

Curriculum Vitae

Adrian Lewis

July 29, 2019

1 Personal Data

Name: Adrian Stephen Lewis

Citizenship: British and Canadian, U.S. Permanent Resident

Employer: Cornell University, School of Operations Research and Information Engineering, Ithaca, NY 14853, USA.

Contact information:

607 255 9147 (office)

607 255 9129 (fax)

adrian.lewis@cornell.edu, people.orie.cornell.edu/~aslewis

scholar.google.com/citations?user=Wg1LA08AAAAJ&hl=en

Degrees

- B.A. (Mathematics), 1983, Cambridge University, U.K.
- M.A., 1987, Cambridge University, U.K.
- Ph.D. (Engineering), July 1987, Cambridge University, U.K.
(Dissertation: Extreme point methods for infinite linear programming.)

Permanent positions

1. Nov. 2018 onwards: **Samuel B. Eckert Professor of Engineering**, Cornell University.
2. July 2004 onwards: Full Professor (with tenure), School of Operations Research and Information Engineering, Cornell University.
3. July 2010 – June 2013: Director, School of Operations Research and Information Engineering.
4. Apr. 2001 – Apr. 2006: Full Professor (with tenure), Department of Mathematics, Simon Fraser University.
5. July 1997 – Apr. 2003: Full Professor (with tenure), Combinatorics and Optimization Dept., University of Waterloo.
6. July 1993 – July 1997: Associate Professor (with tenure), Combinatorics and Optimization Dept., University of Waterloo.
7. Aug. 1988 – June 1993: Assistant Professor (Tenure-track), Combinatorics and Optimization Dept., University of Waterloo.

Visiting positions

1. Sep. 2016 – July 2017: Visiting Professor, Universidad de Sevilla, Spain.
2. July 1999 – Apr. 2000: Visiting Member, Courant Institute, N.Y.
3. June 1999, Professeur Invité, Université de Montpellier II, France.
4. Sep. 1998, Visiting Professor, M.S.R.I. Berkeley, U.S.A.
5. Feb. – Apr. 1998: Visiting Scientist, Cornell University.
6. Mar. 1996: Invited Professor, University of Milan, Italy.
7. June 1995, Jan. 1996, and Apr. 2003: Professeur Invité, Université Paul Sabatier, France.
8. Apr. 1993: Visiting Lecturer, Engineering Science Dept., University of Auckland, New Zealand.

9. Apr. 1991: Maître de Conférences, Université de Limoges, France.
10. June 1989: Maître de Conférences, Université de Pau, France.
11. Aug. 1988: Visiting Research Fellow, Centre for Mathematical Analysis, Australian National University.
12. Jan. 1987 – June 1989: Research Fellow, Dalhousie University.
13. Sep. 1986 – Aug. 1989: Research Fellow, Queens' College, Cambridge University, U.K.

2 Research and Scholarship

Prizes and other honors

- **INFORMS Computing Society Prize**, jointly with J.V. Burke, F.E. Curtis, and M.L. Overton. (Awarded annually for a group of related papers on the Operations Research/Computer Science interface.)
- **2018 Pinhas Naor Lecturer**. Operations Research Society of Israel, Beer Sheva, Israel.
- **Invited speaker: William Tutte's 100th Distinguished Lecture Series**. Department of Combinatorics and Optimization, University of Waterloo, August 2017.
- **Invited speaker: 2014 International Congress of Mathematicians**, (Control and Optimization Section), Seoul, Korea.
- **Fellow of the Society for Industrial and Applied Mathematics (2009)**.
- **2005 Outstanding Paper Prize**, from SIAM, for “Active sets, non-smoothness, and sensitivity”. (Awarded, for originality, to a paper published in a SIAM journal in the period 2001–4.)
- **2003 Lagrange Prize for Continuous Optimization**, from the Mathematical Programming Society and SIAM. (Awarded every three years for an outstanding work in continuous optimization. My paper “Nonsmooth analysis of eigenvalues” was the first winner.)

- **1995 Aisenstadt Prize** from Centre de Recherches Mathématiques, Montréal. (Awarded annually to a Canadian within 7 years of Ph.D.)

Additional major plenary presentations

- Matheon Colloquium, Berlin, Feb. 2008.
- Second Mathematical Programming Society International Conference on Continuous Optimization, Aug. 2007. (Opening Plenary Speaker. 400 participants.)
- Fiftieth Annual Meeting of the Australian Mathematical Society, Sydney, Sep. 2006. (Plenary speaker. 500 participants.)
- Fifth Conference on Foundations of Computational Mathematics, Santander, July 2005. (Plenary speaker. 500 participants.)
- Twelfth Conference of the International Linear Algebra Society, Regina, June 2005. (Plenary speaker. 200 participants.)
- Eighteenth International Symposium on Mathematical Programming, Copenhagen, Aug. 2003. (Semi-plenary speaker. 1,000 participants.)
- Fifth SIAM Conference on Optimization, Victoria, May 1996. (Plenary speaker. 400 participants.)

In my lists of publications I have indicated graduate students (at the time of the work) by *, and postdoctoral fellows by **.

