27, 2006.
- 2006 Neve Ilan, Israel, IMU meeting, May 2006.
- 2006 Paris, Annual Conference of Phenomena in High Dimensions Network, June 2006.
- 2006 Jerusalem, Hebrew University, Colloquium, November 17, 2006.
- 2007 Cortona, Italy, Fourth International Workshop on “Convex Geometry - Analytic Aspects”, June 3-9, 2007.
- 2007 Ottawa, Canada, gave a mini-course at “Geometrization of Probability”, Fields Institute Workshop, September 22-24, 2007.
- 2008 Budapest, Intuitive Geometry, in Memoriam László Fejes Tóth Alfréd Rényi Institute of Mathematics, June 30 - July 4, 2008.

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- 2010 Bad Herrenalb, Workshop on Convex and Stochastic Geometry May 30 - June 4, 2010.
- 2010 Toronto, Thematic Program on Asymptotic Geometric Analysis September 2010.
- 2011 Cortona, Plenary talk at the Fifth International Workshop on “Convex geometry analytic aspects” June 12-18, 2011.
- 2011 Frankfurt, Plenary talk at “Convex and Integral Geometry” Goethe-University Frankfurt September 26-30, 2011.
- 2012 Israel, various talks on “Differential analysis of the polarity transform” Jerusalem Hebrew University Mathematics Colloquium, Feb 2nd; Rehovot, Weizmann Institute Mathematical Analysis and Applications Seminar May 22; Be’er Sheva, Ben Gurion University Mathematics Colloquium, June 19; Tel Aviv University applied mathematics seminar, May 1 2012.
- 2013 Banff, presented two talks at the conference “Interplay of convex geometry and Banach space theory” March 10-15, 2013.
- 2013 Haifa, Colloquium talk at the Technion, “Symplectic Isoperimetry implies Mahler’s conjecture”, November 18, 2013.
- 2013 College park, Maryland, Colloquium talk at University of Maryland, “Symplectic measurements and billiards”, December 4, 2013.
- 2014 Jerusalem, Hebrew University, Combinatorics seminar, “Symplectic isoperimetry, Mahler’s conjecture and billiards”, February 17, 2014.
- 2015 Dead sea, Erdős lecture at the Annual Meeting of the Israel Mathematical Union 28-31 May 2015
- 2015 Jerusalem, Conference in honor of Gil Kalai’s 60<sup>th</sup> birthday, “measures of symmetry”, June 16, 2015.
- 2015 Rehovot, Weizmann Institute Mathematical Analysis and Applications Seminar November 17, 2015.



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- 2015 Oberwolfach, Workshop on Convex Geometry, “Godberesn’s conjecture and related inequalities” Dec. 6-11, 2015.
- 2016 Berlin, BMS Sonia Kovalevskaya Colloquium, April 29, 2016.
- 2016 Vienna, Speaker at “Conference on Convex and Discrete Geometry” celebrating Prof. Grubers’s 75<sup>th</sup> birthday, “Billiard in convex domains”, July 3-8 2016.
- 2016 Berlin, Speaker at the mini-symposium “Asymptotic Geometric Analysis” at the 7-th Congress of the European Mathematical Society, 18-22 July 2016.
- 2017 BIRS Banff, “Recent Advances in Discrete and Analytic Aspects of Convexity” May 21–26, 2017
- 2017 MSRI Berkeley, speaker at “Geometric functional analysis and applications”, November 13–17, 2017
- 2018 London, Queen Mary University colloquium “Around Godbersen’s conjecture for mixed volumes”, February 12, 2018.
- 2018 Graz, Austria, Plenary talk at “European Women in Mathematics General Meeting, CELEBRATING 30 YEARS OF THE EWM”, September 3-7, 2018.
- 2019 Jena, Germany, Plenary talk at “Conference on Convex, Discrete and Integral Geometry” September 16-20, 2019.

