
Contents

| | |
|--|-----------|
| Introduction..... | 1 |
| 1 Extensions and Dilations | 9 |
| 1.1 An Example with 2×2 - Matrices | 10 |
| 1.2 An Extension Problem | 13 |
| 1.3 Weak Tensor Dilations | 14 |
| 1.4 Equivalence of Weak Tensor Dilations | 19 |
| 1.5 Duality | 21 |
| 1.6 The Automorphic Case..... | 25 |
| 1.7 Examples..... | 28 |
| 2 Markov Processes | 37 |
| 2.1 K  mmerer’s Approach | 38 |
| 2.2 Bhat’s Approach | 42 |
| 2.3 Coupling Representation on a Hilbert Space | 45 |
| 2.4 Cuntz Algebra Representations..... | 47 |
| 2.5 Cocycles and Coboundaries | 52 |
| 2.6 K  mmerer-Maassen-Scattering Theory | 60 |
| 2.7 Restrictions and Extensions..... | 63 |
| 2.8 An Interpretation Using Entanglement | 68 |
| 3 Adaptedness | 73 |
| 3.1 A Motivation: Hessenberg Form of an Isometry..... | 74 |
| 3.2 Adapted Endomorphisms – An Abstract View | 79 |
| 3.3 Adapted Endomorphisms and Stationary Processes | 86 |
| 3.4 Adapted Isometries on Tensor Products of Hilbert Spaces..... | 90 |
| 3.5 Nonlinear Prediction Errors..... | 102 |
| 3.6 The Adjoint of an Adapted Isometry | 106 |

4 Examples and Applications 113

4.1 Commutative Stationarity 114

4.2 Prediction Errors for Commutative Processes 128

4.3 Low-Dimensional Examples 132

4.4 Clifford Algebras and Generalizations 136

4.5 Tensor Products of Matrices 139

4.6 Noncommutative Extension of Adaptedness 144

Appendix A:

Some Facts about Unital Completely Positive Maps 149

A.1 Stochastic Maps 149

A.2 Representation Theorems 150

A.3 The Isometry v 154

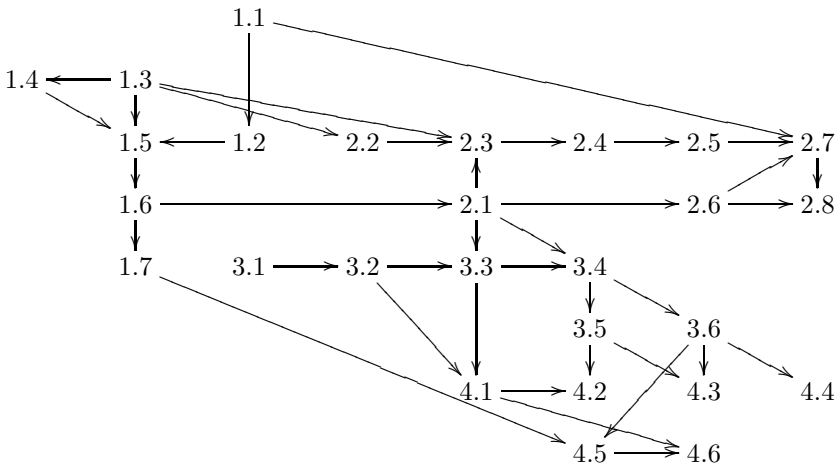
A.4 The Preadjoint C and D 157

A.5 Absorbing Vector States 160

References 165

Index 169

Flow Diagram for the Sections





<http://www.springer.com/978-3-540-20926-3>

Noncommutative Stationary Processes

Gohm, R.

2004, VIII, 172 p., Softcover

ISBN: 978-3-540-20926-3