

CONTENTS

Chapter		Page
	Acknowledgments	
	ABSTRACT	
I	Preliminaries	
I.1	<i>Linear operators on Hilbert space</i>	1
I.2	<i>Spectrum of closed densely defined linear operator</i>	8
I.3	<i>Deficiency indices</i>	9
II	Linear differential operators	
II.1	<i>Linear ordinary quasi-differential expressions</i>	13
II.2	<i>Adjoint of quasi-differential expressions</i>	15
II.3	<i>Lagrange's identity</i>	16
II.4	<i>Operators generated by formally second-order quasi-differential expression in the regular case</i>	21
II.5	<i>Properties of the maximal operators</i>	22
II.6	<i>The maximal and minimal operators in the singular case</i>	29
II.7	<i>Some properties of the solution of the quasi-differential equation</i>	32
II.8	<i>The deficiency indices of $T_0(M)$ and $T_0(M')$</i>	34

III	Limit - point and Limit - circle classification of symmetric differential expression	
III.1	<i>Quasi-differential expression</i>	38
III.2	<i>The concept of deficiency indices and $L^2_{\omega}(a,b)$-classification</i>	40
III.3	<i>Limit-point case</i>	46
III.4	<i>Limit-circle case</i>	49
III.5	<i>Transformation to real coefficients</i>	55
III.6	<i>Some known results</i>	61
IV	Limit-point and Limit-circle of Sims	
IV.1	<i>Introduction</i>	67
IV.2	<i>Limit-point and Limit-circle cases of Sims</i>	68
IV.3	<i>Case I of Sims</i>	72
IV.4	<i>Case II of Sims</i>	76
IV.5	<i>Case III of Sims</i>	77
V	On the $L^2_{\omega}(a,b)$-solutions of general second-order non-symmetric differential equations	
V.1	<i>The general second-order non-symmetric differential expression</i>	79
V.2	<i>The case of $\text{def}(T_0(M) - \lambda I) = \text{def}(T_0(M^+) - \bar{\lambda} I) = 2$</i>	82
V.3	<i>The case of $\text{def}(T_0(M) - \lambda I) = \text{def}(T_0(M^+) - \bar{\lambda} I) = 1$</i>	88
	BIBLIOGRAPHY	91
	Arabic Summary	