

Bibliographie

- [1] R. Abraham, J.E. Marsden, T. Ratiu (1988). *Manifolds, Tensors Analysis, and Applications*. Applied Mathematical Sciences 75. Springer-Verlag, New-York.
- [2] H. Akaike (1959). On a successive transformation of probability distribution and its application to the analysis of the optimum gradient method. *Ann. Inst. Statist. Math. Tokyo*, 11, 1–16.
- [3] F. Al-Kkayyal, J. Kiparis (1990). Finite convergence of algorithms for nonlinear programs and variational inequalities. *Journal of Optimization Theory and Applications*, 70, 319–332.
- [4] G.E. Alefeld, A. Frommer, G. Heindl, J. Mayer (2004). On the existence theorems of Kantorovich, Miranda and Borsuk. *Electronic Transactions on Numerical Analysis*, 17, 102–111.
- [5] G.E. Alefeld, F.A. Potra, Z. Shen (2001). On the existence theorems of Kantorovich, Moore and Miranda. *Computing*, 15, 21–28.
- [6] V. Alexeev, V. Tikhomirov, S. Fomine (1982). *Commande Optimale*. Mir, Moscou.
- [7] F. Alizadeh (1995). Interior point methods in semidefinite programming with applications to combinatorial optimization. *SIAM Journal on Optimization*, 5, 13–51.
- [8] F. Alizadeh, J.-P.A. Haeberly, M.L. Overton (1998). Primal-dual interior-point methods for semidefinite programming: convergence rates, stability and numerical results. *SIAM Journal on Optimization*, 8, 746–768.
- [9] P.R. Amestoy, I.S. Duff, C. Puglisi (1996). Multifrontal qr factorization in a multiprocessor environment. *Numerical Linear Algebra with Applications*, 3, 275–300.
- [10] E.D. Andersen, K.D. Andersen (1999). The MOSEK interior-point optimizer for linear programming: an implementation of the homogeneous algorithm. In S. Zhang, H. Frenk, C. Roos, T. Terlaky, éditeurs, *High Performance Optimization Techniques*, pages 197–232. Kluwer Academic Publishers, Dordrecht, The Netherlands.
- [11] P.L. De Angelis, G. Toraldo (1993). On the identification property of a projected gradient method. *SIAM Journal on Numerical Analysis*, 30, 1483–1497.
- [12] K.M. Anstreicher, M.H. Wright (2000). A note on the augmented Hessian when the reduced Hessian is semidefinite. *SIAM Journal on Optimization*, 11, 243–253.
- [13] P. Armand, J.Ch. Gilbert, S. Jan-Jégou (2002). A BFGS-IP algorithm for solving strongly convex optimization problems with feasibility enforced by an exact penalty approach. *Mathematical Programming*, 92, 393–424.
- [14] L. Armijo (1966). Minimization of functions having Lipschitz continuous first partial derivatives. *Pacific Journal of Mathematics*, 16, 1–3.
- [15] K.J. Arnold, J.V. Beck (1977). *Parameter Estimation in Engineering and Science*. John Wiley & Sons, New York.
- [16] K.J. Arrow, F.J. Gould, S.M. Howe (1973). A generalized saddle point result for constrained optimization. *Mathematical Programming*, 5, 225–234.
- [17] K.J. Arrow, R.M. Solow (1958). Gradient methods for constrained maxima with weakened assumptions. In K.J. Arrow, L. Hurwicz, H. Uzawa, éditeurs, *Studies in Linear and Nonlinear Programming*, pages 166–176. Stanford University Press, Stanford, Calif.

- [18] J.-P. Aubin, I. Ekeland (1984). *Applied Nonlinear Analysis*. John Wiley & Sons, New York.
- [19] Th. Aubin (2001). *A Course in Differential Geometry*. Graduate Studies in Mathematics 27. American Mathematical Society, Providence, Rhode Island.
- [20] A. Auslender, R. Cominetti, M. Haddou (1997). Asymptotic analysis for penalty and barrier methods in convex and linear programming. *Mathematics of Operations Research*, 22, 43–62.
- [21] A. Auslender, M. Teboulle (2000). Lagrangian duality and related multiplier methods for variational inequality problems. *SIAM Journal on Optimization*, 10, 1097–1115.
- [22] A. Auslender, M. Teboulle (2003). *Asymptotic Cones and Functions in Optimization and Variational Inequalities*. Springer Monographs in Mathematics. Springer, New York.
- [23] A. Auslender, M. Teboulle, S. Ben-Tiba (1999). A logarithmic-quadratic proximal method for variational inequalities. *Computational Optimization and Applications*, 12, 31–40.
- [24] J.B. Baillon (2002). Communication personnelle.
- [25] V. Barbu, T. Precupanu (1975). *Convexity and Optimization in Banach Spaces*. Editura Academiei, Bucarest.
- [26] Y. Bard (1974). *Nonlinear Parameter Estimation*. Academic.
- [27] J. Barzilai, J.M. Borwein (1988). Two-point step size gradient methods. *IMA Journal of Numerical Analysis*, 8, 141–148.
- [28] J.-L. Beauvois, R.-V. Joule (1987). *Petit traité de manipulation à l'usage des honnêtes gens*. Presses Universitaires de Grenoble.
- [29] R. Bellman, K. Fan (1963). On systems of linear inequalities in Hermitian matrix variables. In *Proceedings of Symposia in Pure Mathematics, Vol. 7*. AMS.
- [30] R.E. Bellman, R.R. Kalaba, J. Lockett (1966). *Numerical Inversion of the Laplace Transform*. Elsevier.
- [31] A. Ben-Tal, A. Nemirovski (2001). *Lectures on Modern Convex Optimization – Analysis, Algorithms, and Engineering Applications*. MPS/SIAM Series on Optimization 2. SIAM.
- [32] J.F. Benders (1962). Partitioning procedures for solving mixed-variables programming problems. *Numerische Mathematik*, 4, 238–252.
- [33] J.M. Bennet (1965). Triangular factors of modified matrices. *Numerische Mathematik*, 7, 217–221.
- [34] Commandant Benoit (1924). Note sur une méthode de résolution des équations normales provenant de l'application de la méthode des moindres carrés à un système d'équations linéaires en nombre inférieur à celui des inconnues. Application de la méthode à la résolution d'un système défini d'équations linéaires (Procédé du Commandant Cholesky). *Bulletin Géodésique (Toulouse)*, 2, 67–77.
- [35] M. Berger, B. Gostiaux (1988). *Differential Geometry: Manifolds, Curves, and Surfaces*. Graduate Texts in Mathematics 115. Springer, New York.
- [36] D.P. Bertsekas (1976). On the Goldstein-Levitin-Polyak gradient projection method. *IEEE Transactions on Automatic Control*, 21, 174–184.
- [37] D.P. Bertsekas (1976). Multiplier methods: a survey. *Automatica*, 12, 133–145.
- [38] D.P. Bertsekas (1982). Projected Newton methods for optimization problems with simple constraints. *SIAM Journal on Control and Optimization*, 20, 221–246.
- [39] D.P. Bertsekas (1982). *Constrained Optimization and Lagrange Multiplier Methods*. Academic Press.
- [40] D.P. Bertsekas (1995). *Nonlinear Programming*. Athena Scientific.
- [41] D.P. Bertsekas (1999). *Nonlinear Programming* (seconde édition). Athena Scientific.
- [42] D. Bertsimas, J.N. Tsitsiklis (1997). *Introduction to linear optimization*. Athena Scientific, Belmont, Massachusetts.

