

# Why should we believe Mordell's conjecture aka Faltings's theorem

J'ignore • 14 Sep 2025

If the curve  $C$  is given by complete intersection of degree  $(d_1, \dots, d_k)$  inside  $\mathbb{P}^n$ , then the genus is  $\geq 2$  iff  $\sum d_i > n + 1$  (see [here](#) for the formula for genus of complete intersection, which follows from the [adjunction formula](#) and the [Euler exact sequence](#)). Now a naive probabilistic argument shows that in this case  $f_1(X) = \dots = f_k(X) = 0$  is likely to have finitely many primitive solutions  $X \in \mathbb{Z}^{n+1}$ . This argument gives the generally believed heuristic for higher dimensional varieties: varieties with ample canonical bundle tend to have few points.