References

1. F. J. Alexander, A. L. Garcia, and B. J. Alder. A consistent Boltzmann algorithm. *Phys. Rev. Lett.*, 74(26):5212–5215, 1995.
2. F. J. Alexander, A. L. Garcia, and B. J. Alder. Cell size dependence of transport coefficients in stochastic particle algorithms. *Phys. Fluids*, 10(6):1540–1542, 1998.
3. H. L. Anderson. Scientific uses of the MANIAC. *J. Statist. Phys.*, 43(5-6):731–748, 1986.
4. L. Arkeryd. On the Boltzmann equation. Part I. Existence. *Arch. Rational Mech. Anal.*, 45:1–16, 1972.
5. A. A. Arsenev. Approximation of the solution of the Boltzmann equation by solutions of Ito stochastic differential equations. *Zh. Vychisl. Mat. i Mat. Fiz.*, 27(3):400–410, 1987. In Russian.
6. A. A. Arsenev. Approximation of the Boltzmann equation by stochastic equations. *Zh. Vychisl. Mat. i Mat. Fiz.*, 28(4):560–567, 1988. In Russian.
7. H. Babovsky. On a simulation scheme for the Boltzmann equation. *Math. Methods Appl. Sci.*, 8:223–233, 1986.
8. H. Babovsky. A convergence proof for Nanbu's Boltzmann simulation scheme. *European J. Mech. B Fluids*, 8(1):41–55, 1989.
9. H. Babovsky. Time averages of simulation schemes as approximations to stationary kinetic equations. *European J. Mech. B Fluids*, 11(2):199–212, 1992.
10. H. Babovsky. Monte Carlo simulation schemes for steady kinetic equations. *Transport Theory Statist. Phys.*, 23(1-3):249–264, 1994.
11. H. Babovsky. *Die Boltzmann-Gleichung: Modellbildung–Numerik–Anwendungen.* B. G. Teubner, Stuttgart, 1998.
12. H. Babovsky and R. Illner. A convergence proof for Nanbu's simulation method for the full Boltzmann equation. *SIAM J. Numer. Anal.*, 26(1):45–65, 1989.
13. O. M. Belotserkovskij, A. I. Erofeev, and V. E. Yanitskij. A nonstationary method for direct statistical simulation of rarefied gas flows. *Zh. Vychisl. Mat. i Mat. Fiz.*, 20(5):1174–1204, 1980. In Russian.
14. O. M. Belotserkovskij, A. I. Erofeev, and V. E. Yanitskij. Direct statistical modelling of problems in aero-gas dynamics. *Adv. in Mech.*, 5(3/4):11–40, 1982. In Russian.
15. O. M. Belotserkovskij and V. E. Yanitskij. Statistical particle in cell method for problems in rarefied gas dynamics. I. Construction of the method. *Zh. Vychisl. Mat. i Mat. Fiz.*, 15(5):1195–1209, 1975. In Russian.

16. O. M. Belotserkovskij and V. E. Yanitskij. Statistical particle in cell method for problems in rarefied gas dynamics. II. Numerical aspects of the method. *Zh. Vychisl. Mat. i Mat. Fiz.*, 15:1553–1567, 1975. In Russian.
17. P. H. Bézandry, R. Ferland, G. Giroux, and J.-C. Roberge. Une approche probabiliste de résolution d'équations non linéaires. In *Measure-valued processes, stochastic partial differential equations, and interacting systems (Montreal, PQ, 1992)*, volume 5 of *CRM Proc. Lecture Notes*, pages 17–33. Amer. Math. Soc., Providence, RI, 1994.
18. P. H. Bezandry, X. Fernique, and G. Giroux. A functional central limit theorem for a nonequilibrium model of interacting particles with unbounded intensity. *J. Statist. Phys.*, 72(1/2):329–353, 1993.
19. G. A. Bird. Approach to translational equilibrium in a rigid sphere gas. *Phys. Fluids*, 6:1518–1519, 1963.
20. G. A. Bird. Shock wave structure in a rigid sphere gas. In J.H. de Leeuw, editor, *Rarefied Gas Dynamics*, volume 1, pages 216–222. Academic Press, New York, 1965.
21. G. A. Bird. *Molecular Gas Dynamics.* Clarendon Press, Oxford, 1976.
22. G. A. Bird. Transition regime behavior of supersonic beam skimmers. *Phys. Fluids*, 19(10):1486–1491, 1976.
23. G. A. Bird. Monte–Carlo simulation in an engineering context. In S. Fisher, editor, *Proc. of the 12th International Symposium on Rarefied Gas Dynamics (Charlottesville, 1980)*, volume 74 of *Progress in Astronautics and Aeronautics*, pages 239–255. AIAA, New York, 1981.
24. G. A. Bird. Perception of numerical methods in rarefied gas dynamics. *Progr. Astronaut. Aeronaut.*, 118:211–226, 1989.
