

Contents

Preface	ix
Chapter I. Basic Classes of Polynomials	1
Introduction	1
§1. Polynomials correct in Petrovskii's sense	3
§2. Stable correct polynomials	8
Appendix to §2. Pluriparabolic polynomials	16
§3. q -hyperbolic polynomials (with odd q)	19
§4. Weakly q -stable correct polynomials	26
Chapter II. The Cauchy Problem	33
Introduction	33
§1. Some auxiliary notions. Basic spaces of functions and distributions	35
§2. The Cauchy problem for differential operators with constant coefficients	43
§3. Method of energy estimates	51
§4. The Cauchy problem for strictly hyperbolic operators with variable coefficients	59
§5. The Cauchy problem for q -parabolic operators with variable coefficients	73
§6. The Cauchy problem for q -hyperbolic operators with constant and variable coefficients	81
§7. The Cauchy problem for systems of differential equations	90
Appendix 1. Hyperbolic systems with diagonalizable principal part	103
Appendix 2. q -hyperbolic systems with diagonalizable q -principal part	110
Chapter III. Mixed Problem for Hyperbolic Equations	119
Introduction	119
§1. Basic assumptions	120
§2. Statement of the main result. Necessary conditions for the solvability of the mixed problem	126
§3. Solvability of the mixed problem	132
§4. Some auxiliary assertions (pseudodifferential operators and estimates for quadratic forms)	141
§5. Basic estimate. Preliminary results	149
Appendix to §5	158
§6. Completion of the proof of the basic estimate	161
§7. Energy estimate for the case of more general boundary conditions	182
Appendix to §7	193
§8. Mixed problem in a cylindrical domain	195
Chapter IV. Mixed Problem for q -Parabolic and q -Hyperbolic Equations	199
Introduction	199

§1. Mixed problem for q -parabolic equations	200
§2. Mixed problem for q -hyperbolic equations	205
§3. A priori estimate in the mixed problem for q -hyperbolic equations	212
§4. Main theorem	221
References	227
Notation Index	231
Subject Index	233