

CNRS & D.I., UMR 8548,  
École Normale Supérieure.

Born June 20, 1974 in Brussels, Belgium.  
<http://www.di.ens.fr/~aspremon/>

APPOINTMENTS

**CNRS – École Normale Supérieure**  
Département d'Informatique, UMR 8548,  
Professeur attaché,  
DR2, then DR1 CNRS.

2015 – Present  
2013 – Present

**CNRS – École Polytechnique**  
Centre de Mathématiques Appliquées, UMR 7641.  
CDD CNRS, funded by ERC Starting Grant SIPA.

2011 – 2013

**Princeton University**  
ORFE Dept. & Bendheim Center for Finance.  
*Associate Professor (with tenure),*  
*Assistant Professor.*

2010 – 2011  
2004 – 2010

**University of California at Berkeley**  
*Postdoctoral Fellow*, EECS Department.

2003 – 2004

EDUCATION

H.D.R. – **E.N.S. Cachan**

2012

Ph.D. – **Stanford University**  
Management Science & Engineering department.

1999 – 2004

M.S. – **Stanford University**  
E.E.S. & O.R. department.

1999 – 2001

Thèse de doctorat – **École Polytechnique**  
Applied Mathematics department.

1998 – 2003

D.E.A. – **Université de Paris VI, Pierre et Marie Curie**  
Applied Mathematics department.

1997 – 1998

Ingénieur diplômé – **École Polytechnique**  
Majors in Applied Mathematics & Economics.

1994 – 1997

WORKING PAPERS

- “Fast Gradient Methods for Symmetric Nonnegative Matrix Factorization.” with T. Radu-Alexandru Dragomir, Jérôme Bolte. Preprint on ArXiv: 1901.10791.
- “Restarting Frank-Wolfe.” with T. Kerdreux, S. Pokutta. Preprint on ArXiv: 1810.02429. *AISTATS 2019*
- “Overcomplete Independent Component Analysis via SDP.” with A. Podosinnikova, A. Perry, A. Wein, F. Bach, D. Sontag. Preprint on ArXiv: 1901.08334. *AISTATS 2019*
- “M\*-Regularized Dictionary Learning.” with M. Barré. Preprint on ArXiv: 1810.02748.
- “Nonlinear Acceleration of Momentum and Primal-Dual Algorithms.” with Raghu Bollapragada, D. Scieur. Preprint on ArXiv: 1810.04539. *AISTATS 2019*
- “Reconstructing Latent Orderings by Spectral Clustering” with A. Recanatì and T. Kerdreux. Preprint on ArXiv: 1807.07122.
- “Robust Seriation and Applications to Cancer Genomics.” with A. Recanatì, N. Servant, J.P. Vert. Preprint on ArXiv: 1806.00664.
- “Nonlinear Acceleration of Deep Neural Networks.” with D. Scieur, E. Oyallon and F. Bach Preprint on ArXiv: 1805.09639.
- “An Approximate Shapley-Folkman Theorem.” by A. d'Aspremont, I. Colin. Preprint on ArXiv: 1712.08559.

