Computing gonal maps of algebraic curves

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Abstract

The gonality of an algebraic curve C is the smallest integer N such that there exists a degree N morphism from C to the projective line. For instance curves of gonality 2 are hyperelliptic curves. As for the genus, the gonality measures the non rationality of the curve. Computing the gonality and a gonal map is important in order to represent function fields as small extension of K(t), with various applications (parametrization by radicals for instance). In that talk, I will prove the existence of an algorithm that, given a curve C, computes the gonality and a gonal map. The proof is based on the study of the syzygies of a canonical model. This is a joint work with J. Schicho and F-O. Schreyer.