

# SPECIAL VALUES OF TWISTS OF MODULAR/ELLIPTIC *L*-FUNCTIONS.

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ABSTRACT. Let  $L(E/\mathbb{Q}, s)$  be the  $L$ -function of an elliptic curve  $E$  defined over the rational field  $\mathbb{Q}$ . We examine the central value  $L(E, 1, \chi)$  of twists of  $L(E/\mathbb{Q}, s)$  by Dirichlet characters  $\chi$ . We discuss the vanishing and non-vanishing frequencies of these values as  $\chi$  ranges over characters of fixed order greater than 2. We also examine the the square-free part of the algebraic part of  $L(E/F, 1)$  for abelian fields  $F/\mathbb{Q}$  when these values are non-zero.