

- radial distribution function, 280–282, 292, 627
- radiation from accelerated charges, 390–398
- random deposition, 519
- random number generator, 197–198, 236–240, 649–650
- random process, 197, *see* Chapter 7
- random walk, 203–217
  - continuum, 212
  - mean first passage time, 210
  - modified, 210–217
  - multistate, 211
  - persistent, 211
  - polymer application, 225–233
  - quantum Monte Carlo, 701–707
  - relation to diffusion, 216, 249–251
  - self-avoiding, 226–227
  - self-avoiding
    - pivot algorithm, 246–247
  - solution to Laplace's equation, 387–390
  - true self-avoiding, 232–233
- real-time control, 3
- recursion, 149–151, 499–502
- recursion relation, 479
- reduced mass, 109
- refraction, 243
- relaxation methods, 380–387
  - Gauss–Seidel, 383–384
  - Jacobi, 382–383
  - multigrid, 407–408
- relaxation time, 93
- renormalization group, 475–484
- reptation method, 228–231
- resonance, 101, 137
- retarded time, 390
- rigid body dynamics, 735–756
- root finding
  - bisection method, 163, 182, 191–192, 392
  - Newton's method, 190–192
- roundoff error, 102
- sample variance, 426
- Saturn, 177–178
- scattering
  - chaotic, 186–188
  - differential cross section, 126–128, 186
  - Rutherford, 132–133
  - two-body, 126–133
- Schrödinger's equation, 181, 674–679, 702
  - time-dependent, 689–695
- searching, 504–509
  - binary, 504
  - linear, 504
- self-averaging, 550
- self-organization, 543–551
  - earthquake model, 548–549
  - forest fire model, 549–551
  - punctuated equilibrium, 551
- simple harmonic motion, 86–89
- simulated annealing, 644–645
- simulation, 3–4, 74
- solar wind, 137
- solitons, 344–345
- special relativity, 763–768
- spin correlation function, 619, 654
- spin exchange dynamics, 625
- spin glass, 554–555, 658–659
- spinning top, 753–756
- standard deviation of the means, 427, 442–444
- surface growth, 517–519
- susceptibility
  - zero field, 619–621, 667
- temperature, 273, 276, 303
  - Curie temperature, 471
  - kinetic temperature, 595
  - relation to demon energy, 596–598, 599–600, 665–666
- terminal velocity, 60–61
- thermal conductivity, 296, 664
- three-dimensional plots, 167
- three-dimensional
  - transformations, 726–732
- transformation
  - affine, 722
  - Lorentz, 763
- traveling salesman problem, 643–645
- triangular lattice, 277, 627, 630
- truncation error, 103
- two-body problem, 108
- universal computing machine, 543
- van der Waals potential, 256
- variance, 201, 213, 426, 427, 433
  - reduction of variance methods, 428, *see* Metropolis algorithm under Monte Carlo
- variational methods, 240–245
- vector fields, 408–409
- velocity autocorrelation function, 296
- virial, 263, 273, 274, 628
- virial theorem, 713
- visual representation, 2
- visualization, 69–73, *see* Chapter 17
- vortex, 655
- Wa-Tor model, 781
- wave equation, 340, *see also* partial differential equations
- waves
  - reflection, 342
  - standing, 343
  - superposition, 343
  - velocity, 342
- Widom insertion method, 633
- x-y model, *see* planar model
- Yukawa potential, 133, 700