

Table of Contents

Chapter 1. Basic results	1
1. Commutative semitopological semigroups	1
2. C^* and W^* -algebras	4
Chapter 2. The representation algebra	10
1. L^∞ -representations	10
2. Examples	20
3. Examples of monothetic semigroups	23
Chapter 3. Positive-definite and completely positive functions	27
1. Positive-definite functions on semigroups with a dense union of groups	27
2. The dual of $R(S)$	38
3. Completely monotone functions	42
Chapter 4. Discrete separative semigroups	52
1. The semigroup algebra	53
2. Inverse semigroups	55
3. Separative semigroups	58
4. The Šilov boundary of $\ell^1(S)$	63
5. The representation algebra	66
6. Extensions of semicharacters	70
7. The regular representation	72
8. Sources and related work	78
Chapter 5. Subsemigroups of locally compact abelian groups and weakly almost periodic functions	80
1. The representation algebra for locally compact abelian groups	80
2. Weakly almost periodic functions	89

Chapter 6. Representations in Q-algebras	99
1. Q-algebras	100
2. Q-representations and the algebra $RQ(S)$	107
Chapter 7. Special cases of Q-representations	118
1. Discrete semigroups	118
2. Semigroups of type U	127
3. Z_+^0 , R_+^n and their Rees quotients	131
4. Further questions	136
Chapter 8. Hilbert space representations	138
1. General theory	139
2. Dilation theory	151
3. Dilation theory for separative semigroups	158
Appendix A. Fourier analysis	163
Appendix B. Spectral theorem	165
Appendix C. The structure semigroup of the representation algebra	167
References	170
Symbol index	177
Author index	178
Subject index	180