

abstract

Special Number Theory Seminar
Topic:

Speaker:

Affiliation:

Date:

Time/Room:

In three very interesting and suggestive papers, H. Carayol introduced new aspects of complex geometry and Hodge theory into the study of non-classical automorphic representations -- in particular, those involving the totally degenerate limits of discrete series. This talk is based on two joint projects which aim to put Carayol's work into a more general context, while hewing to his over-riding theme of producing arithmetic structures on the cohomology of non-algebraic generalizations of Shimura varieties.

The first of these, with P. Griffiths and M. Green, studies Penrose transforms and cup products in the coherent cohomology of arithmetic-group quotients of certain classifying spaces for Hodge structures with given symmetries. These spaces, called Mumford-Tate domains, are homogeneous spaces for a reductive Lie group G . Our talk will focus mainly on the co-compact setting, and describe an extension of Carayol's main result on "virtual surjectivity" of cup products (for $G=\mathrm{SU}(2,1)$) to the case $G=\mathrm{Sp}_4$.

Time permitting, we shall briefly discuss cuspidal automorphic cohomology for non-co-compact quotients, and describe recent work with G. Pearlstein on their boundary components (with $G=\mathrm{G}_2$ as a key example).