

Equivariant Euler characteristics and modular forms

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This talk will be about Euler characteristics associated to G -sheaves \mathcal{E} on a projective scheme X over \mathbf{Z} on which a finite group G acts tamely. I'll discuss a conjecture about how such Euler characteristics may be determined from the restriction of \mathcal{E} to the ramification locus of $X \rightarrow X/G$. When G is abelian, results of this kind can be proved using generalizations of the Deligne Riemann Roch theorem. For a perfect group G acting freely on X of dimension 2, another method uses Parshin's adèles on surfaces. I'll describe some examples having to do with actions of diamond Hecke operators on modular forms having Fourier coefficients in a ring of algebraic integers.