Contents

DEDICATION	ix
Preface	хi
I. THE PERTURBATION PROBLEM. PERTURBATION OF DISCRETE	
SPECTRA	1
1. Basic notions of spectral theory in Hilbert space	1
2. The perturbation problem	3
3. Perturbation of an isolated point-eigenvalue	4
4. Perturbation of an isolated part of the spectrum	8
II. PERTURBATIONS OF OPERATORS HAVING CONTINUOUS SPECTRA	14
5. Spectral representation	14
6. Perturbation of simple continuous spectra	16
7. Scattering	25
8. Perturbation of an operator with point and con-	
TINUOUS SPECTRUM	30
III. PERTURBATION BY ANNIHILATION-CREATION OPERATORS	41
9. Particle representation	41
10. Perturbation by totally smooth annihilation-	
CREATION OPERATORS	50
11. Products and graphs	54
12. Two basic formulas. Basic equations	58
13. Inverse relations	64
14. Change of attitude	66
15. Scattering	68
16. Remarks about divergences in the case of smooth	
INTERACTION	72
17. Perturbation obeying a conservation law	74
18. Remarks about removal of divergences	84
Appendix to Chapter I	90
A1. FORMAL PERTURBATION PROCEDURE OF MULTIPLE EIGEN-	
VALUES	90
A2. Analytic branches of eigenvalues	92

viii CONTENTS

A3. Nonanalytic disturbance	94
A4. The question of uniform perturbation of the spectrum	9:
A5. THE PROJECTORS ASSOCIATED WITH AN ISOLATED PART OF	-
THE SPECTRUM	98
Appendix to Chapter II	102
A6. An explicit example	102
A7. Classes of gentle operators	103
A8. Existence of wave operators for gentle disturbances	110
A9. Perturbation of operators with restricted spectra	113
A10. DIFFERENTIAL OPERATORS	116
A11. Enlargement of the spectrum	119
A12. Completely gentle operators	125
A13. Enlargement by continuous spectra	127
A14. Multiple channel scattering	133
A15. The wave operator method in scattering	138
Appendix to Chapter III	145
A16. The nongentle character of the operator K	145
A17. Annihilation-creation operators of class $\mathfrak Q$	146
A18. STATEMENTS ABOUT SCATTERING FOR SMOOTH INTERACTION	151
A19. Inverse relations and scattering statements for	
CONSERVATION INTERACTION	156
A20. THE NONDEGENERATE LEE MODEL	162
A21. A non-negative operator $H_0 + V$ with an extra	
VACUUM	168
BIBLIOGRAPHY TO CHAPTER I	171
BIBLIOGRAPHY TO CHAPTER II	
BIBLIOGRAPHY TO CHAPTER III	172
·	174
AUTHOR INDEX	175
Subject Index	177