

JOEL A. TROPP

publications

Available electronically at <https://tropp.caltech.edu/>

SUBMITTED FOR PUBLICATION

1. C. Camaño, E. N. Epperly, R. A. Meyer, and J. A. Tropp, “Linear algebra at exponential scale via tensor network dimension reduction.” June 2026.
2. J. A. Tropp, “Universality laws for random matrices via exchangeable counterparts.” Mar. 2026.
3. J. A. Tropp, “Comparison theorems for the extreme eigenvalues of a random symmetric matrix.” Accepted to *Ann. Appl. Probab.*, Sep. 2026.
4. C. Camaño, E. N. Epperly, R. A. Meyer, and J. A. Tropp, “Faster linear algebra algorithms with structured random matrices.” July 2025.
5. J. A. Tropp and R. J. Webber, “Randomized algorithms for low-rank matrix approximation: Design, analysis, and applications.” Aug. 2023.
6. R. Kueng and J. A. Tropp, “Binary component decomposition, Part II.” July 2019.

THESES

7. J. A. Tropp, *Topics in Sparse Approximation*, PhD Dissertation, Computational and Applied Mathematics, Univ. Texas at Austin, Aug. 2004.
8. J. A. Tropp, *Infinitesimals: History and Application*. Senior Thesis, Mathematics Dept., Univ. Texas at Austin, May 1999.

MONOGRAPH

9. J. A. Tropp, “An Introduction to Matrix Concentration Inequalities.” *Foundations & Trends in Machine Learning*. Vol. 8, num. 1–2, pp. 1–230, May 2015.

LECTURE NOTES

10. A. Kireeva and J. A. Tropp, “Randomized matrix computations: Themes and variations.” Caltech CMS Lecture Notes 2023-02, Pasadena, 2023. Short course for CIME Summer School on Machine Learning in Cetraro, Calabria, July 2023. To appear in CIME Lecture Notes series.
11. J. A. Tropp, *Probability Theory & Computational Mathematics: Caltech CMS/ACM 117, Fall 2024*. Caltech CMS Lecture Notes 2023-01, Pasadena, 2023.
12. J. A. Tropp, *Matrix Analysis: Caltech ACM 204, Winter 2022*. Caltech CMS Lecture Notes 2022-01, Pasadena, 2022.
13. J. A. Tropp, *Probability in High Dimensions: Caltech ACM 217, Winter 2021*. Caltech CMS Lecture Notes 2021-01, Pasadena, 2021.
14. J. A. Tropp, *Randomized Algorithms for Matrix Computations: Caltech ACM 204, Winter 2020*. Caltech CMS Lecture Notes 2020-01, Pasadena, 2020.
15. J. A. Tropp, *Matrix Concentration & Computational Linear Algebra*. Caltech CMS Lecture Notes 2019-01, Pasadena, 2019. Short course for summer school “High-dimensional probability and algorithms” at École Normale Supérieure, Paris, July 2019.

16. J. A. Tropp, *Lectures on Convex Geometry: Caltech ACM 204, Fall 2018*. Caltech CMS Lecture Notes 2019-02, Pasadena, 2019.

BOOK CHAPTERS AND PROCEEDINGS

17. J. A. Tropp, “Applied random matrix theory.” *Proc. Intl. Cong. Mathematicians 2026*, Vol. 7, pp. 129–149, July 2026.
18. M. Lotz and J. A. Tropp, “Sharp phase transitions in Euclidean integral geometry.” *High-Dimensional Probability X: The Będlewo Volume*, eds. R. Adamczak et al., Progress in Probability, Vol. 82, pp. 187–258, Birkhäuser, 2026.
19. P.-G. Martinsson and J. A. Tropp, “Randomized numerical linear algebra: Foundations and Algorithms.” Invited survey, *Acta Numerica* 2020, pp. 403–572. Cambridge Univ. Press, Nov. 2020.
20. M. Lotz, M. B. McCoy, I. Nourdin, G. Peccati, and J. A. Tropp, “Concentration of the intrinsic volumes of a convex body,” *Geometric Aspects of Functional Analysis (GAFA), Israel Seminar 2017–2019*, Vol. II, Lecture Notes in Mathematics, Vol. 2266, pp. 139–167, Springer, July 2020.
21. J. A. Tropp, “The expected spectral norm of a sum of independent random matrices: An elementary approach.” *High-Dimensional Probability VII: The Cargèse Volume*, eds. C. Houdré et al., Progress in Probability, Vol. 71, Birkhäuser, 2016.
22. J. A. Tropp, “Convex recovery of a structured signal from independent random measurements.” *Sampling Theory, a Renaissance: Compressive Sensing and Other Developments*, ed. G. Pfander, Applied and Numerical Harmonic Analysis, Birkhäuser, 2015.