## LIST OF PUBLICATION

1. Shiri Artstein,  
Proportional concentration phenomena on the sphere,  
Israel J. Math., Vol 132 (2002), 337–358.
2. Shiri Artstein, Vitali D. Milman and Stanislaw J. Szarek  
More on the duality conjecture for entropy numbers,  
Comptes Rendus Mathematique, Volume 336, Issue 6 (2003), no. 6,  
479–482.

3. Shiri Artstein, Vitali D. Milman and Stanislaw J. Szarek,  
Duality of metric entropy in Euclidean space,  
Comptes Rendu Mathematique, Volume 337, Issue 11 (2003), no. 11,  
711–714.
4. Shiri Artstein, Keith M. Ball, Franck Barthe and Assaf Naor,  
Solution of Shannon’s problem on the monotonicity of entropy,  
Journal of Amer. Math. Soc. Vol. 17 (2004), no. 4, 975–982.
5. Shiri Artstein, Vitali D. Milman, Stanislaw J. Szarek and Nicole Tomczak-  
Jagermann,  
On Convexified packing and entropy duality,  
Geometric And Functional Anal. Vol. 14, (2004), no. 5, 1134–1141.
6. Shiri Artstein, Vitali D. Milman and Stanislaw J. Szarek  
Duality of metric entropy,  
Annals of Math. (2) 159 (2004), no. 3, 1313–1328.
7. Shiri Artstein, Keith M. Ball, Franck Barthe and Assaf Naor,  
On the rate of convergence in the entropic central limit theorem,  
Probability Theory and Related Fields, Vol. 129 (2004), no. 3, 381–  
390.
8. Shiri Artstein-Avidan, Bo’az Klartag and Vitali D. Milman,  
On the Santaló point of a function and a functional form of the Santaló  
inequality,  
Mathematika 51 (2004) no. 1-2, (2005) 33–48.
9. Shiri Artstein-Avidan, Omer Friedland and Vitali D. Milman,  
Geometric Applications of Chernoff-type estimates and a zigzag ap-  
proximation for balls,  
Proc. Amer. Math. Soc. 134 (2006) no. 1, 1735–1742.
10. Shiri Artstein-Avidan and Vitali D. Milman,  
Logarithmic reduction of the level of randomness in some probabilistic  
geometric constructions,  
J. Func. Anal. Vol. 235 (2006), no.1 , 297–329.
11. Shiri Artstein-Avidan, Omer Friedland, Vitali D. Milman and Sasha  
Sodin

- Polynomial bounds for large Bernoulli sections of  $\ell_1^N$ ,  
Israel J. Math, Vol. 156 (2006) 141–155.
12. Shiri Artstein-Avidan,  
A Bernstein-Chernoff deviation inequality and geometric properties of  
random families of operators,  
Israel J. Math, Vol. 156 (2006) 187–204.
  13. Shiri Artstein-Avidan and Vitali D. Milman,  
Using Rademacher permutations to reduce randomness,  
Algebra i Analiz 19 (2007), no. 1, 23–45 (Vol. dedicated to 85th  
birthday of V.A. Zalgaller); translation in St. Petersburg Math. J. 19  
(2008), no. 1, 15–31 .
  14. Shiri Artstein-Avidan and Vitali D. Milman,  
A characterization of the concept of duality,  
Electron. Res. Announc. Math. Sci. 14 (2007), 42–59.
  15. Shiri Artstein-Avidan and Yaron Ostrover,  
On Symplectic Capacities and Volume Radius,  
ArXiv April 19, 2006. Math.SG/0603411  
<http://arxiv.org/pdf/math.SG/0603411.pdf>
  16. Shiri Artstein-Avidan, Vitali D. Milman and Y. Ostrover,  
The M-ellipsoid, symplectic capacities and volume,  
Comment. Math. Helv. 83 (2008), no. 2, 359–369.
  17. Shiri Artstein-Avidan and Vitali D. Milman,  
The concept of duality for measure projections of convex bodies,  
J. Funct. Anal. 254 (2008) no. 10 2648–2666.
  18. Semyon Alesker, Shiri Artstein-Avidan and Vitali D. Milman,  
A characterization of the Fourier transform and related topics,  
C. R. Math. Acad. Sci. Paris 346 (2008), no. 11–12, 625–628.
  19. Shiri Artstein-Avidan and Yaron Ostrover,  
A Brunn-Minkowski Inequality for Symplectic Capacities of Convex  
Domains,  
Int. Math. Res. Not. IMRN 2008, no. 13, Art. ID rnm044, 31pp.

