

The arithmetic of uniquely trigonal genus 4 curves.

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February 1, 2019

Abstract

A uniquely trigonal curve is a smooth algebraic curve that has an essentially unique morphism to \mathbb{P}^1 of degree 3. The uniquely trigonal curves of genus 4 are closely related to del Pezzo surfaces of degree one. In this talk, we give two examples of how this connection can be used to generate interesting results in number theory. The first result pertains to class groups of cubic fields; we construct an infinite family of cubic number fields whose class groups have many 2-torsion elements. For the second application, we consider the uniquely trigonal genus 4 curves from the perspective of arithmetic invariant theory.