

CONTENTS

SERIES EDITOR'S FOREWORD		ix
PREFACE		xi
CHAPTER 1	INTRODUCTION: ONE-DIMENSIONAL TRANSPORT THEORY	1
1.1	One-Dimensional Transport	1
1.2	Numerical Solution	6
1.3	Derivation Continued	7
1.4	Analytical Rederivation	10
1.5	Several Additional Functions: X and Y	18
1.6	Internal Intensity Functions	21
1.7	Internal Intensities due to Internal Sources	27
1.8	Discussion	28
	Exercises	29
CHAPTER 2	ISOTROPIC SCATTERING IN SLABS: AUXILIARY PROBLEM	31
2.1	Introduction	31
2.2	Emergence Probability	
2.3	Monodirectional Illumination - Integral Equation	37

		Page
2.4	Monodirectional Illumination - Cauchy System for Source Function	42
2.5	Computational Method and Results	49
2.6	Monodirectional Illumination - Internal Intensity Function	69
2.7	Monodirectional Illumination - Reflected and Transmitted Intensities	82
2.8	Discussion	92
	Exercises	93
	References	94
CHAPTER 3	THE BASIC PROBLEM: b AND h FUNCTIONS	95
3.1	Omnidirectional Illumination	95
3.2	Relationships Between Basic and Auxiliary Problems	100
3.3	Cauchy System for b and h Functions	108
3.4	Numerical Method and Results	118
	Exercises	131
	References	132
CHAPTER 4	INTERNAL SOURCES	133
4.1	Introduction	133
4.2	Cauchy System for Source Functions, and Emergent and Internal Inten- sities	134
4.3	Numerical Method and Examples	144
4.4	Inverse Problems for Estimation of Source Distribution	148
4.5	Quasilinearization	150
4.6	Numerical Method and Results for Inverse Problems	155
4.7	Resolvent	160
4.8	Representation Formula	171
	Exercises	176
	References	177

CHAPTER 5	INHOMOGENEOUS MEDIA	179
5.1	Derivation of Cauchy System	179
5.2	Numerical Method	186
5.3	Numerical Results	188
5.4	Inverse Problems	190
	Exercises	199
	References	200
CHAPTER 6	REFLECTING SURFACES	201
6.1	Lambert Law Reflector	201
6.2	Lambert's Law Reflectors - A Reduction	220
6.3	Specular Reflectors	229
6.4	Equivalence Relationships Between Diffuse Radiation Fields for Finite Slabs Bounded by a Perfect Specular Reflector and a Perfect Absorber	247
6.5	Inverse Problems	255
	Exercises	259
	References	260
CHAPTER 7	ANISOTROPIC SCATTERING	261
7.1	The Basic Integral Equation and Cauchy System	261
7.2	Axially Symmetric Radiation Fields	269
7.3	Discussion	285
7.4	Expansion in Legendre Polynomials	285
7.5	Estimation of Phase Functions Based on Multiple Scattering Data	288
	Exercises	292
	References	293
BIBLIOGRAPHY		294
APPENDICES		297
INDEX		335