

1086-14-2055 **Kristin Lauter*** (klauter@microsoft.com), **Michael Naehrig** and **Tonghai Yang**. *A smaller set of invariants for genus 2 curves*. Preliminary report.

Constructing genus 2 curves using their modular invariants is a computationally intensive task. Until recently, the modular invariants used were the “Igusa invariants”, CM values of 3 Siegel modular forms on the Siegel moduli space. Recent work showed that the curves could in fact be constructed from 2 modular invariants on the Hilbert moduli space, the “Gundlach invariants”, where the modular functions are functions of 2 variables instead of 3, and the CM points are easier to describe. In this work, we show how to express these new invariants in terms of theta functions for efficient computation, and analyze the comparative running times of different approaches to computing these invariants. (Received September 24, 2012)