# References


[1] A. Baddeley. An anisotropic sampling design. In W. Nagel, editor, *Geobild'85*, pages 92–97, Jena, 1985. Friedrich–Schiller Universität.

[2] A. Baddeley. Crash course in stochastic geometry. sampling and censoring. In O.E. Barndorff-Nielsen, W.S. Kendall, and M.N.M. van Lieshout, editors, *Stochastic Geometry. Likelihood and Computation*, pages 1–78, Boca Raton, 1999. Chapman & Hall/CRC.

[3] A. Baddeley and L. M. Cruz-Orive. The Rao–Blackwell theorem in stereology and some counterexamples. *Adv. Appl. Probab.*, 27:2–19, 1995.

[4] A. J. Baddeley, H. J. G. Gundersen, and L. M. Cruz-Orive. Estimation of surface area from vertical sections. *J. Microsc.*, 142:259–276, 1986.

[5] V. Beneš. On second order formulas in anisotropic stereology. *Adv. Appl. Probab.*, 27/2:326–343, 1995.

[6] V. Beneš, K. Bodlák, and D. Hlubinka. Stereology of extremes; bivariate models and computation. *Method. Comp. Appl. Probab.*, 5:289–308, 2003.

[7] V. Beneš, K. Bodlák, J. Møller, and R. Waagepetersen. Application of log Gaussian Cox processes in disease mapping. In J. Mateu, D. Holland, and W. Gonzales-Mantiega, editors, *ISI Int. Conf. Environmental Statistics and Health*, pages 95–105. Universidade de Santiago de Compostella, 2003.

[8] V. Beneš, V. Bouše, M. Slámová, V. Suchánek, and K. Voleník. Bubble structure of enamel coatings and its determination. *Ceramics–Silikáty*, 38:4–8, 1994.

[9] V. Beneš, J. Chadoeuf, and A. Kretzschmar. Properties of length estimation in spatial fibre models. *Environmetrics*, 8:397–407, 1997.

[10] V. Beneš, J. Chadoeuf, and J. Ohser. On some characteristics of anisotropic fibre processes. *Math. Nachrichten*, 169:5–17, 1994.

[11] V. Beneš and A. M. Gokhale. Planar anisotropy revisited. *Kybernetika*, 36/2:149–164, 2000.

[12] V. Beneš, M. Hlawiczková, and K. Voleník. Stereological estimation of integral mixed curvature with application. *J. Microscopy*, 200/1:26–31, 2000.

[13] V. Beneš, M. Jiruše, and M. Slámová. Stereological unfolding of the trivariate size-shape-orientation distribution of spheroidal particles with application. *Acta Mater.*, 45.3:1105–1113, 1997.

[14] V. Beneš, J. Rataj, P. Krejčíř, and J. Ohser. Projection measures and estimation variances of intensities. *Statistics*, 32:369–393, 1999.

[15] K. Bodlák, A. Balasundaram, A. M. Gokhale, and V. Beneš. Three-dimensional bivariate size-orientation distribution of microcracks. *Acta Materialia*, 51/11:3131–3143, 2003.

[16] S. Campi, D. Haas, and W. Weil. Approximation of zonoids by zonotopes in fixed directions. *Comput. Geom.*, 11:419–431, 1994.

[17] J. Chadoeuf and V. Beneš. On some estimation variances in spatial statistics. *Kybernetika*, 30/3:245–262, 1994.

[18] S. S. Chang. Role of gas atmosphere in evolution of microstructure in sintered copper powder. Technical report, University of Florida, Gainesville, PhD. thesis, 1990.

[19] L. M. Cruz-Orive. Particle size-shape distributions; the general spheroid problem. *J. Microscopy*, 107.3:235–253, 1976.

[20] L. M. Cruz-Orive. On the precision of systematic sampling: a review of Matheron's transitive methods. *J. Microscopy*, 153:315–333, 1989.

[21] L. M. Cruz-Orive, H. Hoppeler, O. Mathieu, and E. R. Weibel. Stereology analysis of anisotropic structures using directional statistics. *JRSS, Series C*, 34/1:14–32, 1985.

[22] L. M. Cruz-Orive and C. V. Howard. Estimation of individual feature surface area with the vertical spatial grid. *J. Microscopy*, 178/2:146–151, 1995.

