

Construction of automorphic Galois representations

Michael Harris

`harris@math.jussieu.fr`

Centre de Mathématiques de Jussieu

Université Paris 7 Denis Diderot

C.P. 7012, 2, place Jussieu

F-75251 Paris Cedex 05 (France)

Abstract

Recent developments in the theory of the stable trace formula, especially the proof by Laumon and Ngo of the fundamental lemma for unitary groups, has revived Langlands' strategy for constructing Galois representations in the ℓ -adic cohomology of Shimura varieties. I will describe the kinds of representations one can expect to obtain in this way, or more generally as ℓ -adic limits of representations appearing in the cohomology of Shimura varieties attached to unitary groups. I will also report on the current state of the collective project of the Paris automorphic forms seminar to carry out the construction following the prescription outlined by Langlands thirty years ago.