

abstract

IAS/PRINCETON NUMBER THEORY SEMINAR

Topic:

Speaker:

Affiliation:

Date:

Time/Room:

Serre conjectured that all continuous, irreducible, odd $\rho: G_{\mathbf{Q}} \rightarrow \mathrm{GL}_2(\overline{\mathbf{F}}_p)$ arise from modular forms. If ρ is modular, then proven refinements provide recipes for the possible weights and levels of the forms giving rise to it in terms of the local behavior of ρ .

A natural generalization to the context of a totally real field F predicts that all continuous, irreducible, totally odd $\rho: G_F \rightarrow \mathrm{GL}_2(\overline{\mathbf{F}}_p)$ arise from Hilbert modular forms. The recipe for the possible levels is similar to the case of $F = \mathbf{Q}$, but the (conjectural) recipe for the weights reveals features not so apparent for $F = \mathbf{Q}$. In particular, if ρ is locally reducible at a prime \mathcal{P} over p , then the possible weights depend strongly on the corresponding extension of local characters.

If ρ is locally semisimple at \mathcal{P} , then the recipe can be described in terms of the reduction of a corresponding irreducible characteristic zero representation of $\mathrm{GL}_2(\mathcal{O}_F/\mathcal{P})$.