1.	Record Nr.	UNISA996542671903316
	Autore	Dolgopyat Dmitry
	Titolo	Local Limit Theorems for Inhomogeneous Markov Chains [[electronic resource] /] / by Dmitry Dolgopyat, Omri M. Sarig
	Pubbl/distr/stampa	Cham : , : Springer International Publishing : , : Imprint : Springer, , 2023
	ISBN	3-031-32601-6
	Edizione	[1st ed. 2023.]
	Descrizione fisica	1 online resource (348 pages)
	Collana	Lecture Notes in Mathematics, , 1617-9692 ; ; 2331
	Altri autori (Persone)	SarigOmri M
	Disciplina	519.2
	Soggetti	Probabilities Stochastic processes Dynamical systems Probability Theory Stochastic Processes Dynamical Systems Teoremes de límit (Teoria de probabilitats) Processos de Markov Llibres electrònics
	Lingua di pubblicazione	Inglese
	Formato	Materiale a stampa
	Livello bibliografico	Monografia
	Nota di contenuto	Intro -- Acknowledgments -- Contents -- Notation -- 1 Overview -- 1.1 Setup and Aim -- 1.2 The Obstructions to the Local Limit Theorems -- 1.3 How to Show that the Obstructions Do Not Occur -- 1.4 What Happens When the Obstructions Do Occur -- 1.4.1 Lattice Case -- 1.4.2 Center-Tight Case -- 1.4.3 Reducible Case -- 1.5 Some Final Words on the Setup of this Work -- 1.6 Prerequisites -- 1.7 Notes and References -- 2 Markov Arrays, Additive Functionals, and Uniform Ellipticity -- 2.1 The Basic Setup -- 2.1.1 Inhomogeneous Markov Chains -- 2.1.2 Inhomogeneous Markov Arrays -- 2.1.3 Additive Functionals -- 2.2 Uniform Ellipticity -- 2.2.1 The Definition -- 2.2.2 Contraction Estimates and Exponential Mixing -- 2.2.3 Bridge Probabilities -- 2.3 Structure Constants -- 2.3.1 Hexagons -- 2.3.2 Balance and Structure Constants -- 2.3.3 The Ladder Process -- 2.4 -Step Ellipticity Conditions -- *2.5 Uniform Ellipticity and Strong Mixing

Sommario/riassunto

This book extends the local central limit theorem to inhomogeneous Markov chains whose state spaces and transition probabilities are allowed to change in time. Such chains are used to model Markovian systems depending on external time-dependent parameters. It develops a new general theory of local limit theorems for additive functionals of Markov chains, in the regimes of local, moderate, and large deviations, and provides nearly optimal conditions for the classical expansions, as well as asymptotic corrections when these conditions fail. Applications include local limit theorems for independent but not identically distributed random variables, Markov chains in random environments, and time-dependent perturbations of homogeneous Markov chains. The inclusion of numerous examples, a comprehensive review of the literature, and an account of the historical background of the subject make this self-contained book accessible to graduate students. It will also be useful for researchers in probability and ergodic theory who are interested in asymptotic behaviors, random walks in random environments, random dynamical systems and non-stationary systems.