

References

1. Agueh, M., Carlier, G.: Barycenters in the Wasserstein space. *SIAM J. Math. Anal.* **43**(2), 904–924 (2011)
2. Akhiezer, N.I.: *The Classical Moment Problem*. Hafner Publishing Co., New York (1965)
3. Aliprantis, C.D., Border, K.C.: *Infinite dimensional analysis*, 3rd edn. Springer, Berlin (2006)
4. Alizadeh, F., Goldfarb, D.: Second-order cone programming. *Math. Program.* **95**(1, Ser. B), 3–51 (2003)
5. Altman, E.: *Constrained Markov Decision Processes*. Stochastic Modeling. Chapman & Hall/CRC, Boca Raton (1999)
6. Ambrosio, L., Fusco, N., Pallara, D.: *Functions of Bounded Variation and Free Discontinuity Problems*. Oxford Mathematical Monographs. The Clarendon Press, Oxford University Press, New York (2000)
7. Arapostathis, A., Borkar, V.S., Fernández-Gaucherand, E., Ghosh, M.K., Marcus, S.I.: Discrete-time controlled Markov processes with average cost criterion: a survey. *SIAM J. Control Optim.* **31**(2), 282–344 (1993)
8. Araujo, A., Giné, E.: *The Central Limit Theorem for Real and Banach Valued Random Variables*. Wiley, New York (1980)
9. Artzner, P., Delbaen, F., Eber, J.M., Heath, D.: Coherent measures of risk. *Math. Financ.* **9**(3), 203–228 (1999)
10. Attouch, H., Brézis, H.: Duality for the sum of convex functions in general Banach spaces. In: Barroso, J.A. (ed) *Aspects of Mathematics and its Applications*, pp. 125–133 (1986)
11. Aubin, J.-P., Ekeland, I.: Estimates of the duality gap in nonconvex optimization. *Math. Oper. Res.* **1**(3), 225–245 (1976)
12. Aubin, J.P., Frankowska, H.: *Set-Valued Analysis*. Birkhäuser, Boston (1990)
13. Bardi, M., Capuzzo-Dolcetta, I.: *Optimal Control and Viscosity Solutions of Hamilton-Jacobi-Bellman Equations*. Birkhäuser, Boston (1997)
14. Ben-Tal, A., Golany, B., Nemirovski, A.: Vial, J-Ph: Supplier-retailer flexible commitments contracts: a robust optimization approach. *Manuf. Serv. Oper. Manag.* **7**(3), 248–273 (2005)
15. Ben-Tal, A., Nemirovski, A.: *Lectures on modern convex optimization*. Society for Industrial and Applied Mathematics (SIAM), Philadelphia, MPS/SIAM Series on Optimization (2001)
16. Ben-Tal, Aharon: Ghaoui, El: Laurent, Nemirovski, Arkadi: *Robust Optimization*. Princeton University Press, Princeton (2009)
17. Benamou, J.-D., Carlier, G.: Augmented Lagrangian methods for transport optimization, mean field games and degenerate elliptic equations. *J. Optim. Theory Appl.* **167**(1), 1–26 (2015)
18. Benders, J.F.: Partitioning procedures for solving mixed-variables programming problems. *Numer. Math.* **4**, 238–252 (1962)
19. Bertsekas, D.P.: *Dynamic Programming and Optimal Control*, 2nd edn., vol I & II. Athena Scientific, Belmont (2000, 2001)

