BOSTON UNIVERSITY NUMBER THEORY SEMINAR

Counting points on modular curves over finite fields

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Monday, February 6 at 4:15 pm
111 Cummington Street, MCS B21
Tea and cookies in MCS 144 at 3:45 pm

Abstract: This is the final talk in a three-part series. Let X be a modular curve, such as $X_0(N)$ (or a Shimura variety...). How many points does X have over a finite field? It is an idea due to Langlands and developed by Kottwitz that, at least in the good reduction case, this number admits an expression as a linear combination of products of local orbital integrals. Miraculously, the same orbital integrals appear in the Selberg trace formula. This shows that the Hasse-Weil zeta function of X factors as a product over L-functions of modular forms. Scholze has shown how the method of Langlands-Kottwitz extends to the case of primes of bad reduction, thus obtaining a construction of the local Langlands correspondence for GL_n over a p-adic field.