

Index

- adèle group 193, 212
 algebraic group 119
 algebraic integer 24, 76ff
 algebraic number field 24
 algebraic set 156
 algorithm 123ff, 153ff, 178ff
 almost splits 44, 250
 almost supplement 47, 48
 alternating bilinear map 261
 ample 205
 arithmetic group 119ff, 185, 198, 258
 augmentation ideal 83
 Auslander's theorems 83, 92, 99, 173
 automorphism group 14, 25ff, 49, 96,
 116ff, 169ff, 228
 automorphism tower 280

 Baer's theorem 54
 Baker–Campbell–Hausdorff formula 101,
 102, 129
 Borel's theorems 167, 195
 Borel and Harish-Chandra
 theorems 122, 172
 Borel and Serre theorems 187, 190, 195
 breadth 57

 canonical embedding 88, 149ff, 155
 canonical form 264, 267
 Carter subgroup 48
 Cauchy sequence 221
 Čebotarev's theorem 78, 81, 213
 Chevalley and Schmidt theorem 61, 76ff,
 227
 Clifford's theorem 31
 cocycle 189
 cofinal 219
 cohomology 41, 51, 189ff, 196, 239–40,
 250ff
 commensurable 119
 compact 221
 complement 38, 70, 196
 completely reducible 28
 congruence subgroup 61, 97
 congruence topology 62, 168, 225
 conjugacy problem 59, 82, 131
 conjugacy separable 53, 59ff
 content 268

 defined over k 165
 degree (of prime ideal) 55, 57
 derivation 11, 65ff, 70
 descent 212
 diagonalizable 133, 203ff
 dimension subgroup 83, 97
 directed set 218
 Dirichlet Units Theorem 25
 discriminant 268
 double cosets 194, 213

 equivalent representations 149
 equivalent semi-simple splitting 147
 exp 101
 extension 38ff, 247, 250ff
 extension (finite) 175ff
 exterior power 74, 179, 201

 fibre 190
 finite quotients 18, 59, 63, 69, 82, 182,
 214ff, 255ff, 277
 finitely presented 122, 123, 172
 Fitting subgroup 15, 231ff
 Fitting's theorem 15
 Formanek and Remeslennikov
 theorem 53, 59ff
 Formanek and Wehrfritz theorem 61
 formation theory 51
 fractions (module of) 23
 Frattini subgroup 18
 Frattini's theorem 19
 Frobenius density theorem 78, 81
 full (bilinear map) 261

 Galois cohomology 189ff, 212
 Galois group 58, 78, 189, 195
 group ring 22, 279

 Hall's theorems 14, 15, 93
 hat-class 234
 Hausdorff space 219
 Hilbert's Nullstellensatz 188
 Hirsch number 16
 Hirsch's theorems 17–19
 holomorph 83, 96, 173, 175

 inner derivation 39
 inverse limit 218

288

inverse system 218
 irreducible (linear group) 28
 isomorphism problem 100, 123ff, 130ff,
 153ff, 155
 isolator 167, 169
 isolator property 169

Jennings theorem 84, 98
 Jordan decomposition 132, 133ff, 154,
 230

k -closed 163
 k -powered group 147, 155
 k -rational 165
 k -topology 163

lattice group 108, 130
 lattice hull 111, 130
 lattice splittable 235, 243
 lattice \mathfrak{I} -group 228, 235
 Lie algebra 104, 129, 279
 Lie bracket 101
 Lie ring 126
 Lie-ring group 111
 Lie-ring hull 111
 local orbit 187ff
 log 101

Mal'cev completion 98, 100, 106
 Mal'cev's theorems 18, 22ff
 max 1
 Merzljakov's theorem 96
 Moore's theorem 111

nilpotent 6
 norm form 273

orbits 186ff

p -adic numbers 187ff, 212
 p -adic topology 168
 Pfaffian 266
 Pickel's theorems 215ff, 230ff, 253
 polycyclic 2
 profinite completion 214, 218ff, 254
 profinite topology 62, 223ff

Index

pro- p completion 228

\mathbb{Q} -group 119
 \mathbb{Q} -rational representation 124, 200

radicable 104
 radicable hull 98, 100, 107, 129
 rational homomorphism 160
 rational map 157
 rationally irreducible 23
 reducible 28
 residually finite 17
 residually finite- p 19, 97
 residually nilpotent 19

Schreier's theorem 210
 semi-simple automorphism 139
 semi-simple splitting 132, 141ff, 154, 236
 soluble 3
 soluble automorphism group 25ff
 soluble linear group 27ff, 156ff, 185
 solvmanifold 132
 splittable 141ff
 splitting 44ff
 stabilize (series) 9
 strongly equivalent 150
 structure constants 128
 subnormal 7, 25
 subnormal abelian subgroups 25, 279
 supersoluble 54ff
 supplement 50

\mathfrak{I} -group 47
 tori 209, 213
 triangularizable 33
 Tychonoff's theorem 220, 221

unipotent 91, 99, 100ff
 unipotent-free 181, 211, 231
 unitriangular 7, 91, 100ff, 138, 271
 upper triangular 29

word problem 59, 82, 131
 wreath product 5, 36, 96

Zariski topology 156ff, 184

Index of Symbols

\mathbb{A}_f	193
$\mathcal{A}ut$	228
$C(f), C(G)$	268–9
$D(f), D(G)$	
\mathcal{F}	214
\mathcal{L}	104
\mathcal{P}	174
\mathfrak{I}	47
$\mathfrak{I}(n, m)$	260
γ_i	6
ζ_i	5
τ	13
τ_i	49
\sim	220
∞	193