

References

- [1] Aarts, E., Korst, J.: *Simulated Annealing and Boltzman Machines: Stochastic Approach to Combinatorial and Neural Computing*. Wiley, New York (1989)
- [2] Abramowitz, M., Stegun, I.A. (eds.): *Handbook of Mathematical Functions*. Dover, New York (1970)
- [3] Adler, R.J.: *The Geometry of Random Fields*. Wiley, New York (1981)
- [4] Akaike, H.: Fitting autoregressive models for prediction. *Annals of the Institute of Statistical Mathematics* **21**, 243–247 (1969)
- [5] Alfò, M., Postiglione, P.: Semiparametric modelling of spatial binary observations. *Statistical Modelling* **2**, 123–137 (2002)
- [6] Amemiya, T.: *Advanced Econometric*. Basil Blackwell, Oxford (1985)
- [7] Anselin, L.: *Spatial Econometrics : Methods and Models*. Kluwer, Dordrecht (1988)
- [8] Arnold, B.C., Castillo, E., Sarabia, J.M.: *Conditional Specification of Statistical Models*. Springer, New York (1999)
- [9] Augustin, N.H., McNicol, J.W., Marriott, C.A.: Using the truncated auto-poisson model for spatially correlated counts of vegetation. *Journal of Agricultural, Biological & Environmental Statistics* **11**, 1–23 (2006)
- [10] Azencott, R. (ed.): *Simulated Annealing: Parallelization Techniques*. Wiley, New York (1992)
- [11] Baddeley, A.J., Gregori, P., Mateu, J., Stoica, R., Stoyan, D. (eds.): *Case studies in Spatial Point Processes Modeling*. Lecture Notes in Statistics 185. Springer, New York (2006)
- [12] Baddeley, A.J., Møller, J.: Nearest-neighbour Markov point processes and random sets. *International Statistical Review* **57**, 90–121 (1989)
- [13] Baddeley, A.J., Møller, J., Waagepetersen, R.P.: Non- and semi-parametric estimation of interaction in inhomogeneous point patterns. *Statistica Neerlandica* **54**(329-350) (2000)
- [14] Baddeley, A.J., Turner, R.: Practical maximum pseudolikelihood for spatial point patterns (with discussion). *Australian and New Zealand Journal of Statistics* **42**, 283–322 (2000)
- [15] Baddeley, A.J., Turner, R.: Spatstat: an R package for analyzing spatial point patterns. *Journal of Statistical Software* **12**, 1–42 (2005)
- [16] Baddeley, A.J., Turner, R., Møller, J., Hazelton, M.: Residual analysis for spatial point processes (with discussion). *Journal of the Royal Statistical Society, Series B* **67**, 617–666 (2005)
- [17] Baddeley, A.J., van Lieshout, M.N.M.: Area-interaction point processes. *Annals of the Institute of Statistical Mathematics* **46**, 601–619 (1995)
- [18] Banerjee, S., Carlin, B.P., Gelfand, A.E.: *Hierarchical Modeling and Analysis for Spatial Data*. Chapman & Hall/CRC Press, Boca Raton: FL (2004)
- [19] Barker, A.A.: Monte Carlo calculations of the radial distribution functions for a proton-electron plasma. *Australian Journal of Physics* **18**, 119–133 (1965)
- [20] Bartlett, M.S.: Physical nearest-neighbour models and non-linear time series (I). *Journal of Applied Probability* **8**, 222–232 (1971)
- [21] Bartlett, M.S.: Physical nearest-neighbour models and non-linear time series (II). *Journal of Applied Probability* **9**, 76–86 (1972)
- [22] Bayomog, S., Guyon, X., Hardouin, C., Yao, J.: Test de différence de contraste et somme pondérée de Chi 2. *Canadian Journal of Statistics* **24**, 115–130 (1996)
- [23] Benveniste, A., Métivier, M., Priouret, P.: *Adaptive Algorithms and Stochastic Approximations*. Springer, New York (1990)
- [24] Besag, J.: On the correlation structure of some two dimensional stationary processes. *Biometrika* **59**, 43–48 (1972)
- [25] Besag, J.: Spatial interaction and the statistical analysis of lattice systems. *Journal of the Royal Statistical Society, Series B* **36**, 192–236 (1974)
- [26] Besag, J.: Efficiency of pseudo likelihood estimation for simple Gaussian fields. *Biometrika* **64**, 616–618 (1977)