20. Billingsley, P.: *Convergence of Probability Measures*, 2nd edn. Wiley Inc., New York (1999)
21. Birge, J.R., Louveaux, F.: *Introduction to Stochastic Programming*. Springer, New York (1997)
22. Bokanowski, O., Maroso, S., Zidani, H.: Some convergence results for Howard's algorithm. *SIAM J. Numer. Anal.* **47**(4), 3001–3026 (2009)
23. Bonnans, J.F., Cen, Z.: Christel, Th: Energy contracts management by stochastic programming techniques. *Ann. Oper. Res.* **200**, 199–222 (2012)
24. Bonnans, J.F., Gilbert, J.C., Lemaréchal, C., Sagastizábal, C.: *Numerical Optimization: Theoretical and Numerical Aspects*, 2nd edn. Universitext. Springer, Berlin (2006)
25. Bonnans, J.F., Ramírez, H.: Perturbation analysis of second-order cone programming problems. *Math. Program.* **104**(2–3, Ser. B), 205–227 (2005)
26. Bonnans, J.F., Shapiro, A.: *Perturbation Analysis Of Optimization Problems*. Springer, New York (2000)
27. Brenier, Y.: Polar factorization and monotone rearrangement of vector-valued functions. *Commun. Pure Appl. Math.* **44**(4), 375–417 (1991)
28. Brézis, H.: *Functional Analysis. Sobolev Spaces and Partial Differential Equations*. Springer, New York (2011)
29. Brézis, H., Lieb, E.: A relation between pointwise convergence of functions and convergence of functionals. *Proc. Am. Math. Soc.* **88**(3), 486–490 (1983)
30. Brøndsted, A.: Convexification of conjugate functions. *Math. Scand.* **36**, 131–136 (1975)
31. Carlier, G., Ekeland, I.: Matching for teams. *Econ. Theory* **42**(2), 397–418 (2010)
32. Carpentier, P., Chancelier, J-Ph, Cohen, G., De Lara, M.: *Stochastic Multi-stage Optimization*. Springer, Berlin (2015)
33. Castaing, C., Valadier, M.: *Convex Analysis and Measurable Multifunctions*. Lecture Notes in Mathematics, vol. 580. Springer, Berlin (1977)
34. Csiszár, I.: Information-type measures of difference of probability distributions and indirect observations. *Stud. Sci. Math. Hungar.* **2**, 299–318 (1967)
35. Cuturi, M.: Sinkhorn distances: lightspeed computation of optimal transportation. In: *Neural Information Processing Conference Proceedings*, pp. 2292–2300 (2013)
36. Cuturi, M., Doucet, A.: Fast computation of Wasserstein barycenters. In: Xing, E.P., Jebara, T. (eds.) *Proceedings of the 31st International Conference on Machine Learning*. Proceedings of Machine Learning Research, vol. 32, pp. 685–693, Beijing, China (2014)
37. Dallagi, A.: *Méthodes particulières en commande optimale stochastique*. Ph.D. thesis, Université Paris I (2007)
38. Danskin, J.M.: *The Theory of Max-Min and Its Applications to Weapons Allocation Problems*. Springer, New York (1967)
39. Decarreau, A., Hilhorst, D., Lemaréchal, C., Navaza, J.: Dual methods in entropy maximization. Application to some problems in crystallography. *SIAM J. Optim.* **2**(2), 173–197 (1992)
40. Dellacherie, C., Meyer, P.-A.: *Probabilities and potential*. North-Holland Mathematics Studies, vol. 29. North-Holland Publishing Co., Amsterdam (1978)
41. Demengel, F., Temam, R.: Convex functions of a measure and applications. *Indiana Univ. Math. J.* **33**(5), 673–709 (1984)
42. Demengel, F., Temam, R.: Convex function of a measure: the unbounded case. *FERMAT days 85: mathematics for optimization* (Toulouse, 1985). North-Holland Mathematics Studies, vol. 129, pp. 103–134. North-Holland, Amsterdam (1986)
43. Dentcheva, D., Ruszczyński, A.: Common mathematical foundations of expected utility and dual utility theories. *SIAM J. Optim.* **23**(1), 381–405 (2013)
44. Dolecki, S., Kurczyk, S.: On Φ -convexity in extremal problems. *SIAM J. Control Optim.* **16**(2), 277–300 (1978)
45. Dudley, R.M.: *Real Analysis and Probability*. Cambridge University Press, Cambridge (2002). Revised reprint of the 1989 original
46. Ekeland, I., Temam, R., *Convex Analysis and Variational Problems*. Studies in Mathematics and its Applications, vol. 1. North-Holland, Amsterdam (1976). French edition: *Analyse convexe et problèmes variationnels*. Dunod, Paris (1974)
47. Fenchel, W.: On conjugate convex functions. *Can. J. Math.* **1**, 73–77 (1949)

