

Index

- adèle, 6
- admissible representation, 301
- affine flag variety, 346
- affine Grassmannian, 21, 296, 317, 318, 340
- affine Hecke algebra, *see* Hecke algebra, affine
- affine Kac–Moody algebra, 28, 371
- annihilation operator, 141
- associated graded algebra, 78, 367
- automorphic function, 355
- automorphic representation, 7, 353, 359

- big cell, 129

- Cartan decomposition, 108, 369
- Cartan matrix, 369
- Cartan subalgebra, 369
- Casimir element, 32
- center
 - at the critical level, 77, 117, 234
 - of a vertex algebra, 76
 - of the enveloping algebra, 120, 124
- central character, 297
- central charge, 68
- central extension, 27, 370
- conformal dimension, 40
- conformal vector, 68
- congruence subgroup, 2, 18, 302
- connection, 11, 109
 - flat, 11, 109
- constructible sheaf, 23
 - ℓ -adic, 22
- contragredient representation, 21
- convolution, 302
- coweight, 370
- creation operator, 141
- critical level, *see* level, critical

- D -module, 24, 303, 317, 318, 347, 355
- DG scheme, 335
- disc, 68, 81, 90, 93
 - punctured, 17, 93
- Drinfeld–Sokolov reduction, 239
- dual Coxeter number, 64

- equivariant module, 302
- exponent of a Lie algebra, 112

- field, 40
- flag variety, 129
- flat G -bundle, *see* G -bundle, flat
- flat connection, *see* connection, flat
- flat vector bundle, *see* vector bundle, flat
- formal coordinate, 90
- formal delta-function, 39
- formal loop group, *see* loop group
- Frobenius automorphism, 3, 318, 327, 339, 354
- fundamental group, 9

- G -bundle, 14
 - flat, 15
- Galois group, 3, 9
- gauge transformation, 15, 109
- Grothendieck alteration, 194, 335

- Harish-Chandra category, 303
- Harish-Chandra module, 303
- Harish-Chandra pair, 303
- Hecke algebra, 302
 - affine, 329
 - affine, categorical, 346, 361
 - categorical, 304
 - spherical, 306, 340
 - spherical, categorical, 317
- Hecke eigenfunction, 355
- Hecke eigenmodule, 318, 320, 340
- Hecke eigensheaf, 356, 360
- Hecke eigenvector, 307, 355
- highest weight vector, 185
- holomorphic vector bundle, *see* vector bundle, holomorphic
- horizontal section, 13

- integrable representation, 19
- intertwining operator, 197
- invariant inner product, 28
- Iwahori subgroup, 302, 327

- jet scheme, 84, 286

- Kac–Kazhdan conjecture, 190
 Killing form, 28, 63
- L*-packet, 6, 328, 353
- Langlands correspondence
 global, 6, 8, 353
 global geometric, tamely ramified, 363
 global geometric, unramified, 356
 global, tamely ramified, 359
 global, unramified, 355
 local, 1, 4, 6, 354
 local geometric, 29
 local geometric, tamely ramified, 331, 337
 local geometric, unramified, 307, 310, 322
 local, tamely ramified, 327
 local, unramified, 306
- Langlands dual group, 6, 100, 108, 117, 296, 306, 319
- Langlands dual Lie algebra, 117, 221
- level, 28
 critical, 30, 37, 64, 99, 140, 161, 162, 166
- lexicographically ordered monomial, 368
- Lie algebra, 366
 simple, 368
- local field, 1
- local system, 18, 297
 ℓ -adic, 22
 tamely ramified, 332, 342, 360
 trivial, 307, 341
- locality, 41
- localization functor, 356, 360, 363, 365
- loop algebra
 formal, 26, 372
 polynomial, 372
- loop group, 9, 18, 20, 23, 26, 30, 295
- maximal compact subgroup, 21, 302, 305
- Miura oper, 193, 226
 generic, 226
 nilpotent, 258
- Miura transformation, 229, 241, 349
- module over a Lie algebra, 366
- monodromic module, 334
- monodromy, 13, 17, 327, 332, 333, 339, 364
- nilpotent cone, 86, 260, 330
- nilpotent Miura oper, *see* Miura oper,
 nilpotent
- nilpotent oper, *see* oper, nilpotent
- normal ordering, 37, 49
- oper, 109, 297
 nilpotent, 248, 333
 regular, 310
 with regular singularity, 244
- operator product expansion, 56
- PBW filtration, *see* universal enveloping
 algebra, filtration
- Poincaré–Birkhoff–Witt theorem, 368
- principal *G*-bundle, *see* *G*-bundle
- principal gradation, 112
- projective connection, 96, 101, 107
- projective structure, 102
- punctured disc, *see* disc, punctured
- reconstruction theorem, 51, 52
- reduction of a principal bundle, 104
- regular singularity, 16, 244, 360, 363
- relative position, 261
 generic, 194
- representation of a Lie algebra, 366
- residue, 28
 of a nilpotent oper, 253
 of an oper with regular singularity, 244
- Riemann–Hilbert correspondence, 24
- root, 369
 simple, 369
- Satake isomorphism, 306
 categorical, 317
- Schwarzian derivative, 98, 114
- screening operator, 192
 of \mathcal{W} -algebra, 219
 of the first kind, 200, 206
 of the second kind, 203, 208
- Segal–Sugawara operator, 37, 62, 74, 87, 98, 119, 171
- smooth representation, 2, 19, 29, 178, 183
- space of states, 40
- spherical Hecke algebra, *see* Hecke algebra,
 spherical
- Springer fiber, 261, 329, 348
- Springer variety, 260
- state-field correspondence, 41
- Steinberg variety, 330, 347
- symbol, 368
- Tannakian formalism, 15, 317, 340
- torsor, 90
- transition function, 11
- translation operator, 40
- universal enveloping algebra, 367
 completed, 34
 filtration, 367
- unramified representation, 305
- vacuum vector, 40
- vacuum Verma module, *see* Verma module,
 vacuum
- vector bundle, 11
 flat, 11
 holomorphic, 13
- Verma module, 132, 185, 273
 contragredient, 133
 vacuum, 45
- vertex algebra, 40
 commutative, 42
 conformal, 68
 quasi-conformal, 173

vertex algebra homomorphism, 68
vertex operator, 41
vertex Poisson algebra, 221
Virasoro algebra, 66

 \mathcal{W} -algebra, 220
Wakimoto module, 169
 generalized, 183
 of critical level, 166, 343, 351
weight, 370
Weil group, 4, 7, 354
Weil–Deligne group, 4, 306, 326, 339
Weyl algebra, 138
Weyl group, 370
Weyl module, 279
Wick formula, 147