BOOK REVIEW

23. J. A. Tropp, “*A Mathematical Introduction to Compressive Sampling*, by S. Foucart and H. Rauhut, Birkhäuser, 2013. ISBN 978-0-8176-4948-7.” Invited review, *Bull. Amer. Math. Soc.*, July 2016.

REFEREED JOURNAL PAPERS

24. M. Díaz, E. N. Epperly, Z. Frangella, J. A. Tropp, and R. J. Webber, “Robust, randomized preconditioning for kernel ridge regression.” *Adv. Comput. Math.*, Vol. 52, num. 90, pp. 1–28, Sep. 2026.
25. J. A. Tropp, “Comparison theorems for the minimum eigenvalue of a random positive-semidefinite matrix.” *Comm. Amer. Math. Soc.*, Vol. 6, pp. 844–895, July 2026.
26. C. Camaño, E. N. Epperly, and J. A. Tropp, “Successive randomized compression: A randomized algorithm for the compressed MPO–MPS product.” *Quantum*, Vol. 10, p. 2022, Mar. 2026.
27. C.-F. Chen, J. Garza-Vargas, J. A. Tropp, and R. van Handel, “A new approach to strong convergence.” *Ann. Math.*, Vol. 303, num. 2, pp. 555–60, Mar. 2026.
28. E. N. Epperly, J. A. Tropp, and R. J. Webber, “Embrace rejection: Kernel matrix approximation by accelerated randomly pivoted Cholesky.” *SIAM J. Matrix Anal. Appl.*, Vol. 46, num. 4, pp. 2527–2557, 2025.
29. Y. Chen, E. N. Epperly, J. A. Tropp, and R. J. Webber, “Randomly pivoted Cholesky: Practical approximation of a kernel matrix with few entry evaluations.” *Comm. Pure Appl. Math.*, Vol. 78, num. 5, pp. 995–1041, May 2025.
30. Y. Nakatsukasa and J. A. Tropp, “Fast & accurate randomized algorithms for linear systems and eigenvalue problems.” *SIAM J. Matrix Anal. Appl.*, Vol. 45, num. 2, pp. 1183–1214, 2024.
31. C.-F. Chen, A. M. Dalzell, M. Berta, F. G. S. L. Brandão, and J. A. Tropp, “Sparse random Hamiltonians are quantumly easy.” *Phys. Rev. X: Quantum*, Vol. 14, num. 1, page 011014, Feb. 2024. **Quantum Information Processing (QIP) 2023, Best student paper prize.**

