1023-11-1039   **Andreas Stein*** (`astein@uwyo.edu`), Department of Mathematics, University of Wyoming, 1000 E. University Ave, Laramie, WY 82071-3036. *Approximatiing Euler Products and Computing the Class Number of an Algebraic Function Field.*

A fundamental problem in the theory of function fields and curves over finite fields is the effective computation of the class number h and thus the order of the Jacobian of an algebraic function field. If the characteristic of the finite field is small, various recent algorithms solve this problem. Our main focus will be algebraic function fields of large characteristic, in which case not much is known about effective computation of the order of the Jacobian. However, our methods are very general for any genus and any characteristic. In our talk, we will first discuss how to perform arithmetic in an algebraic function fields based on recent results. Then we will provide tight estimates for the class number via truncated Euler products, and show how these estimates can be used to develop an effective method of computing h. (Received September 24, 2006)