Monograph

J.M. Borwein and A.S. Lewis, ‘Convex Analysis and Nonlinear Optimization’, 273 pages, Springer, New York (2000). Expanded Second Edition appeared in 2006.

Invited Article

A.S. Lewis, ‘Nonsmooth optimization: conditioning, convergence and semi-algebraic models’. In: *Proceedings of the International Congress of Mathematicians, Seoul* (2014), 871–895.

Articles submitted to refereed journals

1. D. Drusvyatskiy, A.D. Ioffe and A.S. Lewis, ‘Nonsmooth optimization using Taylor-like models: error bounds, convergence, and termination criteria’, 23 pages, [arXiv:1610.03446](#). In second revision for *Mathematical Programming*.
2. J. Guo* and A.S. Lewis, ‘Rescaling nonsmooth optimization using BFGS and Shor updates’, 26 pages, [arXiv:1802.06453](#). In first revision for *Computational Optimization and Applications*.
3. D. Drusvyatskiy and A.S. Lewis, Inexact alternating projections on nonconvex sets, 15 pages, [arXiv:1811.01298](#), to appear in *Vietnam Journal of Mathematics*.
4. A.S. Lewis and M.L. Overton, Partial smoothness of the numerical radius at matrices whose fields of values are disks, 36 pages, [arXiv:1901.00050](#). In first revision for *SIAM Journal on Matrix Analysis and Applications*.
5. A.S. Lewis and Jingwei Liang, Partial smoothness and constant rank, 17 pages, [arXiv:1807.03134](#). Submitted to *SIAM Journal on Optimization*.
6. A.S. Lewis and C. Wylie, Active-set Newton methods and partial smoothness, 21 pages, submitted to *Mathematics of Operations Research*.

Articles in refereed journals

1. D. Drusvyatskiy and A.S. Lewis, ‘Error bounds, quadratic growth, and linear convergence of proximal methods’, *Mathematics of Operations Research* 43 (2018), 919–948.
2. J. Guo* and A.S. Lewis, ‘Nonsmooth variants of Powell’s BFGS convergence theorem’, *SIAM Journal on Optimization* 28 (2018), 1301–1311.
3. A. Greenbaum, A.S. Lewis and M.L. Overton, ‘Variational analysis of the Crouzeix ratio’, *Mathematical Programming* 164 (2017), 229–243.
4. D. Drusvyatskiy*, A.D. Ioffe and A.S. Lewis, ‘Generic minimizing behavior in semi-algebraic optimization’, *SIAM Journal on Optimization* 26 (2016), 513–534.

5. A.S. Lewis and S.J. Wright, ‘A proximal method for composite minimization’, *Mathematical Programming* 158 (2016), 501–546.
6. D. Drusvyatskiy*, A.D. Ioffe and A.S. Lewis, ‘Transversality and alternating projections for nonconvex sets’, *Foundations of Computational Mathematics* 15 (2015), 1637–1651.
7. A.S. Lewis and S. Zhang*, ‘Nonsmoothness and a variable metric method’, *Journal of Optimization Theory and Applications* 165 (2015), 151–171.
8. D. Drusvyatskiy*, A.D. Ioffe and A.S. Lewis, ‘Clarke subgradients for directionally Lipschitzian stratifiable functions’, *Mathematics of Operations Research* 40 (2015), 328–349.
9. D. Drusvyatskiy*, A.D. Ioffe and A.S. Lewis, ‘Curves of descent’, *SIAM Journal on Control and Optimization* 53 (2015), 114–138.
10. A. Daniilidis, D. Drusvyatskiy and A.S. Lewis, ‘Orbits of geometric descent’, *Canadian Mathematical Bulletin* 58 (2015), 44–50.
11. D. Drusvyatskiy*, A. Daniilidis and A.S. Lewis, ‘Orthogonal invariance and identifiability’, *SIAM Journal on Matrix Analysis and Applications* 35 (2014), 580–598.
12. D. Drusvyatskiy* and A.S. Lewis, ‘Optimality, identifiability, and sensitivity’, *Mathematical Programming* 147 (2014), 467–498.
13. D. Drusvyatskiy* and A.S. Lewis, ‘Tilt stability, uniform quadratic growth, and strong metric regularity of the subdifferential’, *SIAM Journal on Optimization* 23 (2013), 256–267.
14. A.S. Lewis and S. Zhang*, ‘Partial smoothness, tilt stability, and generalized Hessians’, *SIAM Journal on Optimization* 23 (2013), 74–94.
15. D. Drusvyatskiy* and A.S. Lewis, ‘Semi-algebraic functions have small subdifferentials’, *Mathematical Programming B* 140 (2013), 5–29.
16. A.S. Lewis and M.L. Overton, ‘Nonsmooth optimization via quasi-Newton methods’, *Mathematical Programming* 141 (2013), 135–163