- [27] Besag, J., P., M.P.A.: On the estimation and testing of spatial interaction for Gaussian lattice processes. *Biometrika* **62**, 555–562 (1975)
- [28] Besag, J., York, J., Mollié, A.: Bayesian image restoration, with two applications in spatial statistics (with discussion. *Annals of the Institute of Statistical Mathematics* **43**, 1–59 (1991)
- [29] Bochner, N.: Lectures on Fourier Integrals. Princeton University Press, Princeton: NJ (1959)
- [30] Bolthausen, E.: On the central limit theorem for stationary mixing random fields. *Annals of Probability* **10**, 1047–1050 (1982)]
- [31] Bouthemy, P., Hardouin, C., Piriou, G., Yao, J.: Mixed-state auto-models and motion texture modeling. *Journal of Mathematical Imaging and Vision* **25**, 387–402 (2006)
- [32] Breiman, L.: Probability. SIAM Classics in Applied Mathematics 7 (1992)
- [33] Brillinger, D.R.: Estimation of the second-order intensities of a bivariate stationary point process. *Journal of the Royal Statistical Society, Series B* **38**, 60–66 (1976)
- [34] Brockwell, P.J., Davis, R.A.: Time Series Analysis: Theory and Methods. Springer, New York (1992)
- [35] Brook, D.: On the distinction between the conditional probability and joint probability approaches in the specification of nearest neighbour systems. *Biometrika* **51**, 481–483 (1964)
- [36] Brown, P.E., Kåresen, K.F., Roberts, G.O., Tonellato, S.: Blur-generated non-separable space-time models. *Journal of the Royal Statistical Society, Series B* **62**, 847–860 (2000)
- [37] Cairoli, R., Walsh, J.B.: Stochastic integral in the plane. *Acta Mathematica* **134**, 111–183 (1975)
- [38] Casson, E., Coles, S.G.: Spatial regression models for extremes. *Extremes* **1**, 449–468 (1999)
- [39] Catelan, D., Biggeri, A., Dreassi, E., Lagazio, C.: Space-cohort Bayesian models in ecological studies. *Statistical Modelling* **6**, 159–173 (2006)
- [40] Catoni, O.: Rough large deviation estimates for simulated annealing : application to exponential schedules. *Annals of Probability* **20**, 1109–1146 (1992)
- [41] Chadoeuf, J., Nandris, D., Geiger, J., Nicole, M., Pierrat, J.C.: Modélisation spatio-temporelle d'une épidémie par un processus de Gibbs : estimation et tests. *Biometrics* **48**, 1165–1175 (1992)
- [42] Chalmond, B.: Eléments de modélisation pour l'analyse d'image. Springer, Paris (2000)
- [43] Chilès, J.P., Delfiner, P.: Geostatistics. Wiley, New York (1999)
- [44] Christensen, O.F., Roberts, G.O., Sköld, M.: Robust Markov chain Monte Carlo methods for spatial generalised linear mixed models. *Journal of Computational and Graphical Statistics* **15**, 1–17 (2006)
- [45] Cliff, A.D., Ord, J.K.: Spatial Processes: Models and Applications. Pion, London (1981)
- [46] Comets, F.: On consistency of a class of estimators for exponential families of Markov random fields on a lattice. *Annals of Statistics* **20**, 455–468 (1992)
- [47] Comets, F., Janzura, M.: A central limit theorem for conditionally centered random fields with an application to Markov fields. *Journal of Applied Probability* **35**, 608–621 (1998)
- [48] Cressie, N.A.C.: Statistics for Spatial Data, 2nd edn. Wiley, New York (1993)
- [49] Cressie, N.A.C., Hawkins, D.M.: Robust estimation of the variogram, I. *Journal of the International Association of Mathematical Geology* **12**, 115–125 (1980)
- [50] Cressie, N.A.C., Huang, H.C.: Classes of nonseparable, spatio-temporal stationary covariance functions. *Journal of the American Statistical Association* **94**, 1330–1340 (1999)
- [51] Cross, G.R., Jain, A.K.: Markov field texture models. *IEEE Transactions on Pattern Analysis and Machine Intelligence* **5**, 155–169 (1983)
- [52] Csiszar, I., Talata, Z.: Consistent estimation of the basic neighborhood of Markov random fields. *Annals of Statistics* **34**, 123–145 (2006)
- [53] Cuzick, J., Edwards, R.: Spatial clustering for inhomogeneous populations. *Journal of the Royal Statistical Society, Series B* **52**, 73–104 (1990)
- [54] Dacunha-Castelle, D., Duflo, M.: Probabilités et Statistiques, Tome 2: Problèmes à temps mobile. Masson, Paris (1993)
- [55] Dacunha-Castelle, D., Duflo, M.: Probabilités et Statistiques. Tome 1: Problèmes à temps fixe. Masson, Paris (1994)