[23] D. J. Daley and D. Vere-Jones. *Introduction to the Theory of Point Processes.* Springer–Verlag, New York, 1988.

[24] L. de Haan. On regular variation and its application to the weak convergence of sample extremes. Technical report, Math. Centre Tracks 32, Mathematisch Centrum, Amsterdam, 1975.

[25] R. T. DeHoff and F. N. Rhines. *Quantitative Microscopy.* McGraw Hill, New York, 1968.

[26] C. R. Dietrich and G. N. Newsam. A fast and exact method for multidimensional Gaussian stochastic simulation. *Water Resources Research*, 29:2861–2869, 1993.

[27] H. Digabel. Détermination practique de la rose des directions. Technical report, 15 fascicules de morphologie mathématique appliquée (6), Fontainebleau, 1976.

[28] H. Drees and R. D. Reiss. Tail behavior in Wicksell's corpuscle problem. In J. Galambos and J. Kátai, editors, *Probability Theory and Applications*, pages 205–220, Dordrecht, 1992. Kluwer.

[29] H. J. G. Gundersen et al. The new stereological tools: disector, fractionator, nucleator and point sampled intercepts and their use in pathological research and diagnostics. *Acta Pathologica Microbiol. et Immun. Scandinavica*, 96:857–881, 1988.

[30] H. J. G. Gundersen et al. Some new, simple and efficient stereological methods and their use in pathological research and diagnostics. *Acta Pathologica Microbiol. et Immun. Scandinavica*, 96:379–394, 1988.

[31] H. Federer. *Geometric Measure Theory*. Springer–Verlag, New York, 1969.

[32] A. Fellous, J. Granara, and K. Krickeberg. Statistics of stationary oriented line Poisson process in the plane. In R. Miles and J. Serra, editors, *Geometric Probability and Biological Structures: Buffon's 200th anniversary*, No 23 in LNBM, Berlin, 1978. Springer.

[33] M. Frechet. Sur les tableaux de correlation dont les marges sont donnees. *Ann. Univ. Lyon, Sec. A*, 14:53–77, 1951.

[34] D. Gamerman. *Markov Chain Monte Carlo. Stochastic Simulation for Bayesian Inference*. Chapman&Hall, London, 1997.

[35] W. Gerlach and J. Ohser. On the accuracy of numerical solutions such as the Wicksell corpuscule problem. *Biometrical J.*, 28:881–7, 1986.

[36] A. M. Gokhale. Unbiased estimation of curve length in 3D using vertical slices. *J. Microscopy*, 159:133–141, 1990.

[37] A. M. Gokhale. Estimation of bivariate size and orientation distribution of microcracks. *Acta Metall. and Mater.*, 44.2:475–485, 1996.

[38] A. M. Gokhale. Estimation of integral mixed surface curvature from vertical metallographic sections. *Acta Mater.*, 46:1741–1748, 1998.

[39] A. M. Gokhale and V. Beneš. Estimation of average particle size from vertical projections. *J. Microscopy*, 191:195–200, 1998.

[40] A. M. Gokhale and J. M. Drury. Efficient measurements of microstructural surface area using trisector. *Metall. Trans.*, 25A:919–928, 1994.

[41] P. Goodey and W. Weil. Zonoids and generalizations. In P. M. Gruber and J. M. Wills, editors, *Handbook of Convex Geometry*, pages 1297–1326, Amsterodam, 1993. North-Holland.

[42] I. S. Gradshtejn and I. M. Ryzhik. *Tables of Integrals, Sums, Series and Products (in Russian)*. GIFML, Moscow, 1963.

[43] P.M. Gruber. The space of convex bodies. In P.M. Gruber and J.M. Wills, editors, *Handbook of Convex Geometry*, pages 310–318, Amsterdam, 1993. North-Holland.

[44] X. Gual-Arnau and L. M. Cruz-Orive. Systematic sampling on the circle and on the sphere. *Adv. Appl. Prob. (SGSA)*, 32:628–647, 2000.

[45] H. J. G. Gundersen and E. B. Jensen. Stereological estimation of volume-weighted mean volume of arbitrary particles. *J. Microsc.*, 138:127–142, 1985.

[46] U. Hahn and D. Stoyan. Unbiased stereological estimation of surface area density in gradient surface processes. *Adv. Appl. Probab.*, 31:315–327, 1999.