32. E. N. Epperly and J. A. Tropp, “Efficient error and variance estimation for randomized matrix computations.” *SIAM J. Sci. Comp.*, Vol. 46, num. 1, pp. A508–A528, 2024.
33. E. N. Epperly, J. A. Tropp, and R. Webber, “XTrace: Making the most of every sample in stochastic trace estimation.” *SIAM J. Matrix Anal. Appl.*, Vol. 45, num. 1, pp. 1–23, 2024.
34. Z. Frangella, J. A. Tropp, and M. Udell, “Randomized Nyström preconditioning.” *SIAM J. Matrix Anal. Appl.*, Vol. 44, num. 2, pp. 718–752, 2023.
35. D. Giannakis, A. Henriksen, J. A. Tropp, and R. Ward, “Learning to forecast dynamical systems from streaming data.” *SIAM J. Applied Dynamical Systems*, Vol. 22, num. 2, pp. 527–558, 2022.
36. D. Huang, J. Niles-Weed, J. A. Tropp, and R. Ward, “Matrix concentration for products.” *Found. Comput. Math.*, Vol. 22, pp. 1767–1799, 2022.
37. J. A. Tropp, “Randomized block Krylov methods for approximating extreme eigenvalues.” *Num. Math.*, Vol. 150, pp. 217–255, 2022.
38. L. Ding, A. Yurtsever, V. Cevher, J. A. Tropp, and M. Udell, “An optimal-storage approach to semidefinite programming using approximate complementarity.” *SIAM J. Optim.*, Vol. 31, num. 4, pp. 2695–2725, 2021.
INFORMS Optimization Society 2019 Student Paper Prize.
39. C.-F. Chen, H.-Y. Huang, R. Kueng, and J. A. Tropp, “Concentration for random product formulas.” *Phys. Rev. X: Quantum*, Vol. 2, num. 040305, Oct. 2021.
40. D. Huang and J. A. Tropp, “From Poincaré inequalities to nonlinear matrix concentration.” *Bernoulli*, Vol. 27, num. 3, pp. 1724–1744, Aug. 2021.
41. D. Huang and J. A. Tropp, “Nonlinear matrix concentration via semigroup methods.” *Electron. J. Probab.*, Vol. 26, article 8, pp. 1–31, 2021.
42. R. Kueng and J. A. Tropp, “Binary component decomposition, Part I: The positive-semidefinite case.” *SIAM J. Math. Data Sci.*, Vol. 3, num. 2, pp. 544–572, 2021.
43. A. Yurtsever, J. A. Tropp, O. Fercoq, M. Udell, and V. Cevher, “Scalable semidefinite programming.” *SIAM J. Math. Data Sci.*, Vol. 3, num. 1, pp. 171–200, 2021.
44. Y. Sun, Y. Guo, C. Luo, J. A. Tropp, and M. Udell, “Low-rank Tucker approximation of a tensor from streaming data.” *SIAM J. Math. Data Sci.* Vol. 2, num. 4, pp. 1123–1150. 2020.
45. M. Guta, J. Kahn, R. Kueng, and J. A. Tropp, “Fast state tomography with optimal error bounds.” *J. Phys. A*, Vol. 53, 204001, pp. 1–28, Apr. 2020.
46. J. A. Tropp, A. Yurtsever, M. Udell, and V. Cevher, “Streaming low-rank matrix approximation with an application to scientific simulation.” *SIAM J. Sci. Comp.*, Vol. 41, num. 4, pp. A2430–A2463, 2019.
47. J. A. Tropp, “Simplicial faces of the set of correlation matrices.” *Discrete Comput. Geom*, Vol. 60, num. 20, pp. 512–529, Sep. 2018.
48. S. Oymak and J. A. Tropp, “Universality laws for randomized dimension reduction, with applications.” *Inform. Inference*, Vol. 7, num. 3, pp. 337–446, 2018.
49. J. A. Tropp, “Second-order matrix concentration inequalities.” *Appl. Comput. Harmonic Anal.*, Vol. 44, pp. 700–736, 2018.
50. J. A. Tropp, A. Yurtsever, M. Udell, and V. Cevher, “Practical sketching algorithms for low-rank matrix approximation.” *SIAM J. Matrix Anal. Appl.*, Vol. 38, num. 4, pp. 1454–1485, Dec. 2017.