48. Fenchel, W.: *Convex Cones and Functions*. Lecture Notes. Princeton University, Princeton (1953)
49. Föllmer, H., Schied, A.: *Stochastic Finance: An Introduction in Discrete Time*. de Gruyter Studies in Mathematics, vol. 27. Walter de Gruyter & Co., Berlin (2002)
50. Fortin, M., Glowinski, R.: *Augmented Lagrangian Methods*. North-Holland, Amsterdam (1983)
51. Georghiou, A., Wiesemann, W., Kuhn, D.: Generalized decision rule approximations for stochastic programming via liftings. *Math. Program.* **152**(1-2, Ser. A), 301–338 (2015)
52. Girardeau, P., Leclere, V., Philpott, A.B.: On the convergence of decomposition methods for multistage stochastic convex programs. *Math. Oper. Res.* **40**(1), 130–145 (2015)
53. Goberna, M.A., Lopez, M.A.: *Linear Semi-infinite Optimization*. Wiley Series in Mathematical Methods in Practice, vol. 2. Wiley, Chichester (1998)
54. Gol'shtein, E.G.: *Theory of Convex Programming*. Translations of Mathematical Monographs, vol. 36. American Mathematical Society, Providence (1972)
55. Gouriéroux, C.: *ARCH Models and Financial Applications*. Springer, New York (1997)
56. Hernández-Lerma, O., Lasserre, J.B.: *Discrete-Time Markov Control Processes*. Springer, New York (1996)
57. Hernández-Lerma, O., Lasserre, J.B.: *Further Topics on Discrete-Time Markov Control Processes*. Springer, New York (1999)
58. Hestenes, M.R.: Multiplier and gradient methods. *J. Optim. Theory Appl.* **4**, 303–320 (1969)
59. Hoffman, A.: On approximate solutions of systems of linear inequalities. *J. Res. Natl. Bureau Stand., Sect. B, Math. Sci.* **49**, 263–265 (1952)
60. Horn, R.A., Johnson, C.R.: *Matrix Analysis*, 2nd edn. Cambridge University Press, Cambridge (2013)
61. Hsu, S.-P., Chuang, D.-M., Arapostathis, A.: On the existence of stationary optimal policies for partially observed MDPs under the long-run average cost criterion. *Syst. Control Lett.* **55**(2), 165–173 (2006)
62. Kall, P., Wallace, S.W.: *Stochastic Programming*. Wiley, Chichester (1994)
63. Kelley, J.E.: The cutting plane method for solving convex programs. *J. Soc. Indust. Appl. Math.* **8**, 703–712 (1960)
64. Komiyama, H.: Elementary proof for Sion's minimax theorem. *Kodai Math. J.* **11**(1), 5–7 (1988)
65. Krein, M., Milman, D.: On extreme points of regular convex sets. *Studia Math.* **9**, 133–138 (1940)
66. Kuhn, D., Wiesemann, W., Georghiou, A.: Primal and dual linear decision rules in stochastic and robust optimization. *Math. Program.* **130**(1, Ser. A), 177–209 (2011)
67. Kushner, H.J., Dupuis, P.G.: *Numerical Methods for Stochastic Control Problems in Continuous Time*. Applications of Mathematics, vol. 24, 2nd edn. Springer, New York (2001)
68. Lang, S.: *Real and Functional Analysis*, 3rd edn. Springer, New York (1993)
69. Lasserre, J.B.: Semidefinite programming versus LP relaxations for polynomial programming. *Math. Oper. Res.* **27**, 347–360 (2002)
70. Lemaréchal, C., Oustry, F.: Semidefinite relaxations and Lagrangian duality with application to combinatorial optimization. *Rapport de Recherche INRIA* **3710**, (1999)
71. Lewis, A.: The mathematics of eigenvalue optimization. *Math. Programm.* **97**, 155–176 (2003)
72. Lewis, A.S.: The convex analysis of unitarily invariant matrix functions. *J. Convex Anal.* **2**(1–2), 173–183 (1995)
73. Lewis, A.S., Overton, M.L.: Eigenvalue optimization. In: *Acta numerica*, 1996, pp. 149–190. Cambridge University Press, Cambridge (1996)
74. Liapounoff, A.: Sur les fonctions-vecteurs complètement additives. *Bull. Acad. Sci. URSS. Sér. Math. [Izvestia Akad. Nauk SSSR]* **4**, 465–478 (1940)
75. Linderoth, J.T., Shapiro, A., Wright, S.: The empirical behavior of sampling methods for stochastic programming. Technical Report 02-01, Computer Science Department, University of Wisconsin-Madison (2002)
76. Lobo, M.S., Vandenberghe, L., Boyd, S., Lebret, H.: Applications of second-order cone programming. *Linear Algebra Appl.* **284**, 193–228 (1998)