- [43] M.J. Best (1984). Equivalence of some quadratic programming algorithms. *Mathematical Programming*, 30, 71–87.
- [44] L.T. Biegler, O. Ghattas, M. Heinkenschloss, B. van Bloemen Waanders, éditeurs (2003). *Large-Scale PDE-Constrained Optimization*. Springer, Berlin.
- [45] G. Birkhoff (1946). Tres observaciones sobre el algebra lineal. *Universidad Nacional Tucumán Revista*, 5, 147–151.
- [46] Å. Björck (1996). *Numerical Methods for Least Squares Problems*. SIAM Publication, Philadelphia.
- [47] Å. Björck (2004). The calculation of linear least squares problems. In *Acta Numerica 2004*, pages 1–53. Cambridge University Press.
- [48] Å. Björck, T. Elfving, Z. Strakos (1998). Stability of conjugate gradient and Lanczos methods for linear least squares problems. *SIAM Journal on Matrix Analysis and Applications*, 19, 720–736.
- [49] L. Blum, F. Cucker, M. Shub, S. Smale (1988). *Complexity and Real Computation*. Springer Verlag.
- [50] L. Blum, M. Shub, S. Smale (1988). On a theory of computations over the real numbers: NP-completeness, recursive functions and universal machines. In *Proceedings of the 29th Symp. Foundations of Computer Science*, pages 387–397.
- [51] J.F. Bonnans (1989). Asymptotic admissibility of the unit stepsize in exact penalty methods. *SIAM Journal on Control and Optimization*, 27, 631–641.
- [52] J.F. Bonnans (1989). A variant of a projected variable metric method for bound constrained optimization problems. Rapport de recherche, INRIA, BP 105, 78153 Le Chesnay, France.
- [53] J.F. Bonnans, J.Ch. Gilbert, C. Lemaréchal, C. Sagastizábal (2003). *Numerical Optimization – Theoretical and Practical Aspects*. Springer Verlag, Berlin.
- [54] J.F. Bonnans, A. Shapiro (2000). *Perturbation Analysis of Optimization Problems*. Springer Verlag, New York.
- [55] W. Boothby (1986). *An Introduction to Differentiable Manifolds and Riemannian Geometry* (seconde édition). Academic Press, New York.
- [56] K.-H. Borgwardt (1982). The average number of pivot steps required by the simplex-method is polynomial. *Z. Oper. Res.*, 26, A157–A177.
- [57] K.-H. Borgwardt (1987). *The Simplex Method: A Probabilistic Analysis*. Springer, Berlin.
- [58] J.M. Borwein, A.S. Lewis (2000). *Convex Analysis and Nonlinear Optimization*. Springer, New York.
- [59] A. Bouaricha, R.B. Schnabel (1998). Tensor methods for large sparse systems of nonlinear equations. *Mathematical Programming*, 83, 377–400.
- [60] G. Bouligand (1932). *Introduction à la Géométrie Infinitésimale Directe*. Gauthier-Villars, Paris.
- [61] S. Boyd, L. El Ghaoui, E. Feron, V. Balakrishnan (1994). *Linear Matrix Inequalities in System and Control Theory*. SIAM, Philadelphia.
- [62] S. Boyd, L. Vandenberghe (2004). *Convex Optimization*. Cambridge University Press.
- [63] C.B. Boyer (1968). *A History of Mathematics*. Princeton University Press, Princeton, New Jersey.
- [64] H. Brézis (1973). *Opérateurs maximaux monotones et semi-groupes de contractions dans les espaces de Hilbert*. North-Holland, Amsterdam.
- [65] H. Brézis (1983). *Analyse Fonctionnelle Appliquée*. Masson, Paris.
- [66] K.W. Brodli, A.R. Gourlay, J. Greenstadt (1973). Rank-one and rank-two corrections to positive definite matrices expressed in product form. *Journal of the Institute of Mathematics and its Applications*, 11, 73–82.
- [67] P.N. Brown (1991). A theoretical comparison of the Arnoldi and GMRES algorithms. *SIAM Journal on Scientific and Statistical Computing*, 12, 58–78.

- [68] P.N. Brown, Y. Saad (1990). Hybrid Krylov methods for nonlinear systems of equations. *SIAM Journal on Scientific and Statistical Computing*, 11, 450–481.
- [69] C.G. Broyden (1970). The convergence of a class of double rank minimization algorithms, part I. *Journal of the Institute of Mathematics and its Applications*, 6, 76–90.
- [70] J.V. Burke, J.J. Moré (1988). On the identification of active constraints. *SIAM Journal on Numerical Analysis*, 25, 1197–1211.
- [71] J.V. Burke, J.J. Moré (1994). Exposing constraints. *SIAM Journal on Optimization*, 4, 573–595.
- [72] J.D. Buys (1972). *Dual algorithms for constrained optimization*. Thèse de doctorat, Rijksuniversiteit te Leiden, Leiden, The Netherlands.
- [73] R.H. Byrd, J.Ch. Gilbert, J. Nocedal (2000). A trust region method based on interior point techniques for nonlinear programming. *Mathematical Programming*, 89, 149–185.
- [74] R.H. Byrd, M. Marazzi, J. Nocedal (2001, avril). On the convergence of Newton iterations to non-stationary points. Rapport de recherche, Department of Electrical Engineering and Computer Science, Northwestern University, Evanston, IL 60208, USA.
- [75] P.H. Calamai, J.J. Moré (1987). Projected gradient methods for linearly constrained problems. *Mathematical Programming*, 39, 93–116.
- [76] C. Carathéodory (1911). Über den Variabilitätsbereich der Fourier’schen Konstanten von positiven harmonischen Funktionen. *Rendiconti del Circolo Matematico de Palermo*, 32, 193–217.
- [77] C.W. Carroll (1961). The created response surface technique for optimizing nonlinear restrained systems. *Operations Research*, 9, 169–184.
- [78] A.L. Cauchy (1847). Méthode générale pour la résolution des systèmes d’équations simultanées. *Comptes Rendus de l’Académie des Sciences de Paris*, t25, 536–538.
- [79] J.-L. Chabert, Evelyne Barbin, Michel Guillemot, Anne Michel-Pajus, Jacques Borowczyk, Ahmed Djebbar, J.-C. Martzloff (1994). *Histoire d’Algorithmes – Du Cailou à la Puce*. Regards sur la Science. Belin, Paris.
- [80] Y.-Y. Chang, R.W. Cottle (1980). Least-index resolution of degeneracy in quadratic programming. *Mathematical Programming*, 18, 127–137.
- [81] B.W. Char, K.O. Geddes, G.H. Gonnet, M.B. Monagan, S.M. Watt (1988). Maple reference manuel. Symbolic Computation Group, Department of Computer Science, University of Waterloo, Ontario, Canada.
- [82] G. Chavent (2003). Curvature steps and geodesics moves for nonlinear least squares descent algorithms. *Inverse Problems in Engineering*.
- [83] E. Cheney, A. Goldstein (1959). Newton’s method for convex programming and Tchebycheff approximations. *Numerische Mathematik*, 1, 253–268.
- [84] G. Choquet (1969). *Cours d’Analyse – Tome II: Topologie*. Masson, Paris.
- [85] V. Chvátal (1983). *Linear Programming*. W.H. Freeman, New York.
- [86] P.G. Ciarlet (1982). *Introduction à l’Analyse Numérique Matricielle et à l’Optimisation*. Masson, Paris.
- [87] P.G. Ciarlet (1988). *Introduction à l’Analyse Numérique Matricielle et à l’Optimisation* (seconde édition). Masson, Paris.
- [88] F.H. Clarke (1983). *Optimization and Nonsmooth Analysis*. John Wiley & Sons, New York.
- [89] A. Cobham (1965). The intrinsic computational difficulty of functions. In Y. Bar-Hillel, éditeur, *Proc. 1964 International Congress for Logic, Methodology and Philosophy of Science*, pages 20–30. North-Holland, Amsterdam.
- [90] G. Cohen (2000). *Convexité et Optimisation*. École Nationale Supérieure des Ponts et Chaussées et INRIA.
- [91] R. Cominetti (1999). Nonlinear averages and convergence of penalty trajectories in convex programming. In Michel Théra, Rainer Tichatschke, éditeurs, *Ill-posed Variational Problems and Regularization Techniques*, Lecture Notes in Economics and Mathematical System, Tome 477, pages 65–78. Springer Verlag, Berlin.