51. D. Paulin, L. Mackey, and J. A. Tropp, “Efron–Stein inequalities for random matrices.” *Ann. Probab.*, Vol. 44, num. 5, 2016.
52. J. A. Tropp, “Integer factorization of a positive-definite matrix.” *SIAM J. Discrete Math.*, Vol. 29, num. 4, pp. 1783–1791, 2015.
53. J. Bruer, J. A. Tropp, V. Cevher, and S. J. Becker, “Designing statistical estimators that balance sample size, risk, and computational cost,” *IEEE J. Selected Topics Signal Processing*, Vol. 9, num. 4, pp. 612–624, June 2015.
54. R. Horstmeyer, R. Y. Chen, X. Ou, B. Ames, J. A. Tropp, C. Yang, “Solving ptychography with a convex relaxation.” *New J. Phys.*, Vol. 17, article 053044, pp. 1–15, May 2015.
55. G. Lerman, M. B. McCoy, J. A. Tropp, and T. Zhang, “Robust computation of linear models by convex relaxation.” *Found. Comput. Math.* Vol. 15, num. 2, pp. 363–410, Apr. 2015.
56. R. Moarref, M. R. Jovanovic, J. A. Tropp, A. S. Sharma, and B. J. McKeon, “A low-order decomposition of turbulent channel flow via resolvent analysis and convex optimization.” *Phys. Fluids*, Vol. 26, num. 1, 051701, pp. 1–7, 2014.
57. J. L. Bourguignon, J. A. Tropp, A. S. Sharma, and B. J. McKeon, “Compact representation of wall-bounded turbulence using compressive sampling.” *Phys. Fluids*, Vol. 26, num. 1, 015109, pp. 1–20, 2014.
58. D. Amelunxen, M. Lotz, M. B. McCoy, and J. A. Tropp, “Living on the edge: Phase transitions in convex programs with random data.” *Inform. Inference*, Vol. 3, num. 3, pp. 224–294, 2014. Inaugural **IMA Information & Inference Best Paper Prize**, 2015.
59. M. B. McCoy and J. A. Tropp, “From Steiner formulas for cones to concentration of intrinsic volumes.” *Discrete Comput. Geom.* Vol. 51, num. 4, pp. 926–963, 2014.
60. M. B. McCoy and J. A. Tropp, “Sharp recovery bounds for convex demixing, with applications.” May 2012. *Found. Comput. Math.* Vol. 14, num. 3, pp. 503–567, 2014.
61. L. Mackey, M. I. Jordan, R. Y. Chen, B. Farrell, and J. A. Tropp, “Matrix concentration inequalities via the method of exchangeable pairs.” *Ann. Probab.*, Vol. 42, num. 3, pp. 906–945, 2014.
62. R. Y. Chen and J. A. Tropp, “Subadditivity of matrix phi-entropy and concentration of random matrices.” *Electron. J. Probab.* Vol. 19, num. 27, pp. 1–30, 2014.
63. D. Needell and J. A. Tropp, “Paved with good intentions: Analysis of a randomized block Kaczmarz method.” *Linear Algebra Appl.* Vol. 441, pp. 199–221, Jan. 2014.
64. R. Moarref, A. S. Sharma, J. A. Tropp, and B. J. McKeon, “Model-based scaling and prediction of the streamwise energy intensity in high Reynolds-number turbulent flows.” *J. Fluid Mech.*, Vol. 734, pp. 275–316, 2013.
65. G. Pfander, H. Rauhut, and J. A. Tropp, “The restricted isometry property for time–frequency structured random matrices.” *Probab. Theory Related Fields*, Vol. 156, num. 3–4, pp. 707–737, August 2013.
66. R. Y. Chen, A. Gittens, and J. A. Tropp, “The masked sample covariance estimator: An analysis via matrix concentration inequalities.” *Inform. Inference*, Vol. 1, pp. 2–20, 2012.
67. J. A. Tropp, “User-friendly tail bounds for sums of random matrices,” *Found. Comput. Math.*, Vol. 12, num. 4, pp. 389–434, 2012.
68. H. Rauhut, J. Romberg, and J. A. Tropp, “Restricted isometries for partial circulant matrices.” *Appl. Comput. Harmon. Anal.*, Vol. 32, pp. 242–254, 2012.

