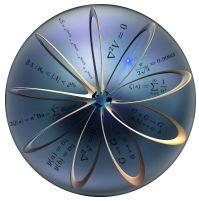

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induced representation

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Let G be a group, $H \subset G$ a subgroup, and V a representation of H, considered as a $\mathbb{Z}[H]$–module. The *induced representation* of ρ on G, denoted $\mathrm{Ind}_H^G(V)$, is the $\mathbb{Z}[G]$–module whose underlying vector space is the direct sum

$$\bigoplus_{\sigma \in G/H} \sigma V$$

of formal translates of V by left cosets σ in G/H, and whose multiplication operation is defined by choosing a set $\{g_\sigma\}_{\sigma \in G/H}$ of coset representatives and setting

$$g(\sigma v) := \tau(hv)$$

where τ is the unique left coset of G/H containing $g \cdot g_\sigma$ (i.e., such that $g \cdot g_\sigma = g_\tau \cdot h$ for some $h \in H$).

One easily verifies that the representation $\mathrm{Ind}_H^G(V)$ is independent of the choice of coset representatives $\{g_\sigma\}$.