- [56] Daley, D., Vere-Jones, D.: An Introduction to The Theory of Point Processes, Vol. I, Elementary Theory and Methods, 2nd edn. Springer, New York (2003)
- [57] Dalhaus, R., Künsch, H.R.: Edge effect and efficient parameter estimation for stationary random fields. *Biometrika* **74**, 877–882 (1987)
- [58] De Iaco, S., Myers, D.E., Posa, T.: Nonseparable space-time covariance models: some parametric families. *Mathematical Geology* **34**, 23–42 (2002)
- [59] Devroye, L.: Non Uniform Random Variable Generation. Springer, New York (1986)
- [60] Diaconis, P., Freedman, D.: Iterated random functions. *SIAM Review* **41**, 45–76 (1999)
- [61] Diaconis, P., Graham, R., Morrison, J.: Asymptotic analysis of a random walk on an hypercube with many dimensions. *Random Structure Algorithms* **1**, 51–72 (1990)
- [62] Diggle, P.J.: Statistical Analysis of Spatial Point Patterns. Oxford University Press, Oxford (2003)
- [63] Diggle, P.J., Ribeiro, P.J.: Model-based Geostatistics. Springer, New York (2007)
- [64] Diggle, P.J., Tawn, J.A., Moyeed, R.A.: Model-based geostatistics (with discussion). *Applied Statistics* **47**, 299–350 (1998)
- [65] Dobrushin, R.L.: Central limit theorems for non stationary Markov chains I, II. *Theory of Probability and its Applications* **1**, 65–80, 329–383 (1956)
- [66] Dobrushin, R.L.: The description of a random field by means of conditional probabilities and condition of its regularity. *Theory of Probability and its Applications* **13**, 197–224 (1968)
- [67] Doukhan, P.: Mixing: Properties and Examples. Lecture Notes in Statistics 85. Springer, Berlin (1994)
- [68] Drosbeke, J.J., Fine, J., Saporta, G. (eds.): Méthodes bayésiennes en statistique. Technip, Paris (2002)
- [69] Drosbeke, J.J., Lejeune, M., Saporta, G. (eds.): Analyse statistique des données spatiales. Technip, Paris (2006)
- [70] Dubois, G., Malczewski, J., De Cort, M.: Spatial Interpolation Comparison 1997. *Journal of Geographic Information and Decision Analysis* **2** (1998)
- [71] Duflo, M.: Algorithmes stochastiques. Mathématiques et Applications. Springer, Paris (1996)
- [72] Duflo, M.: Random Iterative Models. Springer, New York (1997)
- [73] Durrett, R.: Ten lectures on particle systems. In: P. Bernard (ed.) École d'Été de St. Flour XXIII, Lecture Notes in Mathematics 1608, pp. 97–201. Springer-Verlag, New York (1995)
- [74] Durrett, R., Levin, S.A.: Stochastic spatial models : a user's guide to ecological applications. *Philosophical Transactions of the Royal Society of London, series B* **343**, 329–350 (1994)
- [75] Dzhaparidze, K.O.: On simplified estimators of unknown parameters with good asymptotic properties. *Theory of Probability and its Applications* **19**, 347–358 (1974)
- [76] E., P.P., Deutsch, S.J.: Identification and interpretation of first order space-time arma models. *Technometrics* **22**, 397–408 (1980)
- [77] Eriksson, M., Siska, P.P.: Understanding anisotropy computations. *Mathematical Geology* **32**, 683–700 (2000)
- [78] Ferrandiz, J., Lopez, A., Llopis, A., Morales, M., Tejerizo, M.L.: Spatial interaction between neighbouring counties : cancer mortality data in Valencia (Spain). *Biometrics* **51**, 665–678 (1995)
- [79] Fuentes, M.: Approximate likelihood for large irregularly spaced spatial data. *Journal of the American Statistical Association* **102**, 321–331 (2007)
- [80] Gelman, A., Rubin, D.B.: Inference from iterative simulation using multiple sequences. *Statistical Science* **7**, 457–511 (1992)
- [81] Geman, D.: Random fields and inverse problem in imaging. In: P.L. Hennequin (ed.) École d' Été de Probabilités de Saint-Flour XVIII, Lecture Notes in Mathematics 1427, pp. 113–193. Springer, New York (1990)
- [82] Geman, D., Geman, S.: Stochastic relaxation, Gibbs distributions and the bayesian restoration of images. *IEEE Transactions on Pattern Analysis and Machine Intelligence* **6**, 721–741 (1984)