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20. Shiri Artstein-Avidan, Aviezri Fraenkel and Vera Sós,  
A two parameter family of an extension of Beatty sequences,  
*Discrete Math.* 308 (2008) no. 20, 4578–4588.
  21. Shiri Artstein-Avidan and Vitali D. Milman,  
A New Duality Transform ; Une Nouvelle Transformée de Dualité.  
*C. R. Math. Acad. Sci. Paris* 346 (2008), no. 21–22, 1143–1148.
  22. Shiri Artstein-Avidan and Vitali D. Milman,  
The concept of duality in convex analysis and the characterization of  
the Legendre transform.  
*Annals of mathematics (2)*, Vol. 169 (2009) no. 2, 661–674.
  23. Semyon Alesker, Shiri Artstein-Avidan and Vitali D. Milman,  
A characterization of the Fourier transform and related topics,  
*Linear and Complex Analysis*, 11–26, Amer. Math. Soc. Transl. Ser.  
2, Vol. 226, a special volume in honour of Prof. V. Havin, Amer. Math.  
Soc., Providence, RI, 2009.
  24. Shiri Artstein-Avidan and Vitali D. Milman,  
A Characterization of the Support Map,  
*Adv. Math.* 223 (2010), no. 1, 379–391.
  25. Shiri Artstein-Avidan, Hermann König and Vitali D. Milman,  
The chain rule as a functional equation,  
*J. Funct. Anal.* 259 (2010), no. 11, 2999-3024.
  26. Semyon Alesker, Shiri Artstein-Avidan, Dmitry Faifman and Vitali D.  
Milman,  
A characterization of product preserving maps with applications to a  
characterization of the Fourier transform,  
*Illinois J. Math.* 54 (2010), no. 3, 1115-1132 (2012).
  27. Shiri Artstein-Avidan and Orit Raz,  
Weighted covering numbers of convex sets,  
*Adv. Math.* 227 (2011), no. 1, 730-744.
  28. Shiri Artstein-Avidan and Vitali D. Milman,  
Hidden structures in the class of convex functions and a new duality  
transform,  
*J. Eur. Math. Soc. (JEMS)* 13 (2011), no. 4, 975-1004.

