

Contents

Preface	vii
1 C_0-Semigroups of Linear Operators and Cauchy Problems	1
1.1 Preliminaries	1
1.2 Well-posedness of an Abstract Cauchy Problem	18
1.3 Asymptotic Behavior of the Solution of the Abstract Cauchy Problem	41
2 Statement of the Problems	49
2.1 Brief Introduction to Reliability Theory	49
2.2 Brief Introduction to the Mathematical Theory of Reliability	52
2.3 Definitions of Reliability and Related Concepts	54
2.4 Supplementary Variable Technique	56
3 The System Consisting of a Reliable Machine, an Unreliable Machine and a Storage Buffer with Finite Capacity	59
3.1 The Mathematical Model of the System Consisting of a Reliable Machine, an Unreliable Machine and a Storage Buffer Which Can Store at Most One Piece	60
3.2 Well-posedness of the System (3-15)	67
3.3 Asymptotic Behavior of the Time-dependent Solution of the System (3-15)	82
3.4 Asymptotic Behavior of Some Reliability Indices of the System (3-15)	133
4 Transfer Line Consisting of a Reliable Machine, an Unreliable Machine and a Storage Buffer with Infinite Capacity	137
4.1 The Mathematical Model of the Transfer Line Consisting of a Reliable Machine, an Unreliable Machine and a Storage Buffer with Infinite Capacity	138
4.2 Well-posedness of the System (4-23)	147
4.3 Asymptotic Behavior of the Time-dependent Solution of the System (4-23) When $\mu(x) = \mu$	162

4.4 Asymptotic Behavior of the Time-dependent Solution of
the System (4-23) 234

4.5 Asymptotic Behavior of Some Reliability Indices of
the System (4-23) 255

5 Further Research Problems 259

Bibliography 267

Index 275



<http://www.springer.com/978-3-0348-0100-3>

Functional Analysis Methods for Reliability Models

Gupur, G.

2011, VIII, 277 p., Softcover

ISBN: 978-3-0348-0100-3

A product of Birkhäuser Basel