77. Malliavin, P.: *Integration and Probability*. Springer, New York (1995). French edition: Masson, Paris (1982)
78. Mandelbrojt, S.: Sur les fonctions convexes. *C. R. Acad. Sci., Paris* **209**, 977–978 (1939)
79. Maréchal, P.: On the convexity of the multiplicative potential and penalty functions and related topics. *Math. Program.* **89**(3, Ser. A), 505–516 (2001)
80. Modica, L.: The gradient theory of phase transitions and the minimal interface criterion. *Arch. Ration. Mech. Anal.* **98**(2), 123–142 (1987)
81. Monahan, G.E.: A survey of partially observable Markov decision processes: theory, models, and algorithms. *Manag. Sci.* **28**(1), 1–16 (1982)
82. Moreau, J.-J.: Proximité et dualité dans un espace hilbertien. *Bull. Soc. Math. France* **93**, 273–299 (1965)
83. Moreau, J.-J.: Fonctionnelles convexes. In: Leray, J. (ed.) *Séminaire sur les équations aux dérivées partielles*, vol. 2, pp. 1–108. Collège de France (1966/1967). www.numdam.org
84. Moreau, J.-J.: Inf-convolution, sous-additivité, convexité des fonctions numériques. *J. Math. Pures Appl.* **9**(49), 109–154 (1970)
85. Nesterov, Y., Nemirovskii, A.: *Interior-Point Polynomial Algorithms in Convex Programming*. Society for Industrial and Applied Mathematics (SIAM), Philadelphia (1994)
86. Pereira, M.V.F., Pinto, L.M.V.G.: Multi-stage stochastic optimization applied to energy planning. *Math. Program.* **52**(2, Ser. B), 359–375 (1991)
87. Pontryagin, L.S., Boltyanskiĭ, V.G., Gamkrelidze, R.V., Mishchenko, E.F.: *The Mathematical Theory of Optimal Processes*. Gordon & Breach Science Publishers, New York (1986). Reprint of the 1962 English translation
88. Powell, M.J.D.: A method for nonlinear constraints in minimization problems. In: Fletcher, R. (ed.) *Optimization*, pp. 283–298. Academic, New York (1969)
89. Powell, M.J.D.: *Approximation Theory and Methods*. Cambridge University Press, Cambridge (1981)
90. Pulleyblank, W.R.: Polyhedral combinatorics. In: Nemhauser, G.L., et al. (eds.) *Optimization*. Elsevier, Amsterdam (1989)
91. Puterman, M.L.: *Markov Decision Processes: Discrete Stochastic Dynamic Programming*. WileyInc, New York (1994)
92. Puterman, M.L., Shin, M.C.: Modified policy iteration algorithms for discounted Markov decision problems. *Manag. Sci.* **24**(11), 1127–1137 (1978)
93. Rockafellar, R.T.: Duality theorems for convex functions. *Bull. Am. Math. Soc.* **70**, 189–192 (1964)
94. Rockafellar, R.T.: Extension of Fenchel’s duality theorem for convex functions. *Duke Math. J.* **33**, 81–90 (1966)
95. Rockafellar, R.T.: Extension of Fenchel’s duality theorem for convex functions. *Duke Math. J.* **33**, 81–89 (1966)
96. Rockafellar, R.T.: Integrals which are convex functionals. *Pacif. J. Math.* **24**, 525–539 (1968)
97. Rockafellar, R.T.: *Convex Analysis*. Princeton University Press, Princeton (1970)
98. Rockafellar, R.T.: Convex integral functionals and duality. In: *Contributions to Nonlinear Functional Analysis* (Proc. Sympos., Math. Res. Center, University of Wisconsin, Madison, Wisconsin, 1971), pp. 215–236. Academic, New York (1971)
99. Rockafellar, R.T.: Integrals which are convex functionals. II. *Pacif. J. Math.* **39**, 439–469 (1971)
100. Rockafellar, R.T.: *Conjugate Duality and Optimization*. Regional Conference Series in Applied Mathematics, vol. 16. SIAM, Philadelphia (1974)
101. Rockafellar, R.T.: Augmented Lagrangians and applications of the proximal point algorithm in convex programming. *Math. Oper. Res.* **1**, 97–116 (1976)
102. Rockafellar, R.T.: Integral functionals, normal integrands and measurable selections. In: *Non-linear Operators and the Calculus of Variations* (Summer School, Univ. Libre Bruxelles, Brussels, 1975). *Lecture Notes in Mathematics*, vol. 543, pp. 157–207. Springer, Berlin (1976)
103. Rockafellar, R.T., Wets, R.J.-B.: Stochastic convex programming: basic duality. *Pacif. J. Math.* **62**(1), 173–195 (1976)

