

Moduli spaces of genus 2 curves with split Jacobians through K3 surfaces

Abhinav Kumar, Stony Brook University

Genus 2 covers of elliptic curves have been a classical object of study (reduction of abelian integrals, theta functions, etc.) For small degrees (at most 5), the relevant moduli spaces have been explicitly computed over the last couple of centuries by considering the ramification divisor of the associated P^1 quotients; this method quickly becomes quite unwieldy.

I will describe a different approach to their moduli spaces as Hilbert modular surfaces of square discriminant, which can be explicitly computed as moduli spaces of elliptic K3 surfaces; in particular, these ideas allow us to go up to degree 11 relatively easily. Time permitting, I will describe a couple of new methods which may be of wider applicability, and outline some arithmetic connections and applications.