[47] E.F. Harding and D.G. Kendall (eds.). *Stochastic Geometry.* J. Wiley & Sons, 1974.

[48] H. Heyer. *Probability Measures on Locally Compact Groups.* Springer, Berlin, 1977.

[49] J. E. Hilliard. Specification and measurement of microstructural anisotropy. *Trans. Metall. Soc. AIME*, 224:1201–1211, 1962.

[50] M. Hlawiczková. On a stereological estimator of the average caliper diameter. In I. Saxl V. Beneš, J. Janáček, editor, *Proc. $S^4G$ Int. Conf. on Stereol., Spatial Stat. and Stoch. Geom.*, pages 113–118, Praha, 1999. JČMF.

[51] M. Hlawiczková, A. M. Gokhale, and V. Beneš. Bias of a length density estimator based on vertical projections. *J. Microsc.*, 204/3:226–231, 2001.

[52] D. Hlubinka. Shape factor extremes for spheroidal particles in fgm distributions. Technical report, KPMS Preprint 26, Charles University, Prague, 2002.

[53] D. Hlubinka. Stereology of extremes; shape factor of spheroids. *Extremes*, 6:5–24, 2003.

[54] C.V. Howard and M.G. Reed. *Unbiased Stereology. Three-dimensional Measurement in Microscopy.* Bios Scientific, Oxford, 1998.

[55] D. Hug. Contact distributions of boolean models. *Rend. Circ. Matt. Palermo II (Suppl.)*, 65:137–181, 2000.

[56] D. Hug, G. Last, and W. Weil. A survey on contact distribution functions. In K. Mecke and D. Stoyan, editors, *Statistical Physics and Spatial Statistics, Lecture Notes in Physics 600*, pages 317–357, 2002.

[57] O. Kallenberg. *Random Measures.* Akademie-Verlag, Berlin, 1983.

[58] O. Kallenberg. *Foundations of modern probability.* Springer Verlag, New York, 1997.

[59] K. Kanatani. Stereological determination of structural anisotropy. *Int. J. Eng. Sci.*, 22:531–546, 1984.

[60] J. Kerstan, K. Matthes, and J. Mecke. *Unbegrenzt teilbare Punktprozesse.* Akademie-Verlag, 1974.

[61] M. Kiderlen. Non-parametric estimation of the directional distribution. *Adv. Appl. Probab. (SGSA)*, 33:6–24, 2001.

[62] M. Kiderlen and E.B. Vedel-Jensen. Estimation of the directional measure of planar random sets by digitization. *Adv. Appl. Probab. (SGSA)*, 35/3:583–602, 2003.

[63] K. Kieu. Three lectures on systematic geometric sampling. Technical report, University of Aarhus, 1997.

[64] K. Kieu, S. Souchet, and J. Istas. Precision of systematic sampling and transitive methods. *J. Statist. Plan. Inf.*, 77:263–279, 1999.

[65] P. Krejčíř and V. Beneš. Orientation analysis in second-order stereology. *Acta Stereol.*, 15/1:59–64, 1996.

[66] J. Lehmann. *Theory of Point Estimation.* Wadworth & Brooks, California, 1991.

[67] B. A. Mair, M. Rao, and J. M. M. Anderson. Positron emission tomography, Borel measures and weak convergence. *Inverse Problems*, 12:965–976, 1996.

[68] G. Matheron. The theory of regionalized variables and its applications. Technical report, Les Cahiers du Centre de Morphologie Mathématique de Fontainebleau 5, ENSM, Paris, 1971.

[69] G. Matheron. *Random Sets and Integral Geometry.* Wiley, New York, 1975.

[70] P. Mattila. *Geometry of Sets and Measures in Euclidean Spaces.* Cambridge Univ. Press, Cambridge, 1995.

[71] J. Mecke. Formulas for stationary planar fibre processes III - Intersections with fibre systems. *Math. Oper. Statist., Ser. Statist.*, 12:201–210, 1981.

[72] J. Mecke and W. Nagel. Stationäre raumliche Faserprozesse und ihre Schnittzahlrozen. *Elektron. Inf. Kybernet.*, 16:475–483, 1980.

[73] J. Mecke and D. Stoyan. Formulas for stationary planar fibre processes. i. general theory. *Math. Oper. Stat.*, 12:267–279, 1980.

