

SIEGEL MODULARITY OF CERTAIN CALABI–YAU THREEFOLDS OVER \mathbb{Q}

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Abstract

We will consider two examples of Calabi–Yau threefolds defined over \mathbb{Q} having all the Hodge numbers $h^{3,0} = h^{2,1} = h^{1,2} = h^{0,3} = 1$. These two Calabi–Yau threefolds are equipped with real multiplication by some real quadratic fields $K = \mathbb{Q}(\sqrt{d})$, $d > 1$ over \mathbb{Q} , and satisfy the Hilbert modularity over K . Starting with the Hilbert modularity, we will try to establish the Siegel modularity over \mathbb{Q} of such Calabi–Yau threefolds, that is, their (cohomological) L -functions coincide with the Andrianov L -functions of Siegel modular forms of weight 3, genus 2 on paramodular subgroups of level N of $Sp(4, \mathbb{Q})$.

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