
INDEX

- action, 12
- adjoint representation, 236
- almost periodic functions, 377
- arithmetical crystal class, 314
- associated production, 278
- atomic hypothesis, 32
- averaging, 52

- baryon, 157, 276
- baryon magnetic moments, 293
- baryon number, 276
- boson, 201, 277
- Bravais lattice, 314
- buckyball, 45
- buckyball spectra, 126

- central function, 58
- character of a representation, 58
- character tables, 67
 - of C_n , 71
 - of D_{2n} , 73
 - of D_{3d} , 75
 - of D_{4d} , 73
 - of D_6 , 74
 - of O , 73
 - of S_3 , 70, 92
 - of S_4 , 92
 - of S_5 , 92
 - of S_6 , 93
 - of T , 72
- Clebsch–Gordan coefficients, 213
- Clebsch–Gordan decomposition for $SU(2)$, 184
- color, 298
- complete reducibility, 52
- completely continuous representation, 369
- conjugacy class, 15
- conjugation, 14
- cubic group, 17
- cubic lattice, 318
- cyclic group, 1, 2, 28
- cyclic subspace, 268

- degree of a representation, 58
- delta function, 62, 101
- delta particles, 220
- determinantal form, 346
- differentiable vector (in a representation), 237

- dihedral group, 6, 29
- Dirac equation, 231
- distribution, 407
- double coset decomposition, 161

- equivalence of representations, 49
- equivariant, 24
- Euler angles, 12, 21
- Euler's theorem, 21, 27

- fermion, 201, 277
- Fermi's golden rule, 122
- Fitch–Cronin experiment, 156
- fixed point character formula, 62, 102
- fixed point set, 25
- form, in crystallography, 16
- Frobenius fixed point formula, 102, 419
- Frobenius reciprocity formula, 109
- Frobenius reciprocity theorem, 111
- fullerene, 43

- gauge group, 114
- gauge theory, 301
- Gauss decomposition, 260
- general linear group, 3
- generalized density, 409
- generalized function, 409
- gluon, 299
- group, 1

- Haar integral, 362
- habit, 16–18
- hadron, 157, 276
- Hauy, 20, 32
- Hermann–Maugin notation, 29
- Higgs mechanism, 303
- homomorphism, 6
- hook formula for dimensions, 89
- hook length, 89
- hydrogen spectrum, 190, 245
- hyperon, 278

- icosahedral group, 30, 31
- induced representation, 106
- intrinsic parity, 153
- invariant scalar product, 52
- invariant subspace, 49
- irreducible representation, 49
- isotropy group, 13

- Jacobi's identity, 236
- kaon, 279
- Klein–Gordon equation, 226
- K-meson, 278
- Laguerre polynomials, 193
- lambda hyperon, 220
- lattice, 31, 308
- lattice basis, 31
- law of corresponding angles, 16
- law of rational indices, 20, 33
- Lefschetz fixed point formula, 415
- lepton, 157, 276
- Lie algebra, 236
- Littlewood–Richardson rule, 341
- Lorentz boost, 10
- Lorentz group, 6
- Lorentz metric, 6
- Lorentz transformation, 7
- Mackey decomposition formula, 162
- Mackey double coset formula, 164
- Mackey formula for invariants, 164
- magic numbers, 209
- mass acquisition, 308
- mass shell, 225
- maximal weight vector, 264
- Maxwell's equations, 227
- mean ergodic theorem, 360
- meson, 157, 276
- Minkowski space, 7
- monoclinic lattice, 315
- morphism, 24, 49
- multiplier, 157
- Murnaghan–Nakayam rule, 90, 350
- normal subgroup, 135
- number of orbits = dim Hom, 64
- octahedral group, 16, 30
- orbit, 13
- orbits of $Sl(2, \mathbb{C})$ in $\mathbf{R}^{1,3}$, 145
- orthogonal group, 3
- orthogonality relations
- characters, 58
 - matrix elements, 56
- orthorhombic lattice, 317
- parity operator, 151
- choices for cover, 152
- parity violation, 155
- partition pair, 331
- Pauli exclusion principle, 201
- Pauli matrices, 7
- perturbation theory, 120
- Peter–Weyl theorem, 179, 366
- pion, 218
- pion–nucleon scattering, 218
- Poincaré Group, 136
- polarizability tensor, 134
- primitive cell, 311
- principal bundle, 112
- projective representation, 157
- proper Lorentz group, 11
- quark, 288
- quark masses, 297
- Radon transform, 319
- regular representation, 64
- representation, 48
- representation operator, 118
- representations of $SU(2)$, 181
- representative function, 178
- representative operator, 118
- resonance detection, 284
- resonances, 220
- root, 268
- root vector, 268
- scalar operators, 119
- Schoenflies notation, 29
- Schur's lemma, 55
- selection rule, 119
- semi-direct product, 136
- seven crystal systems, 314
- shell model of nucleus, 208
- similar representations, 49
- skew hook, 90
- special linear group, 2
- special unitary group, 4
- spherical harmonics, 188
- Steno, 16
- strangeness, 279
- strong interaction, 156
- subgroup, 3
- subrepresentation, 49
- support, 408
- symmetric group, 5
- table salt, 16
- tableau, 81
- tabloid, 79
- tensor operator, 118
- tetragonal lattice, 316
- tetrahedral group, 30
- transitive group action, 14
- triclinic lattice, 314
- unitary group, 4
- weak interaction, 156
- weight vector, 268
- Weyl equation, 233
- Wigner's classification, 147–50
- Wigner's fixed point formula, 102
- Wigner's theorem, 354
- Young diagram, 78
- Young tableau, 81
- Young tabloid, 79
- Young's rule, 341