Symbols index and Erratum for the book of R. Gangolli and V. S. Varadarajan

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The following incomplete table is designed to help readers locate symbols more efficiently in the book titled *Harmonic Analysis of Spherical Functions on Real Reductive Groups* by R. Gangolli and V. S. Varadarajan. Attached at the end is an errata sheet, most of which were identified by the author. The number in the upper right (or lower right) corner indicates the line number from the top (or bottom) of the page where the error occurs. If the reader notices any additional errors in the book or errata, please feel free to let me know.

(Continued)

Symbols	Definitions	Pages
(G, K)	a pair where G is a second countable locally compact group, unimodular and K is a compact subgroup	9
$\mathscr{E}(K)$	the set of equivalence of the irreducible representations of K	9
$\mathrm{ch}_{\mathfrak{d}}$	the character of $\mathfrak{d} \in \mathscr{E}(K)$	9
$\xi_{\mathfrak{d}}(k)$	$\dim(\mathfrak{d})\, \mathrm{ch}_{\mathfrak{d}}(k^{-1}), k \in K$	9
$E_{\mathfrak{d}}$	$\pi(\xi_{\mathfrak{d}})$	9
$V_{\mathfrak{d}} = E_{\mathfrak{d}}V$	the isotypical subspace of V corresponding to $\mathfrak{d}$	10
$F \subset \mathscr{E}(K)$	finite set	10
E_F	$\sum_{\mathfrak{d}\in F} E_{\mathfrak{d}}$	10
V_F	$E_F V = \bigoplus_{\mathfrak{d}\in F} V_{\mathfrak{d}}$	10
$v_{\mathfrak{d}} = E_{\mathfrak{d}}v$	the Fourier coefficient of $v \in V$	10
$E_{l\times r,(\mathfrak{d}_1,\mathfrak{d}_2)}f$	$\xi_{\mathfrak{d}_1} * f * \xi_{\mathfrak{d}_2}$	11
$C_{\mathfrak{d}}(G)$	$E_{\mathfrak{d},\bar{\mathfrak{d}}}(C(G)) = \xi_{\mathfrak{d}} * C(G) * \xi_{\mathfrak{d}}$	11
$C_{c,\mathfrak{d}}(G)$	$C_c(G) \cap C_{\mathfrak{d}}(G) = \xi_{\mathfrak{d}} * C_c(G) * \xi_{\mathfrak{d}}$	11
$C(G//K)$	$C_1(G)$	11
$C_c(G//K)$	$C_{c,1}(G)$	11
$C_{c,F}(G)$	$\xi_F * C_c(G) * \xi_F$	11
$C^{\infty}_{c,F}(G)$	$\xi_F * C^{\infty}_c(G) * \xi_F$	11
ξ_F	$\sum_{\mathfrak{d}\in F} \xi_{\mathfrak{d}}$	11
$I_c(G)$	the subalgebra of $C_c(G)$ of elements invariant under inner automorphisms	11
$I_{c,F}(G)$	$\xi_F * I_c(G) * \xi_F$	11
$\pi_F(f)$	$\pi(f)\vert_{V_F}, f \in C_{c,F}(G)$	12
V^0	$\sum_{\mathfrak{d}\in\mathscr{E}(K)} V_{\mathfrak{d}}$ (algebraic sum)	13
$\mathfrak{Q}$	$U(\mathfrak{g}_c)^K$ =centralizer of K in $U(\mathfrak{g}_c)$	13
$\Theta_\pi(C^{\infty}_c(G) \to \mathbb{C})$	$f \mapsto \mathrm{tr}(\pi(f))$ the character of π	13
$\Phi_{\pi,F}(x)$	$E_F\pi(x)E_F$ the spherical function of type $F \subset \mathscr{E}(K)$ associated with π	22
$\pi_F(f)$	$\langle f, \Phi_{\pi,F}\rangle = \int_G f(x)\Phi_{\pi,F}(x)dx$	22
γ	a representation of $C_{c,F}(G)$ in U where U is finite-dimensional	22

(Continued)

Symbols	Definitions	Pages
Ψ	$(G \to \mathrm{Hom}_{\mathbb{C}}(U,U))$ such that $\gamma(f) = \langle f, \Psi \rangle$ and $\Psi = \bar{\xi}_F * \Psi * \bar{\xi}_F$	22
$I_{c,\mathfrak{d}}(G)$	the subalgebra of elements invariant under the inner automorphisms	29
$\Phi^\sharp$	$G \to \mathrm{Hom}_{\mathbb{C}}(W,W)$	30
$\sigma_\mathfrak{d}$	an irreducible representations of $I_{c,\mathfrak{d}}(G)$ in some space $W_\mathfrak{d}$	30
$\pi_\mathfrak{d}$	$\theta \otimes \sigma_\mathfrak{d}$ the irreducible representation of $C_{c,\mathfrak{d}}(G)$ in $V_\mathfrak{d}$	30
$\Phi^\sharp_{\pi,\mathfrak{d}}$	the continuous map of G into $\mathrm{Hom}_{\mathbb{C}}(W_\mathfrak{d}, W_\mathfrak{d})$	31
$\varphi_{\pi,\mathfrak{d}}$	$\mathrm{tr}(\Phi^\sharp_{\pi,\mathfrak{d}})$	31
U	the algebra of endomorphisms of V_F	31
$\Phi = \Phi_{\pi,F}$	a function from G to U	32
a^k	$\mathrm{Ad}(k)a$ where $a \in U(\mathfrak{g}_c)$	33
$\Psi(x:y)$	$\int_K \Phi^\sharp(xkyk^{-1})dk$	34
(G,K)	Gelfand pair if $L^1(G//K)$ is commutative	36
θ	an involutive automorphism of G	36
G^θ	the subgroup of fixed points for θ	36
V^K	the space of vectors invariant under K	37
λ	$(G \to B(L^2(G/K))) : y \mapsto \lambda(y)$	39
$\mathfrak{H}$	a separable Hilbert space	40
$\mathfrak{U}$	a commutative algebra of bounded operators in $\mathfrak{H}$	40
$\mathfrak{U}_1$	a dense self-adjoint algebra of $\mathfrak{U}$	41
$\sharp(f)$	$f^\sharp = \int_{K\times K} l(k_1)r(k_2)f dk_1 dk_2$	43
$\Sigma(G//K)$	the spectrum of $L^1(G//K)$	43
φ_τ	uniquely determined elementary spherical function	43
π_τ	a completely irreducible uniformly bounded representation of class 1	43
$\Sigma_u(G//K)$	$\left\{\tau \in \Sigma(G//K) : \tau((f * \tilde{f})^\sharp) \geq 0, \forall f \in L^1(G)\right\}$	43
$\hat{G}$	the set of equivalence classes of irreducible unitary representations of G	43
$\hat{G}_1$	the set of classes of $\hat{G}$ corresponding to class 1 representations	43
$H \subset G$	a closed subgroup	49
$E_G(G/H)$	the algebra of all G-invariant continuous endomorphisms of $C^\infty(G/H)$	49

