

Index

- admissible function, 330
- affine group, 8, 80, 148
 - associated wavelet transform, 331
 - irreducible representations, 83
 - its dual, 162
 - projections in its L^1 -algebra, 323
 - topology on its dual, 235
- algebra
 - Banach $*$, 4
 - C^* , 35
 - group C^* , 37
 - subgroup C^* , 214
 - $L^1(G)$, 4
- almost abelian group, 141
- almost Hausdorff space, 154
- amenable group, 272
- approximate identity, 4

- Banach algebra
 - subgroup algebra, 214
- Bochner's theorem, 43

- C^* -algebra, 35
 - group C^* -algebra, 37
 - subgroup C^* -algebra, 214, 221
- Calderón reproducing formula, 331
- character, 40
- circle group \mathbb{T} , 6
- cocycle, 180
 - measurable, 180
 - similar cocycles, 180
 - trivial, 180
- cocycle representation, 180
- coefficient function of a representation, 24, 30, 306
 - vanishing at infinity, 306

- commutant, 25
- compact–open topology, 204
- continuity of inducing, 232
- continuity of restriction, 231
- continuous wavelet transform, 82, 331
- convergence to topological invariance
 - strongly, 272
 - weakly, 272
- convolution
 - of functions, 4
 - of measures, 5
- coset space, 5
- cross-section, 73
- cyclic representation, 26
- cyclic vector of a representation, 26

- Dauns–Hofmann, 186
- dihedral 4 group, 170
- dilation matrix, 325
- dual group, 40
 - of \mathbb{R} , 40
 - of \mathbb{T} , 40
 - of \mathbb{Z} , 40
 - of Ω_p , 264
- dual space
 - of a C^* -algebra, 35
 - of a generalized motion group, 170
 - of a locally compact group, 27
 - of the affine group, 162
 - of the classical motion group, 172
 - of the Heisenberg group, 167
- dual space topology, 35
 - affine group, 235
 - Heisenberg group, 237
 - of the motion group, 254

- equivalence of representations, 24
- equivariant map, 119
- FC-group, 287
- Fell group, 173
- Fell topology, 204
- finite conjugacy class subgroup, 287
- Fourier transform, 41
- free group on two generators, 56
- free open orbit, 315
- Frobenius properties
 - restricted topological Frobenius property, 277
 - topological Frobenius properties
 - (FP), 277
 - (FP1), 277
 - (FP2), 277
 - weak Frobenius properties
 - (WF1), 277
 - (WF2), 277
- Frobenius reciprocity theorem, 107
- function
 - admissible, 330
 - modular, 3
 - of positive type, 30
 - rho-function, 13
 - positive definite, 34
- generalized limit, 216
- GNS construction, 31
- group
 - $ax + b$, 8, 80, 148
 - affine, 8, 80, 148
 - almost abelian, 141
 - amenable, 272
 - C^* -algebra, 37
 - dihedral, 170
 - FC, 287
 - Fell, 173
 - finite conjugacy class subgroup, 287
 - free, 56
 - generalized motion, 172
 - Heisenberg, 11, 167, 237
 - integer Heisenberg, 12, 265
 - locally compact, 1
 - Mautner, 151, 175
 - motion, 11, 172, 254
 - nilpotent Lie, 168
 - of unitary operators, 21
 - semidirect product, 8
 - two-step nilpotent, 204
 - unimodular, 3
 - $GL(n, \mathbb{R})$, 10
 - p -adic integers, 173
 - p -adic numbers, 173
 - $SL(2, \mathbb{R})$, 80
 - $SO(n)$, 11
- Haar measure, 2
- Heisenberg group, 11, 167
 - as a semidirect product, 149
 - discrete Heisenberg group, 12, 153
 - its dual, 167
 - topology on its dual, 237
- $\text{Hom}_G(\pi, \sigma)$, 24
- hull–kernel topology, 35
- imprimitivity theorem, 126
- induced representation, 65, 72, 74
 - from an open subgroup, 47
 - irreducibility, 51, 53, 145, 159
 - various realizations, 70
- induction in stages theorem, 96
- inner hull–kernel topology, 206
- inner tensor product theorem, 106
- intertwine, 24
- intertwining operator, 24
- invariant subspace, 23
- inverse Fourier transform, 42
- inversion theorem, 42
- involution on $L^1(G)$, 4
- irreducible representation, 23
- Jacobson topology, 35
- kernel of a representation, 35
- left action, 6
- left coset space, 5
- left Haar measure, 2
- left-invariant mean, 272
- left-regular representation, 22
- locally compact group, 1
 - product groups, 7
- Mackey analysis, 140
 - abelian normal Mackey compatible subgroup, 160
 - nonabelian normal subgroup, 185, 191
- Mackey compatible normal subgroup, 159
- Mackey machine, 140
- Mackey’s tensor product theorem, 102

