

Small heights in large non-Abelian extensions

LINDA FREY

Abstract. Let E be an elliptic curve over the rationals. Let L be an infinite Galois extension of the rationals with uniformly bounded local degrees at almost all primes. We will consider the infinite extension $L(E_{\text{tor}})$ of the rationals which is generated by the set of x - and y -coordinates of the torsion points in E with respect to a Weierstrass model of E with rational coefficients. In this paper we will prove a lower bound for the absolute logarithmic Weil height of non-zero elements in $L(E_{\text{tor}})$ that are not a root of unity.

Mathematics Subject Classification (2020): 11G50 (primary); 11G05 (secondary).