

# JOEL A. TROPP

*curriculum vitae*

## CONTACT INFORMATION

**Title:** Steele Family Professor of Applied & Computational Mathematics  
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## ACADEMIC POSITIONS

Caltech, Division of Engineering and Applied Science  
**Steele Family Professor of Applied & Computational Mathematics**, May 2017–Present  
**Professor of Applied & Computational Mathematics**, Mar. 2012–Apr. 2017  
**Assistant Professor of Applied & Computational Mathematics**, Aug. 2007–Feb. 2012

Univ. Michigan at Ann Arbor, Mathematics Department  
**T. H. Hildebrandt Research Assistant Professor** and **NSF Postdoctoral Fellow**, Sep. 2005–July 2007  
**Research Assistant Professor**, Sep. 2004–Aug. 2005

## EDUCATION

Univ. Texas at Austin  
**PhD in Computational and Applied Mathematics**, Aug. 2004  
Dissertation Title: *Topics in Sparse Approximation*. Advisors: I. S. Dhillon and A. C. Gilbert.  
**MS in Computational and Applied Mathematics**, May 2001  
**BS in Mathematics** with Special Honors, May 1999  
**BA in Plan II Liberal Arts Honors**, May 1999  
Graduated *magna cum laude* with concentrations in **Computer Science** and **Latin**  
Senior Thesis Title: *Infinitesimals: History and Application*. Advisor: J. L. Bona.

## SELECTED HONORS AND AWARDS

International Congress of Mathematicians (ICM), invited speaker (Numerical Analysis), 2026  
Richard P. Feynman Prize for Excellence in Teaching at Caltech, 2025  
AMS Fellow, 2025  
IMS Fellow, 2024  
IEEE Fellow, 2020  
SIAM Fellow, 2019  
Clarivate Analytics Highly Cited Researcher (Computer Science, 2017; Cross-Field, 2018)  
Thomson-Reuters Highly Cited Researcher (Computer Science, 2014, 2015, and 2016)  
SIAM Invited Address at the Joint Mathematical Meetings, 2015  
SIAM Outstanding Paper Prize, 2011

Eighth Monroe H. Martin Prize, 2011  
EUSIPCO Best Paper Award, 2010  
Alfred P. Sloan Research Fellowship, 2010  
Sixth Vasil A. Popov Prize, 2010  
2008 Presidential Early Career Award for Scientists and Engineers (PECASE), presented Jan. 2010  
The Associated Students of Caltech (ASCIT) 32nd Annual Award for Excellence in Teaching, 2008  
ONR Young Investigator Program (YIP), 2008  
NSF Mathematical Sciences Postdoctoral Research Fellowship, 2005  
NSF Graduate Research Fellowship (Applied Mathematics), 2000

## PRODUCTS OF SCHOLARLY ACTIVITY

Lists of research publications and presentations are available separately.

## COURSES TAUGHT

### CALTECH

**High-Dimensional Probability**, ACM 217. Winter 2018, Winter 2019, Winter 2023, Winter 2027.  
**Linear Analysis with Applications**, CMS/ACM 107a. Fall 2026.  
**Probability Theory and Computational Mathematics**, CMS/ACM 117. Fall 2019, Fall 2020, Fall 2021, Fall 2022, Fall 2023, Fall 2024.  
**Matrix Analysis**, ACM 204. Winter 2015, Fall 2017, Winter 2022, Spring 2025.  
**Random Matrix Theory**, ACM 217. Winter 2024.  
**Randomized Linear Algebra**, ACM/IDS 204. Winter 2020.  
**Convex Geometry**, ACM/IDS 204. Fall 2018.  
**Concentration Inequalities**, ACM 217. Fall 2013 and Winter 2017.  
**Applied Real and Functional Analysis**, ACM 105. Winter 2016.  
**Linear Algebra and Applied Operator Theory**, ACM 104. Fall 2014 and Fall 2015.  
**Introduction to Optimization**, ACM 113. Winter 2011, Winter 2012, and Winter 2013.  
**Markov Chains, Discrete Stochastic Process, and Applications**, ACM 216. Winter 2010, Winter 2011, and Spring 2012.  
**Introduction to Probability and Random Processes with Applications**, ACM 116. Fall 2012.  
**Methods of Applied Statistics and Data Analysis**, ACM/ESE 118. Winter 2008 and Fall 2009.  
**Wavelets and Modern Signal Processing**, ACM 126ab. Winter and Spring 2009.

