

Isogenies and finite subgroups

1 Isogenies and finite subgroups

Theorem 1. Let A be an abelian variety of dimension d over \mathbb{k} . Then the subgroup $A[n]$ of n torsion points is finite and we have

- (a) if n is coprime to $\text{char}(\mathbf{k})$, then $A[n] \cong (\mathbb{Z}/n\mathbb{Z})^{2d}$;
- (b) if $n = p^k$ for $p = \text{char}(\mathbf{k}) > 0$

Proof. Yang: To be completed. □

Theorem 2. Let A be an abelian variety over \mathbb{k} . There is a bijection between the isogenies from A over \mathbb{k} and the finite subgroup schemes of A .