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Iosif Pinelis  
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- Citizenship: USA

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**Professional Preparation**

- Novosibirsk University, Novosibirsk, f. USSR: Mathematics and applied mathematics, a degree equivalent to B.S. and M.S. (with distinction), 1974
- Institute of Mathematics, Academy of Sciences, Novosibirsk, f. USSR: Probability and mathematical statistics, a degree equivalent to Ph.D., 1982

**Appointments**

- Professor, Michigan Technological University (1994– )
- C. C. Hsiung Visiting Professor, Lehigh University, Bethlehem, PA (2000–01, Fall–Spring)
- Associate Professor, Michigan Technological University (1992–94)
- Visiting Associate Professor, CUNY, New York, NY (1992, Spring)
- Visiting Associate Professor, University of Illinois, Urbana-Champaign (1991, Fall )
- Research Specialist, Arizona Cancer Center, University of Arizona (1991, July-August)
- Assistant Professor, Institute of Electrical Engineering, Novosibirsk, f. USSR (1988–1990)
- Assistant Professor, Institute of Railroad Engineering, Novosibirsk, f. USSR (1984–1988)
- Instructor, Institute of Railroad Engineering, Novosibirsk, f. USSR (1977–1984)
- Research Specialist, Institute of Systems Research, Novosibirsk, f. USSR (1975–1977)

### Selected publications

- [0] Pinelis, I. Exact Rosenthal-type bounds. *Ann. Probab.* **43** (2015), 2511–2544.
- [1] Pinelis, I. On the Bennett-Hoeffding inequality. *Annales de l’Institut Henri Poincaré*. **50** (2014), 15–27.
- [2] Pinelis, I. An asymptotically Gaussian bound on the Rademacher tails. *Electronic J. Probab.* **17** (2012), 1–22.
- [3] Pinelis, I. Exact inequalities for sums of asymmetric random variables, with applications. *Probab. Theory Related Fields* **139** (2007) 605–635.
- [4] Pinelis, I. Extremal probabilistic problems and Hotelling’s  $T^2$  test under a symmetry condition. *Ann. Statist.* **22** (1994) 357–368.
- [5] Pinelis, I. F. A problem of large deviations in a space of trajectories. *Theory Probab. Appl.*, **26** (1981) 69–84.
- [6] Weidman, P. and Pinelis, I. Model equations for the Eiffel tower profile: historical perspective and new results. *Comptes Rendus Mecanique* **332** (2004) 571–584.
- [7] Pinelis, I. Evolutionary models of phylogenetic trees. With an electronic appendix [DOI 10. 1098 spb. 2003. 2374]. *Roy. Soc. Lond. Proc. Ser. Biol. Sci.* **270** (2003) 1425–1431+15 pp.
- [8] Pinelis, I. A discrete mass transportation problem for infinitely many sites, and general representant systems for infinite families. *Math. Methods Oper. Res.* **58** (2003) 105–129.
- [9] Chubarev, A. and Pinelis, I. Linearity of space-time transformations without the one-to-one, line-onto-line, or constancy-of-speed-of-light assumptions. *Comm. Math. Phys.* **215** (2000) 433–441.
- [10] Pinelis, I. Optimum bounds for the distributions of martingales in Banach spaces. *Ann. Probab.* **22** (1994) 1679–1706.

### Synergistic Activities

I.P.’s most extensive expertise is in probability and statistics, including extremal problems, exact inequalities, and limit theorems of probability and statistics; six of his publications in these areas are listed above, [0–5]; for more see I.P. publication list.

I.P. has also demonstrated an outstanding ability to reach out and conduct high-quality research in a wide variety of fields in mathematics and its applications. Such synergistic activities are exemplified by the above references [6] (mechanical engineering), [7] (biology), [8] (operations research and combinatorics), and [9] (geometry and physics). Stories on his work [7] were broadcast by the United Press International and other news agencies. Study [6] has also received wide publicity.

An interesting application of an inequality provided in [4] was given by D. A. Cardon (2002) Convolution operators and zeros of entire functions, *Proc.*

*Amer. Math. Soc.* **130** 1725–1734, where a result of Pólya concerning the Riemann zeta function  $\zeta(s)$  was generalized.

Results given in [10] have been used in a number papers; a series of recent applications have been to learning theory, including S. Smale and D.-X. Zhou (2007) Learning theory estimates via integral operators and their approximations, *Constructive Approximation* **26** 153–172.

### Thesis Advisor

Gao Ming (M.S.); Elena Kasyanova (Ph.D.); Raymond Molzon (Ph.D.); Zhitong Zhao (Ph.D.); Keguo Huang (M.S.); Brent Halonen (M.S.).