### UNIVERSITY OF MICHIGAN AT ANN ARBOR

**Numerical Analysis of Wavelet Methods**, reading course. Fall 2006.  
**Theory of Algorithms**, Math 416. Fall 2006.  
**Introduction to Numerical Methods**, Math 471. Fall 2005 and Fall 2006.  
**Introduction to Probability**, Math 425. Fall 2005.  
**Calculus II**, Math 116. Winter 2005.  
**Calculus I**, Math 115. Fall 2004.

## RESEARCH ADVISING AND MENTORING

### POSTDOCTORAL SUPERVISION

- Raphael Meyer**, Postdoctoral Fellow, Caltech, Fall 2024–Summer 2025. Currently Postdoctoral Scholar at Univ. California at Berkeley.
- Jorge Garza-Vargas**, Center for Mathematics of Information (CMI) Postdoctoral Fellow, Caltech, Winter 2023–Summer 2025. Currently Asst. Prof. Mathematics at Princeton Univ., incoming Asst. Prof. Mathematics at Massachusetts Inst. Tech.
- Robert J. Webber**, Computational Mathematics + X (CMX) Postdoctoral Fellow, Caltech, Fall 2021–Summer 2024. Currently Asst. Prof. Mathematics at Univ. California at San Diego.
- Mateo Díaz**, Computational Mathematics + X (CMX) Postdoctoral Fellow, Caltech, Fall 2021–Present. Supervised with Venkat Chandrasekaran. Currently Asst. Prof. Applied Math, Johns Hopkins Univ.
- Eliza O'Reilly**, NSF Mathematical Sciences Postdoctoral Research Fellow (Fall 2020–Summer 2022) and Center for Mathematics of Information (CMI) Postdoctoral Fellow (Fall 2019–Summer 2023), Caltech. Supervised with Venkat Chandrasekaran. Currently Asst. Prof. Applied Math, Johns Hopkins Univ..
- Richard Kueng**, IQIM Postdoctoral Scholar, Caltech, Fall 2017–Winter 2020. Currently Prof. Computing Technologies, Univ. Linz.
- Ke Wang**, Postdoctoral Scholar, Caltech, Summer 2015–Summer 2016. Currently Assoc. Prof. Mathematics, Hong Kong Univ. Science & Technology (HKUST).
- Madeleine Udell**, Center for Mathematics of Information (CMI) Postdoctoral Fellow, Caltech, Summer 2015–Summer 2016. Currently Asst. Prof. Management Science & Engineering, Stanford Univ.
- Brendan Ames**, von Kármán Instructor, Caltech, Fall 2013–Summer 2014. Currently Assoc. Prof. Operations Research at Univ. Southampton.
- Michael B. McCoy**, Postdoctoral Scholar, Caltech, Summer 2013–Spring 2014.
- Rashad Moarref**, Postdoctoral Scholar, Caltech, Winter 2012–Summer 2014. Supervised with Beverley McKeon.
- Brendan Farrell**, von Kármán Instructor, Caltech, Fall 2011–Summer 2013; Postdoctoral Scholar, Caltech, Fall 2013–Spring 2014.
- Risi Kondor**, CMI Postdoctoral Fellow, Caltech, Fall 2009–Summer 2011. Supervised with Andreas Krause. Currently Assoc. Prof. Statistics, Univ. Chicago.

### DOCTORAL ADVISING

- Chris Camaño**, Applied & Computational Mathematics, Caltech, expected graduation 2029.
- Ethan N. Epperly**, Applied & Computational Mathematics, Caltech, July 2025.  
Dissertation title: *Make the most of what you have: Resource-efficient randomized algorithms for matrix computations.*  
Currently Miller Postdoctoral Fellow, Univ. California at Berkeley.
- John J. Bruer**, PhD Applied & Computational Mathematics, Caltech, Jan. 2017.  
Dissertation title: *Recovering structured low-rank operators using nuclear norms.*
- Richard Y. Chen**, PhD Applied & Computational Mathematics, Caltech, July 2016.  
Dissertation title: *Concentration inequalities of random matrices and solving ptychography with a convex relaxation.*
- Alex Gittens**, PhD Applied & Computational Mathematics, Caltech, June 2013.  
Dissertation title: *Topics in randomized numerical linear algebra.*  
Currently Assoc. Prof. Computer Science, Rensselaer Polytechnic Institute.
- Michael B. McCoy**, PhD Applied & Computational Mathematics, Caltech, June 2013.  
Dissertation title: *A geometric analysis of convex demixing.*
- Peter Stobbe**, PhD Applied & Computational Mathematics, Caltech, June 2013. Supervised with Andreas Krause.  
Dissertation title: *Convex analysis for minimizing and learning submodular set functions.*