17. D. Drusvyatskiy*, A.D. Ioffe and A.S. Lewis, ‘The dimension of semi-algebraic subdifferential graphs’, *Nonlinear Analysis* 75 (2012), 1231–1245.
18. A.S. Lewis and C.H.J. Pang*, ‘Level set methods for finding critical points of mountain pass type’, *Nonlinear Analysis* 74 (2011), 4058–4082.
19. A.S. Lewis and S.J. Wright, ‘Identifying activity’, *SIAM Journal on Optimization* 21 (2011), 597–614.
20. J. Bolte, A. Daniilidis and A.S. Lewis, ‘Generic optimality conditions for semi-algebraic convex programs’, *Mathematics of Operations Research* 36 (2011), 55–70.
21. D. Leventhal* and A.S. Lewis, ‘Randomized Hessian estimation and directional search’, *Optimization* 60 (2011), 329–345.
22. D. Drusvyatskiy* and A.S. Lewis, ‘Generic nondegeneracy in convex optimization’, *Proceedings of the American Mathematical Society* 139 (2010), 2519–2527.
23. D. Leventhal* and A.S. Lewis, ‘Randomized methods for linear constraints: convergence rates and conditioning’, *Mathematics of Operations Research* 35 (2010), 641–654.
24. A.S. Lewis and C.H.J. Pang*, ‘Lipschitz behavior of the robust regularization’, *SIAM Journal on Control and Optimization* 48 (2009), 3080–3104.
25. A.S. Lewis, D.R. Luke and J. Malick, ‘Local linear convergence for alternating and averaged nonconvex projections’, 32 pages, *Foundations of Computational Mathematics* 9 (2009), 485–513.
26. J. Bolte, A. Daniilidis and A.S. Lewis, ‘Tame mappings are semismooth’, *Mathematical Programming B* 117 (2009), 5–19.
27. A. Daniilidis, A.S. Lewis, J. Malick and H. Sendov, ‘Prox-regularity of spectral functions and spectral sets’, *Journal of Convex Analysis* 15 (2008), 547–560.

28. J.V. Burke, A.S. Lewis and M.L. Overton, ‘The speed of Shor’s R-algorithm’, *IMA Journal on Numerical Analysis* 28 (2008), 711–720.
29. A.S. Lewis and C.H.J. Pang*, ‘Variational analysis of pseudospectra’, *SIAM Journal on Optimization* 19 (2008), 1048–1072.
30. A.S. Lewis and J. Malick**, ‘Alternating projections on manifolds’, *Mathematics of Operations Research* 33 (2008), 216–234.
31. A.D. Ioffe and A.S. Lewis, ‘Critical points of simple functions’, *Optimization* 57 (2008), 3–16.
32. A.S. Lewis, ‘Nonsmooth optimization and robust control’, *Annual Reviews in Control* 31 (2007), 167–177.
33. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Spectral conditioning and pseudospectral growth’, *Numerische Mathematik* 107 (2007), 27–37.
34. W.L. Hare* and A.S. Lewis, ‘Identifying active manifolds’, *Algorithmic Operations Research* 2 (2007), 75–82.
35. J. Bolte, A. Daniilidis, A.S. Lewis and M. Shiota, ‘Clarke subgradients of stratifiable functions’, *SIAM Journal on Optimization* 18 (2007) 556–572.
36. J. Bolte**, A. Daniilidis** and A.S. Lewis, ‘The Lojasiewicz inequality for nonsmooth subanalytic functions with applications to subgradient dynamical systems’, *SIAM Journal on Optimization* 17 (2007), 1205–1223.
37. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Convexity and Lipschitz behavior of small pseudospectra’, *SIAM Journal on Matrix Analysis and Applications* 29 (2007) 586–595.
38. J.V. Burke, D. Henrion, A.S. Lewis and M.L. Overton, ‘Stabilization via nonsmooth, nonconvex optimization’, *IEEE Transactions on Automatic Control* 51 (2006), 1760–1769.
39. S. Fitzpatrick and A.S. Lewis, ‘Weak-star convergence of convex sets’, *Journal of Convex Analysis* 13 (2006), 711–719.

40. J. Bolte, A. Daniilidis and A.S. Lewis, ‘A nonsmooth Morse-Sard theorem for subanalytic functions’, *Journal of Mathematical Analysis and Applications* 321 (2006), 729–740.
41. R. Henrion, A.S. Lewis and A. Seeger, ‘The distance to uncontrollability for convex processes’, *SIAM Journal on Control and Optimization* 45 (2006), 26–50.
42. J. Bolte, A. Daniilidis, A.S. Lewis and M. Shiota, ‘Clarke critical values of subanalytic Lipschitz continuous functions’, *Annales Polonici Mathematici* 87 (2005), 13–25.
43. W.L. Hare* and A.S. Lewis, ‘Estimating tangent and normal cones without calculus’, *Mathematics of Operations Research* 30 (2005), 785–799.
44. A.L. Dontchev and A.S. Lewis, ‘Perturbations and metric regularity’, *Set-Valued Analysis* 13 (2005), 417–438.
45. A.S. Lewis and H.S. Sendov*, ‘Nonsmooth analysis of singular values. Part I: Theory’, *Set-Valued Analysis* 13 (2005), 213–241.
46. A.S. Lewis and H.S. Sendov*, ‘Nonsmooth analysis of singular values. Part II: Applications’, *Set-Valued Analysis* 13 (2005), 243–264.
47. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Variational analysis of functions of the roots of polynomials’, *Mathematical Programming* 104 (2005), 263–292.
48. J.V. Burke, A.S. Lewis and M.L. Overton, ‘A robust gradient sampling algorithm for nonsmooth, nonconvex optimization’, *SIAM Journal on Optimization* 15 (2005), 751–779.
49. A.S. Lewis, P. Parrilo and M. Ramana, ‘The Lax conjecture is true’, *Proceedings of the American Mathematical Society* 133 (2005), 2495–2499.
50. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Pseudospectral components and the distance to uncontrollability’, *SIAM Journal on Matrix Analysis and Applications* 26 (2004), 350–361.

