

Index of Notation

α	15
$\mathcal{A}(G)$	7
\ddot{A}	20
$A = A(V, \mathbf{F}, \kappa)$	14
$c = [H_{\overline{\Omega}}]^A $	62
$C, C_i, \mathcal{C}(G), \mathcal{C}_i(G)$	2, 57, 58, 60
$C\ell_n(q)$	46, 173
$C(Q), C_+(E)$	195, 196
$\delta, \delta', \delta_\beta(\mu)$	21, 23
$\delta_{\mathbf{f}, \beta}, \delta_{Q, \beta}$	24, 36
\mathcal{D}	53, 100
$D, D(Q), D(W), D_n^\epsilon(q)$	32, 70
$\Delta(V, \mathbf{F}, \kappa)$	11
$\text{diag}_\beta(\lambda_1, \dots, \lambda_n)$	9
$\text{End}_{\mathbf{F}}(V)$	9
$\mathbf{f}, \mathbf{f}_\beta$	10
$\mathbf{F}_q, \mathbf{F}^*$	vii, 9
$\mathbf{F}_p[X], \mathbf{F}_p(H)$	51
\mathcal{F}	92
$\phi, \phi', \phi_\beta(\alpha)$	10, 21, 23
$\phi_{\mathbf{f}, \beta}, \phi_{Q, \beta}$	23, 25, 35
$\gamma, \bar{\gamma}, \check{\gamma}$	30, 41
g_β	9
g_W	18
$\check{G}, \check{\Gamma}$	20
$g_S, g_I, g_\Delta, g_\Gamma, g_A$	20, 21
$GL(V, \mathbf{F}), \Gamma L(V, \mathbf{F})$	9, 10
$\Gamma(V, \mathbf{F}, \kappa)$	11
$G_{\mathcal{D}}, G_{(\mathcal{D})}, G^{\mathcal{D}}$	53
$\mathcal{G}_C^G(H), \mathcal{G}_S^G(H), \mathcal{G}^G(H), \mathcal{G}_i(H)$	65, 209
$GL_n^\pm(q), \Gamma L_n^\pm(q)$	15
$GO_n^\epsilon(q), \Gamma O_n^\epsilon(q)$	15
$GS_{p_n}(q), \Gamma Sp_n(q)$	15
$GU_n(q), \Gamma U_n(q)$	15
$H_{\overline{\Omega}}, H_\Gamma, H_G$	60

$[H_{\Omega}]^{\bar{A}}$	62
$\text{Hom}_{\mathbf{F}}(V, V')$	9
$I = I(V, \mathbf{F}, \kappa)$	11
$I(W)$	84
$\check{I}(W)$	87
κ	11
κ_W	16
$\pm m$ -space	32
$\square m$ -space, $\boxtimes m$ -space	32
case \mathbf{L} , case \mathbf{L}^{\pm}	14, 15
$\Lambda^2(W)$	45, 199
$\text{Lie}(p), \text{Lie}(p')$	172
μ	20
$M(G)$	173
$m_p(G)$	vii
$M(\lambda)$	191
ν	20
$N_{\mathbf{F}_0}^{\mathbf{F}}$	vii
case \mathbf{O} , \mathbf{O}° , \mathbf{O}^{\pm}	14, 15, 27
$\text{orb}_H(v)$	106
π	62
$P(G), P_f(G), P_f^i(G)$	174
$PGL(V, \mathbf{F}), P\Gamma L(V, \mathbf{F})$	9, 10
P_i	58
Q, Q_W	10, 18
q_n, q_{-n}	112, 182
$r_{\square}, r_{\boxtimes}$	30
$R_{\mathbf{F}}(G), R_p(G), R_{p'}(G), R(G)$	184
$R_{\mathbf{F}}^i(G), R_p^i(G), R_{p'}^i(G), R^i(G)$	185
S	3
case \mathbf{S}	14
$SL(V, \mathbf{F})$	9
$S = S(V, \mathbf{F}, \kappa)$	11, 12
$S(W), \check{S}(W)$	84, 87
$S^2(W)$	199
$\text{sgn}(Q), \text{sgn}(\mathbf{f}), \text{sgn}(W)$	27, 32
σ	12

Cambridge University Press

978-0-521-35949-8 - The Subgroup Structure of the Finite Classical Groups

Peter Kleidman and Martin Liebeck

Index

[More information](#)

