

Rational and integral points of bounded degree on curves (and an application to class groups)

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We will discuss some recent results on rational and integral points of bounded degree on curves. For instance, if C is a (possibly singular) irreducible projective curve of degree d in \mathbb{P}^2 defined over a number field k , g is the genus of a normalization of C , r is a positive integer, and $g - 1 > (r - 1)(d - 1)$, then the set

$$\{P \in C(\bar{k}) \mid [k(P) : k] \leq r\}$$

is finite. These results are obtained as consequences of a deep inequality of Vojta in Diophantine approximation. In the last part of the talk, if time permits, we will discuss how results on integral points of bounded degree on curves can be used to construct number fields with class groups of large rank.