Books on Computational Physics

Undergraduate level textbooks


• Steven Koonin, Computational Physics, Addison-Wesley, (1986).

• Steven E. Koonin and Dawn C. Meredith, Computational Physics, Addison-Wesley (1990).


• Tao Pang, Computational Physics, Cambridge (1997).

• David Potter, Computational Physics, John Wiley and Sons (1973).


• Robert L. Zimmerman and Fredrick I. Olness, Mathematica for Physics, Addison-Wesley (1995).

**Graduate level textbooks and research monographs**


• Richard P. Feynman, Feynman Lectures on Computation, Anthony J. G. Hey and Robin W. Allen, eds., Addison-Wesley (1996). Of course this book cannot be easily categorized. Topics include the theory of computation, the thermodynamics of computing, and quantum mechanical computers.
• J. M. Hammersley and D. C. Handscomb, Monte Carlo Methods, Methuen and Co. and John Wiley (1964).
• Malvin H. Kalos and Paula A. Whitlock, Monte Carlo Methods, John Wiley (1986).
• Dennis Rapaport, The Art of Molecular Dynamics Simulation, Cambridge University Press (1996). The text is partly tutorial, but also contains many computer programs for practical use. The book will be of value to advanced students and researchers in physics, chemistry, polymer science and materials science. Copies of the C program listings are available at http://www.cup.cam.ac.uk/onlinepubs/ArtMolecular/ArtMoleculeartop.html. Table of Contents.
"Computational Aspects of Damage Spreading" (N. Jan and L. de Arcangelis), "Monte Carlo Simulations of Dilute Ising Models" (W. Selke et al.), "Interfacial Dynamics in Disordered Magnets: Relaxation, Critical Dynamics, and Domain Growth" (D. Chowdhury and B. Biswal), "Ising System in Oscillating Field: Hysteretic Response" (M. Acharyya and B. K. Chakrabarti), "Recent Results on the Decay of Metastable Phases" (P. A. Rikvold and B. M. Gorman), "Multineuron Interaction Effects" (R. M. C. de Almeida et al.), "Random and Self-Avoiding Walks in Disordered Media" (H. Nakanishi), "Granular Dynamics: A Review About Recent Molecular Dynamics Simulations of Granular Materials" (G. H. Ristow), and "Symbolic-Numeric Interfaces" (M. C. Dewar).


• M. Suzuki, editor, Quantum Monte Carlo Methods, Springer Verlag (1987).


More Specialized Texts


• Albert Goldbeter, Biochemical Oscillations and Cellular Rhythms, Cambridge (1996). [QP 84.6 G6513]
D. Stein, ed., Lectures in the Sciences of Complexity, Addison-Wesley (1989) table of contents. [Q 175 S767]
Tommaso Toffoli and Norman Margolos, Cellular Automata Machines, MIT Press (1987). [QA 267.5 C45 T64]

Numerical Methods

numerical methods.


Programming


C/C++

- D. M. Capper, C++ for Scientists, Engineers, and Mathematicians, Springer-Verlag (1994). QA 76.64 C25

Fortran

- Cooper Redwine, Upgrading to Fortran 90, Springer-Verlag (1995). table of contents. QA 76.73 F28 R43

Symbolic


Links

- Finite Element Books
- Books on Computational Science and Engineering
- CiSE Portal
- Springer
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Updated 11 July 2005.