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Symbols	**Definitions**	**Pages**
$\mathrm{Diff}_G(G/H)$	the subalgebra of G-invariant differential operators on G/K	49
G^0	the component contained identity	58
$[G : G^0]$	the index of subgroup of G^0	58
${}^0H$	$\bigcap_{X \in \mathrm{Hom}(H, \mathbb{R}_+^\times)} \ker(X)$	59
$C = \ker(\mathrm{Ad})$	the centralizer of $\mathfrak{g}$ in G	59
θ	the Cartan involution	60
G^θ	the set of fixed points of G	60
$\mathfrak{g} = \mathfrak{k} \oplus \mathfrak{s}$	the Cartan decomposition of $\mathfrak{g}$	60
$G = K \exp \mathfrak{s}$	the Cartan decomposition of G	60
B	the Cartan-Killing form	61
(X, Y)	$B_\theta(X, Y) = -B(X, \theta Y)$	61
$\|X\|^2$	$B_\theta(X, X)$	61
$\mathfrak{a}$	a maximal abelian subspaces of $\mathfrak{s}$	61
$\mathfrak{m}_1$	the centralizer of $\mathfrak{a}$ in $\mathfrak{g}$	62
$\mathfrak{m}$	$\mathfrak{m}_1 \cap \mathfrak{k}$	62
M_1 $(\tilde{M}_1)$	the centralizer (normalizer) of $\mathfrak{a}$ in G	62
M	$M_1 \cap K$: the centralizer of $\mathfrak{a}$ in K	62
$\tilde{M}$	$\tilde{M}_1 \cap K$: the normalizer of $\mathfrak{a}$ in K	62
$\mathfrak{g}_\lambda$	$\{X \in \mathfrak{g} : [H, X] = \lambda(H)X, \forall H \in \mathfrak{a}\}$ for any $\lambda \in \mathfrak{a}^*$	62
$\Delta = \Delta(\mathfrak{g}, \mathfrak{a})$	the set of all roots of $(\mathfrak{g}, \mathfrak{a})$	62
Δ^+	the set of all positive roots	62
S	$\{\alpha_i : 1 \leq i \leq r\}$, the simple system	62
$\mathfrak{n}$	$\sum_{\lambda \in \Delta^+} \mathfrak{g}_\lambda$	62
$\mathfrak{k} \oplus \mathfrak{a} \oplus \mathfrak{n}$	(resp. $G = KAN$) the Iwasawa decomposition of $\mathfrak{g}$ (resp. G)	63
$\log$	$A \to \mathfrak{a}$	63
s_λ	the reflection associated with λ	63
σ_λ	$\{\mu \in \mathfrak{a}_c^* : \langle \mu, \lambda \rangle = 0\}$	63
$\mathfrak{w}$	the Weyl group of $(\mathfrak{g}, \mathfrak{a})$	64

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Symbols	Definitions	Pages
$W=\tilde{M}/M$	the Weyl group of (G,A)	64
$\mathfrak{a}^+$	the positive Weyl chamber of $\mathfrak{a}$	64
A^+	$\exp(\mathfrak{a}^+)$	65
$\mathfrak{h}_c\subset\mathfrak{g}_c$	a CSA(Cartan subalgebra)	66
Q	a positive system of roots of $(\mathfrak{g}_c,\mathfrak{h}_c)$	66
$\mathfrak{g}_{c,\alpha}$	the root subspaces	66
$\mathfrak{b}_c$	$\mathfrak{h}_c+\sum_{\lambda\in Q}\mathfrak{g}_{c,\alpha}$, a Borel subalgebra of $\mathfrak{g}_c$	66
$S\subset Q$	the set of simple roots	66
$F\subset S$	finite subset	66
Q_F	positivelinear combinations of elements of F	66
$\mathfrak{q}_{c,F}$	$\mathfrak{b}_c+\sum_{\alpha\in -Q_F}\mathfrak{g}_{c,\alpha}$, a subalgebra of $\mathfrak{g}_c$ containing $\mathfrak{b}_c$	66
$\mathfrak{h}_{\mathfrak{m}}$	a CSA of $\mathfrak{m}$	66
$\mathfrak{h}:=\mathfrak{h}_{\mathfrak{m}}\oplus\mathfrak{a}$	a CSA of $\mathfrak{m}\oplus\mathfrak{a}$	66
$Q_{\mathfrak{m}}$	a positive system of roots for pair $(\mathfrak{m}_c,(\mathfrak{h}\cap\mathfrak{k})_c)$	66
Q^+	the set of all roots of $(\mathfrak{g}_c,\mathfrak{a}_c)$ whose restrictions to $\mathfrak{a}$ lie in $\Delta^+(\mathfrak{g},\mathfrak{a})$	66
Q	$Q_{\mathfrak{m}}\cup Q^+$	66
$\mathfrak{n}_c$	$\sum_{\alpha\in Q^+}\mathfrak{g}_{c,\alpha}$	66
$\mathfrak{m}+\mathfrak{a}+\mathfrak{n}$	a minimal parabolic subalgebra of $\mathfrak{g}$	66
Δ_F^+	posistive linear combinations of elements of F	66
$\mathfrak{p}_F$	$\mathfrak{p}+\sum_{\alpha\in-\Delta_F^+}\mathfrak{g}_\lambda$ the standard psalgebras with respect to $\mathfrak{p}$ or S	66
$\mathfrak{p}_0$	a psalgebra of $\mathfrak{g}$ (of course contains $\mathfrak{p}$)	67
$\mathfrak{n}_0$	the nilradical(nilpotent radical) of $\mathfrak{p}_0\cap[\mathfrak{g},\mathfrak{g}]$	67
$\mathfrak{m}_{10}$	$\mathfrak{p}_0\cap\theta(\mathfrak{p}_0)$	67
$\mathfrak{p}_0=\mathfrak{m}_{10}\oplus\mathfrak{n}_0$	the Levi decomposition of $\mathfrak{p}_0$	67
$\mathfrak{a}_0$	center$(\mathfrak{m}_{10})\cap\mathfrak{s}$	67
$\mathfrak{m}_0$	$\mathfrak{m}_{10}\ominus\mathfrak{a}_0$	67
$\mathfrak{m}_0\oplus\mathfrak{a}_0\oplus\mathfrak{n}_0$	the Langlands decomposition of $\mathfrak{p}_0$	67
$\mathfrak{a}_F$	$\{H\in\mathfrak{a}:\alpha(H)=0,\ \forall\alpha\in F\}$	67

(Continued)

