
The early Langlands Program and Number Theory
Les débuts du programme Langlands et la théorie des nombres
(Org: **Julia Mueller** (Fordham University))

MATTHEW EMERTON, University of Chicago

The Langlands program: past, present, and future

In this talk I will discuss the functoriality and reciprocity conjectures of Langlands, which are the central focus of the Langlands program. I will begin with a historical overview of the theory of reciprocity laws in number theory, and then explain Langlands's very general reciprocity conjecture. This conjecture itself suggests another conjecture, purely within the theory of automorphic forms: the functoriality conjecture. (The historical order of the discovery of these conjectures was in the opposite order, with the functoriality conjecture being formulated first, in Langlands' famous letter to Weil.) In fact, as Langlands already observed, functoriality, formulated in a suitably broad fashion, can to a certain extent incorporate reciprocity within its framework. In any case, the two problems are closely related. I will close the talk by describing some examples of recent progress (by various authors) on both conjectures.

FREYDOON SHAHIDI, Purdue University

Langlands' Automorphic L-functions and Functoriality Principle

This expository talk is an appreciation of some of the Langlands's early work which may be considered as the starting point of his program. I will discuss how his work on the Eisenstein series and his computations of their constant terms led him to define a number of important notions within his program: L-groups, Frobenius-Hecke conjugacy classes, and consequently L-functions, an object which he had been searching for quite sometime unsuccessfully, before he did these calculations. These objects, discovered in the second half of 1966, also played an important role in his famous 1967 letter to Andre Weil. The same ingredients were essential in the formulation of his Functoriality Principle which we will report on during this talk as well.