

Contents

Introduction	iii
Chapter 1. Quantum Euclidean spaces	1
1.1. Crossed product form	2
1.2. Metrics and derivations	7
1.3. Quantum Euclidean variables	12
Chapter 2. Calderón-Zygmund L_p theory	21
2.1. Kernels and symbols	21
2.2. CZ extrapolation: Model case	25
2.3. CZ extrapolation: General case	29
Chapter 3. Pseudodifferential L_p calculus	43
3.1. Adjoint and product formulae	43
3.2. L_2 -boundedness: Sufficient conditions	50
3.3. L_p -boundedness and Sobolev p -estimates	62
Chapter 4. L_p regularity for elliptic PDEs	69
Appendix A. Noncommutative tori	73
Appendix B. BMO space theory in \mathcal{R}_Θ	79
B.1. Operator space structures on BMO and H_1	79
B.2. The H_1 -BMO duality	80
B.3. Complex interpolation	81
B.4. An auxiliary density result	86
Bibliography	89