25. G. A. Bird. *Molecular Gas Dynamics and the Direct Simulation of Gas Flows.* Clarendon Press, Oxford, 1994.
26. G. A. Bird. Forty years of DSMC, and now? In T. J. Bartel and M. A. Gallis, editors, *Rarefied Gas Dynamics, 22nd International Symposium, Sydney, Australia, 9-14 July 2000*, volume 585 of *AIP Conference Proceedings*, pages 372–380. AIP Publishing Center, New York, 2001.
27. A. V. Bobylev. Exact solutions of the Boltzmann equation. *Dokl. Akad. Nauk SSSR*, 225(6):1296–1299, 1975. In Russian.
28. A. V. Bobylev and C. Cercignani. Exact eternal solutions of the Boltzmann equation. *J. Statist. Phys.*, 106(5-6):1019–1038, 2002.
29. A. V. Bobylev and C. Cercignani. The inverse Laplace transform of some analytic functions with an application to the eternal solutions of the Boltzmann equation. *Appl. Math. Lett.*, 15(7):807–813, 2002.
30. A. V. Bobylev and C. Cercignani. Moment equations for a granular material in a thermal bath. *J. Statist. Phys.*, 106(3-4):547–567, 2002.
31. A. V. Bobylev and T. Ohwada. On the generalization of Strang's splitting scheme. *Riv. Mat. Univ. Parma (6)*, 2*:235–243, 1999.
32. A. V. Bobylev and T. Ohwada. The error of the splitting scheme for solving evolutionary equations. *Appl. Math. Lett.*, 14(1):45–48, 2001.
33. A. V. Bobylev and S. Rjasanow. Numerical solution of the Boltzmann equation using a fully conservative difference scheme based on the fast Fourier transform. *Transport Theory Statist. Phys.*, 29(3-5):289–310, 2000.
34. A. V. Bobylev and J. Struckmeier. Numerical simulation of the stationary one-dimensional Boltzmann equation by particle methods. *European J. Mech. B Fluids*, 15(1):103–118, 1996.

35. S. V. Bogomolov. Convergence of the method of summary approximation for the Boltzmann equation. *Zh. Vychisl. Mat. i Mat. Fiz.*, 28(1):119–126, 1988. In Russian.
36. L. Boltzmann. Weitere Studien über das Wärmegleichgewicht unter Gasmolekülen. *Sitzungsber. Akad. Wiss. Wien*, 66:275–370, 1872.
37. J.-F. Bourgat, P. Le Tallec, B. Perthame, and Y. Qiu. Coupling Boltzmann and Euler equations without overlapping. In *Domain decomposition methods in science and engineering (Como, 1992)*, pages 377–398. Amer. Math. Soc., Providence, RI, 1994.
38. I. Boyd, G. Chen, and G. Candler. Predicting Failure of the Continuum Fluid Equations. *AIAA*, 94:2352, 1994.
39. I. D. Boyd. Conservative species weighting scheme for the direct simulation Monte Carlo method. *J. of Thermophysics and Heat Transfer*, 10(4):579–585, 1996.
40. G. Brasseur and S. Solomon. *Aeronomy of the Middle Atmosphere.* D. Reidel Publishing Company, Dordrecht, 1984.
41. N. P. Buslenko, D. I. Golenko, Yu. A. Shreider, I. M. Sobol, and V. G. Sragovich. *The Monte Carlo method. The method of statistical trials.* International Series of Monographs in Pure and Applied Mathematics, Vol. 87. Pergamon Press, Oxford, 1966.
42. N. P. Buslenko, D. I. Golenko, I. M. Sobol, V. G. Sragovich, and Ju. A. Shreider. *Metod statisticheskikh ispytanii (Metod Monte-Karlo).* Gosudarstv. Izdat. Fiz.-Mat. Lit., Moscow, 1962. (Russian) [The method of statistical testing (The Monte Carlo method)] English translation: [41].
43. N. P. Buslenko and Ju. A. Shreider. *Metod statisticheskikh ispytanii (Monte-Karlo) i ego realizatsiya na tsifrovykh vychislitelnykh mashinakh.* Biblioteka Prikladnogo Analiza i Vyčislitelnoĭ Matematiki. Gosudarstv. Izdat. Fiz-Mat. Lit., Moscow, 1961. (Russian) [The Monte-Carlo method and how it is carried out on digital computers].
44. S. Caprino and M. Pulvirenti. A cluster expansion approach to a one–dimensional Boltzmann equation: a validity result. *Comm. Math. Phys.*, 166:603–631, 1995.
45. S. Caprino, M. Pulvirenti, and W. Wagner. Stationary particle systems approximating stationary solutions to the Boltzmann equation. *SIAM J. Math. Anal.*, 29(4):913–934, 1998.
46. C. Cercignani. On the master equation in the space inhomogeneous case. In *Théories cinétiques classiques et relativistes, Colloques Internationaux C.N.R.S. 236 (Paris 1974)*, pages 209–221, 1975.