## MENTORING

I have also worked closely with many other students and postdocs on technical collaborations and aspects of career development. These include **Chi-Fang Anthony Chen** (postdoc, UC-Berkeley), **Hsin-Yuan Robert Huang** (Asst. Prof. Physics, Caltech), **De Huang** (Asst. Prof. Mathematics, Peking Univ.), **Florian Schaefer** (Asst. Prof. CS, NYU), **Alp Yurtsever** (Asst. Prof. Machine Learning, Umeå), **Franca Hoffmann** (Asst. Prof. Applied and Computational Mathematics, Caltech), **Samet Oymak** (Assoc. Prof. EECS, UM-Ann Arbor), **Roarke Horstmeyer** (Asst. Prof. Electrical Engineering, Duke), **Lester Mackey** (Senior Researcher MSR; MacArthur Fellow), and **Deanna Needell** (Dunn Family Chair, Prof. Mathematics, UCLA).

## DOCTORAL COMMITTEES

**Angela Gao**, PhD Computing and Mathematical Sciences, Caltech 2025.

Advisor: K. Bouman. Dissertation title: *Uncovering hidden information: Uncertainty quantification and surrogate modeling for single-view imaging and inversion.*

**Zachary Frangella**, PhD Physics, Stanford 2025.

Advisor: M. Udell. Dissertation title: *Randomized linear algebra for large-scale optimization.*

**Joseph Slote**, PhD Computer Science, Caltech 2025.

Advisor: C. Umans. Dissertation title: *Discrete harmonic analysis and its applications to testing, learning, and complexity.*

**Pau Battle Franch**, PhD Applied and Computational Mathematics, Caltech 2025.

Advisor: H. Owhadi. Dissertation title: *Optimization-based statistical inference: constrained inverse problems, worse-case priors, and kernel regression.*

**Chi-Fang Anthony Chen**, PhD Physics, Caltech 2024.

Advisor: F. G. S. L. Brandão. Dissertation title: *Quantum Gibbs sampling.*

**Hsin-Yuan Robert Huang**, PhD Computing and Mathematical Sciences, Caltech 2023.

Advisors: J. Preskill and T. Vidick. Dissertation title: *Learning in the quantum universe.*

**Ziyun Zhang**, PhD Applied and Computational Mathematics, Caltech 2023.

Advisor: T. Hou. Dissertation title: *Manifold geometry and global convergence.*

**Jeremy Bernstein**, PhD Computing and Neural Systems, Caltech 2022.

Advisor: Y. Yue. Dissertation title: *Optimization & Generalization in Networks of Neurons.*

**Florian Schaefer**, PhD Applied and Computational Mathematics, Caltech 2021.

Advisor: H. Owhadi. Dissertation title: *Information, Computation, and Games*

**Riley Murray**, PhD Computing and Mathematical Sciences, Caltech 2021.

Advisor: V. Chandrasekaran. Dissertation title: *Applications of convex analysis to signomial and polynomial negativity problems*

**Ahmed Douik**, PhD Electrical Engineering, Caltech 2020.

Advisor: B. Hassibi. Dissertation title: *Riemannian optimization for convex and non-convex signal processing and machine learning applications.*

**Ehsan Abbasi**, PhD Electrical Engineering, Caltech 2020.

Advisor: B. Hassibi. Dissertation title: *Universality Laws for Generalized Linear Models.*

**Alp Yurtsever**, PhD Electrical Engineering, EPFL 2019.

Advisor: V. Cevher. Dissertation title: *Scalable convex optimization methods for semidefinite programming.*

**Yong Sheng Soh**, PhD Applied & Computational Mathematics, Caltech 2018.

Advisor: V. Chandrasekaran. Dissertation title: *Fitting convex sets to data: Algorithms and applications.*

