

Index

- H -comodule algebra, 149
- H -module algebra, 2, 84
- H_λ , 86, 89
- \mathfrak{A}_H -tame extension, 170, 189
- \mathfrak{o} -stable subgroup, 90, 93, 94
- $e(G, N)$, 59
- $e_b(G, N)$, 59
- p -adic
 - integers, 3
 - numbers, 3

- Absolutely semisimple, 142
- Adjoint group, 14, 28
 - solvable, 31
- Affine group, 4, 13, 20, 61
- Amitsur cohomology, 121
- Antipode = coinverse, 2
- Associated order, 3, 165, 166

- Bachiller's Theorem, 29
- Baer product, 211
- Base change, 88
- Bi-skew brace, 5, 39, 94
- Bialgebra, 2
- Block system, 79
- Bondarko diagram, 266–270, 274, 290
- Brace, 4
 - additive group, 23
 - of order 4, 32
 - adjoint group, 23
 - bi-skew, *see* Bi-skew brace
 - bicyclic, 28, 32
 - circle group, 23
 - cyclic, 28, 32
 - of order p^3 , 29
 - of order p^n , 67
 - skew, *see* Skew brace
- Byott's
 - conjecture, 35, 37
 - counting formula, 19
 - simple groups theorem, 16, 33, 35
 - translation theorem, 4
 - uniqueness theorem, 27, 33, 52, 113

- Canonical non-classical Hopf algebra, 47
- Canonical non-classical Hopf-Galois structure, 44
- Caranti's Lemma, 65, 98
- Characteristic subgroup, 38, 89
- Childs' Theorem, 169
- Circle group, *see* Adjoint group
- Circle operation, 61
- Classical Hopf-Galois structure, 27, 44
- Coassociative, 2
- Cohomological Hopf order, 214
- Coinverse = antipode, 2
- Commutative local algebras, 68
- Comultiplication, 2
- Counit, 2
- Crossed product, 130

- Derivation, 152
 - field of constants, 152
 - higher derivation, 154
- Descent datum, 119
- Dieudonné modules, 226
- Discriminant
 - Hopf algebra, 190
- Duality Hopf order, 215

- Faithfully flat, 119
- Featherstonhaugh's Theorem, 15
- Field extension
 - almost classical, 83, 100
 - almost classically Galois, 114, 180
 - exponent, 154
 - modular, 154
 - primitive, 154
 - separable of degrees 2, 3, 4, 5, 100
- Fixed field of a Hopf subalgebra, 2, 103
- Fixed point free pair of homomorphisms, 35, 37, 42, 92
- Formal group Hopf order, 216
- Fundamental Theorem of Galois Theory,
 - see also* Galois correspondence, 103
 - for Hopf-Galois extensions, 5
 - strong form, 83
 - weak form, 83

- Galois cohomology, 125
- Galois correspondence, 1, 87
 - for Hopf-Galois extensions, 2
 - not surjective, 97
 - image of, 101
 - ratio, 83, 91, 97
 - strong form, 97
 - surjective, 97, 101
- Galois descent, 5
- Galois extension, 1
- Galois module theory
 - global, 9, 183
- Galois object, 145, 194
- Generalized binomial coefficient, 217
- Generalized Greither order, 215
- Generalized quaternion algebras, 130
- Global Field, 3
- Greither order, 212
 - generalized, 215
- Greither-Pareigis theory, 34
 - non-normal setting, 99
- Group
 - 2-nilpotent, 32
 - almost Sylow-cyclic, 32
 - order 16, 32
 - alternating, 35, 89, 90
 - alternating group, 35, 94
 - double cover, 34
 - central series, 38
 - characteristically simple, 33
 - classification of finite simple groups, 34
 - complementary subgroups, 93
 - cyclic of odd order, 59
 - cyclic of order 2^n , 30, 59
 - cyclic of order p^n , 28
 - dihedral, 30, 32, 59, 101
 - elementary abelian, 59
 - elementary abelian p -group, 61
 - exponent p , 30
 - Frobenius, 101
 - Hamiltonian, 86
 - Heisenberg, 29, 67
 - Mathieu group of degree 10, 35
 - metabelian, 36
 - and radical algebras, 38
 - metacyclic, 60, 107, 110
 - nilpotent, 31, 32, 36
 - class of, 38
 - non-abelian simple, 33
 - number of subgroups, 92
 - of order 2^n with a cyclic subgroup of index 2, 30
 - of order $p(p-1)$, p a safeprime, 35, 39
 - of order p^3q , 52
 - of order pq , 35, 59, 107, 110
 - of order 24, 90
 - of order 80, 32
 - of principal units, 62
 - orthogonal, 65
 - quaternion, 30, 32, 59, 108, 111
 - simple non-abelian, 89
 - solvable, 31, 36
 - squarefree order, 35, 39, 53, 55, 66, 95
 - Sylow-cyclic, 32
 - symmetric, 89
 - symmetric group, 35, 94
- Group ring
 - as a Hopf algebra, 2
- Group scheme
 - action, 148
 - affine, 147
- Group valuation, 197
 - order bounded, 199
 - p -adic, 199
- Grouplike elements, 14, 86

