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HR6611: AN INTERESTING NEW ECLIPSING BINARY

HR6611 is an A3m: star (Cowley et al., 1969) which was discovered to be eclipsing while being tested for pulsational light variability. Figure 1 is a plot of the observations obtained using the photoelectric Volksphotometer on the McDonald Observatory 92cm telescope. The descending branch of the light curve was obtained on June 22, 1975UT in the Strömgren v filter and the ascending branch was obtained four days later in Strömgren y. They were pieced together assuming that the spectroscopic period, P=3.894 days(Petrie, 1928), applies. The epoch derived is T_o = JD 2442585.940 ± 0.005. Strömgren v magnitudes are shown outside of eclipse in Figure 1a from which we derive an eclipse depth of 0.45 mag in v. All of the light curves are relative to two comparison stars.

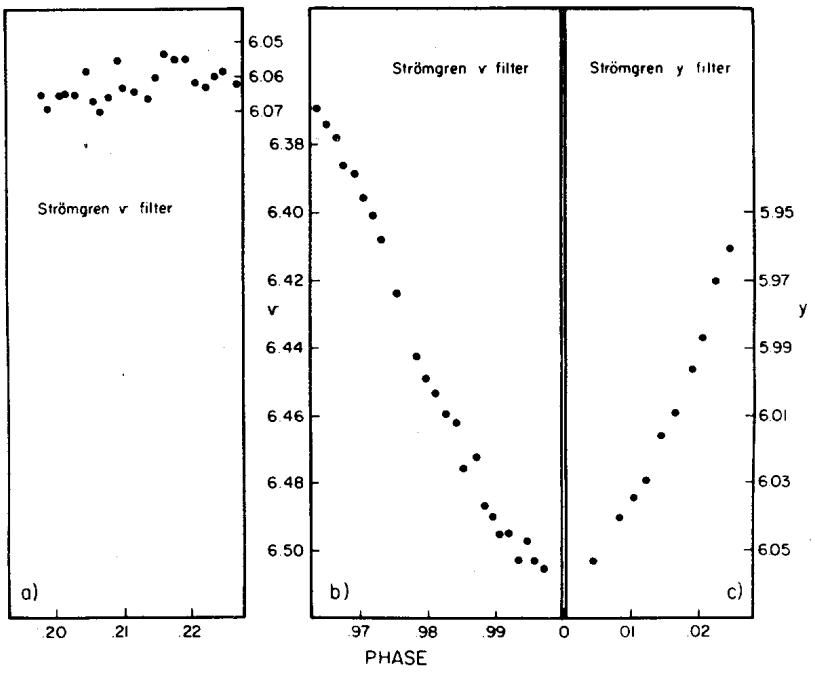
HR6611 is potentially a very interesting system. Although Cowley et al. (1969) classify it as A3m:, Bidelman (Abt and Bidelman, 1969) classifies it as "definitely Am". uvbyß photometric indices indicate that the primary is more than a magnitude above the main sequence making it one of the most luminous Am stars known. Petrie (1928) derived a mass ratio of 0.89 from the radial velocity curve but noted that the primary lines were twice as strong as those of the secondary. He also derived (Petrie, 1950) a magnitude difference between the two components of 0.99 mag. and spectral types of A4 and A7 for the primary and secondary, respectively. Abt (1975) gives $v \sin i$ of 30 and 25 km sec^{-1}, respectively.

How do Am abundances increase with increasing luminosity (age)? HR6611 is composed of two slowly rotating A stars of different mass and luminosity hence probably different evolutionary states. In addition, it is one of the most luminous Am stars known and consequently may provide much information concerning the above question.

We plan to obtain high dispersion spectra during eclipse when one component will be partially hidden in order to obtain relatively uncontaminated abundances. In addition, we plan to obtain a complete light curve and uvbyß photometry during eclipse to derive individual

temperatures and surface gravities for both components. This, coupled with a new radial velocity curve which will yield individual masses, should be useful in constraining theoretical evolutionary models.

I would like to thank Dr. Michel Breger's summer observing class for obtaining the eclipse egress on June 26, 1975UT.



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