[74] K. Mecke and D. Stoyan eds. *Statistical Physics and Spatial Statistics.* Springer, Berlin, 2000. Lecture Notes in Physics 554.

[75] S.P. Meyn and R.L. Tweedie. *Markov Chains and Stochastic Stability.* Springer, New York, 1993.

[76] P. Mikusinski, H. Sherwood, and M. Taylor. Probabilistic interpretations of copulas and their convex sums. In G. Dall Aglio et al, editor, *Advances in Probability Distributions with Given Marginals*, pages 95–112, Dordrecht, 1991. Kluwer.

[77] R. Miles. Stereological formulae based on planar curve sections of surfaces in space. *J. Microsc.*, 121:21–27, 1981.

[78] J. Møller. Stereological analysis of particles of varying ellipsoidal shape. *J. Appl. Probab.*, 25:322–335, 1988.

[79] J. Møller, A.R. Syversveen, and R.P. Waagepetersen. Log Gaussian Cox processes. *Scandinavian Journal of Statistics*, 25:451–482, 1998.

[80] J. Møller and R. Waagepetersen. *Statistical Inference and Simulation for Spatial Point Processes*. Chapman& Hall/CRC, 2003.

[81] P. Monestiez, P. Kretzschmar, and J. Chadoeuf. Modelling natural burrow systems in soil by fibre processes: Monte Carlo tests on independence of fibre characteristics. *Acta Stereol.*, 12:237–242, 1993.

[82] T. Mrkvička. Estimation variances for Poisson process of compact sets. *Adv. Appl. Prob.*, 33:765–772, 2001.

[83] W. Nagel. Dünne Schnitte von stationären räumlichen Faserprozessen. *Math. Oper. Statist.*, 14:569–576, 1983.

[84] J. Ohser. Variances of different intensity estimators of the specific line length. Technical report, Stoch. Geom., Geom. Statist., Stereol., Oberwolfach, unpublished, 1991.

[85] J. Ohser and F. Mücklich. Stereology for some classes of polyhedrons. *Adv. Appl. Prob.*, 27.2:384–396, 1995.

[86] J. Ohser and F. Mücklich. *Statistical Analysis of Microstructures in Materials Science*. Wiley, New York, 2000.

[87] J. Ohser and K. Sandau. Considerations about the estimation of size distribution in Wicksell's corpuscule problem. In K. Mecke and D. Stoyan, editors, *Statistical Physics and Spatial Statistics, Lecture Notes in Physics 554*, 1999.

[88] Z. Pawlas and V. Beneš. Central limit theorem for random measures generated by a stationary poisson point process of compact sets. *Mathematische Nachrichten*, 267, 2004.

[89] S. Pohlmann, J. Mecke, and D. Stoyan. Stereological formulas for stationary surface processes. *Math. Oper. Statist.*, 12:329–440, 1981.

[90] M. Prokešová. Bayesian MCMC estimation of the rose of directions. *Kybernetika*, 39/3:701–718, 2003.

[91] J. Rataj. On set covariance and three-point test sets. *Czech. Math. J.*, to appear.

[92] J. Rataj. Estimation of oriented direction distribution of a planar body. *Adv. Appl. Probab.*, 28:394–404, 1996.

[93] J. Rataj. Determination of spherical area measures by means of dilation volume. *Math. Nachr.*, 235:143–162, 2002.

[94] J. Rataj and I. Saxl. Analysis of planar anisotropy by means of the Steiner compact. *J. Appl. Probab.*, 26:490–502, 1989.

[95] J. Rataj and I. Saxl. Estimation of direction distribution of a planar fibre system. *Acta Stereol.*, 11/I:631–637, 1992.

[96] J. Rataj and M. Zähle. Curvatures and currents for unions of sets with positive reach ii. *Ann. Glob. Anal. Geom.*, 20:1–21, 2001.

[97] L. A. Santaló. *Integral Geometry and Geometric Probability.* Addison Wesley, Reading, MA, 1976.

[98] K. Schladitz. Estimation of the intensity of stationary flat processes. *Adv. Appl. Probab.*, 32:114–139, 2000.

[99] R. Schneider. *Convex Bodies: The Brunn-Minkowski Theory.* Cambridge University Press, 1993.

[100] R. Schneider. On the mean normal measures of a particle process. *Adv. Appl. Prob.*, 33:25–38, 2001.