47. C. Cercignani. The Grad limit for a system of soft spheres. *Comm. Pure Appl. Math.*, 36(4):479–494, 1983.
48. C. Cercignani. *The Boltzmann Equation and its Applications.* Springer, New York, 1988.
49. C. Cercignani. *Ludwig Boltzmann. The Man who Trusted Atoms.* Oxford University Press, Oxford, 1998.
50. C. Cercignani. *Rarefied Gas Dynamics. From Basic Concepts to Actual Calculations.* Cambridge Texts in Applied Mathematics. Cambridge University Press, 2000.
51. C. Cercignani, R. Illner, and M. Pulvirenti. *The Mathematical Theory of Dilute Gases.* Springer, New York, 1994.

52. E. G. D. Cohen, W. Fiszdon, and A. Palczewski, editors. *Fundamental problems in statistical mechanics. IV.* Ossolineum, Wrocław, 1978. Proceedings of the Fourth International Summer School in Statistical Mechanics, held in Jadwisin, September 14–24, 1977.
53. M. H. A. Davis. Piecewise–deterministic Markov processes: A general class of non–diffusion stochastic models. *J. Roy. Statist. Soc. Ser. B*, 46(3):353–388, 1984.
54. M. H. A. Davis. *Markov Models and Optimization.* Chapman & Hall, London, 1993.
55. S. M. Deshpande. The statistical particle–in–cell method for multicomponent gases. *Zh. Vychisl. Mat. i Mat. Fiz.*, 23(1):170–177, 1983.
56. S. M. Ermakov. *Metod Monte-Karlo i smezhnye voprosy.* Nauka, Moscow, 1971. (Russian) [The Monte Carlo method and related problems].
57. S. M. Ermakov and N. M. Moskaleva. Branching processes and the Boltzmann equation. Numerical aspects. *Vestnik Leningrad Univ. Ser. 1*, 3:38–43, 1987. In Russian.
58. S. M. Ermakov, V. V. Nekrutkin, and A. S. Sipin. *Sluchainye protsessy dlya resheniya klassicheskikh uravnenii matematicheskoi fiziki.* Nauka, Moscow, 1984. English translation: [59].
59. S. M. Ermakov, V. V. Nekrutkin, and A. S. Sipin. *Random Processes for Classical Equations of Mathematical Physics*, volume 34 of *Mathematics and its Applications (Soviet Series).* Kluwer Academic Publishers Group, Dordrecht, 1989.
60. M. H. Ernst. Exact solutions of the nonlinear Boltzmann and related kinetic equations. In *Nonequilibrium phenomena. I. The Boltzmann equation*, pages 51–119. North–Holland, 1983.
61. S. N. Ethier and T. G. Kurtz. *Markov Processes, Characterization and Convergence.* Wiley, New York, 1986.
62. J. Fan and C. Shen. Statistical simulation of low-speed rarefied gas flows. *J. Comput. Phys.*, 167:393–412, 2001.
63. W. Feller. Zur Theorie der stochastischen Prozesse. *Math. Ann.*, 113:113–160, 1937.
64. R. Ferland, X. Fernique, and G. Giroux. Compactness of the fluctuations associated with some generalized nonlinear Boltzmann equations. *Can. J. Math.*, 44(6):1192–1205, 1992.
65. A. Frezzotti. A particle scheme for the numerical solution of the Enskog equation. *Phys. Fluids*, 9(5):1329–1335, 1997.
66. T. Funaki. Construction of stochastic processes associated with the Boltzmann equation and its applications. In K. Ito and T. Hida, editors, *Stochastic processes and their applications*, volume 1203 of *Lecture Notes in Mathematics*, pages 51–65. Springer, Berlin/Heidelberg, 1986.
67. A. L. Garcia and W. Wagner. The limiting kinetic equation of the consistent Boltzmann algorithm for dense gases. *J. Statist. Phys.*, 101(5-6):1065–1086, 2000.
68. A. L. Garcia and W. Wagner. Time step truncation error in direct simulation Monte Carlo. *Phys. Fluids*, 12(10):2621–2633, 2000.
69. A. L. Garcia and W. Wagner. Some new properties of the kinetic equation for the Consistent Boltzmann Algorithm. *Transport Theory Statist. Phys.*, 31(4-6):579–594, 2002.

70. A. L. Garcia and W. Wagner. Direct simulation Monte Carlo method for the Uehling-Uhlenbeck-Boltzmann equation. *Physical Review E*, 68(056703):1–11, 2003.
71. D. I. Golenko. *Modelirovanie i statisticheskii analiz psevdosluchainykh chisel na elektronnykh vychislitelnykh mashinakh.* Izdat. "Nauka", Moscow, 1965. (Russian) [Simulation and statistical analysis of pseudo-random numbers on electronic computing machines].
72. C. Graham and S. Méléard. Stochastic particle approximations for generalized Boltzmann models and convergence estimates. *Ann. Probab.*, 25(1):115–132, 1997.
73. F. A. Grünbaum. Propagation of chaos for the Boltzmann equation. *Arch. Rational Mech. Anal.*, 42(5):323–345, 1971.
74. M. Günther, P. Le Tallec, J. P. Perlat, and J. Struckmeier. Numerical modeling of gas flows in the transition between rarefied and continuum regimes. In *Numerical flow simulation, I (Marseille, 1997)*, pages 222–241. Vieweg, Braunschweig, 1998.
