Contents

Preface ix

I Basic concepts. 1
  1.1 Stationary processes. 1
  1.2 The ergodic theory model. 13
  1.3 The ergodic theorem. 33
  1.4 Frequencies of finite blocks. 43
  1.5 The entropy theorem. 51
  1.6 Entropy as expected value. 56
  1.7 Interpretations of entropy. 66
  1.8 Stationary coding. 79
  1.9 Process topologies. 87
  1.10 Cutting and stacking. 103

II Entropy-related properties. 121
  II.1 Entropy and coding. 121
  II.2 The Lempel-Ziv algorithm. 131
  II.3 Empirical entropy. 137
  11.4 Partitions of sample paths. 147
  11.5 Entropy and recurrence times. 154

III Entropy for restricted classes. 165
  III.1 Rates of convergence. 165
  III.2 Entropy and joint distributions. 174
  III.3 The $\tilde{d}$-admissibility problem. 184
  III.4 Blowing-up properties. 194
  III.5 The waiting-time problem. 200

IV B-processes. 211
  IV.1 Almost block-independence. 211
  IV.2 The finitely determined property. 221
  IV.3 Other B-process characterizations. 232

Bibliography 239

Index 245