

Double cosets and K -types for p -adic $\mathrm{GL}(3)$

Peter Campbell, University of Bristol

Let \mathfrak{o} be the ring of integers of a p -adic field F with prime ideal \mathfrak{p} , then $K = \mathrm{GL}(3, \mathfrak{o})$ is a maximal compact subgroup of the p -adic group $G = \mathrm{GL}(3, F)$. For each positive integer i define B_i to be the subgroup of matrices in K whose lower triangular entries lie in \mathfrak{p}^i . Onn, Prasad and Vaserstein have recently shown that whenever $i > 2$ the double coset space $B_i \backslash K / B_i$ depends on the residue field of F . We extend this to the general case $H_1 \backslash K / H_2$ where H_1 and H_2 are finite index subgroups of K containing the upper triangular matrices. Consequently, we are able to describe the decomposition of an unramified principal series representation of G on restriction to K . (Joint work with Monica Nevins).