51. W.L. Hare* and A.S. Lewis, ‘Identifying active constraints via partial smoothness and prox-regularity’, *Journal of Convex Analysis* 11 (2004), 251–266.
52. A.S. Lewis, ‘The structured distance to ill-posedness for conic systems’, *Mathematics of Operations Research* 29 (2004), 776–785.
53. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Variational analysis of the abscissa mapping for polynomials and the Gauss-Lucas theorem’, *Journal of Global Optimization* 28 (2004), 259–268.
54. A.S. Lewis, ‘The mathematics of eigenvalue optimization’, *Mathematical Programming* 97 (2003), 155–176.
55. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Optimization and pseudospectra, with applications to robust stability’, *SIAM Journal on Matrix Analysis and Applications* 25 (2003), 80–104.
56. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Robust stability and a criss-cross algorithm for the pseudospectral abscissa’, *IMA Journal of Numerical Analysis* 23 (2003), 359–375.
57. J.M. Borwein, J.V. Burke and A.S. Lewis, ‘Differentiability of cone-monotone functions on separable Banach space’, *Proceedings of the American Mathematical Society* 132 (2003), 1067–1076.
58. A.S. Lewis, ‘Active sets, nonsmoothness and sensitivity’, *SIAM Journal on Optimization* 13 (2003), 702–725.
59. A.L. Dontchev, A.S. Lewis and R.T. Rockafellar, ‘The radius of metric regularity’, *Transactions of the American Mathematical Society* 355 (2003), 493–517.
60. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Approximating subdifferentials by random sampling of gradients’, *Mathematics of Operations Research* 27 (2002), 567–584.
61. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Two numerical methods for optimizing matrix stability’, *Linear Algebra and its Applications* 351/2 (2002), 117–145.

62. A.S. Lewis and H.S. Sendov*, ‘Quadratic expansions of spectral functions’ *Linear Algebra and its Applications* 340 (2002), 97–121.
63. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Optimal stability and eigenvalue multiplicity’, *Foundations of Computational Math.* 1 (2001), 205–225.
64. A.S. Lewis and H.S. Sendov*, ‘Twice differentiable spectral functions’, *SIAM Journal on Matrix Analysis and Applications* 23 (2001), 368–386.
65. A.S. Lewis and H.S. Sendov*, ‘Self-concordant barriers for hyperbolic means’, *Mathematical Programming* 91 (2001), 1–10.
66. H. Bauschke**, O. Güler, A.S. Lewis and H.S. Sendov*, ‘Hyperbolic polynomials and convex analysis’, *Canadian Journal of Mathematics* 53 (2001), 470–488.
67. A.S. Lewis, ‘Ill-conditioned inclusions’, *Set-Valued Analysis* 9 (2001), 375–381.
68. J.V. Burke, A.S. Lewis and M.L. Overton, ‘Optimizing matrix stability’, *Proceedings of the American Mathematical Society* 129 (2000), 1635–1642.
69. A.S. Lewis, ‘Convex analysis on Cartan subspaces’, *Nonlinear Analysis, Theory, Methods and Applications* 42 (2000), 813–820.
70. A.S. Lewis and R.E. Lucchetti, ‘Nonsmooth duality, sandwich and squeeze theorems’, *SIAM J. Control and Optimization* 38 (2000), 613–626.
71. H.H. Bauschke** and A.S. Lewis, ‘Dykstra’s algorithm with Bregman projections: a convergence proof’, *Optimization* 48 (2000), 409–427.
72. J.M. Borwein, A.S. Lewis, J. Read** and Q. Zhu, ‘Convex spectral functions of compact operators’, *Journal of Nonlinear and Convex Analysis* 1 (2000), 17–35.
73. A.S. Lewis, ‘Ill-conditioned convex processes and conic linear systems’, *Mathematics of Operations Research* 24 (1999), 829–834.

