

CONTENTS

Preface vii *Preface to the English edition* ix

1 Second-Order Hyperbolic Equations	1
1 Initial value problems	1
2 Types of partial differential equations	5
3 Vibrating strings: problems and their solutions	8
4 The problem of the vibrating membrane and energy inequalities	22
2 Hyperbolic Boundary Value Problems With Constant Coefficients	41
1 Fourier–Laplace transforms	41
2 \mathcal{E} -well-posed boundary value problems and a necessary condition for \mathcal{E} -well-posedness	57
3 Another necessary condition for \mathcal{E} -well-posedness	74
4 The construction of a solution for a typical hyperbolic boundary value problem	89
5 Adjoint problems and the uniqueness of solutions	103
3 Hyperbolic Boundary Value Problems With Variable Coefficients	119
1 Sobolev spaces and singular integral operators	119
2 The uniform Lopatinski condition	128
3 The energy inequalities of Dirichlet type (\mathcal{H})	136
4 The existence theorems	158
5 The energy inequalities of Dirichlet type (H)	172
6 The domain of dependence	192
<i>Bibliography</i>	203
List of notation	205
Index	207