- [92] L. Conlon (1993). *Differentiable Manifolds – A first Course*. Birkhauser, Boston.
- [93] A.R. Conn, N. Gould, P.L. Toint (2000). *Trust-Region Methods*. MPS/SIAM Series on Optimization 1. SIAM and MPS, Philadelphia.
- [94] A.R. Conn, N.I.M. Gould, A. Sartenaer, Ph.L. Toint (1996). Convergence properties of an augmented Lagrangian algorithm for optimization with a combination of general equality and linear constraints. *SIAM Journal on Optimization*, 6, 674–703.
- [95] A.R. Conn, N.I.M. Gould, Ph.L. Toint (1991). A globally convergent augmented Lagrangian algorithm for optimization with general constraints and simple bounds. *SIAM Journal on Numerical Analysis*, 28, 545–572.
- [96] A.R. Conn, N.I.M. Gould, Ph.L. Toint (1992). *LANCELOT: A Fortran Package for Large-Scale Nonlinear Optimization (Release A)*. Computational Mathematics 17. Springer Verlag, Berlin.
- [97] L. Contesse (1980). Une caractérisation complète des minima locaux en programmation quadratique. *Numerische Mathematik*, 34, 315–332.
- [98] D. Coppersmith, S. Winograd (1982). On the asymptotic complexity of matrix multiplications. *SIAM Journal on Computing*, 11, 472–492.
- [99] R.W. Cottle, J.-S. Pang, R.E. Stone (1992). *The linear complementarity problem*. Academic Press, Boston.
- [100] CPLEX. <http://cplex.com>.
- [101] J.Ch. Culioli (1994). *Introduction à l'Optimisation*. Ellipses, Paris.
- [102] H.B. Curry (1944). The method of steepest descent for non-linear minimization problems. *Quarterly of Applied Mathematics*, 2, 258–261.
- [103] J. Czyzyk, S. Mehrotra, M. Wagner, S.J. Wright (1999). PCx: an interior-point code for linear programming. *Optimization Methods and Software*, 11-12, 397–430.
- [104] G.B. Dantzig (1951). Maximization of a linear function of variables subject to linear inequalities. In Tj.C. Koopmans, éditeur, *Activity Analysis of Production and Allocation*, pages 339–347. Wiley, New York.
- [105] G.B. Dantzig, P. Wolfe (1961). The decomposition algorithm for linear programming. *Econometrica*, 29, 767–778.
- [106] W.C. Davidon (1959). Variable metric methods for minimization. AEC Research and Development Report ANL-5990, Argonne National Laboratory, Argonne, Illinois.
- [107] W.C. Davidon (1991). Variable metric methods for minimization. *SIAM Journal on Optimization*, 1, 1–17.
- [108] E. de Klerk, C. Roos, T. Terlaky (1998). Infeasible-start semidefinite programming algorithms via self dual imbeddings. *Fields Institute Communications*, 18, 215–236.
- [109] F. Delbos, J.Ch. Gilbert (2005). Global linear convergence of an augmented Lagrangian algorithm for solving convex quadratic optimization problems. *Journal of Convex Analysis*, 12, 45–69.
- [110] R.S. Dembo, T. Steihaug (1983). Truncated-Newton algorithms for large-scale unconstrained optimization. *Mathematical Programming*, 26, 190–212.
- [111] J.W. Demmel (1997). *Applied Numerical Linear Algebra*. SIAM.
- [112] D. den Hertog (1992). *Interior Point Approach to Linear, Quadratic and Convex Programming*. Mathematics and its Applications 277. Kluwer Academic Publishers, Dordrecht.
- [113] J.E. Dennis, D.M. Gay, R.E. Welsch (1981). An adaptive nonlinear least squares algorithm. *ACM Transactions on Mathematical Software*, 7, 348–368.
- [114] J.E. Dennis, H.F. Walker (1984). Inaccuracy in quasi-Newton methods: local improvement theorems. *Mathematical Programming Study*, 22, 70–85.
- [115] P. Deuffhard (2004). *Newton Methods for Nonlinear Problems – Affine Invariance and Adaptive Algorithms*. Computational Mathematics 35. Springer, Berlin.
- [116] P. Deuffhard, G. Heindl (1980). Affine invariant convergence theorems for Newton's method and extensions to related methods. *SIAM Journal on Numerical Analysis*, 16, 1–10.

- [117] M.P. do Carmo (1993). *Riemannian Geometry*. Birkhauser, Boston.
- [118] Z. Dostál (2005). Inexact semimonotonic augmented Lagrangians with optimal feasibility convergence for convex bound and equality constrained quadratic programming. *SIAM Journal on Numerical Analysis*, 43, 96–115.
- [119] Z. Dostál, A. Friedlander, S.A. Santos (1999). Augmented Lagrangians with adaptive precision control for quadratic programming with equality constraints. *Computational Optimization and Applications*, 14, 37–53.
- [120] Z. Dostál, A. Friedlander, S.A. Santos (2003). Augmented Lagrangians with adaptive precision control for quadratic programming with simple bounds and equality constraints. *SIAM Journal on Optimization*, 13, 1120–1140.
- [121] Z. Dostál, A. Friedlander, S.A. Santos, K. Alesawi (2000). Augmented Lagrangians with adaptive precision control for quadratic programming with equality constraints: corrigendum and addendum. *Computational Optimization and Applications*, 23, 127–133.
- [122] Z. Dostál, F.A.M. Gomes, S.A. Santos (2000). Duality based domain decomposition with natural coarse space for variational inequalities. *Journal of Computational and Applied Mathematics*, 126, 397–415.
- [123] J. Drkošová, A. Greenbaum, M. Rozložník, Z. Strakoš (1995). Numerical stability of GMRES. *BIT*, 35, 309–330.
- [124] B.A. Dubrovin, A.T. Fomenko, S.P. Novikov (1985). *Modern Geometry – Methods and Applications – Vol. 2 : The Geometry and Topology of Manifolds*. Springer-Verlag, New York.
- [125] I.S. Duff, J.K. Reid (1982). MA27 – A set of Fortran subroutines for solving sparse symmetric sets of linear equations. Rapport de Recherche AERE R10533, HMSO, London.
- [126] I.S. Duff, J.K. Reid (1983). The multifrontal solution of indefinite sparse symmetric linear equations. *ACM Transactions on Mathematical Software*, 9, 302–325.
- [127] I.S. Duff, J.K. Reid (1996). Exploiting zeros on the diagonal in the direct solution of indefinite sparse symmetric linear systems. *ACM Transactions on Mathematical Software*, 22, 227–257.
- [128] J.C. Dunn (1987). On the convergence of projected gradient processes to singular critical points. *Journal of Optimization Theory and Applications*, 55, 203–216.
- [129] J. Edmonds (1965). Paths, trees, and flowers. *Canad. J. Math.*, 17, 449–467.
- [130] I. Ekeland, R. Temam (1974). *Analyse Convexe et Problèmes Variationnels*. Dunod, Paris.
- [131] J.Y. Fan (2003). A modified Levenberg-Marquardt algorithm for singular system of nonlinear equations. *Journal of Computational Mathematics*, 21, 625–636.
- [132] J. Farkas (1901). Über die theorie der einfachen ungleichungen. *Journal für die reine und angewandte Mathematik*, 124, 1–27. 1902 ?
- [133] W. Fenchel (1949). On conjugate functions. *cjm*, 1, 73–77.
- [134] W. Fenchel (1951). *Convex Cones, Sets, and Functions*. Mimeographed Notes. Princeton University.
- [135] A.V. Fiacco, G.P. McCormick (1968). *Nonlinear Programming: Sequential Unconstrained Minimization Techniques*. John Wiley, New York.
- [136] R. Fletcher (1970). A new approach to variable metric algorithms. *The Computer Journal*, 13, 317–322.
- [137] R. Fletcher (1980). *Practical Methods of Optimization. Volume 1: Unconstrained Optimization*. John Wiley & Sons, Chichester.
- [138] R. Fletcher (1987). *Practical Methods of Optimization* (seconde édition). John Wiley & Sons, Chichester.
- [139] R. Fletcher (1995). An optimal positive definite update for sparse Hessian matrices. *SIAM Journal on Optimization*, 5, 192–218.

- [140] R. Fletcher, M.J.D. Powell (1974). On the modification of LDL^T factorizations. *Mathematics of Computation*, 28, 1067–1087.
- [141] R. Fletcher, C.M. Reeves (1964). Function minimization by conjugate gradients. *The Computer Journal*, 7, 149–154.
- [142] A. Forsgren, P.E. Gill, M.H. Wright (2002). Interior methods for nonlinear optimization. *SIAM Review*, 44, 525–597.
- [143] M. Fortin, R. Glowinski (1982). *Méthodes de Lagrangien Augmenté – Applications à la Résolution Numérique de Problèmes aux Limites*. Méthodes Mathématiques de l'Informatique 9. Dunod, Paris.
- [144] J.B.J. Fourier (1827). Analyse des travaux de l'académie royale des sciences pendant l'année 1824, partie mathématique. In *Histoire de l'Académie Royale des Sciences de l'Institut de France*, Tome 7, pages xlvii–lv.
- [145] M. Frank, P. Wolfe (1956). An algorithm for quadratic programming. *Naval Res. Logistics Quart.*, 3, 95–110.
- [146] K.R. Frisch (1955). The logarithmic potential method for convex programming. Memorandum, Institute of Economics, University of Oslo, Oslo, Norway.
- [147] A. Fuduli, J.Ch. Gilbert (2003). OPINL: a truncated Newton interior-point algorithm for nonlinear optimization. Note de travail.
- [148] E.M. Gafni, D.P. Bertsekas (1984). Two-metric projection methods for constrained optimization. *SIAM Journal on Control and Optimization*, 22, 936–964.
- [149] S. Gallot, D. Hulin, J. Lafontaine (1987). *Riemannian Geometry*. Universitext. Springer-Verlag, Berlin.
- [150] F.R. Gantmacher (1959). *The Theory of Matrices*, Tome 1. Chelsea, New York.
- [151] M.R. Garey, D.S. Johnson (1979). *Computers and Intractability: a Guide to the Theory of NP-Completeness*. W.H. Freeman, San Francisco.
- [152] W. Gautschi (1997). *Numerical Analysis – An Introduction*. Birkhäuser, Boston.
- [153] J. Gauvin (1977). A necessary and sufficient regularity condition to have bounded multipliers in nonconvex programming. *Mathematical Programming*, 12, 136–138.
- [154] J. Gauvin (1992). *Théorie de la programmation mathématique non convexe*. Les Publications CRM, Montréal.
- [155] J. Gauvin (1995). *Leçons de Programmation Mathématique*. Éditions de l'École Polytechnique de Montréal, Montréal.
- [156] D.M. Gay (1981). Computing optimal locally constrained steps. *SIAM Journal on Scientific and Statistical Computing*, 2, 186–197.
- [157] L. El Ghaoui, H. Lebret (1997). Robust solutions to least-squares problems with uncertain data. *SIAM Journal on Matrix Analysis and Applications*, 18, 1035–1064.
- [158] J.Ch. Gilbert, C. Gonzaga, E. Karas (2005). Examples of ill-behaved central paths in convex optimization. *Mathematical Programming*, 103, 63–94.
- [159] J.Ch. Gilbert, X. Jonsson (2002). BFGS preconditioning of a trust region algorithm for unconstrained optimization. Rapport de recherche, INRIA, BP 105, 78153 Le Chesnay, France. (à paraître).
- [160] J.Ch. Gilbert, G. Le Vey, J. Masse (1991). La différentiation automatique de fonctions représentées par des programmes. Rapport de Recherche 1557, INRIA, BP 105, F-78153 Le Chesnay, France. <http://www.inria.fr/RRRT/RR-1557.html>; <ftp://ftp.inria.fr/INRIA/publication/RR,RR-1557.ps.gz>.
- [161] J.Ch. Gilbert, C. Lemaréchal (1989). Some numerical experiments with variable-storage quasi-Newton algorithms. *Mathematical Programming*, 45, 407–435.
- [162] J.Ch. Gilbert, J. Nocedal (1992). Global convergence properties of conjugate gradient methods for optimization. *SIAM Journal on Optimization*, 2, 21–42.
- [163] J.Ch. Gilbert, J. Nocedal (1993). Automatic differentiation and the step computation in the limited memory BFGS method. *Applied Mathematics Letters*, 6, 47–50.