75. N. G. Hadjiconstantinou. Analysis of discretization in direct simulation Monte Carlo. *Phys. Fluids*, 12(10):2634–2638, 2000.
76. J. H. Halton. A retrospective and prospective survey of the Monte Carlo method. *SIAM Rev.*, 12:1–63, 1970.
77. J. M. Hammersley and D. C. Handscomb. *Monte Carlo methods.* Methuen & Co. Ltd., London, 1965.
78. H. A. Hassan and D. B. Hash. A generalized hard-sphere model for Monte Carlo simulations. *Phys. Fluids A*, 5 : 738–744, 1993.
79. J. K. Haviland and M. L. Lavin. Application of the Monte Carlo method to heat transfer in a rarefied gas. *Phys. Fluids*, 5(11):1399–1405, 1962.
80. T. Hokazono, S. Kobayashi, T. Ohsawa, and T. Ohwada. On the time step error of the DSMC. In A. D. Ketsdever and E. P. Muntz, editors, *Rarefied Gas Dynamics*, pages 390–397. AIP Publishing Center, New York, 2003.
81. J. Horowitz and R. L. Karandikar. Martingale problems associated with the Boltzmann equation. In *Seminar on Stochastic Processes, 1989*, volume 18 of *Progress in Probability*, pages 75–122. Birkhäuser, Boston/Basel/Berlin, 1990.
82. K. Huang. *Statistical mechanics.* John Wiley & Sons Inc., New York, second edition, 1987.
83. R. Illner and H. Neunzert. On simulation methods for the Boltzmann equation. *Transport Theory Statist. Phys.*, 16(2&3):141–154, 1987.
84. R. Illner and S. Rjasanow. Random discrete velocity models: Possible bridges between the Boltzmann equation, discrete velocity models and particle simulation? In V. C. Boffi, F. Bampi, and G. Toscani, editors, *Nonlinear kinetic theory and mathematical aspects of hyperbolic systems*, pages 152–158. World Scientific, Singapore, 1992.
85. R. Illner and S. Rjasanow. Numerical solution of the Boltzmann equation by random discrete velocity models. *European J. Mech. B Fluids*, 13(2):197–210, 1994.
86. R. Illner and W. Wagner. A random discrete velocity model and approximation of the Boltzmann equation. *J. Statist. Phys.*, 70(3/4):773–792, 1993.
87. R. Illner and W. Wagner. Random discrete velocity models and approximation of the Boltzmann equation. Conservation of momentum and energy. *Transport Theory Statist. Phys.*, 23(1–3):27–38, 1994.

88. M. S. Ivanov and S. V. Rogasinsky. Theoretical analysis of traditional and modern schemes of the DSMC method. In A. E. Beylich, editor, *Proc. of the 17th International Symposium on Rarefied Gas Dynamics*, pages 629–642, Aachen, 1990.
89. M. S. Ivanov and S. V. Rogazinskij. Comparative analysis of algorithms of the direct statistical modeling method in rarefied gas dynamics. *Zh. Vychisl. Mat. i Mat. Fiz.*, 28(7):1058–1070, 1988. In Russian.
90. M. S. Ivanov and S. V. Rogazinskij. Efficient schemes for direct statistical modeling of rarefied gas flows. *Mat. Model.*, 1(7):130–145, 1989. In Russian.
91. M. Kac. Foundations of kinetic theory. In *Third Berkeley Symposium on Mathematical Statistics and Probability Theory*, volume 3, pages 171–197, 1956.
92. M. Kac. *Some Stochastic Problems in Physics and Mathematics.* Magnolia Petroleum Co., 1956.
93. M. Kac. *Probability and Related Topics in Physical Sciences.* Interscience, London, 1959.
94. M. Kac. *Veroyatnost' i smezhnye voprosy v fizike.* Mir, Moscow, 1965. Russian translation of [93].
95. M. Kac. *Neskol'ko veroyatnostnykh zadach fiziki i matematiki.* Nauka, Moscow, 1967. Russian translation of the Polish edition of [92].
96. M. Kac. Some probabilistic aspects of the Boltzmann equation. *Acta Phys. Austriaca*, Suppl. X:379–400, 1973.
97. M. Kac. Nonlinear dynamics and inverse problems. In *Fundamental problems in statistical mechanics, IV (Proc. Fourth Internat. Summer School, Jadwisin, 1977)*, pages 199–222. Ossolineum, Wrocław, 1978.
98. M. Kac and J. Logan. Fluctuations. In *Fluctuation Phenomena*, volume VII of *Studies in Statistical Mechanics*, pages 1–60. North-Holland, 1979.
99. A. I. Khisamutdinov. A simulation method for statistical modeling of rarefied gases. *Dokl. Akad. Nauk SSSR*, 291(6):1300–1304, 1986. In Russian.
100. R. Kirsch. Die Boltzmann-Gleichung für energieabhängige Verteilungsfunktionen. Diplomarbeit, Universität des Saarlandes, 1999.