- “Learning with Clustering Structure.” by V. Roulet, F. Fogel, A. d’Aspremont, F. Bach, Preprint on ArXiv: 1506.04908.
- “Computational Complexity versus Statistical Performance on Sparse Recovery Problems.” by V. Roulet, N. Boumal, A. d’Aspremont, Preprint on ArXiv: 1506.03295. To appear in *Information and Inference*.
- “Regularized Nonlinear Acceleration.” by D. Scieur, A. d’Aspremont, F. Bach. ArXiv: 1606.04133, To appear in *Mathematical Programming Series A*.
- “An Optimal Affine Invariant Smooth Minimization Algorithm.”, by A. d’Aspremont, C. Guzmán, M. Jaggi, ArXiv: 1301.0465. *SIAM Journal on Optimization*, 28(3), pp. 2384-2405 (2018).
- “A Spectral Algorithm for Fast de Novo Layout of Uncorrected Long Nanopore Reads.” by A. Recanati, T. Brüls, A. d’Aspremont. ArXiv: 1609.07293. *Bioinformatics* 33(20), 3188-3194 (2017).
- “Serialrank: Spectral Ranking using Seriation.” by F. Fogel, A. d’Aspremont, M. Vojnovic, ArXiv: 1306.4805. *Journal of Machine Learning Research*, 17, pp. 1-45, February 2016.
- “Phase Retrieval for Imaging Problems.” by F. Fogel, I. Waldspurger, A. d’Aspremont. ArXiv: 1304.7735. *Mathematical Programming Computations*, 8(3), pp. 311-335, September 2016.
- “Coherent Diffractive Imaging Using Randomly Coded Masks.” by M. H. Seaberg, A. d’Aspremont, J. J. Turner. ArXiv: 1509.03229. *Applied Physics Letters*, 107(23), 231103, December 2015.
- “Convex Relaxations for Permutation Problems.” by F. Fogel, R. Jenatton, F. Bach, A. d’Aspremont. ArXiv: 1306.4805. *SIAM Journal on Matrix Analysis and Applications*, 36(4), pp. 1381-1589, 2015.
- “A Stochastic Smoothing Algorithm for Semidefinite Programming.” by A. d’Aspremont and N. El Karoui. ArXiv: 1204.0665. *SIAM Journal on Optimization*, 24(3), pp. 1138-1177, 2014.
- “Approximation Bounds for Sparse Principal Component Analysis.” by A. d’Aspremont, F. Bach and L. El Ghaoui. ArXiv: 1205.0121. *Mathematical Programming B*, 148 (12), pp. 89-110, December 2014.
- “Phase Recovery, MaxCut and Complex Semidefinite Programming.” by I. Waldspurger A. d’Aspremont and S. Mallat. ArXiv: 1206.0102. *Mathematical Programming*, 149 (1-2), pp. 47-81, February 2015.
- “Weak Recovery Conditions from Graph Partitioning Bounds and Order Statistics.” by A. d’Aspremont and N. El Karoui. ArXiv:1004.5151. *Mathematics of Operations Research*, 38(2), pp. 228-247, 2013.
- “Subsampling Algorithms for Semidefinite Programming” by A. d’Aspremont, ArXiv:0803.1990. *Stochastic Systems*, 2(1), pp. 274-305, 2011.
- “Sparse PCA: Convex Relaxations, Algorithms and Applications.” with Youwei Zhang and Laurent El Ghaoui. ArXiv:1011.3781. *Handbook on Semidefinite, Cone and Polynomial Optimization*, M. Anjos and J.B. Lasserre editors, Springer 2011.
- “Predicting Abnormal Returns From News Using Text Classification” by R. Luss and A. d’Aspremont. ArXiv:0809.2792. *Quantitative Finance*, iFirst, pp. 1-12, 2012.
- “Second Order Accurate Distributed Eigenvector Computation for Extremely Large Matrices.” by A. d’Aspremont and N. El Karoui. ArXiv:0908.0137. *Electronic Journal of Statistics*, 4, pp. 1345-1385, 2010.
- “Identifying Small Mean Reverting Portfolios” by A. d’Aspremont. ArXiv: 0708.3048. *Quantitative Finance*, 11(3), pp. 351-364, March 2011.