- [164] P.E. Gill, G.H. Golub, W. Murray, M.A. Saunders (1974). Methods for modifying matrix factorizations. *Mathematics of Computation*, 28, 505–535.
- [165] P.E. Gill, W. Murray (1972). Quasi-Newton methods for unconstrained optimization. *Journal of the Institute of Mathematics and its Applications*, 9, 91–108.
- [166] P.E. Gill, W. Murray (1977). Modification of matrix factorizations after a rank-one change. In D.A.H. Jacobs, éditeur, *The State of the Art in Numerical Analysis*. Academic Press, London.
- [167] P.E. Gill, W. Murray, M.H. Wright (1981). *Practical Optimization*. Academic Press, New York.
- [168] D. Goldfarb (1970). A family of variable-metric method derived by variational means. *Mathematics of Computation*, 24, 23–26.
- [169] D. Goldfarb (1976). Factorized variable metric methods for unconstrained optimization. *Mathematics of Computation*, 30, 796–811.
- [170] D. Goldfarb, A. Idnani (1983). A numerically stable dual method for solving strictly convex quadratic programs. *Mathematical Programming*, 27, 1–33.
- [171] D. Goldfarb, K. Scheinberg (1998). Interior point trajectories in semidefinite programming. *SIAM Journal on Optimization*, 8, 871–886.
- [172] D. Goldfarb, M.J. Todd (1989). Linear programming. In G.L. Nemhauser, A.H.G. Rinnooy Kan, M.J. Todd, éditeurs, *Handbooks in Operations Research and Management Science*, Tome 1: Optimization, chapter 2, pages 73–170. Elsevier Science Publishers B.V., North-Holland.
- [173] A.J. Goldman, A.W. Tucker (1956). Polyhedral convex cones. In H.W. Kuhn, A.W. Tucker, éditeurs, *Linear Inequalities and Related Systems*, pages 19–40. Princeton University Press, Princeton.
- [174] A.A. Goldstein (1962). Cauchy’s method of minimization. *Numerische Mathematik*, 4, 146–150.
- [175] A.A. Goldstein (1964). Convex programming in Hilbert space. *Bulletin of the American Mathematical Society*, 70, 709–710.
- [176] A.A. Goldstein (1965). On steepest descent. *SIAM Journal on Control*, 3, 147–151.
- [177] E.G. Gol’shteïn, N.V. Tretyakov (1996). *Modified Lagrangians and Monotone Maps in Optimization*. Discrete Mathematics and Optimization. John Wiley & Sons, New York.
- [178] G.H. Golub, C.F. Van Loan (1996). *Matrix Computations*(troisième édition). The Johns Hopkins University Press, Baltimore, Maryland.
- [179] J. Gondzio (1995). HOPDM (version 2.12): a fast LP solver based on a primal-dual interior point method. *European Journal of Operations Research*, 85, 221–225.
- [180] C. Gonzaga (2001). Two facts on the convergence of the Cauchy algorithm. *Journal of Optimization Theory and Applications*. (à paraître).
- [181] P. Gordan (1873). Über die auflösung linearer gleichungen mit reelen coefficienten. *Mathematische Annalen*, 6, 23–28.
- [182] N. Gould, D. Orban, A. Sartenaer, Ph.L. Toint (2000). Superlinear convergence of primal-dual interior point algorithms for nonlinear programming. *Mathematical Programming*, 87, 215–249.
- [183] J.V. Grabiner (1983). The changing concept of change: the derivative from Fermat to Weierstrass. *Mathematics Magazine*, 56, 195–206.
- [184] B. Gracián (1647). *Oracle manuel et art de prudence*. Seuil. Recueil d’écrits de Baltasar Gracián y Morales (1601-1658), traduits de l’espagnol, introduits et annotés par Benito Pelegrín.
- [185] J. Gray (2002). Adrien-Marie Legendre (1752-1833). *European Mathematical Society Newsletter*, 45, 13.
- [186] A. Greenbaum (1989). Behavior of slightly perturbed Lanczos and conjugate-gradient recurrences. *Linear Algebra and its Applications*, 113, 7–63.

- [187] A. Greenbaum (1994). The Lanczos and conjugate gradient algorithms in finite precision arithmetic. In J.D. Brown, M.T. Chu, D.C. Ellison, R.J. Plemmons, éditeurs, *Proceedings of the Cornelius Lanczos International Centenary Conference*, pages 49–60. SIAM, Philadelphia, PA, USA.
- [188] A. Greenbaum (1997). *Iterative Methods for Solving Linear Systems*. SIAM, Philadelphia.
- [189] A. Greenbaum (1997). Estimating the attainable accuracy of recursively computed residual methods. *SIAM Journal on Matrix Analysis and Applications*, 18, 535–551.
- [190] A. Greenbaum, Z. Strakoš (1992). Predicting the behavior of finite precision Lanczos and conjugate gradient computations. *SIAM Journal on Matrix Analysis and Applications*, 13, 121–137.
- [191] A. Griewank (1985). On solving nonlinear equations with simple singularities or nearly singular solutions. *SIAM Review*, 27, 537–563.
- [192] A. Griewank (1989). On automatic differentiation. In M. Iri, K. Tanabe, éditeurs, *Mathematical Programming: Recent Developments and Applications*, pages 83–108. Kluwer Academic Publishers, Dordrecht.
- [193] A. Griewank (1992). Achieving logarithmic growth of temporal and spatial complexity in reverse automatic differentiation. *Optimization Methods and Software*, 1, 35–54.
- [194] A. Griewank (2000). *Evaluating Derivatives – Principles and Techniques of Algorithmic Differentiation*. SIAM Publication.
- [195] A. Griewank (2003). A mathematical view of automatic differentiation. In *Acta Numerica 2003*, pages 321–398. Cambridge University Press.
- [196] A. Griewank, G. Corliss, éditeurs. *Automatic Differentiation of Algorithms: Theory, Implementation, and Application*, number 53 in Proceedings in Applied Mathematics. SIAM, Philadelphia, (1991).
- [197] L. Grippo, F. Lampariello, S. Lucidi (1986). A nonmonotone line search technique for Newton’s method. *SIAM Journal on Numerical Analysis*, 23, 707–716.
- [198] W. Hackbusch (1994). *Iterative Solution of Large Sparse Systems of Equations*. Applied Mathematical Sciences 95. Springer-Verlag, New York.
- [199] W.W. Hager (1993). Analysis and implementation of a dual algorithm for constrained optimization. *Journal of Optimization Theory and Applications*, 79, 427–462.
- [200] M. Halická (2001). Analyticity of the central path at the boundary point in semidefinite programming. Rapport de recherche, Dep. of Appl. Math., FMFI UK, Mlynska dolina, 842 48 Bratislava, Slovakia.
- [201] M. Halická, E. de Klerk, C. Roos (2002). On the convergence of the central path in semidefinite optimization. *SIAM Journal on Optimization*, 12, 1090–1099.
- [202] M. Halická, E. de Klerk, C. Roos (2002). Limiting behavior of the central path in semidefinite optimization. Rapport de recherche.
- [203] S.-P. Han (1976). Superlinearly convergent variable metric algorithms for general nonlinear programming problems. *Mathematical Programming*, 11, 263–282.
- [204] S.-P. Han (1977). A globally convergent method for nonlinear programming. *Journal of Optimization Theory and Applications*, 22, 297–309.
- [205] P.C. Hansen (1998). *Rank-Deficient and Discrete Ill-Posed Problems: Numerical Aspects of Linear Inversion*. SIAM, Philadelphia.
- [206] R.J. Hanson, C.L. Lawson (1969). Extensions and applications of the Householder algorithm for solving linear least squares problems. *Mathematics of Computation*, 23, 787–812.
- [207] R. Hauser, J. Nedić (2005). The continuous Newton-Raphson method can look ahead. *SIAM Journal on Optimization*, 15, 915–925.
- [208] R. Helgason, J. Kennington (1995), *Handbooks in Operations Research and Management Science*. Tome 7: Network Models. North-Holland.

