Stanford Department of Mathematics Colloquium (special date, special room!)

INTEGRAL ZETA VALUES AND COUNTING REPRESENTATIONS

BENEDICT GROSS
Harvard University

Abstract

Let $\zeta^*(s) = (1 - 2^{1-s})\zeta(s)$ ($= 1 - 1/2^s + 1/3^s - 1/4^s + \ldots$ for $\mathrm{Re}(s) > 1$). Euler proved that the values of $\zeta^*(s)$ at negative integers are elements of the ring $\mathbf{Z}[1/2]$. Cassou-Nogues and Deligne/Ribet generalized this to an integrality result for the values of arbitrary partial zeta functions at negative integers. I will review their results, and show how these special values can be used to count the number of certain irreducible representations of $G(\mathbf{A})$ with prescribed local behavior. Here G is a simple algebraic group over a global field k (such as the field $\mathbf{Q}$ of rational numbers or the field $\mathbf{F}(t)$ of rational functions over a finite field $\mathbf{F}$) and $\mathbf{A}$ is the ring of adeles of k. When $k = \mathbf{F}(t)$, I will compare this result with some previous work of Katz and Deligne on Kloosterman sums. This is joint work with Mark Reeder.

Tuesday (!!), December 2
4:15 p.m.
Room 380-F (!!)

http://math.stanford.edu/coll/0809/