Intersection of Arithmetic Cycles and Automorphic Forms
December 12–16, 2005

CM values of Hilbert modular functions

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Abstract

Gross and Zagier found an explicit formula for the values of the j-function at CM points as a special case of their famous work on the Gross–Zagier formula. We report on joint work with T. Yang, in which we extend some of their arguments to obtain exact formulas for the CM-values of rational functions on Hilbert modular surfaces associated to certain non-biquadratic CM fields. If time permits, we also discuss a natural family of rational functions on a Hilbert modular surface which is obtained by a "twisted" Borcherds lifting. For instance, on any Hilbert modular surface, there is a rational function, defined over the underlying real quadratic field, which is the lifting of the classical j-invariant.