

Bibliography and author index

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Symbol index

■	[end of subsection], xvi		
$(-)^{-1}$	[first derived complex], 217 [inverse image], xvi [inverse word], 1 [inverse path], 8	\leq	surfaces], 235, 247 [for patterns, patterned surfaces], 235, 247
$(-)^{\pm 1}$	[set $\times \{1, -1\}$], 1	+	[sum of patterns, patterned surfaces], 233, 247
$(-)^n$	[Cartesian power], xv	\rightarrow	[function], xvi
${}^n(-)$	[column vectors], 149	\mapsto	[function on elements], xvi
$ - $	[cardinal], xv [modulus], 23, 202	\approx	[isomorphism], 3
$\ - \ $	[norm of matrix], 202 [norm of patterned surface], 248	\equiv	[equivalence of patterns, patterned surfaces], 225, 246
$ - $	[norm of track], 234 [polyhedron of simplicial complex], 216	$\sim,$ $(-, -)$	235 [automorphism], 24, 28 [set of all functions], 47 [restriction], 47 [subgroup], xvi [partial order], 18, 47 [integer or ordinal interval], xv
$\langle - \rangle$	[map of polyhedrons] 217	$- -$	[commutator], xvi
$(-)^*$	[subgroup generated by], 2 [complement, set of complements], 47 [dual edge], 52, 67, 125 [dual module], 149 [units of field], 25 [free product], 14	$- \leq -$	[rank of free module], 204 [index of subgroup], 3 [Boolean pairing], 47 [pairing], 48 [presentation], 2
$* -$ ${}_{i \in I}$	[free product], 14 [special HNN extension], 14	$[-, -]$	– [semidirect product], 30 [domain of difference], 48 [tree interval], 30 [free product with amalgamation], 14 [HNN extension], 14
$- \setminus -, - / -$	[quotient set], 3	$[-: -]$	[abelianization], 40
\subseteq, \subset	[containment], xv	$(-: -)$	[almost equal], 48
$-$	[complement], xv	$-\square -$	[inner derivation], 31
\cup	[union], xv	$\langle -, \rangle$	[G-module], 107, 115
\vee	[disjoint union], xv	$\langle - - \rangle$	[automorphism group], 24
\cap	[intersection], xv [cap product], 146	$-\times -, - \times$	[set of almost G-stable functions], 108
\otimes, \prod	[tensor product], xvi, 78 [Cartesian product], xv	$-\nabla -$	
\oplus	[direct sum], xvi [for patterns, patterned	$-[-, -]$	
		$- * -$	
		$(-)^{ab}$	
		$- =_a -$	
		ad	
		A- or A[-]	
		Aut	
		$\mathcal{A}(G, A)$	