74. A.S. Lewis, ‘Lidskii’s theorem via nonsmooth analysis’, *SIAM Journal on Matrix Analysis and Applications* 21 (1999), 379–381.
75. A.S. Lewis, ‘Nonsmooth analysis of eigenvalues’, *Mathematical Programming* 84 (1999), 1–24.
76. J.-B. Hiriart-Urruty and A.S. Lewis, ‘The Clarke and Michel-Penot sub-differentials of the eigenvalues of a symmetric matrix’, *Computational Optimization and Applications* 13 (1999), 13–23.
77. A.S. Lewis, ‘Eigenvalue-constrained faces’, *Linear Algebra and Applications* 269 (1998), 159–181.
78. A.S. Lewis and M.L. Overton, ‘Eigenvalue optimization’, *Acta Numerica* 5 (1996) 149–190.
79. A.S. Lewis, ‘Group invariance and convex matrix analysis’, *SIAM Journal on Matrix Analysis* 17 (1996), 927–949.
80. A.S. Lewis, ‘Derivatives of spectral functions’, *Mathematics of Operations Research* 21 (1996), 576–588.
81. J.M. Borwein, A.S. Lewis and D. Noll, ‘Maximum entropy reconstruction using derivative information part 1: Fisher information and convex duality’, *Mathematics of Operations Research* 21 (1996), 442–468.
82. A.S. Lewis, ‘Superresolution in the Markov moment problem’, *Journal of Mathematical Analysis and Applications* 197 (1996) 774–780.
83. A.S. Lewis and D. Ralph, ‘A nonlinear duality result equivalent to the Clarke-Ledyev mean value inequality’, *Nonlinear Analysis* 26 (1996) 343–350.
84. A.S. Lewis, ‘Convex analysis on the Hermitian matrices’, *SIAM Journal on Optimization* 6 (1996) 164–177.
85. A.S. Lewis, ‘The convex analysis of unitarily invariant matrix norms’, *Journal of Convex Analysis* 2 (1995) 173–183.
86. A.S. Lewis and A.B. Philpott, ‘Experiments with affine scaling and semi-infinite programming’, *New Zealand Journal of Mathematics* 24 (1995), 49–71.

87. A.S. Lewis, ‘Consistency of moment systems’, *Canadian Journal of Mathematics* 47 (1995) 995–1006.
88. J.M. Borwein, A.S. Lewis, M.N. Limber** and D. Noll, ‘Maximum entropy reconstruction using derivative information part 2: computational results’, *Numerische Mathematik* 69 (1995) 243–256.
89. J.M. Borwein, A.S. Lewis and M.A. Limber**, ‘Entropy minimization with lattice bounds’, *Journal of Approximation Theory* 79 (1994) 1–16.
90. J.M. Borwein, A.S. Lewis and R. Nussbaum, ‘Entropy minimization, DAD problems, and doubly stochastic kernels’, *Journal of Functional Analysis* 123 (1994) 264–307.
91. A.S. Lewis, ‘Facial reduction in partially finite convex programming’, *Mathematical Programming* 65 (1994) 123–138.
92. P. Borwein and A.S. Lewis, ‘Moment matching and best entropy estimation’, *Journal of Mathematical Analysis and Applications* 185 (1994) 596–604.
93. M. Chamberland* and A.S. Lewis, ‘Contours of Liapunov functions’, *Journal of Optimization Theory and Applications* 80 (1994) 149–160.
94. J.M. Borwein and A.S. Lewis, ‘Strong rotundity and optimization’, *SIAM Journal on Optimization* 4 (1994) 146–158.
95. J.M. Borwein and A.S. Lewis, ‘Convergence of decreasing sequences of convex sets in nonreflexive Banach spaces’, *Set-Valued Analysis* 1 (1993) 355–363.
96. A.S. Lewis, ‘The convergence of entropy-based approximations for moment problems’, *Optimization* 28 (1993) 383–395.
97. J.M. Borwein and A.S. Lewis, ‘Partially finite programming in L_1 and the existence of maximum entropy estimates’, *SIAM Journal on Optimization* 3 (1993) 248–267.
98. J.M. Borwein and A.S. Lewis, ‘Decomposition of multivariate functions’, *Canadian Journal of Mathematics* 44 (1992) 463–482.

99. J.M. Borwein and A.S. Lewis, ‘Partially-finite convex programming, Part I: Quasi relative interiors and duality theory’, *Mathematical Programming, Series B* 57 (1992) 15–48.
100. J.M. Borwein and A.S. Lewis, ‘Partially-finite convex programming, Part II, Explicit lattice models’, *Mathematical Programming, Series B* 57 (1992) 49–84.
101. J.M. Borwein and A.S. Lewis, ‘Duality relationships for entropy-like minimization problems’, *SIAM Journal on Control and Optimization* 29 (1991) 325–338.
102. J.M. Borwein and A.S. Lewis, ‘Convergence of best entropy estimates’, *SIAM Journal on Optimization* 1 (1991) 191–205.
103. J.M. Borwein and A.S. Lewis, ‘On the convergence of moment problems’, *Transactions of the American Mathematical Society* 325 (1991) 249–271.
104. E.J. Anderson and A.S. Lewis, ‘An extension of the simplex algorithm for semi-infinite linear programming’, *Mathematical Programming* 44 (1989) 247–269.
105. E.J. Anderson, A.S. Lewis and S.Y. Wu, ‘The capacity problem’, *Optimization* 20 (1989) 725–742.