Symbols	Definitions	Pages
Δ_F	$\Delta_F^+ \cup -\Delta_F^+$	67
$\mathfrak{m}_{1F}$	$\sum_{\lambda\in\Delta_F} \mathfrak{g}_\lambda \oplus \mathfrak{a} \oplus \mathfrak{m}$	67
$\mathfrak{n}_F$	$\sum_{\lambda\in\Delta^+\setminus\Delta_F^+} \mathfrak{g}_\lambda$, the nilradical of $\mathfrak{p}_F \cap [\mathfrak{g},\mathfrak{g}]$	67
M_{10}	the centralizer in G of $\mathfrak{a}_0$ (the reductive component of P_0)	68
M_0	${}^0(M_{10})$	68
$K_{M_{10}}$	$K \cap M_{10} = K \cap M_{10}$	68
G	$KP_0 = KM_0A_0N_0$	68
$\theta_{M_{10}}$	$\theta\vert_{M_{10}}$	68
$B_{M_{10}}$	$B\vert_{(\mathfrak{m}_{10})_c\times(\mathfrak{m}_{10})_c}$	68
$M_{0\mathfrak{s}}$	$\exp(\mathfrak{m}_0 \cap \mathfrak{s})$	69
$\Delta(\mathfrak{g},\mathfrak{a}_0)$	$(=\Delta(P_0))$the set of all $\lambda \neq 0$ in $\mathfrak{a}_0^*$ for which $\mathfrak{g}_\lambda \neq 0$	70
$\mathfrak{a}_0^+$	a chamber of $\mathfrak{a}_0$	70
$\Delta(P_0 : \mathfrak{a}_0^+)$	the set of roots in $\Delta(P_0)$ which are > 0 in $\mathfrak{a}_0^+$	70
$\rho(H)$	$\frac{1}{2}\operatorname{tr}(\operatorname{ad} H)_\mathfrak{n} = \frac{1}{2}\sum_{\alpha\in\Delta^+} n(\alpha)\alpha$	71
$\rho_{P_0}(H)$	$\frac{1}{2}\operatorname{tr}(\operatorname{ad} H)_{\mathfrak{n}_0},\ H \in \mathfrak{a}_0$	71
d_P	$(MA \to \mathbb{R}_+^\times) : m_1 \mapsto \lvert\det \operatorname{Ad}(m_1)_\mathfrak{n}\rvert^{1/2}$	71
d_{P_0}	$(M_0A_0 \to \mathbb{R}_+^\times) : m_1 \mapsto \lvert\det \operatorname{Ad}(m_1)_{\mathfrak{n}_0}\rvert^{1/2}$	72
$J(a)$	$\prod_{\alpha\in\Delta^+}(\mathrm{e}^{\alpha(\log a)} - e^{-\alpha(\log a)})^{n(\alpha)}$ for all $a \in A$	73
G^*	G/A_0	74
a^{x^*}	xax^{-1} where $a \in A_0$ and $x \in G$	74
G/Q	flag manifolds of G where Q is a psgrp	76
G/P	the flag manifold of G if $P = MAN$ and $G = KAN$	76
$\operatorname{rk}(G)$	$\operatorname{rk}(G/K)$: the real rank of G	77
X	G/P	78
$\pi(x)$	$xP(x \in G)$	78
i	$(X \to K/M) : x \mapsto \overline{k(x)}$ the natural identification	78
x_s	a representative of $s \in \tilde{M}$	78
$\bigcup_{x\in\mathfrak{w}} Nx_sP$	the Bruhat decomposition of G	78

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Symbols	Definitions	Pages
NsP	Nx_sP	78
$\pi(x_s)$	$\underline{s}(s \in \mathfrak{w})$	78
$\bigcup_{s\in\mathfrak{w}} N\underline{s}$	the Bruhat decomposition of X	78
Δ_s^+	$\{\alpha \in \Delta^+ : s^{-1}\alpha \in \Delta^+\}$	78
${}_s\Delta^+$	$\{\alpha \in \Delta^+ : s^{-1}\alpha \in -\Delta^+\}$	78
$\mathfrak{n}_s$	$\sum_{\alpha\in\Delta_s^+} \mathfrak{g}_\alpha$	78
${}_s\,\mathfrak{n}$	$\sum_{\alpha\in{}_s\Delta^+} \mathfrak{g}_\alpha$	78
N_s	$\exp(\mathfrak{n}_s)$	79
${}_sN$	$\exp({}_s\mathfrak{n})$	79
$\mathfrak{w}_F$	the subgroup of $\mathfrak{w}$ generated by the reflexion s_α for all $\alpha \in F$	80
Ω_1	$\pi(\bar{N})$	80
Ω_s	$x_s \cdot \pi(\bar{N})$	80
$\gamma_s(\bar{n})$	$\pi(x_s\bar{n})$	80
$m(s)$	$x_s^{-1}mx_s$	80
$\beta_s(X)$	$\pi(x_s \cdot \exp X)$	81
$a(x : k)$	$a(xk)$	81
$H(x : k)$	$H(xk)$	81
L	real Lie group with its Lie algebra $\mathfrak{l}$	84
$W \subset L$	open set	84
$\mathrm{Diff}(W)$	the algebra of differential operators on W	84
$D_x \in U(\mathfrak{l}_c)$	the local expression of D at $x \in W$	84
$R_a(f)$	fa for all $a \in U(\mathfrak{l}_c)$	85
λ	$(S(\mathfrak{l}_c) \to U(\mathfrak{l}_c)) : X_1 \dots X_r \mapsto \frac{1}{r!}\sum_\sigma X_{\sigma(1)} \dots X_{\sigma(r)}$	86
I	$I(\mathfrak{g}_c) = S(\mathfrak{g}_c)^G$	86
$I_\mathfrak{w} = I_\mathfrak{w}(\mathfrak{h}_c)$	the algebra of $\mathfrak{w}$-invariant in $S(\mathfrak{h}_c)$	87
$\beta_\mathfrak{n}$	$U(\mathfrak{g}_c) \to U(\mathfrak{a}_c)$: the projection	91
$\gamma_\mathfrak{n}$	$(= \gamma = \gamma_{\mathfrak{g}\,/\,\mathfrak{a}}) : \mathfrak{Q} \to U(\mathfrak{a}_c)$ such that $\gamma_\mathfrak{n}(a)(\lambda) = \beta(a)(\lambda - \rho)$	92
$\mathfrak{k}_0$	$\mathfrak{k} \cap \mathfrak{m}_{10}$	95

