

Speaker: Jeanine Van Order

Title: Integral presentations of $GL(n)$ -automorphic L-functions over CM fields and applications

Abstract: Let $n \geq 2$ be an integer, and let π be an irreducible cuspidal automorphic representation of $GL(n)$ over the rationals (or more generally any totally real number field F). Let K be an imaginary quadratic field (or more generally any totally imaginary quadratic extension of F), and let π_K denote the quadratic base change of π to $GL_n(A_K)$. Motivated by various arithmetic applications such as the conjectures of Birch-Swinnerton-Dyer and Deligne, I will describe a new approach to studying average central values of the twisted base change L-function $L(s, \pi_K \otimes \chi)$, with χ ranging over families of ring class Hecke characters of K . The key point is to realize the averages as the constant terms of certain Eisenstein series. This identification can be used to give an automorphic interpretation of the so-called Galois averages studied in Iwasawa theory, and more concretely to derive some relevant nonvanishing estimates. For instance, in the special case where π is cohomological, it is possible to generalize a well-known theorem of David Rohrlich using recent progress towards Deligne's rationality conjecture for automorphic motives. If time permits, then I will also explain some other arithmetic applications.