

Arithmetic intersection theory and Hilbert modular surfaces

J. Bruinier
`bruinier@math.uni-koeln.de`
Mathematisches Institut
Universität zu Köln
Weyertal 86-90
D-50931 Köln
GERMANY

Abstract

We report on joint work with J. Burgos and U. Kühn. We consider certain arithmetic Hirzebruch–Zagier divisors on Hilbert modular surfaces. The properties of Borchers products and automorphic Green functions of the previous talk are used to show that the generating series of these Hirzebruch–Zagier divisors is an elliptic modular form of weight 2 with values in an arithmetic Chow group. Moreover, we consider the intersection of the generating series with the line bundle of modular forms equipped with the Petersson metric. In particular, the arithmetic self intersection number of the line bundle of modular forms is determined. These results confirm conjectures of Kudla, Maillot and Roessler in the special case of Hilbert modular surfaces.