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Symbols	Definitions	Pages
$\mathfrak{s}_{10}$	$\mathfrak{s} \cap \mathfrak{m}_{10}$	95
$\mathfrak{s}_0$	$\mathfrak{s} \cap \mathfrak{m}_0$	95
$^*\,\mathfrak{a}$	$\mathfrak{a} \cap \mathfrak{m}_0$	96
$^*\,\mathfrak{n}$	$\mathfrak{n} \cap \mathfrak{m}_0$	96
$\mathscr{F}$	$\mathfrak{a}_{\mathbb{C}}^*$	101
$\mathscr{F}_R$	$\mathfrak{a}^*$	101
$\mathscr{F}_I$	$(-1)^{1/2}\,\mathscr{F}_R$	101
$\xi_\beta(a)$	$\mathrm{e}^{\beta \log a}(\beta \in \mathscr{F}, a \in A)$ the quasicharacter of A	101
σ	a f.d. unitary reps. of the compact group M in a Hilbert space $W(\sigma)$	101
$(\sigma, \lambda)(man)$	$\sigma(m)\xi_{\lambda+\rho}(a)$: the representation of $P = MAN$	101
$\mathfrak{B}(\sigma, \lambda)$	the space of Borel functions $f(G \to W(\sigma))$	102
f_K	$f\|_K$	102
$\mathfrak{B}(\sigma)$	the space of Borel functions $g(K \to W(\sigma))$	102
$\mathfrak{H}(\sigma)$	the Hilbert space of functions $g \in \mathfrak{B}(\sigma)$	102
$\mathfrak{H}(\sigma, \lambda)$	the Hilbert space of functions $f \in \mathfrak{B}(\sigma, \lambda)$	102
$\pi_{\sigma,\lambda}$	$(G \to B(\mathfrak{H}(\sigma))) : (\pi_{\sigma,\lambda}(x)g)(k) = \mathrm{e}^{-(\lambda+\rho)(H(x^{-1}k))} g(x^{-1}[k])$	102
π_λ	$\pi_{1,\lambda}$ where $1 =$ trivial representation of M	103
φ_λ	the matrix coefficient of π_λ	103
$\varphi_\lambda(x)$	$\int_K \mathrm{e}^{-(\lambda+\rho)(H(x^{-1}k))} dk$	104
$(\mathscr{H}\,f)(\lambda)$	the Harish-Chandra transform of $f \in C_c(G//K)$	106
$(\mathscr{A}\,f)(a)$	the Abel transform of $f \in C_c(G//K)$	107
$\hat{g}(\lambda)$	the Fourier transform of $g \in C_c(A)$	107
$\mathscr{P}(\mathscr{F})$	the space of all entire functions on $\mathscr{F}$ of Paley-Weiner type	107
$\mathscr{P}(\mathscr{F})^{\mathfrak{w}}$	the subspace of $\mathfrak{w}$-invariant elements of $\mathscr{P}(\mathscr{F})$	107
	$\begin{tikzcd} C_c^\infty(G//K) \arrow[r, hook, "\mathscr{H}"] \arrow[d, "\mathscr{A}"] & \mathscr{P}(\mathscr{F})^{\mathfrak{w}} \\ C_c^\infty(A)^{\mathfrak{w}} \arrow[ur, "\wedge"] & \end{tikzcd}$	107
$V(\pi_\Lambda)_{\mathfrak{d}}$	the corresponding isotypical space for any $\mathfrak{d} \in \mathscr{E}(K)$	111

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Symbols	Definitions	Pages
$\Lambda \in \mathfrak{h}_c^*$		111
$\mathfrak{u} = \mathfrak{k} + i\,\mathfrak{s}$	a compact form of $\mathfrak{g}_c$	111
$\mathscr{D}$	the set of all $\Lambda \in \mathfrak{h}_c^*$ which are dominant(relative to Q) and integral	112
$\mathscr{D}_1$	the set of all $\Lambda \in \mathfrak{h}_c^*$ for which π_Λ are of class 1	112
L	the semilattice generated by $S \subset \Delta^+$	112
$Q_\alpha(X)$	$\frac{4\langle X,\theta X\rangle}{\langle \bar{H}_\alpha,\theta\bar{X}_\alpha\rangle} = \\|\alpha\\|^2 \\|X\\|^2$	117
H_1	the restriction of H to $\bar{N}_1$	117
$^+\,\mathfrak{a}$	$\{H \in \mathfrak{a} : \langle H, H'\rangle \geq 0 \text{ for all } H' \in \mathfrak{a}^+\}$	119
a^*	$(a^{s_0})^{-1} = u_0 a^{-1} u_0^{-1}$	120
$\mathrm{Co}(H, \mathfrak{w})$	the convex hull of the elements H^s	121
$\tilde{D}$	the radial component of differential operator D	124
$\tilde{\varphi}_\lambda$	the restriction of φ_λ on A^+	124
$\tilde{q}/\tilde{\varphi}_\lambda = \gamma(q)(\lambda)\tilde{\varphi}_\lambda$	the differential equations where $q \in \mathfrak{Q}, \gamma = \gamma_{\mathfrak{g}/\mathfrak{a}}$	124
$\Phi(\lambda : \cdot)$	$= \mathrm{e}^{\lambda-\rho} + \sum_{\mu\in L_+} a_\mu(\lambda)\mathrm{e}^{\lambda-\rho-\mu}$: the solutions of the above	124
ψ	$(K \times A \times K \to G) : (k_1, h, k_2) \mapsto k_1 h k_2$	125
G^+	KA^+K	125
A'	$= \bigcup_{s\in\mathfrak{w}} sA^+$: the regular subset of A	125
b	$(U(\mathfrak{g}_c) \to U(\mathfrak{a}_{\mathbb{C}})) : g \mapsto b(g)$	127
ξ_λ	$\mathrm{e}^{\lambda\circ\log}$	128
f_α	$(\xi_\alpha - \xi_{-\alpha})^{-1}$	128
g_α	$\xi_{-\alpha}(\xi_\alpha - \xi_{-\alpha})^{-1}$	128
$\mathscr{R}_0$	the algebra with unit generated over $\mathbb{C}$ by the f_α and $g_\alpha(\alpha > 0)$	128
$\mathscr{R}_{0,d}$	the span of monomials in these generators of degree d	128
$\mathscr{R}_0^+$	$\sum_{d\geq 1} \mathscr{R}_{0,d}$	128
$\mathscr{R}_0^{(d)}$	$\sum_{1\leq e\leq d} \mathscr{R}_{0,e}$	128
$\delta'(g)$	$b(g) + \sum_{1\leq \imath\leq n} \psi_i u_i$	129
χ	$\mathfrak{Q} \to \mathbb{C}$	130

