Index

annealing schedule, 102, 104
aperiodicity, 25
Bernoulli \((p)\) random variable, 6
binomial \((n, p)\) random variable, 6, 43, 71
birth-and-death process, 41, 92
Boltzmann distribution, 100
Chebyshev’s inequality, 6, 71, 74
coupling, 34, 57, 62, 76, 81, 94
density, 3
distribution, 3
Ehrenfest’s urn model, 43
equilibrium, 28, 34
expectation, 4
Fill’s algorithm, 109
four-color theorem, 49
geometric distribution, 96
Gibbs sampler, 49
graph, 40
graph bisection, 106
hard-core model, 45, 47, 52, 99
hitting time, 29
homogeneity, 10
i.i.d. (independent and identically distributed), 3
independence, 2
indicator function, 18
inhomogeneous Markov chain, 13, 50, 100
initial distribution, 10
initialization function, 18
irreducibility, 23
Ising model, 87
ladder walk, 85
Law of Large Numbers, 7, 68, 69, 88
Markov chain, 10
Markov property, 9
MCMC (Markov chain Monte Carlo), 47
mean, 4
memoryless property, 9
Metropolis chain, 50
optimal packing, 99
perfect simulation, 76
phase transition, 88
polynomial time algorithm, 65
polynomial time approximation scheme, 66
probability measure, 1
Propp–Wilson algorithm, 76
random \(q\)-coloring, 49
random number generator, 17, 109
random variable, 2
random walk, 8, 40
reversibility, 39, 48, 51
simulated annealing, 100
St Petersburg paradox, 4
stationary distribution, 28, 34, 37, 39, 47
Steiner’s formula, 5
systematic sweep Gibbs sampler, 50, 55
Index

| 114 |  
| --- | --- |
| total variation distance, 33, 38, 62 | uniform [0, 1] random variable, 4 |
| transition graph, 13 | update function, 19 |
| transition matrix, 10 | Wilson’s modification, 94 |
| travelling salesman problem, 99 |  |