Symbol index

\mathcal{B} -	[Boolean ring], 54, 55, 124, 126	$GL_{-}(-)$	[general linear group], 21
$\overline{\mathcal{B}}$ -	[quotient Boolean ring], 125, 126	\mathcal{H}	[upper half plane], 21
$\mathcal{B}_n X$,	55	HCF	[highest common factor], xv
$\mathcal{B}_{fin} X$,	237	$H^1(-, -)$	[first cohomology group], 107
$\mathcal{B}\alpha$,	242	H_*	[homology], 135, 136, 138, 218
$B(-)$,	[boundaries], 141	H^*	[cohomology], 107, 135, 136, 219
$B_n(K)$	[n -boundaries], 218	i -	[initial vertex], 4, 5, 8
$B^n(K, G)$,	218	$Im(z)$	[imaginary part of z], 21
b_p	234	$Inn(-, -)$	[set of inner derivations], 107
C_n, C_∞	[cyclic group], 2	j_p	[pattern map], 224
C -	[set of components], 29, 33	$k[-]$	[polynomial ring], 27, 28
cd	[cohomological dimension], 110	$k\langle - \rangle$	[free algebra], 28
$(\mathcal{C}1), (\mathcal{C}2), (\mathcal{C}3)$,	247	$k[[-]]$	[power series ring], 25
$C(K)$	[simplicial chain complex], 218	$k((-)$	[Laurent series ring], 25
$C(K, G)$,	218	$\mathcal{M}_n(-)$	[$n \times n$ matrix ring], 202
$C_n[K, G]$,	218	mod_2 ,	225
$\partial/\partial x$	[partial derivative], 166	\mathbb{N}	[positive integers], xv
δ	[coboundary], 54	$\mathcal{N}M$	[normal surfaces], 249
δ_n	[coboundary map], 218	$^\circ$	[involution], 155, 156
$\hat{\partial}$	[boundary map], 29, 113	$(-)^{op}$	[dual complex], 164
$\hat{\partial}_n$	[boundary map], 218	$\pi(-)$	[opposite], 57
Δ -	[diagonal], 42, 179	π_1	[fundamental group], 13, 32, 36
$(-)_d$	[G -set from derivation], 107	pd	[fundamental group], 220
$d(-, -)$	[distance], 25, 67	PD ,	[projective dimension], 110
D_n, D_∞	[dihedral group], 2	PD ,	<i>see</i> Poincaré duality in Subject index
$Der(-, -)$	[set of derivations], 107	$PGL_{-}(-)$	[projective linear group], 21
$(\mathcal{D}1), (\mathcal{D}2)$,	261	$PSL_{-}(-)$	[projective special linear group], 21
D_p	[dual graph], 225	$\mathcal{P}M$	[patterned surfaces], 247
$(-)^e$	[exponent 1, $-1, *$], 1, 8, 49, 125	\mathbb{Q}	[rationals], xv
$\varepsilon(-)$	[augmentation map], 29, 111, 115	$R-$, $R[-]$,	[group ring, G -module], 110
$\varepsilon^0(-)$	[orientation map], 136, 156	\mathbb{R}	[real numbers, Euclidean 1-space], xv
$e(-)$	[number of ends], 126	\mathbb{R}^n	[Euclidean n -space], xv
E -	[edge set, one-simplexes], 4, 223	$Re(z)$	[real part of z], 23
$E(-), E_{-}$,	81	S^1	[circle], 137
\mathcal{E} -	[space of ends], 124, 126	S^2	[sphere], 137
Ext ,	142	$(\mathcal{S}1), (\mathcal{S}2), (\mathcal{S}3)$,	255
\emptyset	[empty set], xv	S -	[simplex set], 215
\hat{f}	[simplified surface map], 249	S_n	[set of n -simplexes], 215
F -	[two-simplexes], 224	$SL_{-}(-)$	[special linear group], 21
F_n	[free group], 2	$star(-)$	[incident edges], 5
FP	[finiteness property], 144, 155	$size(-)$	[size sequence], 92
$^q(-), (-)^q$	[conjugation], 3	Sym -	[symmetric group], 3
$G(-)$	[graph of groups], 11	τ -	[terminal vertex], 4, 5, 8
GD ,	<i>see</i> geometric duality in Subject index	$(-)^t$	[transpose], 149
G_X	[orbit], 3	t_e	[edge functions], 11
$G_x, G_{x_1, \dots, x_n}, G_X$	[stabilizer], 3	$T(E)$	[connecting elements], 11
			[tree for a tree set], 49

$T(G(-), -, -)$	[standard graph of tree], 31	$X(G, S)$	[Cayley graph], 5
Tor	145	$X(m, n)$	[distance-transitive graph], 67
tr	[trace], 108, 202	\mathcal{X} -	[Boolean space], 124, 126
Tr	[Hattori–Stallings trace], 204	χ	[Euler characteristic], 37, 105
T_2	[2×2 lower triangular], 28	\bar{z}	[complex conjugate], 21
U -	[group of units], 21	\mathbb{Z}	[integers], xv
V -	[vertex set], 4, 215	\mathbb{Z}^+	[non-negative integers], xv, 224
$V(-), V_-$	[induced almost equality classes], 81	\mathbb{Z}_2	[$\{0, 1\}$], xvi
V_∞	[infinite stabilizer part], 90	$\mathbb{Z}V, \mathbb{Z}[V]$	[free abelian group], 28
$\tilde{V}T$	[almost equality class for T], 74	$Z(-)$	[cycles], 141
ω -	[augmentation kernel], 29, 111, 115	$Z_n(K)$	[n -cycles], 218
$E(-)$	[words in set and its inverses], 1	$Z^n(K, G)$	

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