

COMPUTING EULER FACTORS OF CURVES

Celine Maistret

University of Bristol, UK

cm16281@bristol.ac.uk

L-functions of abelian varieties are objects of great interest. In particular, they are believed (and known in some cases) to carry key arithmetic information of the variety via the Birch and Swinnerton-Dyer conjecture. As such, it is useful to be able to compute them in practice. In this talk, we will address the case of a genus 2 curve C/\mathbb{Q} with bad reduction at an odd prime p where the Jacobian of C has good reduction. Our approach relies on counting points on the special fibre of the minimal regular model of the curve, which we extract using the theory of cluster pictures of hyperelliptic curves. Our method yields a fast algorithm in the sense that all computations occur in at most quadratic extensions of \mathbb{Q} or finite fields.

Joint work with Andrew Sutherland (MIT).