

- Harvey Gould and W. Klein, "Spinodal effects in systems with long-range interactions," *Physica D* **66**, 61–70 (1993). This paper discusses nucleation in the Ising model and Lennard-Jones systems.
- Harvey Gould and Jan Tobochnik, "Overcoming critical slowing down," *Computers in Physics* **3** (4), 82 (1989).
- Gary S. Grest, Michael P. Anderson, and David J. Srolovitz, "Domain-growth kinetics for the Q-state Potts model in two and three dimensions," *Phys. Rev. B* **38**, 4752–4760 (1988).
- James E. Gubernatis, *The Monte Carlo Method in the Physical Sciences* (AIP Press, 2004). June 2003 was the 50th anniversary of the Metropolis, Rosenbluth, Rosenbluth, Teller, and Teller publication of what is now called the Metropolis algorithm. This algorithm established the Monte Carlo method in physics and other fields and led to the development of other Monte Carlo algorithms. Six of the papers in the proceedings of the conference give historical perspectives.
- Hong Guo, Martin Zuckermann, R. Harris, and Martin Grant, "A fast algorithm for simulated annealing," *Physica Scripta* **T38**, 40–44 (1991).
- R. Harris, "Demons at work," *Computers in Physics* **4** (3), 314 (1990).
- S. Istrail, "Statistical mechanics, three-dimensionality and NP-completeness: I. Universality of intractability of the partition functions of the Ising model across non-planar lattices," *Proceedings of the 32nd ACM Symposium on the Theory of Computing*, ACM Press, pp. 87–96, Portland, Oregon, May 21–23, 2000. This paper shows that it is impossible to obtain an analytic solution for the three-dimensional Ising model.
- J. Kertész, J. Cserti and J. Szép, "Monte Carlo simulation programs for microcomputer," *Eur. J. Phys.* **6**, 232–237 (1985).
- S. Kirkpatrick, C. D. Gelatt, and M. P. Vecchi, "Optimization by simulated annealing," *Science* **220**, 671–680 (1983). See also S. Kirkpatrick and G. Toulouse, "Configuration space analysis of traveling salesman problems," *J. Physique* **46**, 1277–1292 (1985).
- J. M. Kosterlitz and D. J. Thouless, "Ordering, metastability and phase transitions in two-dimensional systems," *J. Phys. C* **6**, 1181–1203 (1973); J. M. Kosterlitz, "The critical properties of the two-dimensional xy model," *J. Phys. C* **7**, 1046–1060 (1974).
- D. P. Landau, Shan-Ho Tsai, and M. Exler, "A new approach to Monte Carlo simulations in statistical physics: Wang–Landau sampling," *Am. J. Phys.* **72**, 1294–1302 (2004).
- D. P. Landau, "Finite-size behavior of the Ising square lattice," *Phys. Rev. B* **13**, 2997–3011 (1976). A clearly written paper on a finite-size scaling analysis of Monte Carlo data. See also D. P. Landau, "Finite-size behavior of the simple-cubic Ising lattice," *Phys. Rev. B* **14**, 255–262 (1976).
- D. P. Landau and R. Alben, "Monte Carlo calculations as an aid in teaching statistical mechanics," *Am. J. Phys.* **41**, 394–400 (1973).
- D. P. Landau, Shan-Ho Tsai, and M. Exler, "A new approach to Monte Carlo simulations in statistical physics: Wang–Landau sampling," *Am. J. Phys.* **72**, 1294–1302 (2005).
- David Landau and Kurt Binder, *A Guide to Monte Carlo Simulations in Statistical Physics*, 2nd ed. (Cambridge University Press, 2005).
- Jooyoung Lee and J. M. Kosterlitz, "New numerical method to study phase transitions," *Phys. Rev. Lett.* **65**, 137 (1990); *ibid.*, "Finite-size scaling and Monte Carlo simulations of first-order phase transitions," *Phys. Rev. B* **43**, 3265–3277 (1991).

