Bruinier and Yang gave a conjectural formula for the arithmetic intersection number $CM(K).G_1$ on the Siegel moduli space of abelian surfaces. This intersection number allows one to compute the denominators of Igusa class polynomials and has applications to the construction of genus 2 curves for use in cryptography.

Yang proved this conjecture under certain assumptions on the ramification in the quartic CM field $K$. More recently, Lauter and Viray gave a seemingly different formula for this intersection for a larger class of primitive quartic CM fields. We discuss each formula and sketch the correspondence between the two formulas in the range where they both apply. (Received September 18, 2012)