[101] R. Schneider and W. Weil. Zonoids and related topics. In P. M. Gruber and J. M. Wills, editors, *Convexity and its Applications*, pages 296–317, Basel, 1983. Birkhäuser.

[102] R. Schneider and W. Weil. *Integralgeometrie.* B.G.Teubner, 1992.

[103] R. Schneider and W. Weil. *Stochastische Geometrie.* B.G. Teubner, Stuttgart - Leipzig, 2000.

[104] R. Schneider and J.A. Wieacker. Integral geometry. In *Handbook of Convex Geometry*, pages 1349–1390. North Holland, Amsterdam, 1993.

[105] B. Silverman. *Kernel Density Estimation.* Wiley, New York, 1986.

[106] B. W. Silverman, D. W. Nychka M. C. Jones, and J. D. Wilson. A smoothed EM approach to indirect estimation problems, with particular reference to stereology and emission tomography. *J. R. Statist. Soc. B*, 52:271–324, 1990.

[107] M. Slámová. Porušování kompozitních materiálů. Technical report, Dissertation, Charles Univ. Prague, 1996.

[108] D. Stoyan and V. Beneš. Anisotropy analysis for particle systems. *J. Microscopy*, 164/2:159–168, 1991.

[109] D. Stoyan, W.S. Kendall, and J. Mecke. *Stochastic Geometry and Its Applications.* Wiley, New York, 1995.

[110] D. Stoyan and J. Ohser. Correlations between planar random structures, with an ecological application. *Biom. J.*, 24:631–647, 1982.

[111] D. Stoyan and J. Ohser. Cross-correlation measures for weighted random measures (in Russian). *Teor. Veroyatn. Primen.*, 29:328–347, 1984.

[112] R. Takahashi. Normalizing constants of a distribution which belongs to the domain of attraction of the Gumbel distribution. *Stat. Prob. Letters*, 5:197–200, 1987.

[113] R. Takahashi and M. Sibuya. The maximum size of the planar sections of random spheres and its application to metallurgy. *Ann. Inst. Statist. Math.*, 48.1:361–377, 1996.

[114] R. Takahashi and M. Sibuya. Prediction of the maximum size in Wicksell's corpuscle problem. *Ann. Inst. Math.*, 50.2:361–377, 1998.

[115] M.N.M. van Lieshout. *Markov Point Processes and Their Applications.* World Scientific, Singapore, 2000.

[116] E.B. Vedel-Jensen. *Local Stereology.* World Scientific, Singapore, 1998.

[117] G. S. Watson. Estimating functionals of particle size distribution. *Biometrika*, 58:483–490, 1971.

[118] E.R. Weibel. *Practical Methods for Biological Morphometry. Vol. I: Stereological Methods.* Academic Press, London, 1980.

[119] W. Weil. The mean normal distribution of stationary random sets and particle process. In D. Jeulin, editor, *Advances in Theory and Applications of Random Sets*, pages 21–33, Singapore, 1997. World Scientific.

[120] W. Weil and J. A. Wieacker. Stochastic geometry. In P. M. Gruber and J. M. Wills, editors, *Handbook of Convex Geometry*, pages 1393–1438, New York, 1993. Elsevier.

[121] I. Weissman. Estimation of parameters and large quantiles based on the k largest observations. *J. American Stat. Assoc.*, 73.364:812–815, 1978.

[122] S. D. Wicksell. The corpuscule problem. A mahematical study of a biometrical problem. *Biometrika*, 17:84–88, 1925.

[123] J.A. Wieacker. Translative Poincaré formulae for Hausdorff rectifiable sets. *Geom. Dedicata*, 1984:231–248, 1984.

[124] A.T.A. Wood and G. Chan. Simulation of stationary Gaussian processes in $[0,1]^d$. *Journal of Computational and Graphical Statistics*, 3:409–432, 1994.

[125] M. Zähle. Random processes of Hausdorff rectifiable closed sets. *Math. Nachrichten*, 108:49–72, 1982.

[126] M. Zähle. Integral and current representation of Federer's curvature measures. *Arch. Math.*, 46:557–567, 1986.

[127] P. Zeman. Objective assessment of risk maps of tick-borne encephalitis and lyme boreliosis based on spatial patterns of located cases. *International Journal of Epidemiology*, 26:1121–1130, 1997.