Articles in refereed conference proceedings

1. J.V. Burke, D. Henrion, A.S. Lewis and M.L. Overton, ‘HIFOO — A MATLAB package for fixed-order controller design and H_∞ optimization’, 6 pages, to appear in: *Proceedings of the 5th IFAC Symposium on Robust Control Design, ROCOND’06*.
2. A.S. Lewis, ‘Eigenvalues and nonsmooth optimization’, in: L.M. Pardo, A. Pinkus, E. Süli and M.J. Todd (eds), *Foundations of Computational Mathematics: Santander 2005*, Cambridge University Press (2006), 208–229.
3. J.V. Burke, A.S. Lewis and M.L. Overton, ‘A nonsmooth, nonconvex optimization approach to robust stabilization by static output feedback

and low-order controllers’, 7 pages, in: *Proceedings of the 4th IFAC Symposium on Robust Control Design, ROCOND’03*.

4. J.M. Borwein, A.S. Lewis and Q.J. Zhu, ‘Convex spectral functions of compact operators, Part II: lower semicontinuity and rearrangement invariance’, in: A. Rubinov and B. Glover (eds), ‘Optimization and Related Topics’, Kluwer (2001), 179–196.
5. A.S. Lewis and J.-S. Pang, ‘Error bounds for convex inequality systems’, in: J.-P. Crouzeix, J.-E. Martinez-Legaz and M. Volle (eds), *Generalized Convexity, Generalized Monotonicity* (1998) 75–110.
6. H. Bauschke*, J.M. Borwein, and A.S. Lewis, ‘The method of cyclic projections for closed convex sets in Hilbert space’, in: Y. Censor and S. Reich (eds), ‘Recent Developments in Optimization Theory and Non-linear Analysis’, *Contemporary Mathematics* 204, AMS, Providence RI, 1997, 1–38.
7. J.M. Borwein and A.S. Lewis, ‘Practical conditions for Fenchel duality in infinite dimensions’, in: M. Théra and J.-B. Baillon (eds.), *Fixed Point Theory and Applications* (Longman, U.K., 1991) 83–89.
8. A.S. Lewis, ‘The convergence of entropic estimates for moment problems’, in: J.R. Giles and S. Fitzpatrick (eds.), *Functional Analysis/Optimization, Proceedings of the Centre for Mathematical Analysis, Canberra, Australia, Vol. 20*, (1989) 100–115.
9. A. Brace, A.S. Lewis and G.N. Newsam, ‘The valuation of contingent securities’, in: J.R. Giles and S. Fitzpatrick (eds.), *Functional Analysis/Optimization, Proceedings of the Centre for Mathematical Analysis, Canberra, Australia, Vol. 20*, (1989) 205–206.
10. A.S. Lewis, ‘Extreme points of infinite transportation problems’, in: M.J. Beckmann, K.-W. Gaede, K. Ritter and H. Schneeweiss (eds.), *Proceedings of the Tenth Symposium on Operations Research, Munich* (Verlag Anton Hain, 1986) 115–126.
11. A.S. Lewis, ‘Extreme points and purification algorithms in general linear programming’, in: E.J. Anderson and A.B. Philpott (eds.), *Infinite Programming, Proceedings* (Springer-Verlag, Berlin, 1985) 123–135.

Articles in unrefereed proceedings

1. A.S. Lewis, ‘Local structure and algorithms in nonsmooth optimization’, in: F. Jarre, C. Lemaréchal and J. Zowe (eds), *Oberwolfach Proceedings, 2005*.
2. A.S. Lewis, ‘Nonsmooth analysis of eigenvalues: a summary’, *Rendiconti del Seminario Matematico e Fisico di Milano*, Vol. LXVI (1998) 33–41.
3. A.S. Lewis, ‘Convex analysis and applications’, in *Bulletin of the Centre de Recherches Mathématiques, Montréal* (1996): a summary of my research interests as Aisenstadt prize recipient.
4. J.M. Borwein and A.S. Lewis, ‘A survey of convergence results for maximum entropy methods’, in: A. Mohammad-Djafari and G. Demoments (eds), ‘Maximum Entropy and Bayesian Methods’, Kluwer, 1993.

Miscellaneous invited contributions

1. J.V. Burke, F.E. Curtis, A.S. Lewis, M.L. Overton, The gradient sampling methodology. Invited survey for *INFORMS Computing Society Newsletter*, Research Highlights, 2019.
2. J.V. Burke, F.E. Curtis, A.S. Lewis, M.L. Overton and L.E.A. Simões, Gradient sampling methods for nonsmooth optimization, 18 pages, invited chapter for: ‘Special methods for Nonsmooth Optimization’, edited by A. Bagirov, M. Gaudioso, N. Karmitza and M. Mäkelä, Springer, 2018.
3. A.S. Lewis, ‘In Memoriam. Jon Borwein: a personal reflection’, *SIAG/OPT Views and News* 24 (1), 8–10, 2016.
4. A.S. Lewis, Book review of ‘Lectures on Modern Convex Optimization’ by A. Ben-Tal and A. Nemirovski, *SIAM Review* 44, 731–734, 2002.
5. A.S. Lewis, 50 entries for: J. Bothamley (ed.), ‘Dictionary of Theories’, Gale Research, London, U.K., 1993.

Invited presentations and colloquia (past 6 years)

I have listed major plenary presentations at the beginning of this section.