- Mautner group, 151, 175
- mean
 - left invariant, topologically left invariant, 272
- measure
 - absolutely continuous, 18
 - Haar, 2
 - of positive type, 75
 - positive definite, 75
 - projection-valued, 117
 - quasi-invariant, 16
 - Radon, 2
 - regular Borel, 2
- measure algebra, 5
- measure of positive type, 75
- minimal projection, 311
- modular function, 3
- modulation representation, 42
- motion group, 254
- multiplicity of a subrepresentation, 26
- multiplier representation, 180

- nondegenerate representation, 29
- normal subgroup
 - Mackey-compatible, 159
 - regularly embedded, 154

- orbit under a group action, 6
- orthogonality relations, 313
- outer tensor product of representations, 27

- Peter–Weyl theorem, 172
- Plancherel theorem, 41
- Plancherel transform, 41
- Pontryagin duality theorem, 42
- positive definite function, 34
- positive definite measure, 75
- positive linear functional on $L^1(G)$, 30
- $\text{Prim}(A)$, 35
- $\text{Prim}(G)$, 38
- primitive ideal, 35
- primitive ideal space
 - of a C^* -algebra, 35
 - of a locally compact group, 38
 - of a two-step nilpotent group, 260
 - of the integer Heisenberg group, 265
- principal series representations, 84
- projection
 - minimal, 311
- projection-generating function, 320

- projection-valued measure, 117
- projective representation, 180

- quasi-invariant measure, 16
- quasi-regular representation, 318
- quotient group, 5
- quotient homomorphism, 5

- Radon measure, 2
 - left invariant, 2
 - right invariant, 2
- Radon–Nikodym derivative, 16
- regular Borel measure, 2
- regularly embedded normal subgroup, 154
- representation
 - associated function of positive type, 33
 - cocycle, 180
 - commutant of, 25
 - cyclic, 26
 - induced, 65, 72, 74
 - induced from an open subgroup, 47
 - irreducible, 23
 - kernel of, 35
 - left regular, 22
 - lives on an orbit, 154
 - modulation, 42
 - multiplier, 180
 - nondegenerate, 29
 - of a locally compact group, 21
 - of a normed algebra, 28
 - outer tensor product, 27
 - principal series, 84
 - projective, 180
 - quasi-regular, 318, 326, 330
 - right regular, 23
 - square integrable modulo its kernel, 300
 - square-integrable, 317
 - subrepresentation, 23
 - multiplicity, 26
 - tensor product, 27
 - unitary equivalence, 24
 - vanishing at infinity, 306
 - weakly equivalent, 35
- rho-function, 13
- right-regular representation, 23

- semicompact set, 224
- semicompact–open topology, 224
- semidirect product, 8, 9
- separating vector, 26
- sesquilinear form, 29

- Shilov idempotent theorem, 332
- smooth choice of Haar measures, 215
- square-integrable representation, 317
- stability subgroup, 6
- stabilizer, 6
- subgroup algebra, 214
- subgroup C^* -algebra, 214
- subgroup representation topology, 222
- support
 - of a projection, 311
 - of a representation, 35
- system of imprimitivity, 114, 119
 - equivalent, 119
 - induced, 120
- tensor product of representations, 27
- theorems
 - Bochner's, 43
 - Dauns–Hofmann, 186
 - dual of a generalized motion group, 170
 - Frobenius reciprocity for finite groups, 107
 - Gelfand–Raikov, 34
 - imprimitivity, 126
 - induction in stages, 96
 - inner tensor product, 106
 - inversion, 42
 - Mackey theorem
 - abelian normal Mackey compatible subgroup, 160
 - abelian subgroup of finite index, 145
 - for semidirect products, 161
 - nonabelian normal subgroup, 185, 191
 - Peter–Weyl, 172
 - Plancherel, 41
 - Pontryagin duality, 42
 - Shilov idempotent, 332
 - topologically left-invariant mean, 272
- topology
 - compact–open, 204
 - Fell, 204
 - hull–kernel, 35
 - inner hull–kernel, 206
 - Jacobson, 35
 - semicompact–open, 224
 - strong operator, 22
 - subgroup representation, 222
 - uniform convergence on compacta, 34
 - weak operator, 21
- transform
 - continuous wavelet, 82, 331
 - Fourier, 41
 - inverse Fourier, 42
 - Plancherel, 41
- unimodular, 3
- unitary equivalence of representations, 24
- universal net, 205
- wavelet transform, 82
- weak containment, 35
- Weil's integration formula, 18