- [209] R. Helgason, J. Kennington, H. Lall (1980). A polynomially bounded algorithm for a singly constrained quadratic program. *Mathematical Programming*, 18, 338–343.
- [210] M.R. Hestenes (1969). Multiplier and gradient methods. *Journal of Optimization Theory and Applications*, 4, 303–320.
- [211] M.R. Hestenes, E. Stiefel (1952). Methods of conjugate gradients for solving linear systems. *Journal of Research of the National Bureau of Standards*, 49, 409–436.
- [212] N.J. Higham (2002). *Accuracy and Stability of Numerical Algorithms* (seconde édition). SIAM Publication, Philadelphia.
- [213] J.-B. Hiriart-Urruty (1996). *L'Optimisation*. Que sais-je 3184. Presses Universitaires de France.
- [214] J.-B. Hiriart-Urruty, C. Lemaréchal (1993). *Convex Analysis and Minimization Algorithms*. Grundlehren der mathematischen Wissenschaften 305-306. Springer-Verlag.
- [215] R.A. Horn, C. Jonhson (1985). *Matrix Analysis*. Cambridge University Press, Cambridge, U.K.
- [216] A.S. Householder (1964). *The Theory of Matrices in Numerical Analysis*. Blaisdell, New York.
- [217] S. Van Huffel, J. Vandewalle (1991). *The Total Least Squares Problem: Computational Aspects and Analysis*. Frontiers in Applied Mathematics 9. SIAM, Philadelphia.
- [218] J. Huschens (1994). On the use of production structure in secant methods for nonlinear least squares problems. *SIAM Journal on Optimization*, 4, 108–129.
- [219] M. Iri (1984). Simultaneous computation of functions, partial derivatives and estimates of rounding errors, complexity and practicality. *Japan Journal of Applied Mathematics*, 1, 223–252.
- [220] M. Iri, K. Kubota (1987). Methods of fast automatic differentiation and applications. Research Memorandum RMI 87-02, Department of Mathematical Engineering and Instrumentation Physics, Faculty of Engineering, University of Tokyo, Hongo 7-3-1, Bunkyo-ku, Tokyo, Japan.
- [221] D.D. Jackson (1972). Interpretation of inaccurate, insufficient and inconsistent data. *ggras*, 28, 97–109.
- [222] J. Jahn (1985). *Scalarization in multi objective optimization*. Springer-Verlag, Vienna.
- [223] B. Jansen (1997). *Interior Point Techniques in Optimization – Complementarity, Sensitivity and Algorithms*. Applied Optimization 6. Kluwer Academic Publishers, Dordrecht.
- [224] F. John (1948). Extremum problems with inequalities as subsidiary conditions. In K.O. Friedrichs, O.E. Neugebauer, J.J. Stokes, éditeurs, *Studies and Essays, Courant Anniversary Volume*, pages 186–204. Wiley Interscience, New York.
- [225] W. Kahan (1966). Numerical linear algebra. *Canadian Math. Bull.*, 9, 757–801.
- [226] L. Kantorovich (1939). The method of successive approximations for functional equations. *Acta Math.*, 71, 63–97.
- [227] L. Kantorovich (1948). On Newton's method for functional equations. *Dokl. Akad. Nauk SSSR*, 59, 1237–1240. (en russe).
- [228] L. Kantorovich (1949). On Newton's method. *Trudy Mat. Inst. Steklov*, 28, 104–144. (en russe).
- [229] L.V. Kantorovich (1940). On an efficient method for solving some classes of extremum problems. *Doklady AN SSSR*, 28, 212–215.
- [230] L.V. Kantorovich, G.P. Akilov (1982). *Functional Analysis* (seconde édition). Pergamon Press, London.
- [231] N. Karmarkar (1984). A new polynomial-time algorithm for linear programming. *Combinatorica*, 4, 373–395.
- [232] W.E. Karush (1939). *Minima of Functions of Several Variables with Inequalities as Side Conditions*. Master's thesis, Department of Mathematics, University of Chicago, Chicago.

- [233] C.T. Kelley (1995). *Iterative Methods for Linear and Nonlinear Equations*. SIAM Publication, Philadelphia.
- [234] C.T. Kelley (1999). *Iterative Methods for Optimization*. SIAM Publication, Philadelphia.
- [235] C.T. Kelley (2003). *Solving Nonlinear Equations with Newton's Method*. SIAM Publication, Philadelphia.
- [236] J.E. Kelley (1960). The cutting plane method for solving convex programs. *Journal of the Society for Industrial and Applied Mathematics*, 8, 703–712.
- [237] K.V. Kim, Yu.E. Nesterov, B.V. Cherkasskii (1984). An estimate of the effort in computing the gradient. *Soviet Math. Dokl.*, 29, 384–387.
- [238] V. Klee, G.L. Minty (1972). How good is the simplex algorithm ? In O. Shisha, éditeur, *Inequalities III*, pages 159–175. Academic Press, New York.
- [239] M. Kojima (1996). Basis lemmas in polynomial-time infeasible-interior-point methods for linear programs. *Annals of Operations Research*, 62, 1–28.
- [240] M. Kojima, S. Mizuno, A. Yoshise (1989). A primal-dual interior-point method for linear programming. In N. Megiddo, éditeur, *Progress in Mathematical Programming, Interior-point and Related Methods*, pages 29–47. Springer-Verlag, New York.
- [241] M. Kojima, S. Mizuno, A. Yoshise (1989). A polynomial-time algorithm for a class of linear complementarity problems. *Mathematical Programming*, 44, 1–26.
- [242] D. König (1936). *Theorie der Endlichen and Unendlichen Graphen*. Akademische Verlagsgesellschaft, Leipzig.
- [243] M.A. Krasnosel'skii, S.G. Krein (1952). An iteration process with minimal residues. *Mat. Sb.*, 31, 315–334. (en russe).
- [244] H.W. Kuhn (1976). Nonlinear programming: a historical view. In R.W. Cottle, C.E. Lemke, éditeurs, *Nonlinear Programming*, SIAM-AMS Proceedings, Tome IX, pages 1–26. American Mathematical Society, Providence, RI.
- [245] H.W. Kuhn, A.W. Tucker (1951). Nonlinear programming. In J. Neyman, éditeur, *Proceedings of the second Berkeley Symposium on Mathematical Studies and Probability*, pages 481–492. University of California Press, Berkeley, California.
- [246] J. Kyparisis (1985). On uniqueness of Kuhn-Tucker multipliers in nonlinear programming. *Mathematical Programming*, 32, 242–246.
- [247] P. Lascaux, R. Théodor (1986). *Analyse Numérique Matricielle Appliquée à l'Art de l'Ingénieur*. Masson, Paris.
- [248] L. Lasdon (1970). *Optimization Theory for Large Systems*. Macmillan Series in Operations Research.
- [249] J.B. Lasserre (1997). A Farkas lemma without a standard closure condition. *SIAM Journal on Control and Optimization*, 35, 265–272.
- [250] P.-J. Laurent (1972). *Approximation et Optimisation*. Hermann, Paris.
- [251] F.-X. Le Dimet, I.M. Navon, D.N. Daescu (2001). Second order information in data assimilation. *Monthly Weather Review*.
- [252] E.B. Lee, L. Markus (1967). *Foundations of Optimal Control Theory* (première édition). Wiley.
- [253] C. Lemaréchal (1981). A view of line-searches. In A. Auslender, W. Oettli, J. Stoer, éditeurs, *Optimization and Optimal Control*, Lecture Notes in Control and Information Science 30, pages 59–78. Springer-Verlag, Heidelberg.
- [254] C. Lemaréchal (2001). Lagrangian relaxation. Rapport de recherche, INRIA. http://www.optimization-online.org/DB_HTML/2001/03/298.html.
- [255] K. Levenberg (1944). A method for the solution of certain nonlinear problems in least squares. *Quart. Appl. Math.*, 2, 164–168.
- [256] E.S. Levitin, B.T. Polyak (1966). Constrained minimization problems. *USSR Comput. Math. Math. Phys.*, 6, 1–50.