- Hall's Theorem, 31
- Hasse-Herbrand functions, 237, 239, 240, 242, 244
- Heisenberg group, 135
- Herbrand's Theorem, 246
- Higher derivation, 154
- Holomorph, 4, 13, 15
 - stabilizer of a regular subgroup in, 20
- Hopf algebra, 2
- Hopf comodule, 194
- Hopf order, 169, 189
 - cohomological, 214
 - duality, 215
 - formal group, 216
 - ILD, 214
 - largest Larson order, 202
 - Larson order, 200
 - realizable, 6, 9, 170, 190
 - triangular, 216
 - truncated exponential, 217, 225
- Hopf-Galois extension, 2, 85
 - almost classical, 100
 - not almost classical, 100
 - separable, non-normal, 99
- Hopf-Galois module theory, 6, 165
- Hopf-Galois structure, 2
 - canonical non-classical, 34, 44
 - classical, 44, 59
 - cyclic type, 34
 - induced, 111
 - non-realizability, 89
 - normality in, 5, 104
 - opposite, 109, 174
 - quotient, 103
 - type, 4, 13, 15

- ILD Hopf orders, 214
- Inner cocycle, 128
- Inner form, 128
- Integral, 190

- Jordan matrix, 62
- Kohl's Theorem, 15
- Larson order
 - one-parameter, 201
- Left regular representation, 13, 14, 23
- Leopoldt's Theorem, 3
- Liftable cocycle, 128
- Local field, 3
 - wildly ramified extensions of degree p^2 , 6, 171
- Model, 218
- Morita theory, 86
- Nilpotent
 - \mathbb{F}_p -algebra
 - almost trivial, 63
 - commutative, 97
 - commutative of dimension 5, 68
 - commutative of dimension 6, 68
 - isomorphic, 61
 - number of ideals, 99
 - primitive, 98
 - ring, 96
 - commutative, 61
- Nilradical, 195
- Noether's Theorem, 3, 165, 169
- Normal basis generator, 166
 - valuation criteria, 168
- Normal Basis Theorem, 1, 3
 - Hopf-Galois, 166
- One-parameter Larson order, 201
- Order, 165
- Outer form, 128
- Precision, 291
- Principal homogeneous space, 149
- Radical algebra, 13, 28, 38
- Radical algebra structures on an elementary abelian p -group, 4
- Radical ring, 96
 - commutative, 28
 - left ideal, 96
- Ramification
 - breaks, 7, 237–240, 246, 247, 251–253, 263, 271, 272, 279, 280, 286, 288, 292–295
 - ramified prime, 3
 - tame, 3, 179
 - unramified, 3
 - wild, 3
- Realizable pair of groups, 27, 37, 59
- Regular embedding, 20
 - equivalence, 20, 41
- Regular subgroup, 13, 14
 - equivalence, 61
- Scaffold, 277, 285–295
 - Galois, 8
- Scheme
 - affine, 145
 - affine group scheme, 147
 - geometric points, 146
 - morphism (natural transformation), 146
 - truncated, 157
 - truncated automorphism, 157
- Semidirect product, 30, 39, 93, 94
- Semiregular subgroup, 70
- Semistable
 - with precision, 291
- Semistable extension, 255, 271–274, 281, 282, 285, 291–293, 295
- Skew brace, 4, 14, 23, 90
 - \circ -quasi ideal, 109
 - \star -quasi ideal, 109
 - homomorphism, 23
 - ideal, 109
 - isomorphism of, 25
 - of order p^3 , 60
 - opposite, 91, 109
 - quasi-ideal, 91, 109
- Smash product, 85, 260
- Stabilizer (of a regular subgroup of the holomorph), 20
- Stable extension, 255, 271, 273–275, 277, 279, 281, 282, 285, 291–293, 295
- Sweedler notation, 84
- Tamely ramified, *see* Ramification, tame
- Teichmüller character, 205
- Teichmüller
 - map, 238
 - representatives, 238, 239, 248, 262, 266
- Torsor, 149
- Triangular Hopf order, 216
- Truncated
 - automorphism scheme, 157
 - polynomial algebra, 157
- Truncated exponential, 216, 232
- Truncated exponential Hopf order, 217, 225
- Twisted form, 120
- Wildly ramified, *see* Ramification, wild
- Wreath product, 71
- Zappa-Szép group, 92