- “Testing the Nullspace Property using Semidefinite Programming” by A. d’Aspremont and L. El Ghaoui. ArXiv:0807.3520.  
*Mathematical Programming*, Series B, 127(1), pp. 123-144, 2011.
  - “Support Vector Machine Classification with Indefinite Kernels” by R. Luss and A. d’Aspremont. ArXiv:0804.0188.  
*Mathematical Programming Computations*, 1(2), pp. 97-118, October 2009.
  - “Smooth Optimization with Approximate Gradient” by A. d’Aspremont.  
ArXiv:math.OC/0512344. *SIAM Journal on Optimization*, 19(3), pp. 1171-1183, 2008.
  - “Optimal Solutions for Sparse Principal Component Analysis” by A. d’Aspremont, F. Bach and L. El Ghaoui. ArXiv:0707.0705.  
*Journal of Machine Learning Research*, 9, pp. 1269-1294, 2008.
  - “Model Selection Through Sparse Maximum Likelihood Estimation” by O. Banerjee, L. El Ghaoui and A. d’Aspremont. ArXiv:0707.0704.  
*Journal of Machine Learning Research*, 9, pp. 485-516, 2008.
  - “Clustering and Feature Selection using Sparse Principal Component Analysis” by R. Luss and A. d’Aspremont. ArXiv:0707.0701.  
*Optimization & Engineering*, 11(1), pp. 145-157, February 2010.
  - “First-Order Methods for Sparse Covariance Selection” by A. d’Aspremont, O. Banerjee and L. El Ghaoui. ArXiv:math.OC/0609812.  
*SIAM Journal on Matrix Analysis and its Applications*, 30(1), pp. 56-66, 2008.
  - “A Market Test for the Positivity of Arrow-Debreu Prices” by A. d’Aspremont.  
ArXiv:cs.CE/0510027.  
*Frontiers in Quantitative Finance: Credit Risk & Volatility Modeling*, November 2008.
  - “A Direct Formulation for Sparse PCA Using Semidefinite Programming” by A. d’Aspremont, L. El Ghaoui, M. Jordan and G. Lanckriet. ArXiv:cs.CE/0406021.  
*SIAM Review*, 49(3), pp. 434-448, 2007. SIAM optimization prize 2004-2007.
  - “Static Arbitrage Bounds on Basket Option Prices” by A. d’Aspremont and L. El Ghaoui.  
ArXiv:math.OC/0302243.  
*Mathematical Programming, Series A*, 106(3), pp. 467-489, July 2006.
  - “Risk-Management Methods for the Libor Market Model Using Semidefinite Programming” by A. d’Aspremont. ArXiv:cs.CE/0302035.  
*Journal of Computational Finance* 8(4), pp. 77-99, Summer 2005.
  - “Interest Rate Model Calibration Using Semidefinite Programming” by A. d’Aspremont.  
ArXiv:cs.CE/0302034.  
*Applied Mathematical Finance* 10(3), pp. 183-213, September 2003.
- PEER REVIEWED CONFERENCE PUBLICATIONS
- “Nonlinear Acceleration of CNNs.” with D. Scieur, E. Oyallon and F. Bach. ArXiv: 1806.00370. ICLR 2018.
  - “Frank-Wolfe with Subsampling Oracle.” with T. Kerdreux, F. Pedregosa. ArXiv: 1803.07348. ICML 2018.
  - “Nonlinear Acceleration of Stochastic Algorithms.” by D. Scieur, A. d’Aspremont, F. Bach. Preprint on ArXiv: 1706.07270. NIPS 2017.
  - “Integration Methods and Accelerated Optimization Algorithms.” by D. Scieur, V. Roulet, F. Bach, A. d’Aspremont. Preprint on ArXiv: 1702.06751. NIPS 2017.
  - “Sharpness, Restart and Acceleration.” by V. Roulet, A. d’Aspremont. Preprint on ArXiv: 1702.03828. NIPS 2017.
  - “Regularized Nonlinear Acceleration.” by D. Scieur, A. d’Aspremont, F. Bach. ArXiv: 1606.04133, *Neural Information Processing Systems* (NIPS) 2016.
  - “Serialrank: Spectral Ranking using Seriation” by F. Fogel, A. d’Aspremont, M. Vojnovic, ArXiv: 1306.4805. *Neural Information Processing Systems* (NIPS) 2014.
  - “Convex Relaxations for Permutation Problems.” with F. Fogel, R. Jenatton, F. Bach. *Neural Information Processing Systems* (NIPS) 2013.
  - “Mean Reversion with a Variance Threshold” with M. Cuturi, *International Conference on Machine Learning* (ICML) 2013.

- “A Pathwise Algorithm for Covariance Selection.” with V. Krishnamurthy, ArXiv:0908.0143. Workshop on Optimization for Machine Learning, NIPS 2009.
- “White Functionals for Anomaly Detection in Dynamical Systems.”, with M. Cuturi, J-P. Vert. ArXiv:0908.0143, *Neural Information Processing Systems* (NIPS) 2009.
- “Sparse Network Analysis of Senate Voting” by J.-K. Park, L. El Ghaoui and A. d’Aspremont. *Harvard Political Networks Conference* 2009.
- “Support Vector Machine Classification with Indefinite Kernels” by R. Luss and A. d’Aspremont. *Neural Information Processing Systems* (NIPS) 2008.
- “Full Regularization Path for Sparse Principal Component Analysis” by A. d’Aspremont, F. Bach and L. El Ghaoui. *International Conference on Machine Learning* (ICML) 2007.
- “Convex Optimization Techniques for Fitting Sparse Gaussian Graphical Models” by O. Banerjee, L. El Ghaoui, A. d’Aspremont, G. Natsoulis. *International Conference on Machine Learning* (ICML), 2006.
- “A Direct Formulation for Sparse PCA Using Semidefinite Programming” by A. d’Aspremont, L. El Ghaoui, M. Jordan and G. Lanckriet. *Neural Information Processing Systems* (NIPS) 2004.
- “A Semidefinite Representation for some Minimum Cardinality Problems” by A. d’Aspremont. *IEEE Conf. on Decision and Control*, Vol. 5, pp. 4985-4990, 2003.