69. J. A. Tropp, “A comparison principle for functions of a uniformly random subspace.” *Probab. Theory Related Fields*, Vol. 153, num. 3–4, pp. 759–769, 2012.
70. J. A. Tropp, “From the joint convexity of quantum relative entropy to a concavity theorem of Lieb.” *Proc. Amer. Math. Soc.*, Vol. 140, num. 5, pp. 1757–1760, May 2012.
71. J. A. Tropp, “Improved analysis of the subsampled randomized Hadamard transform.” *Adv. Adapt. Data Anal.*, special issue, “Sparse Representation of Data and Images,” Vol. 3, num. 1–2, pp. 115–126, 2012.
72. M. B. McCoy and J. A. Tropp, “Two proposals for robust PCA via semidefinite programming.” *Electron. J. Stat.*, Vol. 5, num. 0, pp. 1123–1160, June 2011.
73. N. Halko, P.-G. Martinsson, and J. A. Tropp, “Finding structure with randomness: Probabilistic algorithms for constructing approximate matrix decompositions.” *SIAM Rev.*, Vol. 53, num. 2, pp. 217–288, June 2011.
74. J. A. Tropp, “Freedman’s inequality for matrix martingales.” *Electron. Commun. Probab.*, Vol. 16, pp. 262–270, Mar. 2011.
75. J. A. Tropp and S. J. Wright, “Computational methods for sparse solution of linear inverse problems.” *Proc. IEEE*, special issue “Applications of sparse representation and compressive sensing,” Vol. 98, num. 6, pp. 948–958, June 2010.
76. J. A. Tropp, M. Duarte, J. N. Laska, J. Romberg, and R. G. Baraniuk, “Beyond Nyquist: Efficient sampling of sparse, bandlimited signals.” *IEEE Trans. Inform. Theory*, Vol. 56, num. 1, pp. 520–544, Jan. 2010.
77. D. Needell and J. A. Tropp, “CoSaMP: Iterative signal recovery from incomplete and inaccurate samples.” *Appl. Comput. Harmon. Anal.*, Vol. 26, pp. 301–321, 2009. Selected for the **Research Highlights** section of *Communications of the ACM* (June 2010). Selected as a **Fast-Breaking Paper in Mathematics** by Thomson Reuters ScienceWatch (Aug. 2010).
78. J. A. Tropp, “Norms of random submatrices and sparse approximation.” *Comptes Rendus Acad. Sci. Paris, Ser. I*, Vol. 346, pp. 1271–1274, 2008.
79. J. A. Tropp, “On the linear independence of spikes and sines.” *J. Fourier Anal. Appl.*, Vol. 14, pp. 838–858, 2008.
80. J. Brickell, I. S. Dhillon, S. Sra, and J. A. Tropp, “The metric nearness problem,” *SIAM J. Matrix Anal. Appl.*, Vol. 30, num. 1, pp. 375–296, Apr. 2008. Selected for **SIAM 2011 Outstanding Paper Prize**.
81. A. C. Gilbert, M. J. Strauss, and J. A. Tropp, “A tutorial on fast Fourier sampling,” *Signal Processing Mag.*, pp. 57–66, Mar. 2008.
82. I. S. Dhillon, R. W. Heath Jr., T. Strohmer, and J. A. Tropp, “Constructing packings in Grassmannian manifolds via alternating projection,” *Exper. Math.*, Vol. 17, num. 1, pp. 9–35, 2008.
83. J. A. Tropp, “On the conditioning of random subdictionaries,” *Appl. Comput. Harmon. Anal.*, Vol. 25, pp. 1–24, 2008. Selected for **Eighth Monroe H. Martin Prize** (2011) for an outstanding paper in applied mathematics by a young researcher.
84. J. A. Tropp, “The random paving property for uniformly bounded matrices,” *Studia Math.*, Vol. 185, num. 1, pp. 67–82, 2008.
85. J. A. Tropp and A. C. Gilbert, “Signal recovery from random measurements via Orthogonal Matching Pursuit.” *IEEE Trans. Inform. Theory*, Vol. 53, num. 12, pp. 4655–4666, Dec. 2007.
86. I. S. Dhillon and J. A. Tropp, “Matrix nearness problems with Bregman divergences,” *SIAM J. Matrix Anal. Appl.*, Vol. 29, num. 4, pp. 1120–1146, Nov. 2007.

