

Table of Contents for MBK/107

Markov Chains and Mixing Times

- Basic methods and examples
 - ◆ Introduction to finite Markov chains
 - ◆ Classical (and useful) Markov chains
 - ◆ Markov chain Monte Carlo: Metropolis and Glauber chains
 - ◆ Introduction to Markov chain mixing
 - ◆ Coupling
 - ◆ Strong stationary times
 - ◆ Lower bounds on mixing times
 - ◆ The symmetric group and shuffling cards
 - ◆ Random walks on networks
 - ◆ Hitting times
 - ◆ Cover times
 - ◆ Eigenvalues
- The plot thickens
 - ◆ Eigenfunctions and comparison of chains
 - ◆ The transportation metric and path coupling
 - ◆ The Ising model
 - ◆ From shuffling cards to shuffling genes
 - ◆ Martingales and evolving sets
 - ◆ The cutoff phenomenon
 - ◆ Lamplighter walks
 - ◆ Continuous-time chains
 - ◆ Countable state space chains
 - ◆ Monotone chains
 - ◆ The exclusion process
 - ◆ Cesàro mixing time, stationary times, and hitting large sets
 - ◆ Coupling from the past
 - ◆ Open problems
 - ◆ Background material
 - ◆ Introduction to simulation
 - ◆ Ergodic theorem
 - ◆ Solutions to selected exercises
 - ◆ Bibliography
 - ◆ Notation index
 - ◆ Index