**Christos Thrampoulidis**, PhD Electrical & Computer Engineering, Caltech 2016.

Advisor: B. Hassibi. Dissertation title: *Recovering structured signals in high dimensions via non-smooth convex optimization: Precise performance analysis.*

**Kishore Jaganathan**, PhD Electrical & Computer Engineering, Caltech 2016.

Advisor: B. Hassibi. Dissertation title: *Convex programming-based phase retrieval: Theory and applications.*

**Krishna Shankar**, PhD Mechanical & Civil Engineering, Caltech 2016.

Advisor: J. Burdick. Dissertation title: *Kinematics and local motion planning for quasi-static whole-body mobile manipulation.*

- Roarke Horstmeyer**, PhD Electrical & Computer Engineering, Caltech 2015.  
Advisor: C. Yang. Dissertation title: *Computational microscopy: turning megapixels into gigapixels*.
- Samet Oymak**, PhD Electrical & Computer Engineering, Caltech, 2014.  
Advisor: B. Hassibi. Dissertation title: *Convex relaxation for low-dimensional representation: Phase transitions and limitations*.
- Hyoung Jun Ahn**, PhD Applied & Computational Mathematics, Caltech, 2014.  
Advisor: B. Hassibi. Dissertation title: *Random propagation in complex systems: Nonlinear matrix recursions and epidemic spread*.
- Matthew Faulkner**, PhD Computer Science, Caltech, 2014.  
Advisor: A. Krause. Dissertation title: *Community sense and response systems*.
- Anastasios Zouzias**, PhD Computer Science, Univ. Toronto, 2013.  
Advisor: M. Braverman. Dissertation title: *Randomized primitives for linear algebra and applications*.
- Juhwan Yoo**, PhD Electrical & Computer Engineering, Caltech, 2012.  
Advisor: B. Hassibi. Dissertation title: *Compressed sensing receivers: Theory, design and performance limits*.
- Amin Khajehnejad**, PhD Electrical & Computer Engineering, Caltech, 2012.  
Advisor: B. Hassibi. Dissertation title: *Combinatorial regression and improved basis pursuit for sparse estimation*.
- Svitlana Vyetrenko**, PhD Applied & Computational Mathematics, Caltech, 2011.  
Advisor: T. Ho. Dissertation title: *Network coding for error correction*.
- Stephen Becker**, PhD Applied & Computational Mathematics, Caltech, 2011.  
Advisor: E. Candès. Dissertation title: *Practical Compressed Sensing: Modern Data Acquisition and Signal Processing*.
- Yaniv Plan**, PhD Applied & Computational Mathematics, Caltech, 2011.  
Advisor: E. Candès. Dissertation title: *Compressed Sensing, Sparse Approximation, and Low-Rank Matrix Estimation*.
- Weiyu Xu**, PhD Electrical Engineering, Caltech, 2009.  
Advisor: B. Hassibi. Dissertation title: *Compressive Sensing for Sparse Approximation: Constructions, Algorithms, and Analysis*.
- Ali Vakili**, PhD Electrical Engineering, Caltech, 2009.  
Advisor: B. Hassibi. Dissertation title: *Randomized Matrix Recursions in Estimation, Control, and Adaptive Filtering*.
- Paige Randall**, PhD Applied & Computational Mathematics, Caltech, 2009.  
Advisor: E. Candès. Dissertation title: *Sparse Recovery via Convex Optimization*.
- Sarah Sweatlock**, PhD Applied & Computational Mathematics, Caltech, 2008.  
Advisor: R. McEliece. Dissertation title: *Asymptotic Weight Analysis of LDPC Code Ensembles*.
- Julia Lipman**, PhD Computer Science, Univ. Michigan at Ann Arbor, 2007.  
Advisor: Q. Stout. Dissertation title: *Performance Analysis of Local Synchronization*.

## PROFESSIONAL SERVICE

### CURRENT UNIVERSITY ADMINISTRATION (CALTECH)

Various mentoring and promotion committees. Ongoing.

### PAST UNIVERSITY ADMINISTRATION (CALTECH)

CMS Option Representative, AY 2017, AY 2021–2022, AY 2024.

Computing & Mathematical Sciences (CMS) Teaching Assistant Professor Search Committee (chair), AY 2024.