87. M. Sustik, J. A. Tropp, I. S. Dhillon, and R. W. Heath Jr., “On the existence of equiangular tight frames.” *Linear Algebra Appl.*, Vol. 426, num. 2–3, pp. 619–635, 2007.
88. J. A. Tropp, A. C. Gilbert, and M. J. Strauss, “Algorithms for simultaneous sparse approximation. Part I: Greedy pursuit,” *J. Signal Processing*, Vol. 86, special issue on “Sparse approximations in signal and image processing,” pp. 572–588, Apr. 2006. Selected for **EUSIPCO 2010 Best Paper Award**.
89. J. A. Tropp, “Algorithms for simultaneous sparse approximation. Part II: Convex relaxation,” *J. Signal Processing*, Vol. 86, special issue on “Sparse approximations in signal and image processing,” pp. 589–602, Apr. 2006.
90. J. A. Tropp, “Just relax: Convex programming methods for identifying sparse signals,” *IEEE Trans. Inform. Theory*, Vol. 52, num. 3, pp. 1030–1051, Mar. 2006.
91. I. S. Dhillon, R. W. Heath Jr., M. Sustik, and J. A. Tropp, “Generalized algorithms for constructing Hermitian matrices with prescribed diagonal and spectrum,” *SIAM J. Matrix. Anal. Appl.*, Vol. 27, num. 1, pp. 61–71, June 2005.
92. J. A. Tropp, “Recovery of short, complex linear combinations via l_1 minimization,” *IEEE Trans. Inform. Theory*, Vol. 51, num. 4, pp. 1568–1570, Apr. 2005.
93. J. A. Tropp, I. S. Dhillon, R. W. Heath Jr., and T. Strohmer, “Designing structured tight frames via alternating projection,” *IEEE Trans. Inform. Theory*, Vol. 51, num. 1, pp. 188–209, Jan. 2005.
94. J. A. Tropp, I. S. Dhillon, and R. W. Heath Jr., “Finite-step algorithms for constructing optimal CDMA sequences,” *IEEE Trans. Inform. Theory*, Vol. 50, num. 11, pp. 2916–2921, Nov. 2004.
95. J. A. Tropp, “Greed is good: Algorithmic results for sparse approximation,” *IEEE Trans. Inform. Theory*, Vol. 50, num. 10, pp. 2231–2242, Oct. 2004.

REFEREED CONFERENCE PAPERS

96. A. Levis, D. Lee, J. A. Tropp, C. F. Gammie, and K. L. Bouman, “Inference of black hole fluid dynamics from sparse interferometric measurements.” In *Proc. IEEE/CVF Inc. Conf. Computer Vision (ICCV 2021)*, pp. 2340–2349, Oct. 2021.
97. C.-F. Chen, H.-Y. Huang, R. Kueng, and J. A. Tropp, “Quantum simulation with randomized product formulas: A concentration analysis.” Oral presentation, Theory of Quantum Computation (TQC), online, 2021.
98. Y. Sun, Y. Guo, J. A. Tropp, and M. Udell, “Tensor random projection for low-memory dimension reduction.” NeurIPS Workshop on Relational Databases, Dec. 2018.
99. J. A. Tropp, A. Yurtsever, M. Udell, and V. Cevher, “Fixed-rank approximation of a positive-definite matrix from streaming data,” in *Advances in Neural Information Processing Systems 30*, Long Beach, Dec. 2017.
100. A. Yurtsever, M. Udell, J. A. Tropp, and V. Cevher, “Sketchy decisions: Convex low-rank matrix optimization with optimal storage.” In *Proc. 20th Ann. Conf. Artificial Intelligence and Statistics (AISTATS)*, Fort Lauderdale, Apr. 2017. Oral presentation (top 5% of submissions).
101. J. Bruer, J. A. Tropp, V. Cevher, and S. J. Becker, “Time–data tradeoffs by aggressive smoothing,” in *Advances in Neural Information Processing Systems 27*, Montreal, Dec. 2014.
102. V. Bittorf, B. Recht, C. Ré, and J. A. Tropp, “Factoring nonnegative matrices with linear programs,” in *Advances in Neural Information Processing Systems 25*, pp. 1223–1231, Stateline, NV, Dec. 2012.
103. J. Lee, B. Recht, R. Salakhutdinov, N. Srebro, and J. A. Tropp, “Practical large-scale optimization for max-norm regularization,” in *Advances in Neural Information Processing Systems 23*, pp. 1297–1305, Vancouver, Dec. 2010.