- [257] Y.Y. Lin, J.-S. Pang (1987). Iterative methods for large scale convex quadratic programs: a survey. *SIAM Journal on Control and Optimization*, 25, 383–411.
- [258] J.L. Lions (1968). *Contrôle Optimal de Systèmes Gouvernés par des Equations aux Dérivées Partielles*. Etudes Mathématiques. Dunod – Gauthier-Villars, Paris.
- [259] S. Lucidi, M. Roma (1978). Nonmonotone conjugate gradient methods for optimization. In J. Henry, J.-P. Yvon, éditeurs, *System Modelling and Optimization*, Lecture Notes in Control and Information Sciences 170, pages 206–214. Springer-Verlag, Berlin.
- [260] Z.-Q. Luo, J.F. Sturm, S. Zhang (1998). Superlinear convergence of a symmetric primal-dual path following algorithm for semidefinite programming. *SIAM Journal on Optimization*, 8, 59–81.
- [261] O.L. Mangasarian, S. Fromovitz (1967). The Fritz John necessary optimality conditions in the presence of equality and inequality constraints. *Journal of Mathematical Analysis and Applications*, 17, 37–47.
- [262] D.W. Marquardt (1963). An algorithm for least-squares estimation of nonlinear parameters. *Journal of the Society for Industrial and Applied Mathematics*, 11, 431–441.
- [263] R.K. Martin (1999). *Large Scale Linear and Integer Optimization: a Unified Approach*. Kluwer Academic Publishers, Boston.
- [264] B. Martinet (1970). Régularisation d'inéquations variationnelles par approximations successives. *Revue Française d'Informatique et Recherche Opérationnelle*, R-3, 154–179.
- [265] B. Martinet (1972). Détermination approchée d'un point fixe d'une application pseudo-contractante. *C. R. Acad. Sci. Paris*, 274-A, 163–165.
- [266] J.M. Martínez (1994). Local minimizers of quadratic functions on Euclidean balls and spheres. *SIAM Journal on Optimization*, 4, 159–176.
- [267] J. Mawhin (1992). *Analyse – Fondements, Techniques, Évolution*. De Boeck.
- [268] J. Mawhin, N. Rouche (1973). *Équations Différentielles Ordinaires, Tome 1: Théorie Générale*. Masson et C^{ie}, Paris.
- [269] G.P. McCormick (1983). *Nonlinear Programming. Theory, Algorithms and Applications*. J. Wiley & Sons, New York.
- [270] L. McLinden (1980). An analogue of Moreau's proximation theorem, with application to the nonlinear complementarity problem. *Pacific Journal of Mathematics*, 88, 101–161.
- [271] N. Megiddo (1987). On the complexity of linear programming. In T. Bewley, éditeur, *Advances in Economic Theory*, pages 225–268. Cambridge Univ. Press, Cambridge.
- [272] S. Mehrotra (1992). On the implementation of a primal-dual interior point method. *SIAM Journal on Optimization*, 2, 575–601.
- [273] H. Minkowski (1896). *Geometrie der Zahlen*. Teubner, Leipzig.
- [274] M. Minoux (1983). *Programmation Mathématique. Théorie et Algorithmes*. Dunod, Paris.
- [275] G.J. Minty (1962). Monotone (nonlinear) operators in Hilbert spaces. *Duke Math. J.*, 29, 341–346.
- [276] S. Mizuno (1992). A new polynomial time method for a linear complementarity problem. *Mathematical Programming*, 56, 31–43.
- [277] S. Mizuno, M.J. Todd, Y. Ye (1993). On adaptive-step primal-dual interior-point algorithms for linear programming. *Mathematics of Operations Research*, 18, 964–981.
- [278] R. Monteiro, I. Adler (1989). Interior path following primal-dual algorithms. part I: linear programming. *Mathematical Programming*, 44, 27–41.
- [279] R.D.C. Monteiro (2003). First- and second-order methods for semidefinite programming. *Mathematical Programming*, 97, 209–244.
- [280] R.D.C. Monteiro, P.R. Zanjacomo (1997). A note of the existence of the alizadeh-haeberly-overton direction for semidefinite programming. *Mathematical Programming*, 78, 393–396.

- [281] R.D.C. Monteiro, F. Zhou (1998). On the existence and convergence of the central path for convex programming and some duality results. *Computational Optimization and Applications*, 10, 51–77.
- [282] B.S. Mordukhovich (2006). *Variational Analysis and Generalized Differentiation*. Grundlehren der mathematischen Wissenschaften 330-331. Springer.
- [283] J.J. Moré (1983). Recent developments in algorithms and software for trust region methods. In A. Bachem, M. Grötschel, B. Korte, éditeurs, *Mathematical Programming, the State of the Art*, pages 258–287. Springer-Verlag, Berlin.
- [284] J.J. Moré, D.C. Sorensen (1983). Computing a trust region step. *SIAM Journal on Scientific and Statistical Computing*, 4, 553–572.
- [285] J.J. Moré, G. Toraldo (1989). Algorithms for bound constrained quadratic programming problems. *Numerische Mathematik*, 55, 377–400.
- [286] J.J. Moré, S.A. Vavasis (1991). On the solution of concave knapsack problems. *Mathematical Programming*, 49, 397–411.
- [287] J.J. Moreau (1965). Proximité et dualité dans un espace hilbertien. *Bulletin de la Société Mathématique de France*, 93, 273–299.
- [288] MOZEK. <http://www.mozek.com>.
- [289] P.J. Nahin (2004). *When Least Is Best – How Mathematicians Discovered Many Clever Ways to Make Things as Small (or as Large) as Possible*. Princeton University Press.
- [290] L. Nazareth (1994). *The Newton-Cauchy Framework – A unified approach to unconstrained nonlinear minimization*. Lecture Notes in Computer Science 769. Springer-Verlag.
- [291] E.D. Nering, A.W. Tucker, éditeurs (1993). *Linear Programs and Related Problems*. Academic Press.
- [292] Y. Nesterov (2004). *Introductory Lectures on Convex Optimization – A Basic Course*. Kluwer Academic Publishers.
- [293] Y.E. Nesterov, A.S. Nemirovskii (1993). An interior point method for generalized linear-fractional programming. Rapport de recherche.
- [294] Y.E. Nesterov, A.S. Nemirovskii (1994). *Interior-Point Polynomial Algorithms in Convex Programming*. SIAM Studies in Applied Mathematics 13. SIAM, Philadelphia.
- [295] J. Nocedal (1980). Updating quasi-Newton matrices with limited storage. *Mathematics of Computation*, 35, 773–782.
- [296] J. Nocedal, R.A. Waltz (2001). KNITRO 1.00 – User’s manual. Department of Electrical Engineering and Computer Science, Northwestern University, Evanston, IL 60208, USA.
- [297] J. Nocedal, S.J. Wright (1999). *Numerical Optimization*. Springer Series in Operations Research. Springer, New York.
- [298] G. Nolet, R. Montelli, J. Virieux (1999). Explicit, approximate expressions for the resolution and a posteriori covariance of massive tomographic systems. *Geophysical Journal International*, 138, 36–44.
- [299] Y. Notay (1993). On the convergence rate of the conjugate gradients in presence of rounding errors. *Numerische Mathematik*, 65, 301–317.
- [300] J.M. Ortega, W.C. Rheinboldt (1970). *Iterative Solution of Nonlinear Equations in Several Variables*. Academic Press, New York.
- [301] M. Padberg (1999). *Linear Optimization and Extensions* (seconde édition). Springer, Berlin.
- [302] C.C. Paige (1974). Bidiagonalization of matrices and solution of linear equations. *SIAM Journal on Numerical Analysis*, 11, 197–209.
- [303] C.C. Paige, M.A. Saunders (1982). LSQR: an algorithm for sparse linear equations and sparse least squares. *ACM Transactions on Mathematical Software*, 8, 43–71.
- [304] C.H. Papadimitriou, K. Steiglitz (1982). *Combinatorial optimization: Algorithms and Complexity*. Prentice-Hall, New Jersey.