- [83] Geman, S., Graffigne, C.: Markov random fields models and their applications to computer vision. In: A.M. Gleason (ed.) *Proceedings of the International Congress of Mathematicians 1986*, pp. 1496–1517. American Mathematical Society, Providence: RI (1987)
- [84] Georgii, H.O.: Canonical and grand canonical Gibbs states for continuum systems. *Communications of Mathematical Physics* **48**, 31–51 (1976)
- [85] Georgii, H.O.: *Gibbs measure and phase transitions*. De Gruyter, Berlin (1988)
- [86] Geyer, C.J.: On the convergence of Monte Carlo maximum likelihood calculations. *Journal of the Royal Statistical Society, Series B* **56**, 261–274 (1994)
- [87] Geyer, C.J.: Likelihood inference for spatial point processes. In: O.E. Barndorff-Nielsen, W.S. Kendall, M.N.M. Van Lieshout (eds.) *Stochastic geometry: likelihood and computation*, pp. 79–140. Chapman & Hall/CRC, Florida (1999)
- [88] Geyer, C.J., Møller, J.: Simulation procedures and likelihood inference for spatial point processes. *Scandinavian Journal of Statistics* **21**, 359–373 (1994)
- [89] Gilks, W.R., Richardson, S., Spiegelhalter, D.J. (eds.): *Markov Chain Monte Carlo in Practice*. Chapman & Hall, London (1996)
- [90] Gneiting, T.: Nonseparable, stationary covariance functions for space-time data. *Journal of the American Statistical Association* **97**, 590–600 (2002)
- [91] Gneiting, T., Genton, M.G., Guttorp, P.: Geostatistical space-time models, stationarity, separability and full symmetry. In: B. Finkenstadt, L. Held, V. Isham (eds.) *Statistical Methods for Spatio-Temporal Systems*, pp. 151–175. Chapman & Hall/CRC, Boca Raton: FL (2007)
- [92] Gouriéroux, C., Monfort, A.: *Statistiques et modèles économétriques*, Tomes 1 et 2. Economica, Paris (1992)
- [93] Green, P.J., Richardson, S.: Hidden Markov models and disease mapping. *Journal of the American Statistical Association* **97**, 1055–1070 (2002)
- [94] Greig, D.M., Porteous, B.T., Seheult, A.H.: Exact maximum a posteriori estimation for binary images. *Journal of the Royal Statistical Society, Series B* **51**, 271–279 (1989)
- [95] Guan, Y., Sherman, M.: On least squares fitting for stationary spatial point processes. *Journal of the Royal Statistical Society, Series B* **69**, 31–49 (2007)
- [96] Guyon, X.: *Random Fields on a Network: Modeling, Statistics and Applications*. Springer, New York (1995)
- [97] Guyon, X., Hardouin, C.: The Chi-2 difference of coding test for testing Markov random field hypothesis. In: P. Barone, A. Frigessi, M. Piccioni (eds.) *Stochastic Models, Statistical Methods and Algorithms in Image Analysis, Lecture Notes in Statistics 74*, pp. 165–176. Springer, Berlin (1992)
- [98] Guyon, X., Hardouin, C.: Markov chain Markov field dynamics: models and statistics. *Statistics* **36**, 339–363 (2002)
- [99] Guyon, X., Künsch, H.R.: Asymptotic comparison of estimator of the Ising model. In: P. Barone, A. Frigessi, M. Piccioni (eds.) *Stochastic Models, Statistical Methods and Algorithms in Image Analysis, Lecture Notes in Statistics 74*, pp. 177–198. Springer, Berlin (1992)
- [100] Guyon, X., Pumo, B.: Estimation spatio-temporelle d'un modèle de système de particule. *Comptes rendus de l'Académie des sciences Paris* **I-340**, 619–622 (2005)
- [101] Guyon, X., Pumo, B.: Space-time estimation of a particle system model. *Statistics* **41**, 395–407 (2007)
- [102] Guyon, X., Yao, J.F.: On the underfitting and overfitting sets of models chosen by order selection criteria. *Journal of Multivariate Analysis* **70**, 221–249 (1999)
- [103] Häggström, O.: *Finite Markov Chains and Algorithmic Applications*. Cambridge University Press, Cambridge (2002)
- [104] Häggström, O., van Lieshout, M.N.M., Møller, J.: Characterisation results and Markov chain Monte Carlo algorithms including exact simulation for some spatial point processes. *Bernoulli* **5**, 641–658 (1999)
- [105] Haining, R.: *Spatial Data Analysis in the Social and Environmental Sciences*. Cambridge University Press, Cambridge (1990)