AWARDS, GIFTS  
AND FELLOWSHIPS

- Google focused award, 2018.
- IBM faculty award, 2014.
- NSF CAREER award 2008 (from the NSF description: “*The Faculty Early Career Development Program, CAREER, is a foundation-wide activity that offers the National Science Foundation’s most prestigious awards in support of junior faculty.*”).
- SIAM optimization prize (awarded to “*the most outstanding paper in optimization published between 2004 and 2007*”).
- Howard B. Wentz junior faculty award (Princeton SEAS).
- Peek junior faculty fellowship (Bendheim Center for Finance).
- Princeton Engineering Commendation List for Outstanding Teaching.
- Google research award.
- School of Engineering fellowship, Stanford University.
- AMX fellowship, École Polytechnique.
- Prix de stage, Fondation de l’X.

SELECTED INVITED  
PRESENTATIONS

- “Sharpness, Restart and Compressed Sensing Performance”  
Isaac Newton Institute, Cambridge, January 2018.
- “Sharpness, Restart and Acceleration.”  
Foundations of Computational Mathematics (FOCM), Barcelona, July 2017.
- “Regularized Nonlinear Acceleration”  
Simons Institute, Berkeley, December 2017.  
Alan Turing Institute, London, May 2017.  
BIRS workshop, Oaxaca, October 2016.
- “Optimal Affine Invariant Smooth Minimization Algorithms”  
Institut des hautes études scientifiques, June 2016.  
Nexus of Information and Computation Theories, Institut Henri Poincaré, March 2016.  
Algorithms and Dynamics for Games and Optimization, Santiago, January 2016.
- “Spectral Ranking using Seriation.”  
International Symposium on Mathematical Programming, Pittsburgh, July 2015.  
SDP, Approximation and Applications, Simons Institute, Berkeley, Sept. 2014.
- “Convex Relaxations for Permutation Problems.”  
Lunteren Conference on the Mathematics of Operations Research, January 2014.  
Succinct Data Representations and Applications, Simons Institute, Berkeley, Sept. 2013.
- “Phase Recovery, MaxCut and Complex Semidefinite Programming.”

- SLAC Photon Science Seminar, Stanford, March 2014.
- “An Optimal Affine Invariant Smooth Minimization Algorithm.”  
International Workshop on Statistical Learning, Moscow, June 2013.
  - “Optimisation et Apprentissage.”  
Colloquium Jacques Morgenstern, INRIA Sophia-Antipolis, Avril 2014.  
Collège de France, November 2012.
  - “Approximation Bounds for Sparse Principal Component Analysis.”  
Workshop on Big data: theoretical and practical challenges, IHP, Paris, May 2013.  
Oberwolfach, February 2013.  
International Symposium on Mathematical Programming, Berlin, August 2012.
  - Tutorial: ”Algorithms for Large-Scale Semidefinite Programming.”  
International Workshop on High Performance Optimization, TU Delft, June 2012.
  - “Semidefinite Programming on a Shoestring”  
Journées MODE, Dijon, March 2012.  
Francqui chair workshop, Liège, February 2012
  - “SDP, GFA, ETC.”  
JFFoS, Nice, January 2012.  
New Trends in Mathematical Statistics, Luminy, December 2011.  
IMA workshop on High Dimensional Phenomena, September 2011.
  - “Weak Recovery Conditions from Graph Partitioning Bounds and Order Statistics.”  
SIAM Optimization conference, Darmstadt, May 2011.  
IPAM workshop on Numerical Methods for Continuous Optimization, October 2010.  
The Learning Workshop, Snowbird, April 2010.
  - “Subsampling, Spectral Methods and Semidefinite Programming.”  
MMDS 2010, Stanford, June 2010.  
MIT Operations Research seminar, February 2010.  
CAOA, Les Houches, January 2010.  
ORIE colloquium, Cornell University, October 2009.
  - “Testing the Nullspace Property using Semidefinite Programming.”  
Neyman Seminar, U.C. Berkeley, November 2009.  
Courant Institute, New York, November 2009.  
ISMP, Chicago, August 2009.  
Fields Institute Workshop on Complexity of Numerical Computation, October 2009.  
INFORMS annual meeting, San Diego, October 2009.  
ISMP, Chicago, August 2009.
  - “Tractable Upper Bounds on the Restricted Isometry Constant.”  
INFORMS annual meeting, Washington D.C., October 2008.  
SIAM annual meeting, San Diego, July 2008.  
Foundations of Computational Mathematics, Hong Kong, June 2008.
  - “A Direct Formulation for Sparse PCA Using Semidefinite Programming.”  
SIAM Optimization conference, Boston, May 2008.  
CORE seminar, U.C.L., Louvain-la-Neuve, December 2004.  
INFORMS annual meeting, Denver, October 2004.
  - “Subsampling Algorithms for Semidefinite Programming.”  
INFORMS annual meeting, Washington D.C., October 2008.  
SIAM Optimization conference, Boston, May 2008.
  - “Identifying Small Mean Reverting Portfolios.”  
INFORMS annual meeting, Seattle, November 2007.
  - “Full Regularization Path for Sparse Principal Component Analysis.”  
INFORMS annual meeting, Seattle, November 2007.  
MPS International Conference on Continuous Optimization, Hamilton, August 2007.  
International Congress on Industrial and Applied Mathematics, Zurich, July 2007.  
International Conference on Machine Learning, Corvallis, June 2007.
  - “Semidefinite Optimization with Applications in Sparse Multivariate Statistics.”

