ABSTRACTS

07.13
Long Term UV Continuum Light Variations in Two Be Stars: λ Eri and HD 58978
J.M.S. