

1041-11-221      **Reinier Broker** ([reinierb@microsoft.com](mailto:reinierb@microsoft.com)), Microsoft Research, One Microsoft Way, Redmond, WA 98052, and **Kristin E. Lauter\*** ([klauter@microsoft.com](mailto:klauter@microsoft.com)), Microsoft Research, One Microsoft Way, Redmond, WA 98052. *Evaluating Igusa Functions*. Preliminary report.

The moduli space of principally polarized 2-dimensional abelian varieties is parametrized by 3 Igusa functions. In this article we investigate a new way to evaluate these function by using Siegel Eisenstein series. Our main result is a very efficient way to compute the Fourier coefficients of these Eisenstein series. Our results can be used to efficiently compute invariants of genus 2 curves, which is useful in constructing genus 2 curves suitable for use in cryptography. (Received August 11, 2008)