

Contents

<i>Chapter 1: Measure preserving and null preserving point mappings</i>	1
§ 1.1 Von Neumann's mean ergodic theorem, ergodicity	1
§ 1.2 Birkhoff's ergodic theorem	7
§ 1.3 Recurrence	16
§ 1.4 Shift transformations and stationary processes	22
§ 1.5 Kingman's subadditive ergodic theorem and the multiplicative ergodic theorem of Oseledeč	35
§ 1.6 Relatives of the maximal ergodic theorem	50
§ 1.7 Some general tools and principles	63
<i>Chapter 2: Mean ergodic theory</i>	71
§ 2.1 The mean ergodic theorem	71
§ 2.2 Uniform convergence	86
§ 2.3 Weak mixing, continuous spectrum and multiple recurrence	94
§ 2.4 The splitting theorem of Jacobs-Deleeuw-Glicksberg	103
<i>Chapter 3: Positive contractions in L_1</i>	113
§ 3.1 The Hopf decomposition	113
§ 3.2 The Chacon-Ornstein theorem	119
§ 3.3 Brunel's lemma and the identification of the limit	123
§ 3.4 Existence of finite invariant measures	135
§ 3.5 The subadditive ergodic theorem for positive contractions in L_1	146
§ 3.6 An example with divergence of Cesàro averages	151
§ 3.7 More on the filling scheme	154
<i>Chapter 4: Extensions of the L_1-theory</i>	159
§ 4.1 Non positive contractions in L_1	159
§ 4.2 Vector valued ergodic theorems	167
§ 4.3 Power bounded operators and harmonic functions	172

<i>Chapter 5: Operators in $C(K)$ and in L_p, ($1 < p < \infty$)</i>	177
§ 5.1 Markov operators in $C(K)$	177
§ 5.2 Contractions in L_p , ($1 < p < \infty$)	186
<i>Chapter 6: Pointwise ergodic theorems for multiparameter and amenable semigroups</i>	195
§ 6.1 Unrestricted convergence for averages over d -dimensional intervals	195
§ 6.2 Multiparameter additive and subadditive processes	201
§ 6.3 Multiparameter semigroups of L_1 -contractions	211
§ 6.4 Amenable semigroups	221
<i>Chapter 7: Local ergodic theorems and differentiation</i>	229
§ 7.1 Positive 1-parameter semigroups	229
§ 7.2 Local ergodic theorems for multiparameter and non positive semigroups, and for vector valued functions	243
<i>Chapter 8: Subsequences and generalized means</i>	251
§ 8.1 Strong convergence and mixing	251
§ 8.2 Pointwise convergence	257
<i>Chapter 9: Special topics</i>	267
§ 9.1 Ergodic theorems in von Neumann algebras	267
§ 9.2 Entropy and information	281
§ 9.3 Nonlinear nonexpansive mappings	288
§ 9.4 Miscellanea	297
<i>Supplement: Harris Processes, Special Functions, Zero-Two-Law (by Antoine Brunel)</i>	301
Bibliography	321
Notation	347
Index	351