

# **SPECIAL VALUES OF $L$ -FUNCTIONS FOR BASE EXTENSIONS OF ELLIPTIC CURVES**

FRANÇOIS BRUNAULT

## **ABSTRACT**

Let  $E$  be an elliptic curve defined over  $\mathbb{Q}$ . Using a deep theorem of Beilinson on modular curves, Goncharov and Levin proved that  $L(E, 2)$  can be expressed in terms of the elliptic dilogarithm function on  $E$ , thereby confirming a conjecture of Zagier. In this talk we will explain an analogue of Goncharov and Levin's result for the base extension of  $E$  to an arbitrary finite abelian extension of  $\mathbb{Q}$ . We will explain how to make this result explicit in a special case where  $E$  has conductor 11, and report on some numerical evidence in the non abelian case.