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Markov chains and mixing times. With a chapter on “Coupling from the past” by James G. Propp and David B. Wilson. 2nd edition. (English) [Zbl 1390.60001](#)

Providence, RI: American Mathematical Society (AMS) (ISBN 978-1-4704-2962-1/hbk; 978-1-4704-4232-3/ebook). xvi, 447 p. (2017).

The book is an introduction to the theory of Markov chains and the analysis of their convergence to a stationary distribution. It is the second edition and extended version of [[Zbl 1160.60001](#)] reflecting also the recent development in the field of mixing time since the publication of the first edition in 2009. This new edition includes new chapters consecrated to monotone chains, exclusion process, and a chapter relating mixing times and hitting time parameters to stationary stopping times. In the further chapters, new results concerning the mixing time in ℓ^p , estimates for hitting time on trees and Eulerian digraphs, bounds on cover times for regular graphs using spanning trees are added. Furthermore, the authors show the key development from the time of first edition, e.g., the breakthrough of the Ising model and the cutoff phenomenon. The Notes at the end of chapters are updated and new open problems are presented. The book is a brilliant guide to the modern theory of Markov chains.

Reviewer: [László Lakatos \(Budapest\)](#)

MSC:

- [60-01](#) Introductory exposition (textbooks, tutorial papers, etc.) pertaining to probability theory
- [60J10](#) Markov chains (discrete-time Markov processes on discrete state spaces)

Cited in **2** Reviews
Cited in **17** Documents

Keywords:

[Markov chains](#); [mixing time](#); [Ising model](#); [hitting time](#)