CMS Postdoctoral Committee Chair, AY 2022–AY 2024.

von Kármán Instructor Search Committee, AY 2019, AY 2021, AY 2024.

Ad Hoc Online Curriculum Committee, July 2013–June 2018.

Amazon AI4Science Fellows Selection Committee chair, Fall 2018 and Fall 2020.

Center for Mathematics of Information (CMI) Postdoctoral Scholar Search Committee, Fall 2017 and Fall 2020.

Target of Interest Faculty Search Committee, Fall 2018.  
Faculty Search Committee in CMS, Aug. 2017–Feb. 2018. Chair, Mar. 2018–July 2018.  
Faculty Board Nominating Committee, Feb. 2017–Jan. 2019.  
Faculty Search Committee in CMS, Chair, Sep. 2015–June 2016.  
Faculty Board Steering Committee, Sep. 2016–June 2018.  
Faculty Search Committee in CMS, Oct. 2014–Aug. 2015.  
CMS Colloquium Chair, May 2014–June 2015.  
Core Curriculum Steering Committee, July 2013–June 2016.  
Committee on Moore/Sloan Solicitation for Data Science Challenges, Dec. 2012–Jan. 2013.  
Faculty Search Committee in CMS, Oct. 2012–Apr. 2013.  
Faculty Board, elected member, July 2012–June 2018.  
Faculty Search Committee in Applied & Computational Mathematics (ACM), Jan. 2010–May 2012. Chair, Oct. 2011–May 2012.  
ACM Colloquium Chair, May 2008–Apr. 2014.

#### **EXTRAMURAL ADMINISTRATION**

SIAM Council, Jan. 2016–Dec. 2021.  
AMS Short Course Subcommittee, Feb. 2016–Jan. 2019.  
IMA Data Science Advisory Board, 2017–2018.  
SIAM Council representative to SIAM Board, Jan. 2017–Dec. 2018.

#### **MEETINGS ORGANIZED**

Random Matrix Workshop, Foundations of Computational Mathematics, Vienna, July 2026.  
Workshop Committee, Foundations of Computational Mathematics, Vienna, July 2026.  
Organizing committee, Workshop on Randomized Numerical Linear Algebra, Bernoulli Center, EPFL, June 2026.  
Organizing committee, Workshop on Complexity of Matrix Computations, Online, Summer 2021–Winter 2022.  
**Co-Chair**, inaugural **SIAM Conference on Mathematics of Data Science (MDS)**, Online, May–June 2020. (Pre-COVID projected participation: 1,500 researchers.)  
Concentration of measure and its applications, Institut de Études Scientifique, Cargèse, May 2018.  
Random Matrix Workshop, Foundations of Computational Mathematics, Barcelona, July 2017.  
Information Theory and Concentration Phenomena, Institute for Mathematics and its Applications (IMA), University of Minnesota at Twin Cities, Minneapolis, Apr. 2015.  
SIAM Minisymposium on Matrix Concentration Inequalities, Joint Mathematical Meetings (JMM), San Antonio, Jan. 2015.  
Special session, “Advances in compressive sensing,” 10th Intl. Conf. Sampling Theory and Applications (SampTA 2013), Bremen, July 2013.  
Systems, Information, Learning, and Optimization (SILO) Workshop, Madison, June 2013.  
Sparse and Low-Rank Approximation Workshop, Banff International Research Station, Mar. 2011.  
2006 Sparse Approximation Workshop, Princeton, Nov. 2006.

#### **TECHNICAL PROGRAM COMMITTEES**

2010 IEEE International Symposium on Information Theory (ISIT), 2010.  
2007 IEEE Statistical Signal Processing Workshop, Madison, Aug. 2007.

#### **CURRENT EDITORIAL BOARD MEMBERSHIPS**

*Journal of the American Mathematical Society* (JAMS), Associate Editor, 2026–Present.

*Communications of the American Mathematical Society* (CAMS), Associate Editor, 2021–Present.

*Constructive Approximation* (CA), Mar. 2011–Present.

#### **FORMER EDITORIAL BOARD MEMBERSHIPS**

*SIAM Journal on Mathematics of Data Science* (SIMODS), **Co-Founder**. Section Editor, Jan. 2018–Dec. 2023.

