

Contents

<i>Preface</i>	vii
<i>Glossary of Symbols and Conventions</i>	ix

Chapter 1 Introduction

1.1. Delineation of the Subject	1
1.2. A Brief Chapter by Chapter Outline of Topics Covered	3
1.3. Methodology	7
1.4. Applications to Fields outside Probability	8

Chapter 2 Pointwise Convergence of Partial Sums

2.1. Application of the Borel–Cantelli Lemma and the Chebyshev Inequality to Almost Sure Convergence	10
2.2. Almost Sure Convergence of Subsequences of $\{S_n, n \geq 1\}$ when the X_i Are Orthogonal	14
2.3. The Rademacher–Menchoff Fundamental Convergence Theorem	17
2.4. Convergence of $\{S_n, n \geq 1\}$ Assuming Only Moment Restrictions.	23
2.5. Martingale Difference Sequences	30
2.6. Preservation of the Martingale and Submartingale Structure	36
2.7. The Upcrossings Inequality and Basic Convergence Theorem for Submartingales	40
2.8. Applications of the Basic Submartingale Convergence Theorem	44
2.9. Sums of Squares and Martingale Transforms	70
2.10. Convergence of Martingale Transforms Satisfying a Local Regularity Condition	80
2.11. Global Regularity	91
2.12. Convergence of Partial Sums of Independent Random Variables	93
2.13. Centering at Medians, the Levy-Type Inequality, and Symmetrization.	100

Chapter 3 Stability and Moments

3.1. Introduction	114
3.2. Stability Results for Independent Identically Distributed Random Variables	116
3.3. Stability Results for Martingales	137
3.4. Stability Results for Independent Random Variables	158
3.5. Stability Results for Stationary Random Variables	167
3.6. Application of Stationarity to Stability Results for Markov Sequences.	185
3.7. Stability Results for $\{S_n, n \geq 1\}$ Assuming Only Moment Restrictions	200

Chapter 4 Stability of Weighted Sums of Random Variables

4.1. Independent Identically Distributed X_k	219
4.2. Other Dependence Structures	234

Chapter 5 Exponential Inequalities, the Law of the Iterated Logarithm, and Related Results

5.1. Introduction	255
5.2. The Kolmogorov-Prokhorov Exponential Inequalities with Applications.	260
5.3. An Almost Sure Invariance Principle with Applications.	280
5.4. A Survey of Further Results Related to the Law of the Iterated Logarithm	298

Chapter 6 Recurrence of $\{S_n, n \geq 1\}$ and Related Results

6.1. Recurrence of $\{S_n, n \geq 1\}$ in the Case of Independent Identically Distributed X_i	331
6.2. Generalizations of the Results of Section 6.1 to Other Stochastic Structures	352
6.3. Recurrence of $\{S_n/n^\alpha, n \geq 1\}$ in the Case of Independent Identically Distributed X_i	358

References	367
-----------------------------	-----

<i>Index</i>	375
------------------------	-----