1. Mar. 2019: ‘A picture from my thesis’, Eddie Anderson’s 65th Birthday Workshop, Cambridge, U.K.
2. July 2018: ‘Partial smoothness and active sets: a fresh approach’, 23rd International Symposium on Mathematical Programming, Bordeaux, France.
3. June 2018: ‘How nonsmooth optimization usually is’, Analysis Seminar, University of Seville.
4. Sep. 2017: ‘Error bounds and convergence of proximal methods for composite minimization’, Workshop on Splitting Algorithms, Modern Operator Theory, and Applications, Oaxaca, Mexico.
5. Feb. 2017: ‘Alternating projections, transversality, and metric regularity’, Remembrance Day for Jon Borwein, Institut Henri Poincaré, Paris.
6. Jan. 2017: ‘Partly smooth sets: an introduction’, VII Workshop on Metric Fixed Point Theory, Alanis, Spain.
7. Nov. 2016: ‘Alternating projections and transversality’, Optimization Seminar, University of Seville.
8. Oct. 2016: ‘Nonsmooth optimization: conditioning, convergence, and semi-algebraic models’, Optimization Seminar, University of Seville.
9. July 2016: ‘Proximal methods for composite minimization: theory and practice’, International Workshop on Advances in Convex Analysis and Optimization, Erice, Sicily.
10. June 2016: ‘A proximal method for composite minimization’, Workshop on Nonlinear Optimization Algorithms and Industrial Applications (in honor of Andy Conn), Fields Institute, Toronto.
11. Mar. 2016: ‘Alternating projections and transversality’, “Oliver Club” Mathematics Colloquium, Cornell University.

12. Dec. 2015: ‘Nonsmooth optimization: conditioning, convergence, and semi-algebraic models’, Mathematics Colloquium, Western Michigan University.
13. July 2015: ‘Generic sensitivity analysis for semi-algebraic optimization’, 22nd International Symposium on Mathematical Programming’, Pittsburgh.
14. May 2015: ‘Generic sensitivity analysis for semi-algebraic optimization’, International Conference on Variational Analysis, Optimization and Quantitative Finance, Limoges, France.
15. Jan. 2015: ‘Nonsmooth optimization: conditioning, convergence, and semi-algebraic models’, Applied Mathematics Colloquium, Cornell.
16. Feb. 2014: ‘Identifiability, nonconvexity, and sparse optimization’, Seminar, Dipartimento di Ingegneria Informatica Automatica e Gestionale, La Sapienza, Rome.
17. Feb. 2014: ‘Identifiability, nonconvexity, and sparse optimization’, Optimization Seminar, University of Pisa.
18. Dec. 2013: ‘Identifiability, nonconvexity, and sparse optimization’ 6th NIPS Workshop on Optimization for Machine Learning, Lake Tahoe.
19. Aug. 2013: ‘Nonsmooth geometry and active sets’, PIMS Workshop on Numerical Linear Algebra and Optimization, Vancouver.
20. Feb. 2013: ‘A fresh look at active sets’, Applied and Computational Mathematics Colloquium, Caltech.

US Funding

Principal Investigator

- National Science Foundation 4-year grant DMS-1613996, ‘Nonsmooth Optimization: Structure, Geometry, and Conditioning’, US\$ 349,444 (total), September 2016.

- United States – Israel Binational Science Foundation 4-year grant 2014241, ‘Variational Analysis, Computation, and Structure in Optimization and Dynamics.’, \$82,800 (total), July 2015. Co-PIs: D. Drusvyatskiy and A. Ioffe.
- National Science Foundation 4-year grant DMS-1208338, ‘Geometry in Nonsmooth Optimization’, US\$ 412,971 (total), June 2012.
- National Science Foundation grant DMS-0849383, ‘Special Semester: Foundations of Computational Mathematics’, US\$ 110,000 (total), August 2009. Co-PI: M.J. Todd.
- United States – Israel Binational Science Foundation 4-year grant 2008261, ‘Tame Optimization’, \$68,000 (total), July 2009. Co-PI: A. Ioffe.
- National Science Foundation 3-year grant DMS-0806057, ‘Variational Analysis for Practical Optimization’, US\$ 387,861 (total), June 2008.
- National Science Foundation 3-year grant DMS-0504032, ‘Applied Variational Analysis: Structure, Regularity, and Algorithms’, US\$ 275,364 (total), June 2005.

3 Teaching activities

Prizes

- 2007, 2015 Excellence in Teaching Award from Cornell’s College of Engineering.
- 2007 Outstanding Teaching Award at Cornell’s School of ORIE in the Undergraduate Program.

Courses taught (past six years)

(Approximate class sizes in parentheses.)

- MATH 2940: Linear Algebra for Engineers, Spring 2016 (100), 2019 (610 – 2 sections).

- ORIE 7390: Selected Topics in Mathematical Programming (12), Fall 2018.
- ORIE 6328: Convex Analysis, Spring 2015, 2018 (40).
- ORIE 6300: Mathematical Programming I (35), Fall 2013, 2015.
- ORIE 3300/5300: Optimization 1 (200), Fall 2014, Fall 2017, Fall 2019.

