

Constructing genus 3 hyperelliptic Jacobians: a mathematician's point of view
Christelle Vincent, Stanford University

It is known that given a CM sextic field, there exists a non-empty finite set of abelian varieties of dimension 3 that have CM by this field. In this talk we present the theory underlying an algorithm that takes as input such a field, and outputs a period matrix for such an abelian variety. We also discuss how theta functions allow us to verify computationally if our period matrix is that of the Jacobian of a hyperelliptic curve and also to compute a model of the hyperelliptic curve.

This is joint work with J. Balakrishnan, S. Ionica and K. Lauter.