INTEGRAL POINTS ON ELLIPTIC CURVES $y^2 = x(x - 2^m)(x + p)$

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Abstract

We provide a description of the integral points on elliptic curves of the shape $y^2 = x(x - 2^m)(x + p)$, where p and $p + 2^m$ are primes. In particular, we show that for $m = 2$ such a curve has no nontorsion integral point, and for $m = 1$ it has at most one such a point (with $y > 0$). Our proofs rely upon the numerical computations and a variety of results on quartic and other Diophantine equations combining with elementary analysis.

This is joint work with Malgorzata Wieczorek (University of Szczecin)