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Symbols	Definitions	Pages
$A(U:\chi)$	$\{g \in C^\infty(U) : \delta'(q)f = \chi(q)f \text{ for all } q \in \mathfrak{Q}\}$	130
ω	Casimir operator	132
$J(h)$	$\prod_{\alpha>0}(\mathrm{e}^{\alpha(\log h)} - \mathrm{e}^{-\alpha(\log h)})^{n(\alpha)}$	133
$g_1(t)$	$\mathrm{e}^{-2t}(1-\mathrm{e}^{-2t})^{-1}$	135
$g_2(t)$	$\mathrm{e}^{-4t}(1-\mathrm{e}^{-4t})^{-1}$	135
$\beta(q)$	$\mathrm{e}^{-\rho} \circ \gamma(q) \circ \mathrm{e}^{\rho}$	
$\psi(\lambda:t)$	$\mathrm{e}^{t\rho}\varphi_\lambda(\exp tH_0),\ t \in \mathbb{R}$	137
$\psi_\lambda(h)$	$\mathrm{e}^{\rho(\log h)}\varphi_\lambda(h), h \in A^+$	139
L	$\left\{\sum_{1\le i\le r} m_i\alpha_i : m_1, \cdots, m_r \text{ integers} \ge 0\right\}$	137
L^+	$L \setminus \{0\}$	137
$\mu \prec \mu'$	$\mu' - \mu \in L^+$	137
$m(\mu)$	$m_1 + \cdots + m_r, \mu = m_1\alpha_1 + \cdots + m_r\alpha_r$	137
b	a complex-valued function on L	137
$f_b(H)$	$\sum_{\mu\in L} b(\mu)\mathrm{e}^{-\mu(H)},\ H_R \in \mathfrak{a}^+$	140
$\mathscr{R}_{00}$	the algebrta of all functions f_b	140
$\mathscr{R}_{00}^+$	the ideal in $\mathscr{R}_{00}$ of all functions with $b(0) = 0$	140
$\tilde{f}(h)$	$f(\log h),\ h \in A^+$	140
$\widetilde{\mathscr{R}}_{00}^+$	coressponding function in $\mathscr{R}_{00}^+$ defined on A^+	140
$a_\mu(\lambda)$	the rational functions of λ	141
$\xi_\nu(h)$	$\mathrm{e}^{\nu(\log h)}$	141
σ_μ	$\left\{\lambda \in \mathscr{F} : \langle\mu,\lambda\rangle = \frac{1}{2}\langle\mu,\mu\rangle\right\},\ \mu \in L^+$	141
$\mathscr{F}^\vee$	$\mathscr{F} \setminus \bigcup_{\mu\in L^+}\sigma_\mu$	142
$\mathscr{F}_\eta$	$\{\lambda \in \mathscr{F} : \langle\lambda_{\mathbb{R}}, \alpha_i\rangle < \eta, 1 \le i \le r\} \subset \mathscr{F}^\vee$	142
$\mathscr{F}_I(\varepsilon)$	$\{\lambda \in \mathscr{F} : \lVert\lambda_R\rVert \le \varepsilon\} \subset \mathscr{F}^\vee$	142
$\mathscr{F}_\mu^\vee$	$\mathscr{F} \setminus \bigcup_{\nu\in L^+, \nu\preceq\mu}\sigma_\nu$	142
$\mathscr{D}_{\mathfrak{a}}$		146
$\mathscr{D}_\mu$		146
${}^0\,\mathfrak{a}$	$\mathfrak{a} \cap \text{center}(\mathfrak{a})$	149

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Symbols	**Definitions**	**Pages**
$\tau_\nu(s,t)$	$\{\lambda \in \mathfrak{a}_{\mathbb{C}}^* : s\lambda - t\lambda = \nu\}$	150
${}^*\mathscr{F}$	$\mathscr{F} \setminus \bigcup_{s\in\mathfrak{w},\mu\in L^+} s\sigma_\mu \cup \bigcup_{s,t\in\mathfrak{w},\nu\in L^+} \tau_\nu(s,t)$	150
$\mathfrak{w}_\lambda$	the stabilizer of λ in $\mathfrak{w}$	150
$c_s(\lambda)$	$\mathbf{c}(s\lambda)$	152
$\Psi(\lambda : h)$	$J(h)^{1/2}\Phi(\lambda : h)$	154
$c_\mu(\lambda)$	is of at most polynomial growth in μ	154
λ_R	the components in $\mathscr{F}_R$ for $\lambda \in \mathscr{F}$	158
λ_I	the components in $\mathscr{F}_I$ for $\lambda \in \mathscr{F}$	158
$\mathscr{F}_R^+$	the open chamber of elements $\nu \in \mathfrak{a}^*$ such that $H_\nu \in \mathfrak{a}^+$	158
$\beta(\log a)$	$\min_{1\le i\le r} \alpha_i(\log a)$ for $a \in A^+$	163
$\pi(\lambda)$	$\prod_{\alpha\in\Delta^{++}} \langle\lambda,\alpha\rangle$	165
$\mathbf{b}$	$\pi \cdot \mathbf{c}$	165
$\mathscr{F}_{R,\varepsilon}$	$C_0(\varepsilon\rho : \mathfrak{w})$: the convex hull of the points $\varepsilon s\rho(\varepsilon > 0, s \in \mathfrak{w})$	166
$\alpha_i^\vee$		
σ	$(G \to \mathbb{R}) : x \mapsto d(K, Kx)$ where $d(\cdot,\cdot)$ is the geodesic distance on S	167
$\hat{T}(g) = T(\hat{g})$	the Fourier transform of tempered distribution T on A where $g \in \mathscr{S}(\mathscr{F}_I)$	172
$\mathfrak{g}^{(\alpha)}$	$\mathfrak{m} \oplus \mathfrak{a} \oplus \mathfrak{g}_\alpha \oplus \mathfrak{g}_{2\alpha} \oplus \mathfrak{g}_{-\alpha} \oplus \mathfrak{g}_{-2\alpha}$	174
$\mathfrak{s}^{(\alpha)}$	$\mathfrak{g}^{(\alpha)} \cap \mathfrak{s}$	174
$G^{(\alpha)}$	Lie group of $\mathfrak{g}^{(\alpha)}$	174
$\mathbf{c}^{(\alpha)}$	$\mathbf{c}$-fucntion of $G^{(\alpha)}$	174
R	a set of roots	175
$\mathfrak{g}_{-R}$	$\sum_{\alpha\in -R} \mathfrak{g}_\alpha$	175
$\bar{\mathfrak{n}}_{-R}$	$\sum_{\alpha\in -R\cap -\Delta^+} \mathfrak{g}_\alpha$	175
$\mathfrak{n}_{-R}$	$\sum_{\alpha\in -R\cap \Delta^+} \mathfrak{g}_\alpha$	175
$J_R(\lambda)$	$\int_{\bar{N}_{-R}} \mathrm{e}^{-(\lambda+\rho)(H(\bar{n}))} d\bar{N}_{-R}$	175
Ω	$\left\{\lambda \in \mathscr{F} : \frac{\langle\lambda_R,\alpha\rangle}{\langle\alpha,\alpha\rangle} > -\min(a, \frac{1}{2}n(\alpha)) \text{ for all } \alpha \in \Delta^{++}\right\}$	182
Ω_δ	$\left\{\lambda \in \mathscr{F} : \frac{\langle\lambda_R,\alpha\rangle}{\langle\alpha,\alpha\rangle} > -\delta \text{ for all } \alpha \in \Delta^{++}\right\}$	183
$\mathscr{D}_\lambda$	$\left\{f \in C^\infty(G) : f(xan) = \mathrm{e}^{-(\lambda+\rho)(\log a)} f(x) \text{ for all } x \in G, a \in A, n \in N\right\}$	184