101. A. Klar. Convergence of alternating domain decomposition schemes for kinetic and aerodynamic equations. *Math. Methods Appl. Sci.*, 18(8):649–670, 1995.
102. A. Klar. Domain decomposition for kinetic problems with nonequilibrium states. *European J. Mech. B Fluids*, 15(2):203–216, 1996.
103. A. Klar. Asymptotic analysis and coupling conditions for kinetic and hydrodynamic equations. *Comput. Math. Appl.*, 35(1-2):127–137, 1998.
104. Yu. L. Klimontovich. Kinetic theory of fluctuations in gases and plasma. In *Fundamental problems in statistical mechanics, IV (Proc. Fourth Internat. Summer School, Jadwisin, 1977)*, pages 265–309. Ossolineum, Wrocław, 1978.
105. Yu. L. Klimontovich. Dissipative equations for many-particle distribution functions. *Uspekhi Fiz. Nauk*, 139(4):689–700, 1983. In Russian.
106. Yu. L. Klimontovich. *Statistical theory of open systems. Vol. 1*, volume 67 of *Fundamental Theories of Physics.* Kluwer Academic Publishers Group, Dordrecht, 1995.
107. M. Knudsen. *Kinetic Theory of Gases.* Methuen, London, 1952.
108. A. Kolmogoroff. Über die analytischen Methoden in der Wahrscheinlichkeitsrechnung. *Math. Ann.*, 104:415–458, 1931.
109. A. Kolmogoroff and M. Leontowitsch. Zur Berechnung der mittleren Brownschen Fläche. *Physik. Zeitschr. d. Sowjetunion*, 4:1–13, 1933.

110. A. N. Kolmogoroff. *Grundbegriffe der Wahrscheinlichkeitsrechnung*. Springer, Berlin, 1933.
111. Yu. N. Kondyurin. A statistical approach to the solution of the Boltzmann equation. *Zh. Vychisl. Mat. i Mat. Fiz.*, 26(10):1527–1534, 1986. In Russian.
112. K. Koura. Null–collision technique in the direct–simulation Monte Carlo method. *Phys. Fluids*, 29(11):3509–3511, 1986.
113. K. Koura and H. Matsumoto. Variable soft sphere molecular model for inverse-power-law or Lennard-Jones potential. *Phys. Fluids A*, 3 : 2459–2465, 1991.
114. K. Koura and H. Matsumoto. Variable soft sphere molecular model for air species. *Phys. Fluids A*, 4 : 1083–1085, 1992.
115. M. Krook and T. T. Wu. Exact solutions of the Boltzmann equation. *Phys. Fluids*, 20(10):1589–1595, 1977.
116. M. Lachowicz and M. Pulvirenti. A stochastic system of particles modelling the Euler equation. *Arch. Rational Mech. Anal.*, 109(1):81–93, 1990.
117. P. Le Tallec and F. Mallinger. Coupling Boltzmann and Navier-Stokes equations by half fluxes. *J. Comput. Phys.*, 136(1):51–67, 1997.
118. C. Lécot. A direct simulation Monte Carlo scheme and uniformly distributed sequences for solving the Boltzmann equation. *Computing*, 41(1/2):41–57, 1989.
119. C. Lécot. Low discrepancy sequences for solving the Boltzmann equation. *J. Comput. Appl. Math.*, 25(2):237–249, 1989.
120. C. Lécot. A quasi-Monte Carlo method for the Boltzmann equation. *Math. Comp.*, 56(194):621–644, 1991.
121. M. A. Leontovich. Basic equations of the kinetic gas theory from the point of view of the theory of random processes. *Zhurnal Teoret. Ehksper. Fiziki*, 5(3-4):211–231, 1935. In Russian.
122. M. Leontowitsch. Zur Statistik der kontinuierlichen Systeme und des zeitlichen Verlaufes der physikalischen Vorgänge. *Physik. Zeitschr. d. Sowjetunion*, 3:35–63, 1933.
123. H. W. Liepmann, R. Narasimha, and M. T. Chahine. Structure of a plane shock layer. *Phys. Fluids*, 5:1313, 1962.
124. J. Logan and M. Kac. Fluctuations and the Boltzmann equation. *Phys. Rev. A*, 13(1):458–470, 1976.
125. A. V. Lukshin. A stochastic method for solving the Boltzmann equation for a gas with an arbitrary interaction law. *Differentsial'nye Uravneniya*, 23(11):2001–2004, 1987. In Russian.
126. A. V. Lukshin. Stochastic algorithms of the mathematical theory of the spatially inhomogeneous Boltzmann equation. *Mat. Model.*, 1(7):146–159, 1989. In Russian.
127. A. V. Lukshin and S. N. Smirnov. On a stochastic method for solving the Boltzmann equation. *Zh. Vychisl. Mat. i Mat. Fiz.*, 28(2):293–297, 1988. In Russian.
128. A. V. Lukshin and S. N. Smirnov. An efficient stochastic algorithm for solving the Boltzmann equation. *Zh. Vychisl. Mat. i Mat. Fiz.*, 29(1):118–124, 1989. In Russian.
