
Contents

Preface	vii
1 Formulation of the Problems and Their Nonstationary Boundary Integral Equations	1
1.1 The Initial-Boundary Value Problems	1
1.2 A Matrix of Fundamental Solutions	8
1.3 Time-dependent Plate Potentials	13
1.4 Nonstationary Boundary Integral Equations	16
2 Problems with Dirichlet Boundary Conditions	19
2.1 Function Spaces	19
2.2 Solvability of the Transformed Problems	21
2.3 Solvability of the Time-dependent Problems	28
3 Problems with Neumann Boundary Conditions	37
3.1 The Poincaré–Steklov Operators	37
3.2 Solvability of the Problems	42
4 Boundary Integral Equations for Problems with Dirichlet and Neumann Boundary Conditions	43
4.1 Time-dependent Potentials	43
4.2 Nonstationary Boundary Integral Equations	51
4.3 The Direct Method	53
5 Transmission Problems and Multiply Connected Plates ...	57
5.1 Infinite Plate with a Finite Inclusion	57
5.2 Multiply Connected Finite Plate	64
5.3 Finite Plate with an Inclusion	75

6	Plate Weakened by a Crack	81
6.1	Formulation and Solvability of the Problems	81
6.2	The Poincaré–Steklov Operator	85
6.3	Time-dependent Potentials	87
6.4	Infinite Plate with a Crack	91
6.5	Finite Plate with a Crack	93
7	Initial-Boundary Value Problems with Other Types of Boundary Conditions	99
7.1	Mixed Boundary Conditions	99
7.2	Combined Boundary Conditions	108
7.3	Elastic Boundary Conditions	114
8	Boundary Integral Equations for Plates on a Generalized Elastic Foundation	119
8.1	Formulation and Solvability of the Problems	119
8.2	A Matrix of Fundamental Solutions	121
8.3	Properties of the Boundary Operators	126
8.4	Solvability of the Boundary Equations	127
9	Problems with Nonhomogeneous Equations and Nonhomogeneous Initial Conditions	129
9.1	The Time-dependent Area Potential	129
9.2	The Nonhomogeneous Equation of Motion	131
9.3	Initial Potentials	133
A	The Fourier and Laplace Transforms of Distributions	139
	References	145
	Index	147