

1077-11-718

Kristin Lauter (klauter@microsoft.com) and **Bianca Viray*** (bviray@math.brown.edu). *An arithmetic intersection formula for denominators of Igusa class polynomials*. Preliminary report.

In this talk we will give an explicit formula for the arithmetic intersection number $\mathcal{CM}(K).G_1$ on the Siegel moduli space of abelian surfaces, under some assumptions on the quartic CM field K . These intersection numbers allow one to compute the denominators of Igusa class polynomials, which has important applications to the construction of genus 2 curves for use in cryptography.

Bruinier and Yang conjectured a formula for intersection numbers on an arithmetic Hilbert modular surface, and, as a consequence, obtain a conjectural formula for $\mathcal{CM}(K).G_1$ under strong assumptions on the ramification in K . Yang later proved this conjecture under slightly stronger assumptions on the ramification. In this paper, we prove a formula for $\mathcal{CM}(K).G_1$ for a larger class of primitive quartic CM fields. We use a different method of proof than Yang; namely, we study the embedding problem posed by Goren and the first author by generalizing work of Dorman and Gross–Zagier. (Received September 11, 2011)