- [106] Hajek, B.: Cooling schedules for optimal annealing. *Mathematics of Operations Research* **13**, 311–329 (1999)
- [107] Hannan, E.J.: The estimation of the order of an ARMA process. *Annals of Statistics* **8**, 1071–1081 (1980)
- [108] Hardouin, C.: Quelques résultats nouveaux en statistique des processus: contraste fort, régressions à rélog-périodogramme. Ph.D. thesis, Université Paris VII, Paris (1992)
- [109] Hardouin, C., Yao, J.: Multi-parameter auto-models and their application. *Biometrika* (2008). To appear
- [110] Hastings, W.: Monte Carlo sampling methods using Markov chains and their applications. *Biometrika* **57**, 97–109 (1970)
- [111] Heinrich, L.: Minimum contrast estimates for parameters of spatial ergodic point processes. In: *Transactions of the 11th Prague Conference on Random Processes, Information Theory and Statistical Decision Functions*, pp. 479–492. Academic Publishing House, Prague (1992)
- [112] Higdon, D.: Space and space-time modeling using process convolutions. In: C. Anderson, V. Barnett, P.C. Chatwin, A. El-Shaarawi (eds.) *Quantitative Methods for Current Environmental Issues*, pp. 37–56. Springer-Verlag, London (2002)
- [113] Higdon, D.M., Swall, J., Kern, J.: Non-stationary spatial modeling. In: J.M. Bernardo, J.O. Berger, A.P. Dawid, A.F.M. Smith (eds.) *Bayesian Statistics 6*, pp. 761–768. Oxford University Press, Oxford (1999)
- [114] Hoeting, A., Davis, A., Merton, A., Thompson, S.: Model selection for geostastistical models. *Ecological Applications* **16**, 87–98 (2006)
- [115] Huang, F., Ogata, Y.: Improvements of the maximum pseudo-likelihood estimators in various spatial statistical models. *Journal of Computational and Graphical Statistics* **8**, 510–530 (1999)
- [116] Ibragimov, I.A., Linnik, Y.V.: *Independent and Stationary Sequences of Random Variables*. Wolters-Noordhoff Publishing, Groningen (1971)
- [117] Ibragimov, I.A., Rozanov, Y.A.: *Processus aléatoires gaussiens*. MIR, Moscou (1974)
- [118] Ihaka, R., Gentleman, R.: R: a language for data analysis and graphics. *Journal of Computational and Graphical Statistics* **5**, 299–314 (1996)
- [119] Illig, A.: Une modélisation de données spatio-temporelles par AR spatiaux. *Journal de la société française de statistique* **147**, 47–64 (2006)
- [120] Isaacson, D.L., Madsen, R.Q.: *Markov Chains: Theory and Application*. Wiley, New York (1976)
- [121] Jensen, J., Møller, J.: Pseudolikelihood for exponential family of spatial point processes. *Annals of Applied Probability* **3**, 445–461 (1991)
- [122] Jensen, J.L.: Asymptotic normality of estimates in spatial point processes. *Scandinavian Journal of Statistics* **20**, 97–109 (1993)
- [123] Jensen, J.L., Künsch, H.R.: On asymptotic normality of pseudo-likelihood estimates for pairwise interaction processes. *Annals of the Institute of Statistical Mathematics* **46**, 475–486 (1994)
- [124] Ji, C., Seymour, L.: A consistent model selection procedure for Markov random fields based on penalized pseudo-likelihood. *Annals of Applied Probability* **6**, 423–443 (1996)
- [125] Jolivet, E.: Central limit theorem and convergence of empirical processes for stationary point processes. In: P. Bastfai, J. Tomko (eds.) *Point Processes and Queuing Problems*, pp. 117–161. North-Holland, Amsterdam (1978)
- [126] Jones, R., Zhang, Y.: Models for continuous stationary space-time processes. In: T.G. Gregoire, D.R. Brillinger, P.J. Diggle, E. Russek-Cohen, W.G. Warren, R.D. Wolfinger (eds.) *Modelling Longitudinal and Spatially Correlated Data*, Lecture Notes in Statistics 122, pp. 289–298. Springer, New York (1997)
- [127] Kaiser, M.S., Cressie, N.A.C.: Modeling Poisson variables with positive spatial dependence. *Statistics and Probability Letters* **35**, 423–432 (1997)
- [128] Keilson, J.: *Markov chain models: Rarity and Exponentiality*. Springer, New York (1979)
- [129] Kemeny, G., Snell, J.L.: *Finite Markov Chains*. Van Nostrand, Princeton: NJ (1960)

- [130] Kendall, W.S., Møller, J.: Perfect simulation using dominating processes on ordered state spaces, with application to locally stable point processes. *Advances in Applied Probability* **32**, 844–865 (2000)
- [131] Klein, D.: Dobrushin uniqueness techniques and the decay of correlation in continuum statistical mechanics. *Communications in Mathematical Physics* **86**, 227–246 (1982)
- [132] Koehler, J.B., Owen, A.B.: Computer experiments. In: S. Ghosh, C.R. Rao (eds.) *Handbook of Statistics*, Vol 13, pp. 261–308. North-Holland, New York (1996)
- [133] Kolovos, A., Christakos, G., Hristopulos, D.T., Serre, M.L.: Methods for generating non-separable spatiotemporal covariance models with potential environmental applications. *Advances in Water Resources* **27**, 815–830 (2004)
- [134] Krige, D.: A statistical approach to some basic mine valuation problems on the Witwatersrand. *Journal of the Chemical, Metallurgical and Mining Society of South Africa* **52**, 119–139 (1951)
- [135] Kutoyants, Y.A.: *Statistical Inference for Spatial Poisson Processes*. Springer, New York (1998)
- [136] Kyriakidis, P.C., Journel, A.G.: Geostatistical space-time models: a review. *Mathematical Geology* **31**, 651–684 (1999)
- [137] Lahiri, S.N.: CLT for weighted sums of a spatial process under a class of stochastic and fixed designs. *Sankhya A* **65**, 356–388 (2003)
- [138] Lahiri, S.N., Lee, Y., C., C.N.A.: On asymptotic distribution and asymptotic efficiency of least squares estimators of spatial variogram parameters. *Journal Statistical Planning and Inference* **103**, 65–85 (2002)
- [139] Lantuëjoul, C.: *Geostatistical Simulation*. Springer, Berlin (2002)
- [140] Laslett, M.: Kriging and splines: and empirical comparison of their predictive performance in some applications. *Journal of the American Statistical Association* **89**, 391–409 (1994)
- [141] Lawson, A.B.: *Statistical Methods in Spatial Epidemiology*. Wiley, New York (2001)
- [142] Le, N.D., Zidek, J.V.: *Statistical Analysis of Environmental Space-Time Processes*. Springer, New York (2006)
- [143] Lee, H.K., Higdon, D.M., Calder, C.A., Holloman, C.H.: Efficient models for correlated data via convolutions of intrinsic processes. *Statistical Modelling* **5**, 53–74 (2005)
- [144] Lee, Y.D., Lahiri, S.N.: Least square variogram fitting by spatial subsampling. *Journal of the Royal Statistical Society, Series B* **64**, 837–854 (2002)
- [145] Loève, M.: *Probability Theory II*. Springer, New York (1978)
- [146] Lunn, D.J., Thomas, A., Best, N., Spiegelhalter, D.J.: WinBUGS - a Bayesian modelling framework: concepts, structure, and extensibility. *Statistics and Computing* **10**, 325–337 (2000)
- [147] Ma, C.: Families of spatio-temporal stationary covariance models. *Journal of Statistical Planning and Inference* **116**, 489–501 (2003)
- [148] Mardia, K.V., Goodall, C., Redfern, E.J., Alonso, F.J.: The Kriged Kalman filter (with discussion). *Test* **7**, 217–252 (1998)
- [149] Mardia, K.V., Marshall, J.: Maximum likelihood estimation of models for residual covariance in spatial regression. *Biometrika* **71**, 289–295 (1984)
- [150] Marroquin, J., Mitter, S., Poggio, T.: Probabilistic solution of ill posed problem in computational vision. *Journal of the American Statistical Association* **82**, 76–89 (1987)
- [151] Mase, S.: Marked Gibbs processes and asymptotic normality of maximum pseudo-likelihood estimators. *Mathematische Nachrichten* **209**, 151–169 (1999)
- [152] Matheron, G.: *Traité de géostatistique appliquée*, Tome 1. Mémoires du BRGM, n. 14. Technip, Paris (1962)
- [153] Matheron, G.: The intrinsic random function and their applications. *Advances in Applied Probability* **5**, 439–468 (1973)
- [154] Matérn, B.: *Spatial Variation: Stochastic Models and their Applications to Some Problems in Forest Surveys and Other Sampling Investigations*, 2nd edn. Springer, Heidelberg (1986)
- [155] McCullagh, P., Nelder, J.A.: *Generalized Linear Models*. Chapman & Hall, London (1989)