129. A. V. Lukshin and I. E. Yuferov. Stochastic algorithms for solving the spatially homogeneous Boltzmann equation for gas mixtures. *Mat. Model.*, 1(2):151–160, 1989. In Russian.
130. I. Matheis and W. Wagner. Convergence of the stochastic weighted particle method for the Boltzmann equation. *SIAM J. Sci. Comput.*, 24(5):1589–1609, 2003.

131. M. J. McEwan and L. F. Phillips. *The Chemistry of the Atmosphere.* Edward Arnold (Publishers) Ltd., London, 1975.
132. H. P. McKean. Speed of approach to equilibrium for Kac's caricature of a Maxwellian gas. *Arch. Rational Mech. Anal.*, 21:343–367, 1966.
133. H. P. McKean. An exponential formula for solving Boltzmann's equation for a Maxwellian gas. *J. Combin. Theory*, 2:358–382, 1967.
134. H. P. McKean. Fluctuations in the kinetic theory of gases. *Comm. Pure Appl. Math.*, 28(4):435–455, 1975.
135. J. Meixner. Zur Thermodynamik irreversibler Prozesse. *Z. Phys. Chem.*, 53 B:253, 1941.
136. S. Meleard. Stochastic approximations of the solution of a full Boltzmann equation with small initial data. *ESAIM Probab. Statist.*, 2:23–40 (electronic), 1998.
137. N. Metropolis and S. Ulam. The Monte Carlo method. *J. Amer. Statist. Assoc.*, 44:335–341, 1949.
138. G. A. Mikhailov and S. V. Rogazinskii. Weighted Monte Carlo methods for the approximate solution of the nonlinear Boltzmann equation. *Sibirsk. Mat. Zh.*, 43(3):620–628, 2002. In Russian.
139. J. M. Montanero and A. Santos. Simulation of the Enskog equation *á la* Bird. *Phys. Fluids*, 9:2057–2060, 1997.
140. D. Morgenstern. Analytical studies related to the Maxwell–Boltzmann equation. *J. Rational Mech. Anal.*, 4:533–555, 1955.
141. H. Mott-Smith. The solution of the Boltzmann equation for a shock wave. *Phys. Rev.*, 82:885–892, 1951.
142. C. Muckenfuss. Some aspects of shock structure according to the bimodal model. *Phys. Fluids*, 5(11):1325–1336, 1962.
143. H. Murata. Propagation of chaos for Boltzmann-like equations of noncutoff–type in the plane. *Hiroshima Math. J.*, 7:479–515, 1977.
144. K. Nanbu. Direct simulation scheme derived from the Boltzmann equation. I. Monocomponent gases. *J. Phys. Soc. Japan*, 49(5):2042–2049, 1980.
145. K. Nanbu. Interrelations between various direct simulation methods for solving the Boltzmann equation. *J. Phys. Soc. Japan*, 52(10):3382–3388, 1983.
146. K. Nanbu. Theoretical basis of the direct simulation Monte Carlo method. In V. Boffi and C. Cercignani, editors, *Rarefied Gas Dynamics*, volume 1, pages 369–383. Teubner, Stuttgart, 1986.
147. K. Nanbu. Weighted particles in Coulomb collision simulations based on the theory of a cumulative scattering angle. *J. Comput. Phys.*, 145:639–654, 1998.
148. V. Nekrutkin and N. Tur. Asymptotic expansions and estimators with small bias for Nanbu processes. *Monte Carlo Methods Appl.*, 3(1):1–35, 1997.
149. V. V. Nekrutkin and N. I. Tur. On the justification of a scheme of direct modelling of flows of rarefied gases. *Zh. Vychisl. Mat. i Mat. Fiz.*, 29(9):1380–1392, 1989. In Russian.
150. H. Neunzert, F. Gropengiesser, and J. Struckmeier. Computational methods for the Boltzmann equation. In *Applied and industrial mathematics (Venice, 1989)*, volume 56 of *Math. Appl.*, pages 111–140. Kluwer Acad. Publ., Dordrecht, 1991.
151. H. Neunzert, A. Klar, and J. Struckmeier. Particle methods: theory and applications. In *ICIAM 95 (Hamburg, 1995)*, pages 281–306. Akademie Verlag, Berlin, 1996.

152. H. Neunzert and J. Struckmeier. The finite pointset method for hypersonic flows in the rarefied gas regime. In *Advances in hypersonics, Vol. 3 (Colorado Springs, CO, 1989; Aachen, 1990)*, pages 342–370. Birkhäuser Boston, Boston, MA, 1992.
153. H. Neunzert and J. Struckmeier. Particle methods for the Boltzmann equation. In *Acta Numerica 1995*, pages 417–457. Cambridge University Press, Cambridge, 1995.
154. A. Nordsieck, W. E. Lamb, Jr., and G. E. Uhlenbeck. On the theory of cosmic-ray showers. I. The furry model and the fluctuation problem. *Physica*, 7(4):344–360, 1940.