*SIAM Journal on Matrix Analysis and Applications* (SIMAX), Jan. 2013–Dec. 2018.

*Journal of Fourier Analysis and Applications* (JFAA), Jan. 2013–Dec. 2017.

*Applied and Computational Harmonic Analysis* (ACHA), Sep. 2012–Dec. 2017.

#### **REVIEWER FOR THE FOLLOWING JOURNALS**

*Advances in Adaptive Data Analysis*, *Advances in Mathematics*, *Alea*, *Annals of the Henri Poincaré Institute (AIHP)*, *Annals of Statistics*, *Applied and Computational Harmonic Analysis*, *Communications of the Association for Computing Machinery*, *Communications in Pure and Applied Mathematics*, *Constructive Approximation*, *EURASIP Journal of Signal Processing*, *Electronic Journal of Probability*, *Electronic Communications in Probability*, *Forum of Mathematics Pi*, *Foundations and Trends in Machine Learning*, *Foundations of Computational Mathematics*, *Geometric and Functional Analysis*, *IEEE Journal of Selected Topics in Signal Processing*, *IEEE Signal Processing Letters*, *IEEE Transactions on Information Theory*, *IEEE Transactions on Signal Processing*, *Journal of the Association for Computing Machinery*, *Journal of the American Mathematical Society*, *Journal of Approximation Theory*, *Journal of Fourier Analysis and Applications*, *Journal of Functional Analysis*, *Journal of Machine Learning Research*, *Journal of Statistical Physics*, *Mathematical Programming*, *Numerische Mathematik*, *Probability Theory and Related Fields*, *Proceedings of the IEEE*, *SIAM Journal on Applied Dynamical Systems*, *SIAM Journal on Imaging Sciences*, *SIAM Journal on Matrix Analysis and Applications*, *SIAM Review*, *Statistical Science*, *Statistics & Probability Letters*

#### **REVIEWER FOR THE FOLLOWING CONFERENCES**

2019 ACM Conference on Learning Theory (COLT), 2014 IEEE International Symposium on Information Theory (ISIT), 2012 International Workshop on Approximation Algorithms for Combinatorial Optimization Problems (APPROX), 2011 ACM–SIAM Symposium on Discrete Algorithms (SODA), 2010 IEEE International Symposium on Information Theory (ISIT), 2009 Neural Information Processing Systems (NIPS), 2008 ACM Symposium on Theory of Computing (STOC), 2007 IEEE Symposium on Foundations of Computer Science (FOCS), 2005 IEEE International Conference on Communications (ICC), 2004 IEEE Global Communications Conference (GLOBECOM), 2004 IEEE International Symposium on Information Theory (ISIT)

#### **REVIEWER FOR THE FOLLOWING GRANTING AGENCIES**

Air Force Office of Scientific Research (AFOSR), Engineering and Physical Sciences Research Council (EPSRC), Gordon & Betty Moore Foundation (GBMF), International Centre for Mathematical Sciences (ICMS), National Science Foundation (NSF)

#### **PROFESSIONAL SOCIETIES**

AMS, Fellow

IEEE, Fellow

IMS, Fellow

SIAM, Fellow

#### **RESEARCH GRANTS**

Grantor: **Caltech**, S2I Early-Stage Research Projects

Project Title: “Scalable, lightweight kernel methods for distillation of streaming data”

Principal Investigator: Joel A. Tropp  
Dates: June 2024–December 2025

Grantor: **ONR/C4ISR**, BAA N00014-24-S-B0001  
Project Title: “Pushing the limits of large-scale kernel computations”  
Award Number: N00014-24-1-2223  
Principal Investigator: Joel A. Tropp  
Dates: January 2024–December 2027

Grantor: **Caltech**, Carver Mead New Adventures Fund  
Project Title: “Pushing the limits of large-scale kernel computations”  
Principal Investigator: Joel A. Tropp  
Dates: April 2023–March 2025

Grantor: **NSF/DMS**, Focused Research Group (FRG) program  
Project Title: “Randomized algorithms for solving linear systems”  
Award Number: 1952777  
Principal Investigators: Per-Gunnar Martinsson (UT-Austin), Vladimir Rokhlin (Yale), Joel A. Tropp, Rachel Ward (UT-Austin)  
Dates: August 2020–July 2024