(Continued)

Symbols	Definitions	Pages
$\psi(\lambda : t)$	$\mathrm{e}^{t\rho_0}\varphi(\lambda : \exp tH_0)$	194
f	$2(pg_1 + 2qg_2)$	194
$\Psi(\lambda : t)$	$\begin{bmatrix} \psi(\lambda : t) \\ \frac{d}{dt}\psi(\lambda : t) \end{bmatrix}$	194
$\Gamma(\lambda)$	$\begin{bmatrix} 0 & 1 \\ \lambda^2 & 0 \end{bmatrix}$	194
$M(t)$	$\begin{bmatrix} 0 & 0 \\ \rho_0 f & f \end{bmatrix}$	194
$\Theta(\lambda : t)$	$= \Theta(-\lambda : t) = \exp(-t\Gamma(\lambda))\Psi(\lambda : t)$	195
$M(\lambda; t)$	$\exp(-t\Gamma(\lambda))M(t)\exp(t\Gamma(\lambda))$	195
$\Theta(\lambda)$	$\lim_{t\to\infty}\Theta(\lambda : t)$	196
$E(\lambda)$	$\begin{bmatrix} \frac{1}{2} & \frac{1}{2\lambda} \\ \frac{\lambda}{2} & \frac{1}{2} \end{bmatrix}$	196
$I = I_{\mathfrak{w}}(\mathfrak{a}_c)$	the subalgebra of $\mathfrak{w}$-invariant elements of $U(\mathfrak{a}_c)$	198
$u_1, u_2, \ldots, u_w$	homogeneous and such that $U(\mathfrak{a}_c) = \bigoplus_{1\le i\le w} Iu_i$	198
$p_{u:ij} \in I$	for given $u \in U(\mathfrak{a}_c)$, $uu_j = \sum_{1\le i\le w} p_{u,ij}u_i,\ i \le j \le w$	198
$B(u)$	$(p_{u:ij})_{1\le i,j\le w}$	198
$\Gamma(u)$	$B(u)^t$ where $t =$ transpose	198
$\Gamma(\lambda : u)$	$\Gamma(u)(\lambda) = (p_{u:ij}(\lambda))_{1\le i,j\le w}$	198
$\Phi_0(\lambda : h)$	$\begin{bmatrix} \varphi(\lambda : h_j; u_1 \circ \mathrm{e}^{\rho}) \\ \vdots \\ \varphi(\lambda : h_j; u_w \circ \mathrm{e}^{\rho}) \end{bmatrix}$	198
$\delta'(q)$	the radial component of $q \in \mathfrak{Q}$ on A^+	198
$\delta(q)$	$\mathrm{e}^{\rho} \circ \delta'(q) \circ \mathrm{e}^{-\rho}$	198
$g_{u:ijr} \in \mathscr{R}^+$		198
$q_{u:ijr} \in \mathfrak{Q}$		198
$\tau(H)$	$\min_{\alpha\in S}\alpha(H) \quad (H \in \mathfrak{a})$	199
$(E_u(\lambda : h))_{jk}$	$\sum_{1\le r\le m}\gamma(q_{u:kjr})(\lambda)g_{u:kjr}(h)$	199

(Continued)

Symbols	**Definitions**	**Pages**
$\Xi = \varphi_0$	the basic spherical function	200
S_η	$\{h \in A^+ : \lvert\tau(\log h)\rvert \geq \eta \lVert\log h\rVert\}$	200
$H_0 \in \mathrm{Cl}(\mathfrak{a}^+)$	$H_0 \notin Z_{\mathfrak{g}}$	200
G_{H_0}	the centralizer of H_0 in G	200
$\mathfrak{Q}_{H_0}$	the analogue of $\mathfrak{Q}$ for G_{H_0}	200
F	the set of simple roots vanishing at H_0	200
P_0	$M_{10}N_0 = M_0A_0N_0$: standard psgrp associated to F	200
Δ_0^+	the set of roots in Δ^+ vanishing at H_0	200
$\mathfrak{q}$	$\mathfrak{g} \ominus \mathfrak{m}_{10}$	200
$\mathfrak{q}_{\mathfrak{k}}$	$\mathfrak{q} \cap \mathfrak{k}$	200
$\mathfrak{q}_{\mathfrak{s}}$	$\mathfrak{q} \cap \mathfrak{s}$	200
K_0	$K \cap M_0 = K \cap M_{10}$: the maximal compact subgroup of M_{10}	201
M'_{10}	$\left\{m \in M_{10} : (\mathrm{Ad}\, m - \mathrm{Ad}(\theta(m)))_{\mathfrak{n}_0} \text{ is invertible}\right\}$	201
G'	$KM'_{10}K$	202
$\mathfrak{b}$	a linesr subspace of $\mathfrak{g}$	202
$U(\mathfrak{b})$	$U(\mathfrak{b}_c) = \lambda(S(\mathfrak{b}))$ where $S(\mathfrak{b}) = S(\mathfrak{b}_c)$ is the symmetric algebra over $\mathfrak{b}_c$	202
$S_d(\mathfrak{b})$	the homogeneous subspaces of $S(\mathfrak{g})$	202
$U_d(\mathfrak{b})$	$\lambda(S_d(\mathfrak{b}))$	203
$U^+(\mathfrak{b})$	$\bigoplus_{d\geq 1} U_d(\mathfrak{b})$	203
β_0	$U(\mathfrak{g}) \to U(\mathfrak{s}_{10})$ the projection	203
δ'_m	the projection of $D_m'^{-1}$ on $U(\mathfrak{s}_{10})$	204
$\mathfrak{Q}_0$	$U(\mathfrak{s}_{10})^{K_0}$	205
$\mathfrak{w}_0$	$\mathfrak{w}(\mathfrak{m}_{10}, \mathfrak{a})$	
$\varepsilon(m)$	$\lVert\mathrm{Ad}(m^{-1})_{\mathfrak{n}_0}\rVert$	208
$\varepsilon_0(a)$	$\exp\left(-\min_{\alpha\in\Delta^+\setminus\Delta_0^+} \alpha(\log a)\right),\ \forall a \in A$	209
M_{10}^+	$\{m \in M_{10} : \varepsilon_0(m) < 1\}$	209
$A_{H_0}^+$	$\left\{a \in \mathrm{Cl}(A^+) : \alpha(\log a) > 0, \forall\alpha \in \Delta^+\setminus\Delta_0^+\right\}$	209
$\mathfrak{H}$	$\bigoplus_{d\geq 0}(\mathfrak{H} \cap U_d(\mathfrak{a}))$	211

(Continued)

