ABSTRACTS

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Abstract:

The origin of S11V and ClV with additional narrow circumstellar shell components shifted shortward by 1800 km/s. A single IUE spectrum of HD93403 shows a S11V component at 1402.5A, presumably interstellar plus an additional component shifted longward by 85-130 km/s. Since all these objects are early-type binaries, these observations are not inconsistent with explanations involving mass loss or mass exchange. But due to the high frequency of binaries and the high occurrence in the stars observed in this study of both negative and positive velocity absorption components, large contributions to interstellar features from circumstellar material or from a mass stream between stars with unresolved velocity shifts must be seriously considered. Since the velocity resolution of IUE is on the order of 30-40 km/s, difficulties may arise in obtaining an unambiguous interpretation for the origin of narrow interstellar features of highly ionized species observed along any line of sight.

06.19.06 IUE Ultraviolet Spectra of Classical Cepheids, S. B. Parsons, U. Tex. Austin - The classical cepheid variables δ Cep (5.37 days) and δ Dor (9.84 days) were observed with IUE in December 1978 at several phases each, especially in the interval 0.7 - 1.0 P. Two phases (0.76 and 0.86 P) were observed of δ Gem (10.15 days). Most sets of observations give the full range 1200-5300 Å available at low resolution (6 Å) and usually the range 2400-5200 Å at high resolution (0.3 Å). Similar spectra were obtained of non-pulsating supergiants over the spectral type range F3 Ib - G2 Ib. Very little if any flux is recorded shortward of the Si I opacity edge near 1680 Å, although O I λ1304 emission appears at type F8 Ib and is very strong at G2 Ib, along with Si II λ1814 emission. O I emission and Mg II emission cores are present at all observed phases of δ Dor but at no observed phases of δ Cep. From this it is speculated that the presence of a substantial chromosphere is related to the small difference in mean temperature of the cepheids (δ Cep averages about 250 K hotter) rather than to the actual large changes in temperature or specific hydrodynamic events during their pulsations. No explanation is evident yet from the spectral data for the bumps on the λ1910 light curve of δ Dor observed by OAO-2 filter photometry (Hutchinson, Hill, and Lillie 1975, A.J. 80, 1044). Further study of line identifications and flux distributions is in progress. I gratefully acknowledge the assistance of the IUE Observatory staff in the acquisition and reduction of these data. This work is supported in part by NASA under grant NSG 5328.

06.19.06 Theoretical Colors for Helium Rich Cepheids, W. Whitaker, A. W., Lasl, and Kurucz, R. L., SIO - Cox et al. (1978, Ap. J., 222, 621) have suggested that certain cepheids may have solar like winds which deplete their atmospheres of hydrogen. The helium enrichment can explain the mass discrepancy for these stars. We have computed UBV and uvby colors for a modest grid (1.0 < log (g) < 3.0; 5500K < Teff < 7000K) of stellar atmospheres with Y = 0.27 and Y = 0.75. The latter value is an upper limit for helium enrichment suggest by Cox et al. New ODFs for Y = 0.75 have been computed and used in Kurucz's ODF version of the ATLAS stellar atmospheres computer code. Our results are compared with those of Sonneborn et al. (1979, submitted Ap. J.).

06.19.06 Rotation Broadening Functions of Selected W Ursa Majoris Stars. L. Anderson, U. of Toleda, M. Raff, and F. H. Shu, U. C. Berkeley - Through the technique of Fourier deconvolution we have been able to extract rotation broadening functions from the spectra of several W Uma stars. If one assumes that each surface element on a star emits radiation with the same spectral distribution but not necessarily the same integrated intensity as the next element (the uniform profile assumption), then the spectral distribution received at Earth is a frequency convolution of the appropriately Doppler shifted intensity distribution over the visible surface of the star (Shajn and Struve 1929, M.N., 82, 222). We digitize and take the Fourier transforms of photographic spectra covering some 500 Angstroms and including several dozen strong lines, and deconvolve with equivalent spectra from...