V alg. grp on wh. G acts

$V^0 := \{ v \in V \mid G_v \text{ is open} \}$ is G-invt, smooth rep.

$A := \mathrm{Hom}_{\mathbb{Z}}\left(\frac{\mathbb{Z}[\mathbb{P}^1(\mathbb{Q})]^0}{\mathcal{D}}, \mathbb{C} \right)^0 \qquad (g \cdot f(x) = f(g^{-1}x))$

<u>Thm</u> $A^\Gamma \cong \mathrm{Hom}_{\Gamma_1}(\mathcal{D}, -)$

We should have (expect):

Thm(?) $f \in \mathrm{Hom}_{\Gamma_1}(\mathcal{D}, -)$ Hef. $\iff$ Gf $(\subseteq A^0)$ is G-irreducible.

In this picture you can show for example:

$$\mathrm{Hom}_{\mathbb{Z}}(\mathbb{Z}[\mathbb{P}^1(\mathbb{Q})], \mathbb{C})^0 \cong \mathrm{Ind}_B^G \mathbb{1}$$

(locally const $f : B \to \mathbb{C}$, $f(\Delta x) = f$ for open subgroup of G, $f(xb) = f(x)\chi(b)$ $\forall b \in B$, $g \cdot f(x) := f(g^{-1}x)$)

$G = SL(2,\mathbb{Z})\, B$: Iwasawa decomp. $\left(B = \begin{pmatrix} * & * \\ 0 & * \end{pmatrix} \right)$

$\cancel{\chi\begin{pmatrix} a & b \\ 0 & d \end{pmatrix} = \frac{d^2}{|ad|}}$ 1

(namely: $f \longmapsto$ "$\tilde{f}((s)) := f(g_s)$" $\quad \left(\begin{array}{c} g_s \in G \\ g_s \infty = s \end{array} \right)$)