

Abstract Submitted  
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**Epsilon Aurigae: Spectropolarimetric Characteristics of the Primary Star in and out of Eclipse**<sup>1</sup> KATHLEEN GEISE, ROBERT STENCEL, University of Denver — Epsilon Aurigae is a single line binary system with an unusually long eclipse. The system consists of a variable F0 supergiant star, the primary, and a disk surrounding an unseen object, probably a B star. Many fundamental characteristics of the system, such as the mass and size of each object, origin and evolutionary nature of the disk material and the physical processes underlying the variability of the primary star, are poorly defined. We aim to characterize the polarization features of atomic and ionized gaseous species present in the F0 star atmosphere in order to identify anisotropies, to better understand the physical processes underlying the non-radial pulsation modes of the star. We obtained 50 epochs of high dispersion spectra from the ESPaDOnS spectropolarimeter at CFHT during 2008-2012. These spectra include eclipse and out-of-eclipse observations rich with polarization features attributable to both the F0 star and the disk. Polarization increased dramatically during eclipse, even for ionized species, suggesting that the B star engulfed in the disk contributes to the ionization of outer disk material. Pre-eclipse polarization signatures and position angles attributed to the F0 star indicate that anisotropies existed across the stellar disk.

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