Supervision

Postdoctoral fellows

1. F. Aragón-Artacho, Spring – Summer 2010. Ramón y Cajal Fellow, University of Alicante.
2. J. Malick, Spring – Summer 2006. CNRS Directeur de Recherche, University Grenoble Alpes.
3. R. Luke (PIMS Postdoctoral Fellow), Fall 2002 – Summer 2004 (jointly with J.M. Borwein). Professor for Continuous Optimization and Institute Director at Göttingen University.
4. J. Bolte (postdoctoral visitor), Summer 2003. Tenured Professor, University of Toulouse I.
5. A. Daniilidis (postdoctoral visitor), Summer 2003. Tenured Professor, University of Chile.
6. Heinz Bauschke (NSERC Postdoctoral Fellow), Fall 1996 – Fall 1998. Tenured Professor and Canada Research Chair, University of British Columbia (Okanagan).

Ph.D. Committee Chair

1. C. Wylie, Fall 2014 – present.
2. A. Gorokh, Fall 2015 – Fall 2016.
3. J. Guo, Spring 2013 – Spring 2018. Currently tenure-track Assistant Professor, Shanghai University of Finance and Economics.

4. S. Zhang, Summer 2009 – Summer 2013. Currently with Amazon in Seattle.
5. D. Drusvyatskiy, Summer 2009 – Summer 2013. Currently tenure-track Assistant Professor of Mathematics, University of Washington.
6. S. Schismenos, Spring 2006 – Spring 2009 (joint with S. Henderson). Currently with J.P. Morgan-Chase in London.
7. J. Pang (Applied Mathematics), Spring 2005 – Spring 2009. Currently tenure-track Assistant Professor of Mathematics, National University of Singapore.
8. D. Leventhal, Spring 2005 – Spring 2009. Currently with Goldman-Sachs in New York.
9. W. Hare , Spring 2001 – Spring 2004. Tenured Associate Professor of Mathematics, University of British Columbia (Okanagan).
10. H. Sendov, Fall 1996 – Fall 2000. Tenured Associate Professor of Statistics and Actuarial Science, University of Western Ontario.

M.Eng. projects

1. Z. Cai, W. Chen, M. Guo, X. Sun, X. Zhang, J. Zhu: Is momentum a factor in corporate bond excess returns? (Client: Guardian. Joint with M. Chazal.) Fall 2018.
2. O. Clahar, Y. Diao, Y. Xu, L. Yang, J. Zhao, Q. Zhu: Incorporating a factor model and analyst recommendations into a corporate bond portfolio optimization framework. (Client: Guardian. Joint with M. Chazal.) Fall 2017.
3. C. Kansu, J. Lee, S. Mtandwa, B. Olaleye, H. Zhang: Tax-efficient portfolio management strategies. (Client: Goldman-Sachs.) Fall 2009.

4 Service (past six years)

Administrative positions

- Director, School of Operations Research and Information Engineering, July 2010 – June 2013.

Committees

- University Faculty Advisor Committee on Tenure Appointments (FACTA), Fall 2017 – Spring 2019.
- Engineering Policy Committee, Fall 2018 – present.
- Five departmental Faculty Hiring Committees, Fall 2014 – present; ORIE 2015/16 and 2017/18 Search Chair.
- Departmental Tenure Committee Chair: Kris Iyer (2018), Katya Scheinberg (2019).
- University Faculty Financial Planning Committee, Fall 2014 – Spring 2016.
- Alumni Advisory Board Committee, Fall 2014 – present.
- MEng Admissions Committee, Fall 2014 – Spring 2015.
- Center for Applied Mathematics redesign committee, Fall 2012 – Spring 2013.
- Dean's Ad Hoc Committee, Fall 2013.

5 Professional activities

Editorial boards

- Co-Editor, *Mathematical Programming, Series A*, Oct. 2005 – present.
- Associate Editor, *Set-Valued and Variational Analysis*, Jan. 2015 – present.

- Associate Editor, *Mathematika*, June 2018 – present.
- Associate Editor, *Mathematics of Operations Research*, Dec. 1998 – Dec. 2018.
- Associate Editor, *SIAM Journal on Matrix Analysis and Applications*, Dec. 2006 – Jan. 2012.
- Associate Editor, *SIAM Journal on Optimization*, June 1994 – Jan. 2007.
- Associate Editor, *SIAM Journal on Control and Optimization*, Jan. 1997 – Jan. 2000.
- Associate Editor, *Mathematical Programming*, Oct. 1999 – Oct. 2005.
- Springer SIAM/MPS Monographs in Optimization, Summer 1999 – Fall 2013.

Positions

- Farkas Prize Committee, Summer 2019.
- SIAG Optimization Prize Committee, Oct. 2016 – Spring 2017.
- Council Member, Mathematical Optimization Society, July 2015 – June 2018.
- Lagrange Prize Committee, Aug. 2005 – Aug. 2006, and Nov. 2007 – Mar. 2009 (Chair).
- 2008 NSF Operations Research Panel.
- Selection Committee for 2005 SIAG-SIOPT Best Paper Prize.
- Treasurer, Foundations of Computational Mathematics, 2005 – 2010.
- Selection Committee for 2004 Math. Programming Society Young Researcher Competition (Chair).
- 2006 NSF Numerical Analysis and Optimization Panel.