Smart, N. P.; **Stephens, N. M.**

Integral points on elliptic curves over number fields. (English) Zbl 0881.11054

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This paper extends the elliptic logarithm method of finding all integral points on a given model of an elliptic curve defined over $\mathbb{Q}$ [see *R. J. Stroeker* and *N. Tzanakis*, Acta Arith. 67, 177-196 (1994; Zbl 0805.11026), *J. Gebel*, *A. Pethö* and *H. G. Zimmer*, Acta Arith. 68, 171-192 (1994; Zbl 0816.11019) and *N. P. Smart*, Proc. Camb. Philos. Soc. 116, 391-399 (1994; Zbl 0817.11031)] to the class of elliptic curves defined over an algebraic number field. As David's lower bound for linear forms in elliptic logarithms [*S. David* Mém. Soc. Math. Fr., Nouv. Sér. 62 (1995; Zbl 0859.11048)], which is essential for the elliptic logarithm method to work, also applies to arbitrary algebraic number fields, this extension is from a general point of view rather straightforward. Only as far as explicit knowledge of the structure of the number field is needed in each individual case, difficulties may arise, especially where rank and the construction of a Mordell-Weil basis are concerned. This paper closes with three well-chosen examples, two in which a quadratic extension of $\mathbb{Q}$ and one in which a cubic number field is considered.

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MSC:

11G05	Elliptic curves over global fields
14H52	Elliptic curves
11Y16	Number-theoretic algorithms; complexity
11D25	Cubic and quartic Diophantine equations

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Mordell-Weil group; elliptic logarithm method; integral points; elliptic curve; algebraic number fields

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