- [156] Mercer, W.B., Hall, A.D.: The experimental error of field trials. *The experimental error of field trials* **4**, 107–132 (1973)
- [157] Meyn, S.P., Tweedie, R.L.: *Markov Chains and Stochastic Stability*. Springer, New York (1993)
- [158] Mitchell, T., Morris, M., Ylvisaker, D.: Existence of smoothed process on an interval. *Stochastic Processes and their Applications* **35**, 109–119 (1990)
- [159] Møller, J., Syversveen, A.R., Waagepetersen, R.P.: Log-gaussian Cox processes. *Scandinavian Journal of Statistics* **25**, 451–82 (1998)
- [160] Møller, J., Waagepetersen, R.P.: *Statistical Inference and Simulation for Spatial Point Processes*. Chapman & Hall/CRC, Boca Raton: FL (2004)
- [161] Møller, J., Waagepetersen, R.P.: Modern statistics for spatial point processes. *Scandinavian Journal of Statistics* **34**, 643–684 (2007)
- [162] Moyeed, R.A., Baddeley, A.J.: Stochastic approximation of the MLE for a spatial point pattern. *Scandinavian Journal of Statistics* **18**, 39–50 (1991)
- [163] Neyman, J., Scott, E.L.: Statistical approach to problems of cosmology. *Journal of the Royal Statistical Society, Series B* **20**, 1–43 (1958)
- [164] Nguyen, X.X., Zessin, H.: Ergodic theorems for spatial processes. *Probability Theory and Related Fields* **48**, 133–158 (1979)
- [165] Nguyen, X.X., Zessin, H.: Integral and differential characterization of the Gibbs process. *Mathematische Nachrichten* **88**, 105–115 (1979)
- [166] Onsager, L.: Crystal statistics I : A two dimensional model with order-disorder transition. *Physical Review* **65**, 117–149 (1944)
- [167] Ord, J.K.: Estimation methods for models of spatial interaction. *Journal of the American Statistical Association* **70**, 120–126 (1975)
- [168] Papangelou, F.: The conditional intensity of general point processes and application to line processes. *Zeitschrift für Wahrscheinlichkeitstheorie und verwandte Gebiete* **28**, 207–227 (1974)
- [169] Penttinen, A.: Modelling interaction in spatial point patterns: parameter estimation by the maximum likelihood method. *Jyväskylä Studies in Computer Science, Economics and Statistics* **7** (1984)
- [170] Perrin, O., Meiring, W.: Identifiability for non-stationary spatial structure. *Journal of Applied Probability* **36**, 1244–1250 (1999)
- [171] Perrin, O., Senoussi, R.: Reducing non-stationary random fields to stationary and isotropy using space deformation. *Statistics and Probability Letters* **48**, 23–32 (2000)
- [172] Peskun, P.: Optimum Monte Carlo sampling using Markov chains. *Biometrika* **60**, 607–612 (1973)
- [173] Peyrard, N., Calonnec, A., Bonnot, F., Chadoeuf, J.: Explorer un jeu de données sur grille par test de permutation. *Revue de Statistique Appliquée* **LIII**, 59–78 (2005)
- [174] Pfeifer, P.E., Deutsch, S.J.: A three-stage iterative procedure for space-time modeling. *Technometrics* **22**, 93–117 (1980)
- [175] Ploner, A.: The use of the variogram cloud in geostatistical modelling. *Environmetrics* **10**, 413–437 (1999)
- [176] Preston, C.: Random Fields. *Lecture Notes in Mathematics* 534. Springer, Berlin (1976)
- [177] Propp, J.G., Wilson, D.B.: Exact sampling with coupled Markov chains and applications to statistical mechanics. *Random Structures and Algorithms* **9**, 223–252 (1996)
- [178] R Development Core Team: R: A Language and Environment for Statistical Computing. R Foundation for Statistical Computing, Vienna, Austria (2007). URL <http://www.R-project.org>
- [179] Rathbun, S.L., Cressie, N.A.C.: Asymptotic properties of estimators for the parameters of spatial inhomogeneous Poisson point processes. *Advances in Applied Probability* **26**, 122–154 (1994)
- [180] Revuz, D.: *Probabilités*. Herman, Paris (1997)
- [181] Ribeiro, P., Diggle, P.J.: geoR: a package for geostatistical analysis. *R-NEWS* **1**, 14–18 (2001)

