

1077-11-2476

**Ryan C Daileda\*** (rdaileda@trinity.edu), Department of Mathematics, One Trinity Place, San Antonio, TX 78212-7200, and **Nathan C Jones** (ncjones@olemiss.edu), Department of Mathematics, Hume Hall 305, P. O. Box 1848, University, MS 38677-1848. *Making imprimitive characters behave primitively.*

Given a Dirichlet character  $\chi$  mod  $q$ , it is traditional to extend  $\chi$  to all of  $\mathbb{Z}/q\mathbb{Z}$  by declaring that  $\chi(n) = 0$  when  $(n, q) \neq 1$ . When  $\chi$  is primitive (i.e. not induced by a Dirichlet character mod  $d$  for some proper divisor  $d$  of  $q$ ), this extension endows the associated Gauss sum and  $L$ -function with properties that are lost when  $\chi$  is imprimitive. In this talk we will introduce a modification to the traditional extension of imprimitive characters which causes them to behave primitively, in the sense that the relevant properties of the Gauss sum and  $L$ -function take on the form usually only associated to primitive characters. (Received September 22, 2011)