104. J. A. Tropp, “Column subset selection, matrix factorization, and eigenvalue optimization,” in *Proc. 2009 ACM–SIAM Symp. Discrete Algorithms*, pp. 978–986, New York, Jan. 2009.
105. M. Mishali, Y. C. Eldar, and J. A. Tropp, “Efficient sampling and stable reconstruction of wide band sparse analog signals,” in *Proc. 25th IEEE Conv. Electrical and Electronic Engineers in Israel*, Eilat, Dec. 2008. Selected for **Best Student Paper Award**.
106. D. Needell, J. A. Tropp, and R. Vershynin, “Greedy signal recovery review,” in *Proc. 42nd Asilomar Conf. Signals, Systems, and Computers*, Pacific Grove, Oct. 2008.
107. A. C. Gilbert, M. J. Strauss, J. A. Tropp, and R. Vershynin, “One sketch for all: Fast algorithms for Compressed Sensing,” in *Proc. 39th ACM Symp. Theory of Computing*, San Diego, Jun. 2007.
108. A. C. Gilbert, M. J. Strauss, J. A. Tropp, and R. Vershynin, “Algorithmic linear dimension reduction in the l_1 norm for sparse vectors,” invited paper, special session “Compressed Sensing,” in *Proc. 44th Annual Allerton Conf. Communication, Control, and Computing*, Allerton, Sep. 2006.
109. S. Sra and J. A. Tropp, “Row-action methods for Compressed Sensing,” in *Proc. 2006 IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Vol. 3, pp. 868–871, Toulouse, May 2006.
110. K. K. Herrity, A. C. Gilbert, and J. A. Tropp, “Sparse approximation via iterative thresholding,” in *Proc. 2006 IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Vol. 3, pp. 624–627, Toulouse, May 2006.
111. J. A. Tropp, M. B. Wakin, M. F. Duarte, D. Baron, and R. G. Baraniuk, “Random filters for compressive sampling and reconstruction,” in *Proc. 2006 IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Vol. 3, pp. 872–875, Toulouse, May 2006.
112. A. C. Gilbert and J. A. Tropp, “Applications of sparse approximation in communications,” in *Proc. 2005 IEEE Int. Symp. Information Theory*, pp. 1000–1004, Adelaide, Sept. 2005.
113. J. A. Tropp, A. C. Gilbert, and M. J. Strauss, “Simultaneous sparse approximation via greedy pursuit,” special session “Sparse representations in signal processing,” in *Proc. 2005 IEEE Int. Conf. Acoustics, Speech, and Signal Processing*, Vol. 5, pp. 721–724, Philadelphia, Mar. 2005.
114. I. S. Dhillon, S. Sra, and J. A. Tropp, “Triangle fixing algorithms for the metric nearness problem,” *Advances in Neural Information Processing* 17, pp. 361–368, Vancouver, Dec. 2004.
115. R. W. Heath Jr., J. A. Tropp, I. S. Dhillon, and T. Strohmer, “Construction of equiangular signatures for synchronous CDMA systems,” in *Proc. 2004 IEEE Int. Symp. Spread Spectrum Technologies*, pp. 708–712, Sydney, Aug. 2004.
116. J. A. Tropp, I. S. Dhillon, and R. W. Heath Jr., “Optimal CDMA signatures: a finite-step approach,” in *Proc. 2004 IEEE Int. Symp. Spread Spectrum Technologies*, pp. 335–340, Sydney, Aug. 2004.
117. J. A. Tropp, I. S. Dhillon, R. W. Heath Jr. and T. Strohmer, “CDMA signature sequences with low peak-to-average-power ratio via alternating projection,” in *Proc. 37th Asilomar Conf. Signals, Systems, and Computers*, pp. 475–479, Monterey, Nov. 2003.
118. J. A. Tropp, A. C. Gilbert, S. Muthukrishnan, and M. J. Strauss, “Improved sparse approximation over quasi-incoherent dictionaries,” invited paper, special session “Redundant representations in image processing,” in *Proc. 2003 IEEE Int. Conf. Image Processing*, vol. 1, pp. 37–40, Barcelona, Sept. 2003.
119. J. A. Tropp, R. W. Heath Jr., and T. Strohmer, “Optimal CDMA signature sequences, inverse eigenvalue problems, and alternating minimization,” in *Proc. 2003 IEEE Int. Symp. Information Theory*, p. 407, Yokohama, July 2003.