- Jooyoung Lee and Katherine J. Strandburg, "First-order melting transition of the hard-disk system," *Phys. Rev. B* **46**, 11190–11193 (1992).
- Jiwen Liu and Erik Luijten, "Rejection-free geometric cluster algorithm for complex fluids," *Phys. Rev. Lett.* **92** 035504 (2004) and *ibid.*, *Phys. Rev. E* **71**, 066701–1–12 (2005).
- J. Machta, Y. S. Choi, A. Lucke, T. Schweizer, and L. Chayes, "Invaded cluster algorithm for Potts models," *Phys. Rev. E* **54**, 1332–1345 (1996).
- S. S. Mak, "The analytical demon of the Ising model," *Phys. Lett. A* **196**, 318 (1995).
- J. Marro and R. Toral, "Microscopic observations on a kinetic Ising model," *Am. J. Phys.* **54**, 1114–1121 (1986).
- N. Metropolis, A. W. Rosenbluth, M. N. Rosenbluth, A. H. Teller, and E. Keller, "Equation of state calculations for fast computing machines," *J. Chem. Phys.* **21**, 1087–1092 (1953).
- A. Alan Middleton, "Improved extremal optimization for the Ising spin glass," *Phys. Rev. E* **69**, 055701–1–4 (2004). The extremal optimization algorithm, which was inspired by the Bak–Sneppen algorithm for evolution (see Problem 14.12), preferentially flips spins that are "unfit." The adaptive algorithm proposed in this paper is an example of an heuristic that finds exact ground states efficiently for systems with frozen-in disorder.
- M. E. J. Newman and G. T. Barkema, *Monte Carlo Methods in Statistical Physics* (Oxford University Press, 1999).
- M. A. Novotny, "A new approach to an old algorithm for the simulation of Ising-like systems," *Computers in Physics* **9** (1), 46 (1995). The n -fold way algorithm is discussed. Also, see M. A. Novotny, "A tutorial on advanced dynamic Monte Carlo methods for systems with discrete state spaces," in *Annual Reviews of Computational Physics IX*, edited by Dietrich Stauffer (World Scientific Publishing Company, 2001), pp. 153–210.
- Ole G. Mouritsen, *Computer Studies of Phase Transitions and Critical Phenomena* (Springer-Verlag, 1984).
- E. P. Mürner and M. A. Novotny, "Reweightings in Monte Carlo and Monte Carlo renormalization-group studies," *Phys. Rev. B* **43**, 5773–5783 (1991). The authors discuss the histogram method and combine it with renormalization group calculations.
- Michael Plischke and Birger Bergersen, *Equilibrium Statistical Physics*, 3rd ed. (Prentice Hall, 2005). A graduate level text that discusses some contemporary topics in statistical physics, many of which have been influenced by computer simulations.
- William H. Press, Saul A. Teukolsky, William T. Vetterling, and Brian P. Flannery, *Numerical Recipes*, 2nd ed. (Cambridge University Press, 1992). A Fortran program for the traveling salesman problem is given in Section 10.9.
- Stephen H. Shenker and Jan Tobochnik, "Monte Carlo renormalization-group analysis of the classical Heisenberg model in two dimensions," *Phys. Rev. B* **22**, 4462–472 (1980).
- Amihai Silverman and Joan Adler, "Animated simulated annealing," *Computers in Physics* **6**, 277 (1992). The authors describe a simulation of the annealing process to obtain a defect free single crystal of a model material.
- H. Eugene Stanley, *Introduction to Phase Transitions and Critical Phenomena* (Oxford University Press, 1971). See Appendix B for the exact solution of the zero-field Ising model for a two-dimensional lattice.
- Jan Tobochnik and G. V. Chester, "Monte Carlo study of the planar model," *Phys. Rev. B* **20**, 3761–3769 (1979).