

## Index

- abelian category, 43
- additive category, 41
- adjoint group, 12
- affine algebraic group, 1
- affine variety, 1, 64
- affine Weyl group, 29, 30, 182
- alcove, 29, 182
- almost character, 80
- Andersen–Jantzen–Soergel theorem, 185
- automorphisms, 130
- baby Verma module, 184
- Borel and de Siebenthal algorithm, 132
- Borel subgroup, 5
- Borel–Moore homology, 153
- braid group, 31, 37, 120
- braid monoid, 31
- Broué’s conjecture, 58
- Bruhat decomposition, 5, 69
- Cartan integer, 11
- Cartan matrix, 11
- Casimir element, 106
- chamber, 24
- character group, 7
- character of a rational  $G$ -module, 14, 175
- character sheaves, 80
- characterization of module categories, 45
- Chevalley basis, 178
- Chevalley group, 179
- classical group, 136
- cocharacter group, 7
- complete root datum, 69, 87
- complex reflection group, 34
- constructible character, 71
- coroot, 10
- Coxeter group, 11, 22, 26
- Coxeter system, 21
- crystal basis, 123
- crystallographic group, 24
- cuspidal character, 93
- cyclic homology, 58
- cyclotomic Hecke algebra, 102
- $d$ -Harish-Chandra series, 97
- $d$ -cuspidal character, 96
- $d$ -cuspidal pair, 97
- $d$ -defect torus, 99
- $d$ -split Levi subgroup, 90
- $d$ -torus, 90
- Deligne–Lusztig generalized character, 73
- derived category, 48
- derived equivalent, 57
- derived functor, 51
- dihedral group, 22
- direct image, 166
- dominant weight, 14, 175
- dual group, 74
- Dynkin diagram, 12
- enveloping algebra, 17, 105, 113, 177
- étale topology, 167
- exceptional group, 141
- exotic local subgroup, 144
- families of characters of the Weyl group, 71
- fields of definition, 64
- finite group of Lie type, 68, 86
- finite reductive group, 68
- Frobenius map, 66, 131
- full embedding theorem, 44, 45
- fundamental root, 11
- fundamental weight, 14
- gallery, 25
- generic degree, 70
- generic finite reductive group, 87

- generic Levi subgroup, 87
- generic unipotent character, 95
- Grothendieck topology, 166
- Grothendieck group, 55
- Harish-Chandra homomorphism, 117
- Harish-Chandra induction, 73, 93
- Harish-Chandra restriction, 93
- Harish-Chandra series, 94
- Hecke algebra, *see* Iwahori-Hecke algebra
- highest weight module, 14, 116
- Hochschild homology, 58
- homotopy category, 47
- Hopf algebra, 19, 112
- hyperalgebra, 181
- hyperoctahedral group, 22
- intersection homology, 159
- intersection chains, 158
- Iwahori-Hecke algebra, 32, 38, 70, 94, 183
- Jordan decomposition of characters, 76
- Jordan decomposition of elements, 3, 135
- Kazhdan-Lusztig polynomial, 170, 183
- Kostant  $\mathbb{Z}$ -form, 118, 181
- Kostant's conjecture, 145
- $\ell$ -adic cohomology, 167
- $\ell$ -block, 98
- Lang's theorem, 67
- length of an element, 23
- Levi subgroup, 6, 134
- Lie algebra, 16
- linear refinement, 154
- linear algebraic group, 2
- linkage principle, 182
- local intersection cohomology, 170
- long root element, 135
- Lusztig series, 75
- Lusztig's conjecture, 173, 183
- maximal torus, 4
- module category, 43
- monodromy, 38
- Morita equivalence, 45
- morphism of affine varieties, 65
- multiplicity formula, 78
- normalization, 160
- order formula, 70
- parabolic subgroup, 6, 134
- perversity, 158
- piecewise linear structure, 154
- Poincaré-Birkhoff-Witt theorem, 18, 106, 119
- polynomial order, 89
- presheaf, 162
- pseudo-reflection, 34
- pseudo-reflection group, 34, 101
- pseudomanifold, 157
- quantised enveloping algebra, 106, 114
- quantum  $\mathfrak{sl}_2$ , 106
- quasi-isomorphism, 47
- radical, 3
- rational representation, 13
- reduced decomposition, 23
- reduction theorem, 137, 140, 144
- reductive group, 3, 86
- regular unipotent element, 135
- relative Weyl group, 91, 99, 101
- representable functor, 42
- restricted enveloping algebra, 184
- Rickard's theorem, 56
- root, 8
- root datum, 86
- root subgroup, 8, 130
- root system, 27
- scalar product formula, 73
- section, 163

- semisimple element, 2
- semisimple group, 3
- Serre's theorem, 145
- sheaf, 163
- sheaf cohomology, 165
- simple algebraic group, 129
- simple root, 11
- simplicial chains, 153
- simplicial homology, 153
- simply-connected group, 12
- stalk, 163
- Steinberg's tensor product theorem, 181
- subsystem subgroup, 132
- symmetric group, 4, 22, 95
  
- tilting complex, 57
- topological constructions, 37
- topologically normal, 160
- total right derived functor, 51
- triangle functor, 56
- triangular decomposition, 115, 177
- triangulated category, 54
- triangulation, 152
- truncated induction, 71
- twisted induction, 72
- twisted restriction, 72
  
- uniform function, 73
- unipotent almost character, 79
- unipotent character, 76, 95
- unipotent element, 2
- unipotent radical, 3
- universal enveloping algebra, *see*  
     enveloping algebra
  
- Verma module, 177
  
- weight, 14
- weight space, 107, 174, 177
- Weyl group, 4, 27
- Weyl's character formula, 15, 178
  
- Zariski topology, 2