- [305] P.M. Pardalos, S.A. Vavasis (1992). Open questions in complexity theory for numerical optimization. *Mathematical Programming*, 57, 337–339.
- [306] V.Th. Paschos (2004). *Complexité et approximation polynomiale*. Lavoisier, Paris.
- [307] V.Th. Paschos, éditeur (2005). *Optimisation combinatoire 1 – Concepts fondamentaux*. Lavoisier, Paris.
- [308] E. Polak (1971). *Computational Methods in Optimization: A Unified Approach*. Academic Press, New York.
- [309] E. Polak (1997). *Optimization – Algorithms and Consistent Approximations*. Applied Mathematical Sciences 124. Springer.
- [310] B. Polyak (2001). History of mathematical programming in the ussr: analyzing the phenomenon. *Mathematical Programming*.
- [311] M.J.D. Powell (1969). A method for nonlinear constraints in minimization problems. In R. Fletcher, éditeur, *Optimization*, pages 283–298. Academic Press, London.
- [312] M.J.D. Powell (1970). A hybrid method for nonlinear equations. In P. Rabinowitz, éditeur, *Numerical Methods for Nonlinear Algebraic Equations*, pages 87–114. Gordon and Breach, New York.
- [313] M.J.D. Powell (1973). On search directions for minimization algorithms. *Mathematical Programming*, 4, 193–201.
- [314] M.J.D. Powell (1975). Convergence properties of a class of minimization algorithms. In O.L. Mangasarian, R.R. Meyer, S.M. Robinson, éditeurs, *Nonlinear Programming 2*, pages 1–27. Academic Press, New York.
- [315] M.J.D. Powell (1976). Some global convergence properties of a variable metric algorithm for minimization without exact line searches. In R.W. Cottle, C.E. Lemke, éditeurs, *Nonlinear Programming*, SIAM-AMS Proceedings 9. American Mathematical Society, Providence, RI.
- [316] M.J.D. Powell (1978). Algorithms for nonlinear constraints that use Lagrangian functions. *Mathematical Programming*, 14, 224–248.
- [317] M.J.D. Powell (1984). On the global convergence of trust region algorithms for unconstrained minimization. *Mathematical Programming*, 29, 297–303.
- [318] M.J.D. Powell (1987). Updating conjugate directions by the BFGS formula. *Mathematical Programming*, 38, 29–46.
- [319] L. Pronzato, H.P. Wynn, A.A. Zhigljavsky (2001). Renormalised steepest descent in Hilbert space converges to a two-point attractor. *Acta Applicandae Mathematicae*, 67, 1–18.
- [320] L. Pronzato, H.P. Wynn, A.A. Zhigljavsky (2004). Asymptotic behaviour of a family of gradient algorithms in \mathbb{R}^d and Hilbert spaces. Manuscript.
- [321] B.N. Pshenichnyj (1994). *The Linearization Method for Constrained Optimization*. Computational Mathematics 22. Springer-Verlag.
- [322] M. Ramana (1997). An exact duality theory for semidefinite programming and its complexity implications. *Mathematical Programming*, 77, 129–162.
- [323] M. Ramana, L. Tunçel, H. Wolkowicz (1997). Strong duality for semidefinite programming. *SIAM Journal on Optimization*, 7, 641–662.
- [324] T. Rapcsák (1997). *Nonconvex Optimization and its Applications*. Kluwer.
- [325] J. Renegar (2001). *A Mathematical View of Interior-Point Methods in Convex Optimization*. MPS/SIAM Series on Optimization 3. SIAM.
- [326] S.M. Robinson (1976). First order conditions for general nonlinear optimization. *SIAM Journal on Applied Mathematics*, 30, 597–607.
- [327] S.M. Robinson (1982). Generalized equations and their solutions, part II: applications to nonlinear programming. *Mathematical Programming Study*, 19, 200–221.
- [328] R.T. Rockafellar (1969). Convex functions and duality in optimization problems and dynamics. Lecture Notes in Operations Research and Mathematical Economics 11, pages 117–141. Springer-Verlag.

- [329] R.T. Rockafellar (1970). *Convex Analysis*. Princeton Mathematics Ser. 28. Princeton University Press, Princeton, New Jersey.
- [330] R.T. Rockafellar (1971). New applications of duality in convex programming. In *Proceedings of the 4th Conference of Probability, Brasov, Romania*, pages 73–81. (version écrite d’un exposé donné à différentes conférences, en particulier au “7th International Symposium on Mathematical Programming”, La Haye, 1970).
- [331] R.T. Rockafellar (1973). A dual approach to solving nonlinear programming problems by unconstrained optimization. *Mathematical Programming*, 5, 354–373.
- [332] R.T. Rockafellar (1973). The multiplier method of Hestenes and Powell applied to convex programming. *Journal of Optimization Theory and Applications*, 12, 555–562.
- [333] R.T. Rockafellar (1974). Augmented Lagrange multiplier functions and duality in nonconvex programming. *SIAM Journal on Control*, 12, 268–285.
- [334] R.T. Rockafellar (1974). *Conjugate Duality and Optimization*. Regional Conference Series in Applied Mathematics 16. SIAM, Philadelphia, PA.
- [335] R.T. Rockafellar (1976). Monotone operators and the proximal point algorithm. *SIAM Journal on Control and Optimization*, 14, 877–898.
- [336] R.T. Rockafellar (1976). Augmented Lagrangians and applications of the proximal point algorithm in convex programming. *Mathematics of Operations Research*, 1, 97–116.
- [337] R.T. Rockafellar (1993). Lagrange multipliers and optimality. *SIAM Review*, 35, 183–238.
- [338] Y.-H. De Roeck (2000). Sparse linear algebra and geophysical migration. Rapport de Recherche 3876, INRIA, BP 105, 78153 Le Chesnay, France.
- [339] C. Roos, T. Terlaky, J.-Ph. Vial (1997). *Theory and Algorithms for Linear Optimization – An Interior Point Approach*. John Wiley & Sons, Chichester.
- [340] Y. Saad, M.H. Schultz (1986). GMRES: a generalized minimal residual algorithm for solving non symmetric linear systems. *SIAM Journal on Scientific and Statistical Computing*, 7, 856–869.
- [341] S. Sahni (1974). Computationally related problems. *SIAM Journal on Computing*, 3, 262–279.
- [342] R. Saigal (1995). *Linear Programming – A Modern Integrated Analysis*. Kluwer Academic Publisher, Boston.
- [343] J.W. Sawyer (1984). First partial differentiation by computer with an application to categorial data analysis. *The American Statistician*, 38, 300–308.
- [344] A. Schrijver (1986). *Theory of Linear and Integrated Programming*. John Wiley & Sons.
- [345] L. Schwartz (1991). *Analyse I – Théorie des Ensembles et Topologie*. Hermann, Paris.
- [346] L. Schwartz (1992). *Analyse II – Calcul Différentiel et Équations Différentielles*. Hermann, Paris.
- [347] SEDUMI. <http://sedumi.mcmaster.ca>.
- [348] R. Shamir (1987). The efficiency of the simplex method: a survey. *Management Science*, 33, 301–334.
- [349] D.F. Shanno (1970). Conditioning of quasi-Newton methods for function minimization. *Mathematics of Computation*, 24, 647–656.
- [350] G.A. Shultz, R.B. Schnabel, R.H. Byrd (1985). A family of trust-region-based algorithms for unconstrained minimization with strong global convergence properties. *SIAM Journal on Numerical Analysis*, 22, 47–67.
- [351] D. Siegel (1993). Updating conjugate direction matrices using members of Broyden’s family. *Mathematical Programming*, 60, 167–185.
- [352] M. Slater (1950). Lagrange multipliers revisited: a contribution to non-linear programming. Cowles Commission Discussion Paper, Math. 403.

- [353] S. Smale (1983). On the average number of steps of the simplex method of linear programming. *Mathematical Programming*, 27, 241–262.
- [354] G. Sonnevend, J. Stoer, G. Zhao (1989). On the complexity of following the central path of linear programs by linear extrapolation. *Mathematics of Operations Research*, 63, 19–31.
- [355] G. Sonnevend, J. Stoer, G. Zhao (1991). On the complexity of following the central path of linear programs by linear extrapolation II. *Mathematical Programming*, 52, 527–553.
- [356] D.C. Sorensen (1982). Newton’s method with a model trust region modification. *SIAM Journal on Numerical Analysis*, 19, 409–426.
- [357] D.C. Sorensen (1982). Collinear scaling and sequential estimation in sparse optimization algorithms. *Mathematical Programming*, 18, 135–159.
- [358] B. Speelpenning (1980). *Compiling fast partial derivatives of functions given by algorithms*. PhD thesis, Department of Computer Science, University of Illinois at Urbana-Champaign, Urbana, IL 61801.
- [359] M. Spivak (1979). *A Comprehensive Introduction to Differential Geometry*. Publish or Perish.
- [360] G. Sporre, A. Forsgren (2002). Characterization of the limit point of the central path in semidefinite programming. Rapport de recherche.
- [361] T. Steihaug (1983). The conjugate gradient method and trust regions in large scale optimization. *SIAM Journal on Numerical Analysis*, 20, 626–637.
- [362] J.M. Stern, S.A. Vavasis (1993). Active set methods for problems in column block angular form. *Mat. Apl. Comput.*, 12, 199–226.
- [363] E. Stiefel (1952). Ausgleichung ohne aufstellung der gausschen normalgleichungen. *Wiss. Z. Technische Hochschule Dresden*, 2, 441–442.
- [364] V. Strassen (1969). Gaussian elimination is not optimal. *Numerische Mathematik*, 13, 354–356.
- [365] J.F. Sturm (1999). Using SeDuMi 1.02, a Matlab toolbox for optimization over symmetric cones. *Optimization Methods and Software*, 11, 625–653.
- [366] O. Talagrand (1997). Assimilation of observations, an introduction. *Journal of the Met. Soc. of Japan*, 75(1B), 191–209.
- [367] T. Terlaky, éditeur (1996). *Interior Point Methods of Mathematical Programming*. Kluwer Academic Press, Dordrecht.
- [368] T. Terlaky, S. Zhang (1993). Pivot rules for linear programming – a survey. *Annals of Operations Research*, 46, 203–233.
- [369] S.W. Thomas (1975). *Sequential estimation techniques for quasi-Newton algorithms*. Thèse de doctorat, Cornell University, Ithaca, NY.
- [370] A.N. Tikhonov (1963). Solution of ill-posed problems and the regularization method. *Soviet Mathematics Doklady*, 4, 1035–1038.
- [371] F. Tisseur (2001). Newton’s method in floating point arithmetic and iterative refinement of generalized eigenvalue problems. *SIAM Journal on Matrix Analysis and Applications*, 22, 1038–1057.
- [372] M.J. Todd (2001). Semidefinite optimization. In *Acta Numerica 2001*, pages 515–560. Cambridge University Press.
- [373] M.J. Todd, K.-C. Toh and R.H. Tütüncü (1998). On the Nesterov-Todd direction in semidefinite programming. *SIAM Journal on Optimization*, 8, 769–796.
- [374] Ph.L. Toint (1977). On sparse and symmetric matrix updating subject to a linear equation. *Mathematics of Computation*, 31, 954–961.
- [375] L.N. Trefethen, D. Bau (1997). *Numerical Linear Algebra*. SIAM Publication, Philadelphia.
- [376] C. Udrişte (1994). *Convex Functions and Optimization Methods on Riemannian Manifolds*. Mathematics and its Applications 297. Kluwer Academic Publishers, Dordrecht.

