

Towards a higher dimensional analog of uniform boundedness of torsion on elliptic curves

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Abstract:

Let E be an elliptic curve over a number field K . Mordell proved that $E(K)$, the set of K -rational points on E , forms a finitely generated abelian group. So one can ask how this abelian group varies as E and K vary, in particular one can ask whether the torsion subgroup can be arbitrarily large. In 1996, Merel gave a definitive answer to this question, showing that the size of the torsion subgroup of $E(K)$ can be bounded by a constant that depends only on the degree of K over \mathbb{Q} .

K3 surfaces are in many ways similar to elliptic curves, although there is no group structure on a K3 surface. Despite this key difference, we explain how one can formulate an analog of Merel's theorem for K3 surfaces and state some results in this direction. This talk will be suitable for a general audience.