

Restrictions on endomorphism algebras

Pip Goodman

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Given a hyperelliptic curve $y^2 = f(x)$ defined over a number field, can one find simple conditions on f to determine whether its Jacobian is absolutely simple or not? Or, even better, obtain information on the structure of its (geometric) endomorphism ring?

Zarhin has shown that in many cases when the Galois group of f is “large” (insoluble, two-transitive, ...) the possibilities for the endomorphism ring are heavily restricted. In this talk, we will see that many restrictions persist when the Galois group of f is merely cyclic of large prime order. In fact, for certain base fields, we are able to give a finite explicit list.