298

$SL_n(q), SL_n^\pm(q)$	15
$\text{soc}(G)$	vii
$Sp_n(q)$	15
$SU_n(q)$	15
τ	12, 20
$T_{\mathbf{F}_o}^{\mathbf{F}}$	vii
Θ	29
u	15
case U	14
$\mathcal{U}_m, \mathcal{U}_m^i$	16, 30
$(V, \mathbf{F}), (V, \mathbf{F}, \kappa)$	11
w_o	192
$\Omega = \Omega(V, \mathbf{F}, \kappa)$	14
$\Omega(W), \tilde{\Omega}(W)$	84, 87
$\Omega_n(q), \Omega_n^\pm(q)$	15
X^\perp	17
$[Y], [Y]_X, [Y]^X$	62
$\zeta_p(r)$	182
\square, \boxtimes	32
\approx	46

Index

A	14
α , field automorphism	15
absolutely irreducible representation	3, 47
Action Table	75
adjoint group	189
adjoint module	190
almost simple group	1
alternating group	1, 6
anisotropic space	26
Aschbacher's Theorem	4
associate, X -associate	60
bilinear form	10
Borel subgroup	180
\mathcal{C} , $\mathcal{C}(G)$, $\mathcal{C}_i(G)$	2, 57, 58, 60
case \mathbf{L} , \mathbf{L}^\pm , \mathbf{U} , \mathbf{S} , \mathbf{O}	14, 15
central extension	173
classical geometry	16
classical groups	14, 170
classical subgroups \mathcal{C}_8	165
Clifford algebra	195
Clifford group	195
component	vii
covering group	173
Δ	12, 13
\mathcal{D} -length	106
deleted permutation module	185
diagonal linear transformation	9
dimension of a classical group	173
discriminant	32
Dynkin diagram	180
exceptional group	1, 6, 170
extraspecial group	148

faithful subgroup	65
field automorphism	191
field extension subgroups C_3	111
Frobenius map	190
full covering group	173
fully deleted permutation module	186
γ , homomorphism	30
Γ	12, 13
$\mathcal{G}_S(H)$, $\mathcal{G}_C(H)$, $\mathcal{G}_i(H)$	65, 209
general linear group	9
graph automorphism	4, 16, 25, 38, 191
group of Lie type	169
highest weight	191
homogeneous representation	129
imprimitive subgroups C_2	99
inverse transpose	14, 21
isometry	11
I , isometry group	12, 13
isotropic vector	16
κ , form	11
Levi factor	94, 180
$Lie(p)$, $Lie(p')$	172
Lie algebra	179, 190
Lie rank	169
Lie type	169
linear group	15, 20
local subgroup	5
longest element w_o	192
μ , generator of \mathbf{F}^*	20

Main Theorem	5, 57
maximal flag	92
maximal torus	190
m -decomposition	100
minimal module	200
multiplier	173
ν , generator of $\text{Aut}(\mathbf{F})$	20
non-degenerate form	13
non-degenerate subspace	16
norm	10
novelty	66
O’Nan-Scott Theorem	7
orthogonal group	15, 26, 34, 35, 39
orthogonal subspace	17
overgroup	65
π , homomorphism	62
parabolic argument	181
parabolic subgroup	58, 180
primitive prime divisor	112, 182
projective representation	183
quadratic form	10
quasiequivalent representations	55
quasisimple group	vii
realization over a subfield	52, 192
reducible subgroups \mathcal{C}_1	83
reflection	29
root subgroup	180
root system	179, 190
\mathcal{S}	3
σ , homomorphism	12
S , special isometry group	11, 12

scalar linear transformation	9
semilinear transformation	9
semisimple group	82
similarity group	11
simple algebraic group	189
simply connected group	189
singular vector	16
skew-symmetric form	13
special Clifford group	196
special linear group	9
spin module	195
spinor norm	29
sporadic groups	1, 6, 171
standard basis	22, 24, 27
subspace decomposition	53, 100
subfield subgroups C_5	139
symmetric form	13
symplectic basis	24
symplectic group	14, 24
symplectic-type group	149
symplectic-type normalizers C_6	148
τ , homomorphism	12
tensor decomposition	128
tensor product subgroups C_4, C_7	126, 155
torus	190
totally isotropic	16
totally singular	16
twisted group	172
types in C_i	58
u , integer	15
\mathcal{U}_i	16
unfaithful subgroup	65
unipotent radical	94, 180
unitary basis	22
unitary form	13

unitary group	15, 22
untwisted Lie rank	172
untwisted group	172
Ω	14
weights of a representation	190
Weyl group	190
Witt defect	28
Witt index	28
Witt's Lemma	18
Zsigmondy's Theorem	182