BIRS Workshop on Mathematical Programming in Data Mining and Machine Learning, Banff, January 2007.

- “Smooth Optimization for Sparse Semidefinite Programs.”  
SIAM annual meeting, Boston, July 2006.  
BIRS Workshop on Optimization and Engineering Applications, Banff, November 2006.
- “Sparse Covariance Selection via Robust Maximum Likelihood Estimation.”  
SIAM annual meeting, Boston, July 2006.  
Workshop on Machine Learning and Optimization, I.S.M., Tokyo, August 2006.  
International Conference on Machine Learning, Pittsburgh, June 2006.  
Workshop on Large-Scale Robust Optimization, Sandia Labs, Santa Fe, September 2005.
- “Maximum Margin Matrix Factorization using Smooth Semidefinite Optimization.”  
INFORMS 2005 annual meeting, San Francisco, November 2005.
- “A Direct Test for the Positivity of Arrow-Debreu Prices.”  
INFORMS 2005 annual meeting, San Francisco, November 2005.  
ORFE Stochastic Analysis Seminar, Princeton University, September 2005.  
INFORMS Applied Probability Conference, Ottawa, July 2005.
- “Sparse PCA with Applications in Finance.”  
INFORMS 2005 annual meeting, San Francisco, November 2005.  
SIAM 2005 annual meeting, New Orleans, July 2005.
- “Pricing Basket Options with an Eye on Swaptions.”  
ORFE Stochastic Analysis Seminar, September 2004.
- “Libor Market Model Calibration & Risk-Management.”  
Petit déjeuner de la finance, Paris, January 2004.
- “Static Arbitrage Bounds on Basket Option Prices.”  
INFORMS 2003, Atlanta, October 2003.

COURSES &  
TEACHING  
ACTIVITIES

CURRENT COURSES.

- **ENS Ulm.** *Master M1*, cours magistraux 30h.  
Optimisation Combinatoire et Convexe, avec Zhentao Li.
- **ENS Cachan.** *Master M2 MVA, vision et apprentissage*, cours magistraux 21h.  
Optimisation convexe: modélisation, algorithmes et applications.

OLDER COURSES.

- **ENSAE.** *Optimisation*  
Tronc commun, première année. 2013-2014.
- **Université de Paris Sud, Orsay.** *Master M2 MathSV, Mathématiques pour les sciences du vivant.* Optimisation et simulation numérique (with S. Allasonnière, S. Faure).
- **Princeton University.**  
ORFE 311, Optimization under Uncertainty. (Fall 2004).  
ORFE 515, Stochastic Calculus and Advanced Derivatives. (Spring 2005).  
ORFE 307, Optimization. (Spring 2006, 2007, 2008, 2010).  
ORFE 523, Nonlinear Optimization. (Spring 2006, 2007, 2010).  
ORFE 569, Optimization Seminar. (Fall 2007, Spring 2009).  
ORFE 522, Linear Optimization. (Fall 2008).

