

Contents

1	Introduction	1
2	Lebesgue Spaces of Matrix Functions	5
2.1	Preliminaries	5
2.2	Differentiability of Norm in $L^p(G, M_n)$	14
3	Matrix Convolution Operators	21
3.1	Characterisation of Matrix Convolution Operators	22
3.2	Weak Compactness of Convolution Operators	31
3.3	Spectral Theory	33
3.4	Jordan Structures in Harmonic Functions	72
4	Convolution Semigroups	87
4.1	Harmonic Functions of Semigroups	87
4.2	Hypercontractivity	94
	References	101
	List of Symbols	105
	Index	107