104. Rockafellar, R.T., Wets, R.J.-B.: Stochastic convex programming: singular multipliers and extended duality singular multipliers and duality. *Pacif. J. Math.* **62**(2), 507–522 (1976)
105. Royden, H.L.: *Real Analysis*, 3rd edn. Macmillan Publishing Company, New York (1988)
106. Ruszczyński, A., Shapiro, A. (eds.): *Stochastic Programming. Handbook in Operations Research and Management*, vol. 10. Elsevier, Amsterdam (2003)
107. Ruszczyński, A., Shapiro, A.: Conditional risk mappings. *Math. Oper. Res.* **31**(3), 544–561 (2006)
108. Santambrogio, F.: *Optimal Transport for Applied Mathematicians*. Birkhäuser (2015)
109. Santos, M.S., Rust, J.: Convergence properties of policy iteration. *SIAM J. Control Optim.* **42**(6), 2094–2115 (electronic) (2004)
110. Schrijver, A.: *Theory of Linear and Integer Programming*. Wiley, New Jersey (1986)
111. Shapiro, A.: Asymptotic analysis of stochastic programs. *Ann. Oper. Res.*, 30(1–4):169–186 (1991). *Stochastic programming, Part I* (Ann Arbor, MI, 1989)
112. Shapiro, A.: Asymptotics of minimax stochastic programs. *Stat. Probab. Lett.* **78**(2), 150–157 (2008)
113. Shapiro, A.: Analysis of stochastic dual dynamic programming method. *Eur. J. Oper. Res.* **209**(1), 63–72 (2011)
114. Shapiro, A., Dentcheva, D., Ruszczyński, A.: *Lectures on Stochastic Programming: Modelling and Theory*, 2nd edn. SIAM (2014)
115. Shiryaev, A.N.: *Probability. Graduate Texts in Mathematics*, vol. 95, 2nd edn. Springer, New York (1996). Translated from the first (1980) Russian edition by R.P. Boas
116. Sinkhorn, R.: Diagonal equivalence to matrices with prescribed row and column sums. *Am. Math. Mon.* **74**(4), 402–405 (1967)
117. Sion, M.: On general minimax theorems. *Pacif. J. Math.* **8**, 171–176 (1958)
118. Skorohod, A.V.: Limit theorems for stochastic processes. *Teor. Veroyatnost. i Primenen.* **1**, 289–319 (1956)
119. Tardella, F.: A new proof of the Lyapunov convexity theorem. *SIAM J. Control Optim.* **28**(2), 478–481 (1990)
120. Tibshirani, R.: Regression shrinkage and selection via the lasso: a retrospective. *J. R. Stat. Soc. Ser. B* **73**, Part 3, 273–282 (2011)
121. Villani, C.: *Intégration et analyse de Fourier*. ENS Lyon (2007). Revised in 2010
122. Villani, C.: *Optimal Transport. Old and New*. Springer, Berlin (2009)
123. Wallace, S.W., Ziemba, W.T. (eds.): *Applications of Stochastic Programming*. MPS/SIAM Series Optimization, vol. 5. SIAM, Philadelphia (2005)
124. Wets, R.J.-B.: Stochastic programs with fixed recourse: the equivalent deterministic program. *SIAM Rev.* **16**, 309–339 (1974)
125. Wolkowicz, H., Saigal, R., Vandenberghe, L. (eds.): *Handbook of Semidefinite Programming*. Kluwer Academic Publishers, Boston (2000)
126. Yosida, K., Hewitt, E.: Finitely additive measures. *Trans. Am. Math. Soc.* **72**, 46–66 (1952)
127. Zhou, L.: A simple proof of the Shapley-Folkman theorem. *Econom. Theory* **3**(2), 371–372 (1993)
128. Zou, J., Ahmed, S., Sun, X.A.: Stochastic dual dynamic integer programming. *Math. Program.* (2018)