Course ratings (at Princeton).

Acad. Year	Course	Enrollment	Student Rating*
09-10	ORF 523	11	4.2
	ORF 307	73	2.8 <sup>†</sup>
08-09	ORF 569	3	4.3
	ORF 522	31	4.0
07-08	ORF 307	86	4.8
	ORF 569	4	4.8
06-07	ORF 523	15	4.6
	ORF 307	75	4.0
05-06	ORF 307	68	3.3
	ORF 523	14	4.0
04-05	ORF 515	12	4.5
	ORF 311	62	3.9

\*Out of 5. General course rating (question 31), average score.

<sup>†</sup>Missed several weeks because of the Eyjafjallajökull eruption...

GRADUATE &  
POSTDOCTORAL  
STUDENTS

- Grégoire Mialon, Ph.D., 2018 - présent (Jointly supervised with Julien Mairal).
- Radu-Alexandru Dragomir, Ph.D., 2018 - présent (Jointly supervised with Jérôme Bolte).
- Mathieu Barré, Ph.D., 2018 - présent (100% support).
- Thomas Kerdreux, Ph.D., 2017 - present (100% support).
- Igor Colin, Postdoc, 2017 (100% support).
- Antoine Recanati, Ph.D., 2015 - present (100% support).
- Damien Scieur, Ph.D., 2015 - present (Jointly supervised with Francis Bach).
- Vincent Roulet, Ph.D., 2014 - 2017 (100% support). Now at University of Washington.
- Fabian Pedregosa, Postdoc, 2015 - 2017. (100% support) Now at UC-Berkeley on a Marie Curie fellowship.
- Federico Vaggi, Postdoc, 2016 - 2017. (100% support) Now at Amazon.
- Amit Bermanis, Postdoc, 2014 (50% support). Now at University of Toronto.
- Matthew Seaberg, Postdoc, 2015 - 2016 (100% support). Now at Stanford SLAC.
- Nicolas Boumal, Postdoc, 2014 - 2015 (100% support). Now at Princeton University.
- Nicolas Flammarion, Ph.D., 2014 - present (Jointly supervised with Francis Bach).
- Fajwel Fogel, Ph.D., 2012 - 2015 (Jointly supervised with Francis Bach).
- Rodolphe Jenatton, Postdoc, 2012 - 2014, (100% support) now at Amazon labs.

- Martin Jaggi, Postdoc, 2012 - 2014, (100% support) now at EPFL.
- Ronny Luss, Ph.D., 2006 - 2009 (100% support). Now at IBM Thomas J. Watson Research Center.
- Vijay Krishnamurthy, Ph.D., 2008 - 2011 (100% support). Now at LL Funds.
- Quentin Berthet, Ph.D. (Jointly supervised with Philippe Rigollet). Now at Cambridge University.
- Marco Cuturi, Postdoc, 2009 - 2010 (100% support). Now at ENSAE.
- Selin Damla Ahipasaoglu, Postdoc, 2009 - 2010 (100% support). Now at Singapore University of Technology and Design.

## GRANTS

- Google focused award, discretionary, €135,000 (with Francis Bach (INRIA-ENS) and Martin Jaggi (EPFL), total award €400,000).
- IdR AXA, Kamet - Fondation du Risque - Fondation de l'ENS "Optimization & data science", 2018-2019, €210,000.
- IRIS PSL "Science des données, données de la science", 2016-2018, €400,000/year.
- Chaire Havas-Dauphine, IdR AXA - Fondation du Risque - Fondation de l'ENS "data science", 2015-2017, €350,000.
- ERC Starting Grant "SIPA: Semidefinite Programming with Applications in Statistical Learning", 2011-2016, €1,148,460.
- NSF, CMMI, "Collaborative Research: Mathematical Programming for Streaming Data" 2010-2013 (180-6067), \$169,851 (Total budget: \$419,851).
- NSF, CAREER: "Semidefinite Programming with Applications in Statistical Learning". 2009-2013 (180-6060) \$401,100. (3 out of 22 CAREER proposals funded in OR program in 2008, overall 2008 NSF CAREER funding rate: 16%.)
- NSF, CDI-Type II, Collaborative Research: "Sparse Inference: New Tools for Structural Knowledge Discovery". 2008-2013 (180-6058), \$417,179. (Total budget: \$1,341,676. 36 out of 743 CDI Type II proposals funded in 2008, funding rate: 3%.)
- NSF, MSPA-MCS, Collaborative Research: "Sparse Multivariate Data Analysis". 2006-2009 (180-6036), \$150,000.
- Eurocontrol, "Large Scale Robust Planning for Highly Time & Cost Efficient Air Transport Systems". 2005-2006 (180-4183), \$57,280.
- Google, discretionary, (180-2025), \$25,000.