OTHER CONFERENCE PAPERS

120. J. A. Tropp, “The sparsity gap: Uncertainty principles proportional to dimension,” invited paper, in *Proc. 44th Ann. IEEE Conf. Information Sciences and Systems*, pp. 1–6, Princeton, Mar. 2010.
121. A. C. Gilbert, M. J. Strauss, J. A. Tropp, and R. Vershynin, “Sublinear approximation of compressible signals,” invited paper, special session “Compressive Sensing,” in *Proc. SPIE Intelligent Integrated Microsystems*, pp. 623206.01–09, Orlando, Apr. 2006.
122. J. A. Tropp, “Random filters for compressive sampling,” invited paper, special session on “Sparse representations and compressed sensing,” in *Proc. 2006 IEEE Conf. Information Sciences and Systems*, Princeton, Mar. 2006.
123. J. A. Tropp, “Complex equiangular tight frames,” in *Proc. SPIE Wavelets XI*, pp. 590401.01–11, San Diego, Aug. 2005.
124. J. A. Tropp, “Average-case analysis of greedy pursuit,” invited paper, in *Proc. SPIE Wavelets XI*, pp. 590412.01–11, San Diego, Aug. 2005.

SELECTED TECHNICAL REPORTS

125. J. A. Tropp, “Analysis of randomized block Krylov methods.” ACM Report 2018-02, Caltech, June 2021. Research dated Mar. 2018.
126. M. B. McCoy and J. A. Tropp, “The achievable performance of convex demixing.” ACM Report 2017-02, Caltech, Feb. 2017. Research dated Sep. 2013.
127. J. A. Tropp, A. Yurtsever, M. Udell, and V. Cevher, “Randomized single-view algorithms for low-rank matrix approximation.” ACM Report 2017-01, Caltech, Jan. 2017. Research dated Aug. 2016.
128. D. Paulin, L. Mackey, and J. A. Tropp, “Deriving matrix concentration inequalities from kernel couplings,” Technical Report 2014-10, Stanford Department of Statistics, Aug. 2014. Research dated May 2013.
129. A. Gittens and J. A. Tropp, “Tail bounds for all eigenvalues of a sum of random matrices,” ACM Report 2014-02, Caltech, Aug. 2014. Research dated Apr. 2011.
130. A. Gittens and J. A. Tropp, “Error bounds for randomized matrix approximation schemes,” ACM Report 2014-01, Caltech, Aug. 2014. Research dated Nov. 2009.
131. R. Y. Chen, A. Gittens, and J. A. Tropp, “The masked sample covariance estimator: An analysis via the matrix Laplace transform,” ACM Report 2012-01, Caltech, Feb. 2012.
132. C. Probel and J. A. Tropp, “Large-scale PCA with sparsity constraints,” ACM Report 2011-02, Caltech, Aug. 2011.
133. J. A. Tropp, “Column subset selection, matrix factorization, and eigenvalue optimization,” ACM Report 2008-02, Caltech, Mar. 2008. Revised, July 2008.
134. A. C. Gilbert, M. J. Strauss, J. A. Tropp, and R. Vershynin, “Algorithmic linear dimension reduction in the ℓ_1 norm for sparse vectors,” Nov. 2005. Revised, Aug. 2006.
135. A. C. Gilbert and J. A. Tropp, “Signal recovery from random measurements via Orthogonal Matching Pursuit: The Gaussian Case,” ACM Report 2007-01, Caltech, 2007. Research dated Apr. 2005; revised Nov. 2006 and Aug. 2007.
136. J. A. Tropp, “Just relax: Convex programming methods for subset selection and sparse approximation,” ICES Report 04-04, Univ. Texas at Austin, Feb. 2004.

137. J. A. Tropp, “Greed is good: Algorithmic results for sparse approximation,” ICES Report 03-04, Univ. Texas at Austin, Feb. 2003.

MISCELLANEOUS

138. R. Moarref, A. S. Sharma, J. A. Tropp, and B. J. McKeon, “A foundation for analytical developments in the logarithmic region of turbulent channels.” Sep. 2014.