### Awards

- NSA grant “Precise probabilistic tools for statistical practice”, 2012–2014.
- NSF grant “Exact inequalities and limit theorems for Rademacher and self-normalized sums, and related statistics”, 2008–2011.
- Outstanding Research Award, 2015, Department of Mathematical Sciences, Michigan Technological University
- Outstanding Research Award, 2012, Department of Mathematical Sciences, Michigan Technological University
- Outstanding Research Award, 2009, Department of Mathematical Sciences, Michigan Technological University
- Outstanding Research Award, 2007, Department of Mathematical Sciences, Michigan Technological University
- Outstanding Research Award, 2005, Department of Mathematical Sciences, Michigan Technological University

## Publication List

- [1] Iosif Pinelis. On the extreme points of moments sets. *Math. Methods Oper. Res.*, 2016. Online First.
- [2] Iosif Pinelis. Unimodality of certain parametric integrals. *Math. Inequal. Appl.*, 2015. To appear.
- [3] Iosif Pinelis. A topological dichotomy with applications to complex analysis. *Colloq. Math.*, 139(1):137–146, 2015.
- [4] Iosif Pinelis. Relationships between the first four moments. *Amer. Math. Monthly*, 122(5):479–481, 2015.
- [5] Iosif Pinelis. On the supremum of the tails of normalized sums of independent Rademacher random variables. *Statistics and Probability Letters*, 99:131–134, 2015.

- [6] Iosif Pinelis. On the Hölder and Cauchy–Schwarz Inequalities. *Amer. Math. Monthly*, 122(6):593–595, 2015.
- [7] Iosif Pinelis. Monotone tail and moment ratio properties of Student’s family of distributions. *Math. Methods Statist.*, 24(1):74–79, 2015.
- [8] Iosif Pinelis. Geometrically convergent sequences of upper and lower bounds on the Wallis ratio and related expressions. *Math. Inequal. Appl.*, 18(1):195–205, 2015.
- [9] Iosif Pinelis. Explicit additive decomposition of norms on  $\mathbb{R}^2$ . To appear in *The American Mathematical Monthly*, 2015.
- [10] Iosif Pinelis. Exact upper and lower bounds on the difference between the arithmetic and geometric means. *Bull. Aust. Math. Soc.*, 92(1):149–158, 2015.
- [11] Iosif Pinelis. Exact Rosenthal-type bounds. *Ann. Probab.*, 43(5):2511–2544, 2015.
- [12] Iosif Pinelis. Characteristic function of the positive part of a random variable and related results, with applications. *Statist. Probab. Lett.*, 106:281–286, 2015.
- [13] Iosif Pinelis. Best possible bounds of the von Bahr–Esseen type. *Ann. Funct. Anal.*, 6(4):1–29, 2015.
- [14] I. Pinelis. Exact bounds on the closeness between the Student and standard normal distributions. *ESAIM: Probability and Statistics*, 19:24–27, 2015.
- [15] Iosif Pinelis. Schur<sup>2</sup>-concavity properties of Gaussian measures, with applications to hypotheses testing. *J. Multivariate Anal.*, 124:384–397, 2014.
- [16] Iosif Pinelis. An optimal three-way stable and monotonic spectrum of bounds on quantiles: A spectrum of coherent measures of financial risk and economic inequality. *Risks*, 2(3):349–392, September 2014.
- [17] Iosif Pinelis. On the Bennett–Hoeffding inequality. *Annales de l’Institut Henri Poincaré, Probabilités et Statistiques*, 50(1):15–27, 2014.
- [18] Iosif Pinelis. Optimal re-centering bounds, with applications to Rosenthal-type concentration of measure inequalities. In *High dimensional probability VI (The Banff Volume)*, volume 66 of *Progr. Probab.*, pages 81–93. Birkhäuser, Basel, 2013. <http://arxiv.org/abs/1111.2622>.
- [19] Iosif Pinelis. Exact Rosenthal-type inequalities for  $p = 3$ , and related results. *Statistics & Probability Letters*, 83(12):2634–2637, 2013.
- [20] Iosif Pinelis. Rosenthal-type inequalities for martingales in 2-smooth Banach spaces. <http://arxiv.org/abs/1212.1912>, to appear in *Theory of Probability and Applications*, 2012.