155. T. Ohwada. Higher order approximation methods for the Boltzmann equation. *J. Comput. Phys.*, 139:1–14, 1998.
156. T. Ohwada. Higher order time integration of spatially nonhomogeneous Boltzmann equation: deterministic and stochastic computations. *Transport Theory Statist. Phys.*, 29(3-5):495–508, 2000.
157. G. C. Papanicolaou. Asymptotic analysis of transport processes. *Bull. Amer. Math. Soc.*, 81(2):330–392, 1975.
158. L. Pareschi and R. E. Caflisch. An implicit Monte Carlo method for rarefied gas dynamics. I. The space homogeneous case. *J. Comput. Phys.*, 154(1):90–116, 1999.
159. L. Pareschi and G. Russo. Time relaxed Monte Carlo methods for the Boltzmann equation. *SIAM J. Sci. Comput.*, 23(4):1253–1273, 2001.
160. L. Pareschi and B. Wennberg. A recursive Monte Carlo method for the Boltzmann equation in the Maxwellian case. *Monte Carlo Methods Appl.*, 7(3-4):349–357, 2001.
161. G. Pichon. Sur la propagation du chaos moléculaire. *C. R. Acad. Sci. Paris Sér. A*, 274:1667–1670, 1972.
162. G. Pichon. Chaos moléculaire et équation de Boltzmann. *C. R. Acad. Sci. Paris Sér. A*, 276:583–585, 1973.
163. G. Pichon. Chaos moléculaire et équation de Boltzmann. *J. Math. Pures Appl.*, 53(2):183–195, 1974.
164. G. Pichon. Chaos moléculaire et équation de Boltzmann. In *Théories cinétiques classiques et relativistes, Colloques Internationaux C.N.R.S. 236 (Paris 1974)*, pages 195–207, 1975.
165. H. Ploss. On simulation methods for solving the Boltzmann equation. *Computing*, 38:101–115, 1987.
166. A. Ya. Povzner. On the Boltzmann equation in kinetic gas theory. *Matem. Sb.*, 58(1):65–86, 1962. In Russian.
167. M. Pulvirenti, W. Wagner, and M. B. Zavelani Rossi. Convergence of particle schemes for the Boltzmann equation. *European J. Mech. B Fluids*, 13(3):339–351, 1994.
168. P. Quell. Nonlinear stability of entropy flux splitting schemes on bounded domains. *IMA J. Numer. Anal.*, 20(3):441–459, 2000.
169. A. K. Rebrov and P. A. Skovorodko. An improved sampling procedure in DSMC method. In C. Shen, editor, *Rarefied Gas Dynamics*, pages 215–220. Peking University Press, Beijing, 1997.
170. F. Rezakhanlou. Kinetic limits for a class of interacting particle systems. *Probab. Theory Related Fields*, 104(1):97–146, 1996.
171. F. Rezakhanlou. Propagation of chaos for particle systems associated with discrete Boltzmann equation. *Stochastic Process. Appl.*, 64(1):55–72, 1996.

172. F. Rezakhanlou. A stochastic model associated with Enskog equation and its kinetic limit. *Comm. Math. Phys.*, 232(2):327–375, 2003.
173. F. Rezakhanlou and J. E. Tarver. Boltzmann-Grad limit for a particle system in continuum. *Ann. Inst. H. Poincaré Probab. Statist.*, 33(6):753–796, 1997.
174. *Rarefied Gas Dynamics, Proceedings of the 23rd International Symposium (Whistler, Canada, 20-25 July 2002), eds. Ketsdever, A. D. and Muntz, E. P.*, volume 663 of *AIP Conference Proceedings*, AIP Publishing Center, New York, 2003.
175. *Rarefied gas dynamics: Proceedings of the First International Symposium (Nice, France, 1958)*, International Series on Aeronautical Sciences and Space Flight, Division IX, Vol. 3, Pergamon Press, New York, 1960.
176. S. Rjasanow, T. Schreiber, and W. Wagner. Reduction of the number of particles in the stochastic weighted particle method for the Boltzmann equation. *J. Comput. Phys.*, 145(1):382–405, 1998.
177. S. Rjasanow and W. Wagner. A stochastic weighted particle method for the Boltzmann equation. *J. Comput. Phys.*, 124(2):243–253, 1996.
178. S. Rjasanow and W. Wagner. A generalized collision mechanism for stochastic particle schemes approximating Boltzmann-type equations. *Comput. Math. Appl.*, 35(1/2):165–178, 1998.
179. S. Rjasanow and W. Wagner. On time counting procedures in the DSMC method for rarefied gases. *Math. Comput. Simulation*, 48(2):153–178, 1998.
180. S. Rjasanow and W. Wagner. A temperature time counter scheme for the Boltzmann equation. *SIAM J. Numer. Anal.*, 37(6):1800–1819, 2000.
181. S. Rjasanow and W. Wagner. Simulation of rare events by the stochastic weighted particle method for the Boltzmann equation. *Math. Comput. Modelling*, 33(8-9):907–926, 2001.
182. S. V. Rogasinsky. Solution of stationary boundary value problems for the Boltzmann equation by the Monte Carlo method. *Monte Carlo Methods Appl.*, 5(3):263–280, 1999.