- [377] A. van der Sluis (1969). Condition numbers and equilibration of matrices. *Numerische Mathematik*, 15, 14–23.
- [378] H.A. van der Vorst (1990). The convergence behaviour of preconditioned CG and CG-S in the presence of rounding errors. In O. Axelsson, L.Y. Kolotilina, éditeurs, *Preconditioned Conjugate Gradient Methods*, Lecture Notes in Mathematics 1457, pages 126–136. Springer-Verlag, Berlin.
- [379] H.A. van der Vorst (2003). *Iterative Krylov Methods for Large Linear Systems*. Cambridge monographs on applied and computational mathematics 13. Cambridge University Press, Oxford.
- [380] L. Vandenberghe, S. Boyd (1996). Semidefinite programming. *SIAM Review*, 38, 49–95.
- [381] R.J. Vanderbei (1997). *Linear Programming: Foundations and Extensions*. Kluwer Academic Publishers, Boston.
- [382] S.A. Vavasis (1991). *Nonlinear Optimization – Complexity Issues*. Oxford University Press, New York.
- [383] S.A. Vavasis (1992). Local minima for indefinite quadratic knapsack problems. *Mathematical Programming*, 57, 127–153.
- [384] VAX UNIX MACSYMA: Reference manual, version 11 (1985). Symbolics.
- [385] R.A. Wiggins (1972). General linear inverse problem – implication of surface waves and free oscillations for Earth structure. *Rev. Geophys. Space Phys.*, 10, 251–285.
- [386] A.C. Williams (1970). Boundedness relations for linear constraint sets. *Linear Algebra and its Applications*, 3, 129–141.
- [387] R.B. Wilson (1963). *A simplicial algorithm for concave programming*. Thèse de doctorat, Graduate School of Business Administration, Harvard University, Cambridge, MA, USA.
- [388] P. Wolfe (1969). Convergence conditions for ascent methods. *SIAM Review*, 11, 226–235.
- [389] P. Wolfe (1971). Convergence conditions for ascent methods II: some corrections. *SIAM Review*, 13, 185–188.
- [390] P. Wolfe (1972). On the convergence of gradient methods under constraint. *IBM Journal of Research and Development*, 16, 407–411.
- [391] H. Wolkowicz, R. Saigal, L. Vandenberghe, éditeurs (2000). *Handbook of Semidefinite Programming – Theory, Algorithms, and Applications*. Kluwer Academic Publishers.
- [392] S. Wright, D. Orban (2002). Properties of the log-barrier function on degenerate nonlinear programs. *Mathematics of Operations Research*, 27, 585–613.
- [393] S.J. Wright (1993). Identifiable surfaces in constrained optimization. *SIAM Journal on Control and Optimization*, 31, 1063–1079.
- [394] S.J. Wright (1996). A path-following interior-point algorithm for linear and quadratic problems. *Annals of Operations Research*, 62, 103–130.
- [395] S.J. Wright (1997). *Primal-Dual Interior-Point Methods*. SIAM Publication, Philadelphia.
- [396] S.J. Wright (1999). Modified Cholesky factorizations in interior-point algorithms for linear programming. *SIAM Journal on Optimization*, 9, 1159–1191.
- [397] H. Yabe, N. Yamaki (1995). Convergence of a factorized Broyden-like family for nonlinear least squares problems. *SIAM Journal on Optimization*, 5, 770–790.
- [398] Y. Ye (1992). On the finite convergence of interior-point algorithms for linear programming. *Mathematical Programming*, 57, 325–336.
- [399] Y. Ye (1997). *Interior Point Algorithms – Theory and Analysis*. Wiley-Interscience Series in Discrete Mathematics and Optimization. Wiley.
- [400] Y. Ye, M.J. Todd, S. Mizuno (1994). An $O(\sqrt{n}L)$ -iteration homogeneous and self-dual linear programming algorithm. *Mathematics of Operations Research*, 19, 53–67.
- [401] T.J. Ypma (1983). Finding a multiple zero by transformations and Newton-like methods. *SIAM Review*, 25, 365–378.

- [402] T.J. Ypma (1995). Historical development of the Newton-Raphson method. *SIAM Review*, 37, 531–551.
- [403] X. Zhan (2002). *Matrix Inequalities*. Springer.
- [404] Y. Zhang (1994). On the convergence of a class of infeasible interior-point methods for the horizontal linear complementarity problem. *SIAM Journal on Optimization*, pages 208–227.
- [405] Y. Zhang (1998). Solving large-scale linear programs with interior-point methods under the Matlab environment. *Optimization Methods and Software*, 10, 1–31.
- [406] G. Zoutendijk (1970). Nonlinear programming, computational methods. In J. Abadie, éditeur, *Integer and Nonlinear Programming*, pages 37–86. North-Holland, Amsterdam.

La figure E.3 donne par tranche de 10 ans la fréquence des publications contenues

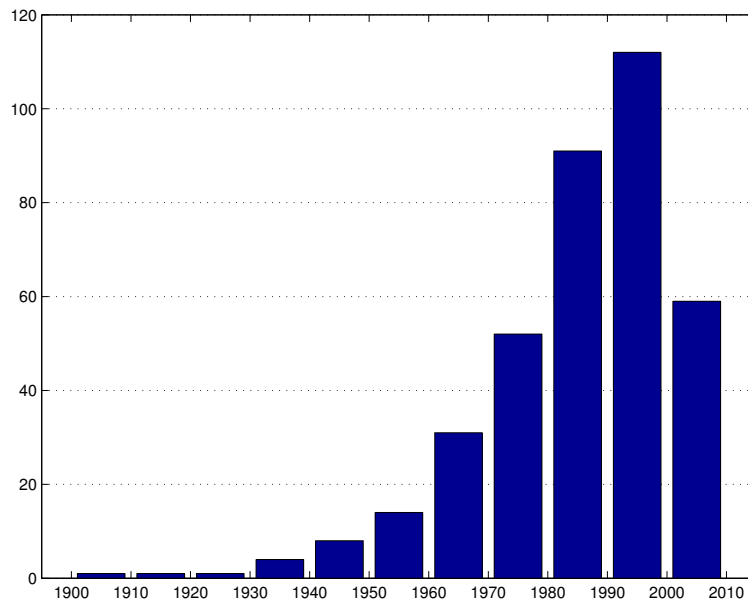


Fig. E.3. Fréquence des publications de la bibliographie en fonction de leur date de parution.

dans cette bibliographie en fonction de leur date de parution (cette idée a été empruntée à N. Higham [212]). On constate une croissance exponentielle de celles-ci jusqu'en 1990. Cette évolution reflète, selon nous, le filtre qu'opère notre mémoire sur le passé et l'accroissement des activités de recherche dans ce domaine. Par ailleurs, la décennie 2000-2009 n'était pas terminée au moment de la parution de cet ouvrage. Quant au tassement de la croissance observé dans la tranche 1990-1999, le lecteur est libre d'en avoir sa propre interprétation . . . On constate également que l'optimisation numérique est une discipline jeune. Les publications d'avant 1950 sont relatives à l'analyse convexe et à l'algèbre linéaire, parfois à l'optimisation, mais guère aux aspects numériques de cette dernière discipline, qui ne se sont développés qu'après la seconde guerre mondiale.

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