- [21] Iosif Pinelis. Exponential deficiency of convolutions of densities. *ESAIM Probab. Stat.*, 16:86–96, 2012.
- [22] Iosif Pinelis. An asymptotically Gaussian bound on the Rademacher tails. *Electron. J. Probab.*, 17:1–22, 2012.
- [23] Iosif Pinelis. Positive-part moments via the Fourier–Laplace transform. *J. Theor. Probab.*, 24:409–421, 2011.
- [24] Iosif Pinelis. Exact lower bounds on the exponential moments of Winsorized and truncated random variables. *J. App. Probab.*, 48:547–560, 2011.
- [25] Iosif Pinelis. Optimal two-value zero-mean disintegration of zero-mean random variables. *Electron. J. Probab.*, 14:no. 26, 663–727, 2009.
- [26] Iosif Pinelis. On the non-degeneracy of Kendall’s correlation coefficient. *Proceedings of the 2008 International Workshop on Applied Probability, Compiègne, France, electronic*, 2008.
- [27] Iosif Pinelis. On inequalities for sums of bounded random variables. *J. Math. Inequal.*, 2(1):1–7, 2008.
- [28] Iosif Pinelis. L’Hospital-type rules for monotonicity: discrete case. *Math. Inequal. Appl.*, 11(4):647–653, 2008.
- [29] Iosif Pinelis. Toward the best constant factor for the Rademacher-Gaussian tail comparison. *ESAIM Probab. Stat.*, 11:412–426 (electronic), 2007. MR2339301.
- [30] Iosif Pinelis. “Non-strict” l’Hospital-type rules for monotonicity: intervals of constancy. *JIPAM. J. Inequal. Pure Appl. Math.*, 8(1):Article 14, 8 pp. (electronic), 2007. MR2295708.
- [31] Iosif Pinelis. Exact inequalities for sums of asymmetric random variables, with applications. *Probab. Theory Related Fields*, 139(3-4):605–635, 2007. MR2322709.
- [32] Iosif Pinelis. A characterization of the convexity of cyclic polygons in terms of the central angles. *J. Geom.*, 87(1-2):106–119, 2007. MR2372521.
- [33] Iosif Pinelis. On normal domination of (super)martingales. *Electron. J. Probab.*, 11:no. 39, 1049–1070 (electronic), 2006. MR2268536.
- [34] Iosif Pinelis. On l’Hospital-type rules for monotonicity. *JIPAM. J. Inequal. Pure Appl. Math.*, 7(2):Article 40, 19 pp. (electronic), 2006. MR2221321.
- [35] Iosif Pinelis. Binomial upper bounds on generalized moments and tail probabilities of (super)martingales with differences bounded from above. In *High dimensional probability*, volume 51 of *IMS Lecture Notes Monogr. Ser.*, pages 33–52. Inst. Math. Statist., Beachwood, OH, 2006. MR2387759.

- [36] Iosif Pinelis. L'Hospital-type rules for monotonicity, and the Lambert and Saccheri quadrilaterals in hyperbolic geometry. *JIPAM. J. Inequal. Pure Appl. Math.*, 6(4):Article 99, 12 pp. (electronic), 2005. MR2178280.
- [37] Iosif Pinelis. Cyclic polygons with given edge lengths: existence and uniqueness. *J. Geom.*, 82(1-2):156–171, 2005. MR2161821.
- [38] P. Weidman and I. Pinelis. Model equations for the Eiffel tower profile: historical perspective and new results. *Comptes Rendus Mecanique*, 332:571–584, 2004.
- [39] Iosif Pinelis. L'Hospital rules for monotonicity and the Wilker-Anglesio inequality. *Amer. Math. Monthly*, 111(10):905–909, 2004. MR2104696.
- [40] Iosif Pinelis. Evolutionary models of phylogenetic trees. *Roy. Soc. Lond. Proc. Ser. Biol. Sci.*, 270(1522):1425–1431+15, 2003. With an electronic appendix [DOI 10. 1098 spb. 2003. 2374]. MR2058471.
- [41] Iosif Pinelis. A discrete mass transportation problem for infinitely many sites, and general representant systems for infinite families. *Math. Methods Oper. Res.*, 58(1):105–129, 2003. MR2002566.
- [42] Iosif Pinelis. Dimensionality reduction in extremal problems for moments of linear combinations of vectors with random coefficients. In *Stochastic inequalities and applications*, volume 56 of *Progr. Probab.*, pages 169–185. Birkhäuser, Basel, 2003. MR2073433.
- [43] Iosif Pinelis. Spherically symmetric functions with a convex second derivative and applications to extremal probabilistic problems. *Math. Inequal. Appl.*, 5(1):7–26, 2002. MR1880267.
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- [74] I. F. Pinelis. Probabilistic inequalities for sums of independent random variables with values in a Banach space. *Mat. Zametki*, 39(3):438–443, 463, 1986. MR850190.



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