Symbols	Definitions	Pages
$\mathfrak{H}_{\mathfrak{w}_0}$	the subspace of $\mathfrak{w}_0$ invariant elements on $\mathfrak{H}$	211
$\dim \mathfrak{H}_{\mathfrak{w}_0}$	$[\mathfrak{w}, \mathfrak{w}_0] := k$	211
$\Gamma_0(v)_{ij}$	$B_0(\gamma_{\mathfrak{m}_{10}\,/\,\mathfrak{a}}(v))_{ji}$	211
$B_0(u)$		211
$\Phi_0(\lambda : m : v)$	$\Gamma_0(\lambda : v)\Phi_0(\lambda : m) + \Phi_0(\lambda : m : E_v)$	212
$\Phi_0(\lambda : m)$	$\begin{bmatrix} \varphi(\lambda : m; u_1 \circ \mathrm{e}^{\rho}) \\ \vdots \\ \varphi(\lambda : m; u_w \circ \mathrm{e}^{\rho}) \end{bmatrix}$	212
E_v	$\begin{bmatrix} \sum_{1\le p\le p_v} \psi_{v:1p}\mu_{v:1p},\ 0 \\ \vdots \\ \sum_{1\le p\le p_v} \psi_{v:jp}\mu_{v:jp},\ 0 \\ \vdots \\ \sum_{1\le p\le p_v} \psi_{v:kp}\mu_{v:kp},\ 0 \end{bmatrix}$	212
$\Gamma_0(\lambda : v) :$	$\Gamma_0(v)(\lambda) = (\gamma_{\mathfrak{g}\,/\,\mathfrak{a}}(q_{v:ij})(\lambda))_{1\le i,j\le k}$	212
$F_{\mathbb{R}}$	a real vector space of finite dimension	213
F	complexification of $F_{\mathbb{R}}$	213
W	a finite reflexion group on $F_{\mathbb{R}}$	214
P	the algebra of polynomials on F	214
$P_d(d \ge 0)$	the homogeneous components	214
$H \subset P$	is homogeneous if $H = \bigoplus_{d\ge 0}(H \cap P_d)$	214
$I = I_W$	the algebra of W-invariant elements of P	214
$\lambda_\sigma \in F_{\mathbb{R}}^* \subset F^*$	associated to $\sigma \in W$	214
W_0	arbitrary reflexion subgroup of W	214
W_0	arbitrary reflexion subgroup of W	214
w	$\|W\|$	214
π	$\prod_\sigma \lambda_\sigma$	214
I_0	I_{W_0}	214
π_0	$\prod_\sigma^0 \lambda_\sigma$	214

(Continued)

Symbols	Definitions	Pages
w_0	$\|W_0\|$	214
$e(\lambda)$	$(u_1(\lambda)\cdots u_w(\lambda))^T$	216
$e_s(\lambda)$	$e(s^{-1}\lambda)$	216
$E(\lambda)$:	$(e_{js}(\lambda))_{1\leq j\leq w, s\in W}$	216
$\mathrm{Det}(E)$	$c\pi^{(1/2)w}$	216
$P_H(T)$	$\sum_r m_r T^r$, Poincare series for H	216
$I^v ee$	$\{v \in: \langle u, v\rangle \in I,\ \forall\ u \in P\}$	218
ρ_0	$\frac{1}{2}\sum_{\alpha\in\Delta_0^+} m_\alpha \alpha$	223
$d_{P_0}(h)$	$\mathrm{e}^{(\rho-\rho_0)(\log h)}$ for all $h \in A$	223
$H_1, \cdots, H_p$	a specific basis of $\mathfrak{a}_0$	224
$\mathfrak{a}_0^+$	$\left\{H \in \mathfrak{a}_0^+ : \alpha_i(H) > 0, 1 \leq i \leq q\right\}$	224
$\tau_0(H)$	$\min_{1\leq i\leq q} \|\alpha_i(H)\|, H \in \mathfrak{a}_0$	224
$\mathbf{f}$	$(f_1, \ldots, f_k)^T$	225
$\mathbf{g}_i$	$(g_{i1}, \ldots, g_{ik})^T$	225
$\mathbf{\Gamma}$	$(\Gamma_1, \ldots, \Gamma_q)^T$	225
$\mathbf{g}$	$(\mathrm{g}_1, \ldots, \mathrm{g}_k)$	225
$\\|\mathbf{g}\\|_{b,s}$	$\max_{1\leq j\leq k} \\|\mathrm{g}_j\\|_{b,s}$	225
$\mathfrak{a}_0^+(\eta)$:	$\left\{H \in \mathfrak{a}_0^+ : \tau_0(H) > \eta \\|H\\|\right\}$ for any $\eta > 0$	230
$H \xrightarrow{P_0} \infty$	if for some $\eta > 0$, $H \in \mathfrak{a}_0^+(\eta)$ and $\\|H\\| \to \infty$	230
$\mathscr{F}_I(\kappa_0)$	$\{\lambda \in \mathscr{F} : \\|\lambda_R\\| < \kappa_0\}$ for some $\kappa_0 > 0$	230
$\Theta(\lambda : m)$	$\lim_{\mathfrak{a}_0^+\ni H\xrightarrow{P_0}\infty} \exp(-\Gamma_0(\lambda : H))\Phi_0(\lambda : m\exp H)$	230
$\Theta(\lambda : m; \mu)$	$\lim_{\mathfrak{a}_0^+\ni H\xrightarrow{P_0}\infty} \exp(-\Gamma_0(\lambda : H))\Phi_0(\lambda : m\exp H; \mu)$ where $\mu \in U(\mathfrak{m}_{10})$	230
$\Theta(\lambda : m; g)$	$\Gamma_0(\lambda : g)\Theta(\lambda : m)$	231
$\theta(\lambda : m)$	$\int_{K_0} \mathrm{e}^{(\lambda-\rho_0)(H(mk_0))} dk_0$	236
$\theta(\lambda : ma)$	$\mathrm{e}^{\lambda(\log a)}\theta(\lambda : m)$ for $m \in M, a \in A$ if H_0 is regular	236
$\psi(\lambda : m)$	$\Theta_1(\lambda : m)$ where $\Theta_j (1 \leq j \leq k)$ are the components of Θ	236
$\mathbf{c}_0$	the Harish-Chandra $\mathbf{c}$-function on M_{10}	236

(Continued)