Index

A

Acceptation set, 170
Accessible set, 234
Adjoint state, 215
Algebra, 117
Algorithm
 cutting plane, 268
 Kelley, 268
Application
 measurable, 119
Approximation
 Moreau–Yosida, 38
Approximation in the sense of Chebyshev,
 101

B

Backward equation, 215
Biconjugate, 19
Bidual, 89
Bochner, 140
Borel σ -algebra, 118
Borel–Cantelli, 125
Borelian function, 121
Bounded
 in probability, 181

C

Calmness, 51
Carathéodory, 142
Carathéodory theorem, 123
Castaing representation, 143
Cauchy sequence, 5
Class
 recurrent, 257
 transient, 257

Compatibility, 209
Compatible
 multimapping, 144
Conditional
 expectation, 202
 variance, 208
Cone
 normal, 31
 recession, 41
 tangent, 31
Cone of nonincreasing vectors, 80
Conjugate, 17, 21
Contact set, 96
Convergence
 in law, 180
 in measure, 127
 in probability, 127
 narrow, 180
 simple, 120, 233
Convex
 function, 3
 set, 3
Convex closure, 20
Core, 26
Costate, 215
 adapted, 217
Countable additivity, 122
Covariance, 185
Cycle, 257
Cylinder, 125

D

Distribution
 empirical, 190
Disutility, 165
Domain, 1

- Dominated convergence, 132, 137
 - generalized, 133
- Doob–Dynkin, 121
- Dynamic programming, 229, 230, 232, 239, 270
 - ergodic, 264
- E**
- Egoroff, 127
- Entropy, 36
- Epigraph, 4
- Estimate of lack of convexity, 69
- Exchange property, 142
- Exhaustion sequence, 122
- Expansive (non), 54
- Extremal loading, 114
- F**
- Fatou, 133
- Fenchel
 - duality, 42
 - subdifferential formula, 46
- Fenchel conjugate, 17
- Fenchel–Young inequality, 17
- Filtration, 218
- Floor approximation, 121
- Function
 - moment-generating, 199
 - perspective, 63
 - rate, 199
 - recession, 62
 - simple, 120
 - spectral, 80
 - step, 120
 - symmetric, 80
- G**
- Gâteaux differentiable, 29
- Gauge function, 7
- Graph class, 257
- H**
- Hadamard
 - differentiability, 187, 188
- Half-space, 6
- Hamiltonian, 250
- Hyperplane, 6
- I**
- Indicatrix function, 2
- Inequality
 - Tchebycheff, 129
- Infimal convolution, 60
- Innovations, 214
- Integrable selection, 156
- Interpolation
 - Lagrange, 104
- Iteration
 - Howard, 236
 - policy, 236
 - values, 235
- K**
- Kolmogorov equation, 226
- L**
- Lagrangian, 65
 - duality, 33
 - standard, 38
- Legendre transform, 23
- Lemma
