

Abstract Submitted  
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**AN ANALYSIS OF THE REVISED  $\zeta$  INDEX IN RELATION TO THE METAL CONTENT OF M DWARF STARS<sup>1</sup>** BRIANNA GALGANO, Vanderbilt University, CAITLIN DORMAN, Brown University, EVE RODGERS, The University of Chicago, BARBARA ROJAS-AYALA, Centre for Astrophysics of the University of Porto — In 2007 Lepine et al. created a proxy for the metallicity of M dwarfs known as the  $\zeta$  (zeta) index. It was redefined in 2011 by Dhital et al., in hopes of increasing accuracy. We set out to find the locations of high  $\zeta$  value M dwarfs in the Milky Way Galaxy using the redefined index from Dhital et al. (2011) and observed 1962 high signal to noise stars from the Sloan Digital Sky Survey. However, we discovered flaws in the revised  $\zeta$  index. We were unable to find the locations of "metal-rich" M dwarfs because the revised  $\zeta$  index is not an accurate measure of metallicity. As the spectral type of a given M dwarf increases, so does the calculated  $\zeta$  value for that star. The dependence on spectral type suggests that the revised  $\zeta$  index is incorrect because spectral type should not have a direct correlation to metallicity. The Dhital et al. (2011)  $\zeta$  index also places exceedingly metal rich stars in the halo of the galaxy, and more metal poor stars in the disk, which denied expectations based on previous research.

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