Symbols	Definitions	Pages
$f_1 \sim f_2$	if $f_1(\exp tX) - f_2(\exp tX) \to 0$ as $t \to +\infty$	236
$\tau_0(H)$	$\min_{\alpha\in\Delta^+\setminus\Delta_0^+} \alpha(H),\ H \in \mathfrak{a}$	236
$S(\mathscr{F})$	the symmetric algebra over $\mathscr{F}$	237
$\gamma_0(b)$	$d_{P_0} \circ \beta_0(b) \circ d_{P_0}^{-1}$	241
$A^+(H_0 : \zeta)$:	$\{a \in \mathrm{Cl}(A^+) : \tau_0(\log a) > \zeta \,\|\log a\|\}$ for any $\zeta > 0$	242
$\mathscr{C}(G)$		253
$\mathscr{C}(G//K)$		253
$\mathscr{S}(A)$	the Schwartz space of the vector group A	264
$\varphi'_a(x)$	$\varphi'(a : x) = \int_{\mathscr{F}_I} a(\lambda)\varphi(\lambda : x)d\lambda$ for any $a \in L^1(\mathscr{F}_I)$	268
$\varphi_a(x)$	$\varphi(a : x) := \int_{\mathscr{F}_I} a(\lambda)\pi(\lambda)\varphi(\lambda : x)d\lambda$ for any $a \in \mathscr{S}(\mathscr{F}_I)$	269
$\varphi_a(x; b)$	$\varphi(a : x; b) := \int_{\mathscr{F}_I} a(\lambda)\pi(\lambda)\varphi(\lambda : x; b)d\lambda$ for any $a \in \mathscr{S}(\mathscr{F}_I)$ and $b \in U(\mathfrak{g})$	269
$\hat{a}(\lambda : y)$	$\hat{a}_y(\lambda) = \int_{L_I^*} a(\lambda : \nu)\mathrm{e}^{\langle y,\nu\rangle} d\nu$	270
$E(\lambda : h)$	$\|E(\lambda : h)\| \leq C(1 + \|\lambda\|)^{m_0}(1 + \sigma(h))^{m_0}\mathrm{e}^{-2\tau_0(\log h)}$	270
$E(\pi a : h)$	$\int_{\mathscr{F}_I} \pi(\lambda)a(\lambda)E(\lambda : h)d\lambda$	271
$A^+(H_0 : \zeta)$	$\{h \in \mathrm{Cl}(A^+) : \tau_0(\log h) > \zeta\sigma(h)\}$ where $H_0 \neq 0$	271
$\psi_a(x)$:	$\psi(a : x) = \int_{\mathscr{F}_I} a(\lambda)\varphi(\lambda : x) \left\|\mathbf{c}(\lambda)\right\|^{-2} d\lambda$	272
$\mathscr{J}$	$(\mathscr{S}(\mathscr{F}_I)^{\mathfrak{w}} \to \mathscr{C}(G//K)) : \mathscr{J}\ a\|\mathfrak{w}\|^{-1}\,\psi_{a^\vee}$	274
$a^\vee(\lambda)$	$a(-\lambda)(\lambda \in \mathscr{F}_I)$	274
$\theta^{(v)}(\lambda : x : h)$	$\sum_{s\in\mathfrak{w}} \mathbf{c}(s\lambda)v(s\lambda)\mathrm{e}^{(s\lambda-\rho)(H(x)+(s\lambda)(\log h))}$	279
$\theta^{(v)}(a : x : h)$	$\int_{\mathscr{F}_I} a(\lambda)\theta^{(v)}(\lambda : x : h)\,\mathbf{c}(\lambda^{-1})\,\mathbf{c}(-\lambda)^{-1}d\lambda$	279
$a^{(v)}(\lambda)$	$a(\lambda)\,\mathbf{c}(-\lambda)^{-1}v(\lambda)$	279
$\widehat{a^{(v)}}(h)$	$\int_{\mathscr{F}_I} \mathrm{e}^{\lambda(\log h)}a^{(v)}(\lambda)d\lambda$	279
$F(\bar{n} : h)$	$F(\bar{n}h),\ (\bar{n} \in \bar{N}, h \in A)$ for any function F on G	282
$A(r)$	$\{a \in A : \sigma(a) = \|\log a\| \leq r\}$ for any $r > 0$	288
$\mathscr{P}_r(\mathscr{F})$		288
$G(r)$	$\{x \in G : \sigma(x) \leq r\}$	289

Errata

Page$_{\text{line}}^{\text{line}}$	instead of	Read
67_{10}	$\mathfrak{m}_{1F} = \sum_{\lambda\in\Delta_F} \mathfrak{g}_\lambda$	$\mathfrak{m}_{1F} = \mathfrak{m} \oplus \mathfrak{a} \oplus \sum_{\lambda\in\Delta_F} \mathfrak{g}_\lambda$
95^{7}	$-2\sum_{1\le i\le a} \rho(H_i)$	$-2\sum_{1\le i\le a} \rho(H_i)H_i$
103_{10}	$\mathrm{e}^{(\lambda+\rho)(H(x^{-1}k))} f(x^{-1}[k])$	$\mathrm{e}^{(\lambda+\rho)(H(x^{-1}k))} g(x^{-1}[k])$
152^{10}	$\sum_{s\in\mathfrak{w}} \mathbf{c}_s(\lambda)(s\lambda : h)$	$\sum_{s\in\mathfrak{w}} \mathbf{c}_s(\lambda)\Phi(s\lambda : h)$
156^{1}	$\mathscr{F}_n$	$\mathscr{F}_\eta$
183^{13}	$1/2(n-r)$	$(1/2)(n-r)$
198_{10}	$\Phi_0(\lambda : h) = \begin{bmatrix} \varphi(\lambda : h_j; u_1 \circ \mathrm{e}^\rho) \\ \varphi(\lambda : h_j; u_w \circ \mathrm{e}^\rho) \end{bmatrix}$	$\Phi_0(\lambda : h) = \begin{bmatrix} \varphi(\lambda : h_j; u_1 \circ \mathrm{e}^\rho) \\ \vdots \\ \varphi(\lambda : h_j; u_w \circ \mathrm{e}^\rho) \end{bmatrix}$
200_{18}	next n^0	next section.
201^{10}	$K_0 = K_0 \cap M_0$	$K_0 = K \cap M_0$
204^{11}	(5.2.23)	(5.3.23)
212_7	$E_v = \begin{bmatrix} \sum_{1\le p\le p_v} \psi_{v:1p}\mu_{v:1p}, & 0 \\ \sum_{1\le p\le p_v} \psi_{v:jp}\mu_{v:jp}, & 0 \\ \sum_{1\le p\le p_v} \psi_{v:kp}\mu_{v:kp}, & 0 \end{bmatrix}$	$E_v = \begin{bmatrix} \sum_{1\le p\le p_v} \psi_{v:1p}\mu_{v:1p}, & 0 \\ \vdots & \\ \sum_{1\le p\le p_v} \psi_{v:jp}\mu_{v:jp}, & 0 \\ \vdots & \\ \sum_{1\le p\le p_v} \psi_{v:kp}\mu_{v:kp}, & 0 \end{bmatrix}$
243_{11}	$\varphi(\lambda :; b)$	$\varphi(\lambda : a; b)$
229_7	$-t_1T_1$	t_1T_1
227_3	$f(\mathbf{t})$	$\mathbf{f}(\mathbf{t})$
243_2	$s = s(b,\zeta) > 0$	$s = s(b,\zeta) \ge 0$