- [182] Richardson, S., Guihenneuc, C., Lasserre, V.: Spatial linear models with autocorrelated error structure. *The Statistician* **41**, 539–557 (1992)
- [183] Ripley, B.D.: The second-order analysis of stationary point processes. *Journal of Applied Probability* **13**, 255–266 (1976)
- [184] Ripley, B.D.: *Statistical Inference for Spatial Processes*. Cambridge University Press, Cambridge (1988)
- [185] Ripley, B.D.: *Spatial Statistics*. Wiley, New York (1991)
- [186] Ripley, B.D., Kelly, F.P.: Markov point processes. *Journal of the London Mathematical Society* **15**, 188–192 (1977)
- [187] Robert, C.P.: L'analyse statistique bayésienne. *Economica*, Paris (1992)
- [188] Robert, C.P., Casella, G.: *Monte-Carlo Statistical Methods*. Springer, New York (1999)
- [189] Rue, H., Held, L.: *Gaussian Markov Random Fields: Theory and Applications*. Chapman & Hall/CRC, Boca Raton: FL (2005)
- [190] Ruelle, D.: *Statistical Mechanics*. Benjamin, New York (1969)
- [191] Saloff-Coste, L.: Lectures on finite Markov chains. In: P. Bernard (ed.) *Lectures on Probability Theory and Statistics*. Ecole d'été de Probabilité de St. Flour XXVI, Lecture Notes in Mathematics 1665, pp. 301–408. Springer (1997)
- [192] Sampson, P., Guttorp, P.: Nonparametric estimation of nonstationary spatial covariance structure. *Journal of the American Statistical Association* **87**, 108–119 (1992)
- [193] Santer, T.J., Williams, B.J., Notz, W.I.: *The Design and Analysis of Computer Experiments*. Springer, New York (2003)
- [194] Schabenberger, O., Gotway, C.A.: *Statistical Methods for Spatial Data Analysis*. Chapman & Hall/CRC, Boca Raton: FL (2004)
- [195] Schlather, M.: Introduction to positive definite functions and to unconditional simulation of random fields. Tech. Rep. ST 99-10, Lancaster University, Lancaster (1999)
- [196] Senoussi, R.: Statistique asymptotique presque sûre des modèles statistiques convexes. *Annales de l'Institut Henri Poincaré* **26**, 19–44 (1990)
- [197] Serra, J.: *Image Analysis and Mathematical Morphology*. Academic Press, New York (1982)
- [198] Shea, M.M., Dixon, P.M., R., S.R.: Size differences, sex ratio, and spatial distribution of male and female water tupelo, *nyssa aquatica* (nyssaceae). *American Journal of Botany* **80**, 26–30 (1993)
- [199] Shibata, R.: Selection of the order of an autoregressive model by Akaike's information criterion. *Biometrika* **63**, 117–126 (1976)
- [200] Stein, M.L.: *Interpolation of Spatial Data: Some Theory for Kriging*. Springer, New York (1999)
- [201] Stein, M.L.: Statistical methods for regular monitoring data. *Journal of the Royal Statistical Society, Series B* **67**, 667–687 (2005)
- [202] Storvik, G., Frigessi, A., Hirst, D.: Stationary space-time gaussian fields and their time autoregressive representation. *Stochastic Modelling* **2**, 139–161 (2002)
- [203] Stoyan, D., Grabarnik, P.: Second-order characteristics for stochastic structures connected with Gibbs point processes. *Mathematische Nachrichten* **151**, 95–100 (1991)
- [204] Stoyan, D., Kendall, W.S., Mecke, J. (eds.): *Stochastic Geometry and its Applications*, 2nd edn. Wiley, New York (1995)
- [205] Strathford, J.A., Robinson, W.D.: Distribution of neotropical migratory bird species across an urbanizing landscape. *Urban Ecosystems* **8**, 59–77 (2005)
- [206] Strauss, D.J.: A model for clustering. *Biometrika* **62**, 467–475 (1975)
- [207] Strauss, D.J.: Clustering on colored lattice. *Journal of Applied Probability* **14**, 135–143 (1977)
- [208] Stroud, J.R., Müller, P., Sansó, B.: Dynamic models for spatio-temporal data. *Journal of the Royal Statistical Society, Series B* **63**, 673–689 (2001)
- [209] Sturtz, S., Ligges, U., Gelman, A.: R2WinBUGS: a package for running WinBUGS from R. *Journal of Statistical Software* **2**, 1–16 (2005)

