Mathematics > Number Theory

# Explicit n-descent on elliptic curves. III. Algorithms

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This is the third in a series of papers in which we study the n-Selmer group of an elliptic curve, with the aim of representing its elements as curves of degree n in P^{n-1}. The methods we describe are practical in the case n=3 for elliptic curves over the rationals, and have been implemented in Magma.

One important ingredient of our work is an algorithm for trivialising central simple algebras. This is of independent interest: for example, it could be used for parametrising Brauer-Severi surfaces.

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| Comments: | 43 pages, comes with a file containing Magma code for the computations used for the examples. v2: some small edits |
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| MSC classes: | 11G05, 14H52, 14H25 |
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*Which authors of this paper are endorsers?*