 - Schur, 78
 - Schur (generalized), 88
- Limit
 - Cesaro, 256
- Linear rate, 256
- Local solution, 72
- Log-likelihood, 177
- M**
- Markov chain, 223
- Maximum likelihood, 177
- Measure, 122
 - completed, 125
 - Gaussian, 185
 - non-atomic, 156
 - positive, 97
 - probability, 122
 - with finite support, 97
- Metric, 2
- Minimizing sequence, 2
- Minkowski sum, 7
- Moments of distributions, 111
- Monotone convergence, 131
- Monotonicity, 168
- Multiplier
 - Lagrange with finite support, 97
- N**
- Neutral risk probability, 167
- Nonanticipativity constraint, 218

Norm

- differentiable, 29
- Frobenius, 75

Normal integrand, 146

O

- Oblique hyperplane, 19
- Optimality condition, 35
- Optimization
 - semi-infinite, 95

P

- Path, 257
- Point of interpolation, 104
- Policy
 - feedback, 229
 - open-loop, 248
- Polyhedron, 57
- Polynomial
 - nonnegative, 106
 - of Chebyshev, 103
- Pontryagin's principle, 251
- Positively homogeneous, 4
- Preference, 166
- Probability
 - invariant, 256
- Programming
 - semi-infinite, 95
- Programming
 - positive semidefinite, 77
 - positive semidefinite linear, 77
- Projector, 209

R

- Recourse, 153
- Reference (of a polynomial), 102
- Regular
 - probability, 179
- Regularisation
 - Lipschitz, 181
- Regularity
 - constraints, 96
- Relative interior, 9
- Risk-adverse, 166
- Rotationally invariant, 80

S

- Sample approximation, 186
- SDP relaxation, 87
- Second-order cone, 91
- Separable, 140
- Separation, 6

Set

- feasible, 1
- negligible, 124
- solution, 2
- σ -algebra, 117
 - complete, 124
 - Lebesgue, 125
 - product, 118
 - trivial, 117
- Skorokhod–Dudley representation theorem, 185

Space

- measurable, 117
- measure, 122
- normed, 5
- probability, 122
- separable, 122
- Stability, 36
- State
 - accessible, 257
 - communicating, 257
- State equation, 215
 - linearized, 215
- Subadditive, 4
- Subdifferential, 22
 - partial, 44
- Support, 97
 - function, 22
 - of a measure, 56

T

- Time
 - exit, 239
 - stopping, 240
- Trajectory, 273
- Transition
 - matrix (regular), 259
 - operator, 224
- Translation invariance, 168

U

- Uniformly integrability, 134

V

- Value, 1
- Value at risk, 174
- Vertical hyperplane, 19
- Vitali, 134

W

- Walk, 257