Grantor: **ONR/C4ISR**, BAA N00014-17-S-BA13, ONR Basic Research Challenge on “Randomized numerical linear algebra for large-scale, efficient matrix computations”  
Project Title: “Toward scalable universal solvers for linear systems”  
Award Number: N00014-18-1-2363  
Principal Investigators: Joel A. Tropp, Houman Owhadi, and Peter Schröder  
Dates: July 2018–November 2023

Grantor: **ONR/C4ISR**, BAA N00014-16-R-BA01, “Long-range BAA”  
Project Title: “Efficient algorithms for low-rank matrix optimization with applications to matrix factorization”  
Award Number: N00014-17-1-214  
Principal Investigator: Joel A. Tropp  
Dates: Jan. 2017–Dec. 2019

Grantor: **AFOSR**, BRI Program “Foundations of energy transfer in multi-physics flow phenomena”  
Project Title: “Wall turbulence with designer properties”  
Award Number: FA9550-12-1-0469  
Principal Investigators: Beverley McKeon and Joel A. Tropp, David Goldstein, Mark Sheplak  
Dates: Sep. 2012–Nov. 2015

Grantor: **ONR/C4ISR**, 2008 PECASE Award  
Project Title: “Linear inverse problems with matrix data”  
Award Number: N00014-11-1-0025  
Principal Investigator: J. A. Tropp  
Dates: Nov. 2010–Sep. 2015

Grantor: **Alfred P. Sloan Foundation**  
Dates: Sep. 2010–Sep. 2012

Grantor: **AFOSR**, MURI Topic 2009-17, “Information dynamics in networks”  
Project Title: “Information dynamics as a foundation for network management”  
Award Number: FA9550-09-1-0643  
Subcontracted by Princeton Univ., Principal Investigator: R. A. Calderbank  
Subcontract Principal Investigator: J. A. Tropp  
Dates: June 2009– May 2014

Grantor: **ONR/C4ISR**, 2008 Young Investigator Program (YIP)  
Project Title: “Compressive Signal Processing: Theory and Applications”  
Award Number: N00014-08-1-0883  
Principal Investigator: J. A. Tropp  
Dates: June 2008–May 2011

Grantor: **DARPA/MTO**, BAA 08-03, “Analog-to-Information Receiver Development Program”  
Project Title: “Information-scalable analog-to-information receivers”  
Award Number: N66001-08-1-2065  
Subcontracted by Rice Univ., Principal Investigator: R. G. Baraniuk  
Subcontract Principal Investigator: J. A. Tropp  
Dates: June 2008–May 2011

Grantor: **DARPA/MTO**, BAA 05-35, “Analog-to-Information Receiver Development Program”  
Project Title: “Theory and practice of analog-to-information conversion”  
Award Number: N66001-06-1-2011  
Subcontracted by Rice Univ., Principal Investigator: R. G. Baraniuk  
Subcontract Principal Investigators: A. C. Gilbert, M. J. Strauss, and J. A. Tropp  
Dates: Jan.–Dec. 2006

## **PATENTS**

“Ptychography imaging systems and methods with convex relaxation.” Inventors: R. Horstmeyer, R. Y. Chen, J. A. Tropp, and C. Yang. US Patent 20,150,331,228. Granted 2015.

“Method and apparatus for on-line compressed sensing.” Inventors: R. G. Baraniuk, D. Baron, M. A. Davenport, M. F. Duarte, M. Elnozahi, S. Kirolos, J. N. Laska, Y. Massoud, T. Ragheb, J. A. Tropp, and M. B. Wakin. US Patent 8,687,689. Granted 2014.

## **CONSULTING**

Employer: **United Technologies Research Center**  
Project: “Randomized and Distributed Matrix Factorization for Missing Data Inference” (for ONR Computational Methods for Decision Making program)  
Dates: Apr. 2017–Aug. 2018

Employer: **United Technologies Research Center**  
Project: “Quantifying Dynamic Complexity” (for DARPA META-II program)  
Dates: June 2011–Sep. 2011

Employer: **SA Photonics**  
Project: “Analog-to-Information Sensing for Software-Defined Receivers” (for Navy SBIR topic N92-106)  
Dates: Sep. 2009–Mar. 2010

## **PERSONAL INFORMATION**

Date of Birth: 18 July 1977  
Citizenship: USA  
Languages: Can read French and Spanish