2-group Belyi Maps

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Abstract

This thesis concerns the explicit computation of Galois Belyi maps $\phi\colon X \to \mathbb{P}^1$ with monodromy group a 2-group. The motivation behind computing these so-called *2-group Belyi maps* comes from Beckmann's theorem which relates the primes of bad reduction of the algebraic curve X to the primes dividing the order of the monodromy group of ϕ. The computation has two parts. The first is a combinatorial computation to enumerate the isomorphism classes of 2-group Belyi maps. The second part is an explicit algorithm to compute equations for the curve X. All computations are carried out using Magma. The source code for these implementations is available at the following link.

`https://github.com/michaelmusty/2groupdessins`