Abstract Submitted
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HD314884: A Slowly Pulsating B star in a Close Binary CHRISTOPHER B. JOHNSON, Louisiana State University — We present the results of a spectroscopic and photometric analysis of HD314884, a binary system with detected soft X-ray emission. A reclassification of the optical counterpart reveals a B5V-B6V star with T_{eff} = 15,490 ± 310 K, log g = 3.75 ± 0.25 dex, and a photometric period of 0.889521(12) days. A spectroscopic period search reveals an orbital period for the system of P_1 = 1.3654(11) days. The discrepancy in the two periods and the identification of a second distinct frequency in the photometric fourier transform at P_2 = 3.1347(56) days provides evidence that one of the stars is a slowly pulsating B star (SPB) with at least two oscillation frequencies. Using the dynamical parameters obtained from the radial velocity curve, we find the most probable companion mass to be $M_1 = 0.8\ M_\odot$. We conclude that the X-ray source in HD314884 is most likely a coronally active G-type star or a white dwarf (WD), with no apparent emission lines in the optical spectrum. The probability distribution of the companion star mass spans 0.6-2.3 $M_\odot$ at 99% confidence which allows the possibility of a neutron star companion. Our analysis does rule out a black hole as the primary X-ray source unless it is of a very low mass.

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