- [210] Sweeting, T.J.: Uniform asymptotic normality of the maximum likelihood estimator. *Annals of Statistics* **8**, 1375–1381 (1980)
- [211] Tempelman, A.A.: Ergodic theorems for general dynamical systems. *Transactions of the Moscow Mathematical Society* **26**, 94–132 (1972)
- [212] Thomas, A., O’ Hara, B., Ligges, U., Sturtz, S.: Making BUGS open. *R News* **6**, 12–17 (2006)
- [213] Thomas, M.: A generalisation of Poisson’s binomial limit for use in ecology. *Biometrika* **36**, 18–25 (1949)
- [214] Tierney, L.: Markov chains for exploring posterior distributions (with discussion). *Annals of Statistics* **22**, 1701–1762 (1994)
- [215] Tierney, L.: A note on Metropolis-Hastings kernels for general state space. *Annals of Applied Probability* **3**, 1–9 (1998)
- [216] Tuckey, J.W.: *Spectral Analysis Time Series*. Wiley, New York (1967)
- [217] Van Lieshout, M.N.M.: *Markov Point Processes and their Applications*. Imperial College Press, London (2000)
- [218] Van Lieshout, M.N.M., Baddeley, A.J.: Indices of dependence between types in multivariate point patterns. *Scandinavian Journal of Statistics* **26**, 511–532 (1999)
- [219] Ver Hoef, J., Barry, R.P.: Constructing and fitting models for cokriging and multivariable spatial prediction. *Journal of Statistical Planning and Inference* **69**, 275–294 (1998)
- [220] Waagepetersen, R.P.: An estimating function approach to inference for inhomogeneous Neyman-Scott processes. *Biometrics* **63**, 252–258 (2007)
- [221] Wackernagel, H.: *Multivariate Geostatistics: A n Introduction with Applications*, 3rd edn. Springer, New York (2003)
- [222] Whittle, P.: On stationary processes in the plane. *Biometrika* **41**, 434–449 (1954)
- [223] Wikle, C.K., Cressie, N.A.C.: A dimension-reduced approach to space-time Kalman filtering. *Biometrika* **86**, 815–829 (1999)
- [224] Winkler, G.: *Image Analysis, Random Fields and Markov Chain Monte Carlo Methods*, 2nd edn. Springer (2003)
- [225] Wolpert, R.L., Ickstadt, K.: Poisson/Gamma random fields models for spatial statistics. *Biometrika* **85**, 251–267 (1998)
- [226] Wu, H., Huffer, F.W.: Modelling the distribution of plant species using the autologistic regression model. *Environmental and Ecological Statistics* **4**, 49–64 (1997)
- [227] Yaglom, A.M.: *Correlation Theory of Stationary and Related Random Functions. Volume I: Basic Results*. Springer, New York (1987)
- [228] Yao, J.F.: On constrained simulation and optimisation by Metropolis chains. *Statistics and Probability Letters* **46**, 187–193 (2000)
- [229] Ycart, B.: *Modèles et algorithmes markoviens*. Mathématiques et Applications. Springer, Paris (2002)
- [230] Younes, L.: Estimation and annealing for Gibbsian fields. *Annales de l’Institut Henri Poincaré (B). Probabilités et Statistiques* **2**, 269–294 (1988)
- [231] Zhang, H., Zimmerman, D.L.: Towards reconciling two asymptotic frameworks in spatial statistics. *Biometrika* **92**, 921–936 (2005)
- [232] Zimmerman, D., Zimmerman, M.: A comparison of spatial semivariogram estimators and corresponding ordinary kriging predictors. *Technometric* **33**, 77–91 (1991)

for CPL of PPs, 221

for Gaussian CARs, 178

for invariant specification, 190

for ML of PPs, 225

For Moran’s index, 167

for spatial regression, 183

for stationary fields, 175

in geostatistics, 157

increasing domain, 149

infill, 149, 157

identification of, 176

intrusion, 237

Markov Gaussian, 3

non-stationary, 15

Cholesky decomposition, 160, 169

CGL, 111

for functions of fields, 160

for Markov chains, 11

for mixing fields, 269

Loess, 116