

On a Galois property of fields generated by torsion

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In this talk I will report on a recent project with Gabriel A. Dill in which we study a certain Galois property of subextensions of $k(A_{\text{tors}})$, the minimal field of definition of all torsion points of an abelian variety A defined over a number field k . Concretely, we show that each subfield of $k(A_{\text{tors}})$ which is Galois over k (of possibly infinite degree) and whose Galois group has finite exponent is contained in an abelian extension of some finite extension of k . As an immediate corollary of this result and a theorem of Bombieri and Zannier, we deduce that each such field has the Northcott property, i.e. does not contain any infinite set of algebraic numbers of bounded height.