(7-2)

- $P \subset Q \Rightarrow \begin{cases} \Phi_P^Q := \Phi_{P \cap M_Q} = \{ \alpha \in \Phi_P \text{ occurring in } \mathfrak{m}_Q \} \\ \Phi_P^{Q+} := \Phi^+_{P\cap M_Q} = \{ \alpha \in \Phi_P^+ \\ \Delta_P^Q := \Delta_{P \cap M_Q} = \{ \alpha \in \Delta_P \end{cases}$ ← Lie(M_Q)

$\Rightarrow$ (i) $\Delta_P^Q \subset \mathfrak{a}_P^{Q*} \subset \mathfrak{a}_P^{*}$ basis

(ii) the projection of $(\alpha^\vee)_{\alpha\in\Delta_P^Q}$ onto $\mathfrak{a}_P^Q$ basis of $\mathfrak{a}_P^Q$

$\Updownarrow$ dual basis

$\Leftarrow$ (iii) $\{\varpi_\alpha^Q\}_{\alpha\in\Delta_P^Q} \subset \mathfrak{a}_P^{Q*}$ basis as well.

Acute Weyl chamber

$$\mathfrak{a}_P^{Q+} := \{ H \in \mathfrak{a}_P^Q : \langle \alpha, H \rangle > 0 \ \forall \alpha \in \Delta_P^Q \} \Rightarrow \tau_P^Q$$

Obtuse Weyl chamber

$$^+\mathfrak{a}_P^Q := \{ H \in \mathfrak{a}_P^Q : \langle \varpi_\alpha^Q, H \rangle > 0 \ \forall \alpha \in \Delta_P^Q \} \Rightarrow \hat{\tau}_P^Q$$

Lemma: $\mathfrak{a}_P^{Q+} \subset {}^+\mathfrak{a}_P^{Q}$.

Lemma (Langlands) $\forall P \subset R$ $\forall H \in \mathfrak{a}_P^R$

then

$$\sum_{Q : P \subset Q \subset R} (-1)^{\dim \mathfrak{a}_Q^R} \tau_P^Q([H]^Q) \hat{\tau}_Q^R([H]_Q) = \delta_P^R$$

$$\sum_{Q : P \subset Q \subset R} (-1)^{\dim \mathfrak{a}_P^Q} \hat{\tau}_P^Q([H]^Q) \tau_Q^R([H]_Q) = \delta_P^R$$

- Constant term: $f_P(g) = \int_{N_P(\mathbb{Q})\backslash N_P(\mathbb{A})} f(ng)\, dn$

$\forall T \in \mathfrak{a}_P$

- Arthur's truncation: $(\Lambda^T f)(g) = \hat{\sum_P} (-1)^{\dim(\mathfrak{a}_P)} \sum_{\delta \in P(\mathbb{Q})\backslash P(\mathbb{A})} f_P(\delta g) \cdot \hat{\tau}_P(H_P(\delta g) - T)$.

- Prop. $\forall$ nice system of functions $\{a(Q, \nu_Q')\}_{(Q,\nu_Q')\in\mathcal{B}}$ $\nu_Q' \in \mathcal{X}_r(A_Q')$. $\{b(Q,\nu_Q')\}_{(Q,\nu_Q')}$.

$$\begin{cases} a(Q,\nu_Q') = \sum_{P\in\mathcal{P},\ P\subset Q} \ \sum_{\nu_P' \in \mathcal{X}_r(A_P'),\ [\nu_P']_Q = \nu_Q'} \tau_P^Q([\nu_P']^Q) \cdot b(P,\nu_P') \\ b(Q,\nu_Q') = \sum_{P : P\subset Q} (-1)^{\dim(\mathfrak{a}_P^Q)} \sum_{\nu_P' \in \mathcal{X}_r(A_P'),\ [\nu_P']_Q = \nu_Q'} \hat{\tau}_P^Q([\nu_P']^Q)\, a(P,\nu_P') \end{cases}$$

$\Leftrightarrow$

Laumon - Rapoport.