

Contents

Chapter 1: Basic Notions on Probability Measures

1. Decomposition of probability measures	1
2. Distances between probability measures	5
3. Topologies and σ -fields on sets of probability measures	13
4. Separable sets of probability measures	17
5. Transforms of bounded Borel measures	21
6. Miscellaneous results	30

Chapter 2: Elementary Theory of Testing Hypotheses

7. Basic definitions	38
8. Neyman-Pearson theory for binary experiments	42
9. Experiments with monotone likelihood ratios	47
10. The generalized lemma of Neyman-Pearson	54
11. Exponential experiments of rank 1	55
12. Two-sided testing for exponential experiments: Part 1	58
13. Two-sided testing for exponential experiments: Part 2	63

Chapter 3: Binary Experiments

14. The error function	68
15. Comparison of binary experiments	74
16. Representation of experiment types	78
17. Concave functions and Mellin transforms	81
18. Contiguity of probability measures	85

Chapter 4: Sufficiency, Exhaustivity, and Randomizations

19. The idea of sufficiency	92
20. Pairwise sufficiency and the factorization theorem	93
21. Sufficiency and topology	97
22. Comparison of dominated experiments by testing problems	98
23. Exhaustivity	101
24. Randomization of experiments	105
25. Statistical isomorphism	109

Chapter 5: Exponential Experiments

26. Basic facts	115
27. Conditional tests	119
28. Gaussian shifts with nuisance parameters	124

Chapter 6: More Theory of Testing

29. Complete classes of tests.	131
30. Testing for Gaussian shifts	135
31. Reduction of testing problems by invariance	140
32. The theorem of Hunt and Stein	147

Chapter 7: Theory of estimation

33. Basic notions of estimation	155
34. Median unbiased estimation for Gaussian shifts.	162
35. Mean unbiased estimation	166
36. Estimation by desintegration	172
37. Generalized Bayes estimates.	181
38. Full shift experiments and the convolution theorem	186
39. The structure model	200
40. Admissibility of estimators.	215

Chapter 8: General decision theory

41. Experiments and their L -spaces.	227
42. Decision functions	230
43. Lower semicontinuity	234
44. Risk functions	237
45. A general minimax theorem.	238
46. The minimax theorem of decision theory.	240
47. Bayes solutions and the complete class theorem.	242
48. The generalized theorem of Hunt and Stein	245

Chapter 9: Comparison of experiments

49. Basic concepts	257
50. Standard decision problems	262
51. Comparison of experiments by standard decision problems	264
52. Concave function criteria	266
53. Hellinger transforms and standard measures.	270

54. Comparison of experiments by testing problems	273
55. The randomization criterion.....	278
56. Conical measures	287
57. Representation of experiments.....	288
58. Transformation groups and invariance.....	293
59. Topological spaces of experiments	296

Chapter 10: Asymptotic decision theory

60. Weakly convergent sequences of experiments	302
61. Contiguous sequences of experiments.....	305
62. Convergence in distribution of decision functions	308
63. Stochastic convergence of decision functions.....	312
64. Convergence of minimum estimates	317
65. Uniformly integrable experiments	324
66. Uniform tightness of generalized Bayes estimates.....	331
67. Convergence of generalized Bayes estimates	333

Chapter 11: Gaussian shifts on Hilbert spaces

68. Linear stochastic processes and cylinder set measures	340
69. Gaussian shift experiments.....	343
70. Banach sample spaces	350
71. Testing for Gaussian shifts	357
72. Estimation for Gaussian shifts.....	362
73. Testing and estimation for Banach sample spaces	372

Chapter 12: Differentiability and asymptotic expansions

74. Stochastic expansion of likelihood ratios.....	378
75. Differentiable curves	383
76. Differentiable experiments	387
77. Conditions for differentiability.....	390
78. Examples of differentiable experiments	395
79. The stochastic expansion of a differentiable experiment	402

Chapter 13: Asymptotic normality

80. Asymptotic normality	409
81. Exponential approximation and asymptotic sufficiency.....	419
82. Application to testing hypotheses	426

83. Application to estimation	437
84. Characterization of central sequences	446
Appendix: Notation and terminology	461
References	478
List of symbols	483
Author index	485
Subject index	487