Contents

	Prefe	ace	page ix
1	Basics		1
	1.1	Locally compact groups	1
	1.2	Examples	6
	1.3	Coset spaces and quasi-invariant measures	12
	1.4	Representations	21
	1.5	Representations of $L^1(G)$ and functions of positive type	27
	1.6	C^* -algebras and weak containment of representations	35
	1.7	Abelian locally compact groups	39
	1.8	Notes and references	44
2	Induced representations		
	2.1	Inducing from an open subgroup	46
	2.2	Conditions for irreducibility of induced representations	51
	2.3	The induced representation in general	61
	2.4	Other realizations and positive definite measures	70
	2.5	The affine group and $SL(2, \mathbb{R})$	80
	2.6	Some basic properties of induced representations	87
	2.7	Induction in stages	96
	2.8	Tensor products of induced representations	101
	2.9	Frobenius reciprocity	107
	2.10	Notes and references	112
3	The imprimitivity theorem		114
	3.1	Systems of imprimitivity	114
	3.2	Induced systems of imprimitivity	120
	3.3	The imprimitivity theorem	125
	3.4	Proof of the imprimitivity theorem: the general case	128
	3.5	Notes and references	138

viii Contents

4	Mac	ckey analysis	140
	4.1	Mackey analysis for almost abelian groups	141
	4.2	Orbits in the dual of an abelian normal subgroup	145
	4.3	Mackey analysis for abelian normal subgroups	154
	4.4	Examples: some solvable groups	162
	4.5	Examples: action by compact groups	169
	4.6	Limitations on Mackey's theory	173
	4.7	Cocycles and cocycle representations	177
	4.8	Mackey's theory for a nonabelian normal subgroup	184
	4.9	Notes and references	201
5	Topologies on dual spaces		
	5.1	The inner hull-kernel topology	204
	5.2	The subgroup C^* -algebra	214
	5.3	Subgroup representation topology and functions of	
		positive type	223
	5.4	Continuity of inducing and restricting representations	230
	5.5	Examples: nilpotent and solvable groups	235
	5.6	The topology on the dual of a motion group	244
	5.7	Examples: motion groups	253
	5.8	The primitive ideal space of a two-step nilpotent group	258
	5.9	Notes and references	266
6	Topological Frobenius properties		
	6.1	Amenability and induced representations	270
	6.2	Basic definitions and inheritance properties	277
	6.3	Motion groups	282
	6.4	Property (FP) for discrete groups	287
	6.5	Nilpotent groups	294
	6.6	Notes and references	303
7	Further applications		
	7.1	Asymptotic properties of irreducible representations of	
		motion groups	305
	7.2	Projections in $L^1(G)$	310
	7.3	Generalizations of the wavelet transform	329
	7.4	Notes and references	332
	Bib	liography	333
	Index		340