## PROFESSIONAL SERVICE

### ADMINISTRATIVE RESPONSIBILITIES.

- **Paris Sciences & Lettres.** *Initiatives de Recherches Interdisciplinaires et Stratégiques (IRIS)*, "Science des données, données de la science". Project leader.  
This is very similar to a GdR but at the PSL scale. The project intends to foster collaborations between PSL teams around machine learning and its applications. The project spans 2016-2018 and has a budget of €400,000/year.
- **Chaire "Économie des nouvelles données"**. *Initiatives de recherche AXA "machine learning"*. Project leader.  
Develop algorithms for online structured prediction, regularized logistic regression. The project spans 2015-2017 and has a budget of €350,000.
- **Paris Sciences & Lettres.** *Master M2 MASH: Mathématiques, Apprentissage et Sciences Humaines*. Co-scientific director.  
Master program created in 2014, hosted by Paris-Dauphine and funded by PSL. The master is focused on machine learning and applications in the humanities (journalism, marketing, public policy, etc.).

### EDITORIAL WORK, CONFERENCES, COMMITTEES ETC.

- Associate Editor, *Mathematics of Operations Research* (2019-...).
- Associate Editor, *SIAM Journal on Mathematics of Data Science* (2018-...).
- Associate Editor, *Mathematical Programming Series B* (2018-...).



Associate Editor, *SIAM Journal on Optimization* (2013-...).

Associate Editor, *Optimization Methods & Software* (2010-2014).

Editor, issue of *Mathematical Programming B* on Optimization and Machine Learning.

Guest associate editor for the *SIAM Journal on Financial Mathematics*.

Organizer, NIPS 2005 workshop on the accuracy-regularization frontier.

Organizer, BIRS five day workshop on “Sparse Statistics, Optimization and Machine Learning”, Banff, January 2011.

Organizer, workshop, “Optimisation pour l’apprentissage statistique”, École de Physique des Houches, (2013, 2015, 2017).

Organizer, “Optimisation without borders”, École de Physique des Houches, 2016.

Conseil scientifique, Programme Gaspard Monge pour l’Optimisation, Fondation mathématique Jacques Hadamard. (2011-2016)

Comité de pilotage, chaire Havas - Dauphine “Economie des nouvelles données”.

Program committee, SIAM Optimization Conference, May 2017.

#### REFEREEING

NSF panelist, Mathematical Programming, Operations Research, SIAM Review, Proceedings of the National Academy of Sciences, Journal of Machine Learning Research, SIAM Journal on Optimization, SIAM Journal on Control and Optimization, SIAM Journal on Matrix Analysis and Applications, Optimization Methods and Software, IEEE Transactions on Signal Processing, Mathematical Finance, International Journal of Theoretical and Applied Finance, Applied Mathematical Finance, Journal of Risk, Biostatistics, Electronic Journal of Statistics, Annals of Statistics, NIPS, ICML, AISTATS, etc.

#### OTHER ACTIVITIES INDUSTRY COLLABORATIONS

Darrell Duffie Consulting, consultant (2000).

Paribas Capital Markets, U.K. (1998-1999). Quantitative research on fixed income markets.

Vivienne Investissement, scientific consulting, (2014 - present).

Co-founder, Kayrros SAS (now ~30 employees), scientific consulting, (2016 - present).

#### SOFTWARE & RESEARCH CODES

- An implementation of the LMM calibration algorithm is available from RaisePartner.
- *DSPCA*: Sparse PCA using semidefinite programming.
- *COVSEL*: First order algorithm for sparse covariance selection.
- *PathSPCA*: A fast greedy algorithm for Sparse PCA.
- *IndefiniteSVM*: Support vector machine classification using indefinite kernels.
- *PhaseCut*: Phase Retrieval using Semidefinite Programming.