183. M. Schreiner. Weighted particles in the finite pointset method. *Transport Theory Statist. Phys.*, 22(6):793–817, 1993.
184. A. J. F. Siegert. On the approach to statistical equlibrium. *Phys. Rev.*, 76(11):1708–1714, 1949.
185. A. V. Skorokhod. *Stokhasticheskie uravneniya dlya slozhnykh sistem.* Nauka, Moscow, 1983. English translation: [186].
186. A. V. Skorokhod. *Stochastic Equations for Complex Systems*, volume 13 of *Mathematics and its Applications (Soviet Series)*. D. Reidel Publishing Co., Dordrecht, 1988.
187. S. N. Smirnov. On the justification of a stochastic method for solving the Boltzmann equation. *Zh. Vychisl. Mat. i Mat. Fiz.*, 29(2):270–276, 1989. In Russian.
188. I. M. Sobol. *Chislennye metody Monte-Karlo.* Izdat. "Nauka", Moscow, 1973. (Russian) [Numerical Monte Carlo methods].
189. J. Spanier and E. M. Gelbard. *Monte Carlo principles and neutron transport problems.* Addison-Wesley Publishing Co., Reading, Mass.-London-Don Mills, Ont., 1969.
190. J. Struckmeier and K. Steiner. A comparison of simulation methods for rarefied gas flows. *Phys. Fluids*, 7(11):2876–2885, 1995.
191. Q. Sun and I.D. Boyd. A direct simulation method for subsonic, microscale gas flows. *J. Comput. Phys.*, 179:400–425, 2002.

192. A.-S. Sznitman. Équations de type de Boltzmann, spatialement homogènes. *C. R. Acad. Sci. Paris Sér. I Math.*, 295:363–366, 1982.
193. A. S. Sznitman. Équations de type de Boltzmann, spatialement homogènes. *Z. Wahrsch. Verw. Gebiete*, 66(4):559–592, 1984.
194. A. S. Sznitman. Topics in propagation of chaos. In *Lecture Notes in Mathematics*, volume 1464, pages 165–251. Springer, Berlin, 1991.
195. H. Tanaka. On Markov processes corresponding to the Boltzmann equation of Maxwellian gas. In *Lecture Notes in Mathematics*, volume 330, pages 478–489. Springer, Berlin, 1973.
196. H. Tanaka. Probabilistic treatment of the Boltzmann equation of Maxwellian molecules. *Z. Wahrsch. Verw. Gebiete*, 46(1):67–105, 1978.
197. H. Tanaka. Some probabilistic problems in the spatially homogeneous Boltzmann equation. In G. Kallianpur, editor, *Theory and Applications of Random Fields*, volume 49 of *Lecture Notes in Control and Inform. Sci.*, pages 258–267, Springer, Berlin, 1983.
198. C. J. Thompson. The contributions of Mark Kac to mathematical physics. *Ann. Probab.*, 14(4):1129–1138, 1986.
199. S. Tiwari. Coupling of the Boltzmann and Euler equations with automatic domain decomposition. *J. Comput. Phys.*, 144(2):710–726, 1998.
200. S. Tiwari and A. Klar. An adaptive domain decomposition procedure for Boltzmann and Euler equations. *J. Comput. Appl. Math.*, 90(2):223–237, 1998.
201. S. Tiwari and S. Rjasanow. Sobolev norm as a criterion of local thermal equilibrium. *European J. Mech. B Fluids*, 16(6):863–876, 1997.
202. H. F. Trotter and J. W. Tukey. Conditional Monte Carlo for normal samples. In *Symposium on Monte Carlo methods, University of Florida, 1954*, pages 64–79. John Wiley and Sons, Inc., New York, 1956.
203. K. Uchiyama. Fluctuations in population dynamics. In M. Kimura, G. Kallianpur, and T. Hida, editors, *Stochastic Methods in Biology*, volume 70 of *Lecture Notes in Biomathematics*, pages 222–229, Springer, Berlin, 1987.
204. W. Wagner. A convergence proof for Bird's direct simulation Monte Carlo method for the Boltzmann equation. *J. Statist. Phys.*, 66(3/4):1011–1044, 1992.
205. W. Wagner. A stochastic particle system associated with the spatially inhomogeneous Boltzmann equation. *Transport Theory Statist. Phys.*, 23(4):455–477, 1994.
206. W. Wagner. Stochastic systems of particles with weights and approximation of the Boltzmann equation. The Markov process in the spatially homogeneous case. *Stochastic Anal. Appl.*, 12(5):639–659, 1994.
207. W. Wagner. A functional law of large numbers for Boltzmann type stochastic particle systems. *Stochastic Anal. Appl.*, 14(5):591–636, 1996.
208. E. Wild. On Boltzmann's equation in the kinetic theory of gases. *Proc. Cambridge Philos. Soc.*, 47:602–609, 1951.
209. S.-M. Yen. Temperature overshoot in shock waves. *Phys. Fluids*, 9(7):1417–1418, 1966.