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29. Shiri Artstein-Avidan, Dan Y. Florentin and Vitali D. Milman,  
Order isomorphisms in windows,  
*Electron. Res. Announc. Math. Sci.* 18 (2011), 112-118.
  30. Shiri Artstein-Avidan, Bo'az Klartag, Carsten Schütt and Elisabeth Werner,  
Functional affine-isoperimetry and an inverse logarithmic Sobolev inequality,  
*J. Funct. Anal.* 262 (2012), no. 9, 4181-4204.
  31. Shiri Artstein-Avidan and Boaz A. Slomka,  
Order isomorphisms in cones and a characterization of duality for ellipsoids,  
*Selecta Math. (N.S.)* 18 (2012), no. 2, 391-415.
  32. Shiri Artstein-Avidan and Yaron Ostrover,  
Bounds for Minkowski Billiard Trajectories in Convex Bodies,  
*Int. Math. Res. Not. IMRN* 2014, no. 1, 165-193.
  33. Shiri Artstein-Avidan and Vitali D. Milman,  
Stability results for some classical convexity operations,  
*Adv. Geom.* 13 (2013), no. 1, 51-70.
  34. Shiri Artstein-Avidan, Dan Florentin and Yaron Ostrover,  
Remarks about Mixed Discriminants and Volumes  
*Commun. Contemp. Math.* 16 (2014), no. 2, 14 pp.
  35. Shiri Artstein-Avidan, Roman Karasev and Yaron Ostrover,  
From Symplectic Measurements to the Mahler Conjecture  
*Duke Math. J.* 163 (2014), no. 11, 2003-2022.
  36. Shiri Artstein-Avidan and Boaz A. Slomka,  
A note on Santaló inequality for the polarity transform and its reverse  
*Proc. Amer. Math. Soc.* 143 (2015), no. 4, 1693-1704.
  37. Shiri Artstein-Avidan and Boaz A. Slomka,  
On weighted covering numbers and the Levi-Hadwiger conjecture,  
*Israel J. Math.* 209 (2015), no. 1, 125-155.
  38. Shiri Artstein-Avidan, Keshet Einhorn, Dan I. Florentin and Yaron Ostrover,

- On Godbersen's conjecture,  
Geom. Dedicata 178 (2015), 337-350
39. Shiri Artstein-Avidan and Yanir Rubinstein,  
Differential analysis of polarity: polar Monge Ampère, Hamilton–Jacobi  
and conservation laws,  
J. Anal. Math. 132 (2017), 133-156.
  40. Shiri Artstein-Avidan and Boaz A. Slomka,  
The fundamental theorems of affine and projective geometry revisited  
Commun. Contemp. Math. 19 (2017), no. 5, 39 pp.
  41. Shiri Artstein-Avidan, Dan I. Florentin, Yaron Ostrover and Daniel  
Rosen,  
Duality of Caustics in Minkowski Billiards  
Nonlinearity, (2018), Volume 31, Number 4.
  42. Shiri Artstein-Avidan and David Katzin,  
Isotropic measures and maximizing ellipsoids: Between John and Loewner,  
to appear in Proceedings of the American Mathematical Society.
  43. David Alonso-Gutiérrez, Shiri Artstein-Avidan, Bernardo González Merino,  
C. Hugo Jiménez, Rafael Villa,  
Rogers-Shephard and local Loomis-Whitney type inequalities  
Mathematische Annalen, 2019. <https://doi.org/10.1007/s00208-019-01834-3>

### Books

1. Shiri Artstein-Avidan, Apostolos Giannopoulos and Vitali Milman  
Asymptotic Geometric Analysis Part I.  
Mathematical Surveys and Monographs, 202. American Mathematical  
Society, Providence, RI, 2015. xx+451 pp. ISBN: 978-1-4704-2193-9

### Publications in Proceedings of Conferences

1. Shiri Artstein,  
The change in the diameter of a convex body under a random sign-  
projection,  
Geometric Aspects of Functional Analysis, 31–39, Lect. Notes in Math,  
1850, Springer, Berlin, 2004.

2. Shiri Artstein-Avidan, Omer Friedland and Vitali D. Milman,  
Geometric Applications of Chernoff-type Estimates,  
Geometric Aspects of Functional Analysis, 45–75, Lect. Notes in Math,  
1910, Springer, Berlin, 2007.
3. Shiri Artstein-Avidan, Dmitry Faifman, and Vitali D. Milman  
On Multiplicative Maps of Continuous and Smooth Functions,  
Geometric Aspects of Functional Analysis, 35–59, Lect. Notes in Math,  
2050, Springer, Berlin, 2012.
4. Shiri Artstein-Avidan, Dan Y. Florentin, and Vitali D. Milman,  
Order Isomorphisms on Convex Functions in Windows,  
Geometric Aspects of Functional Analysis, 61–122, Lect. Notes in  
Math, 2050, Springer, Berlin, 2012.

May 2019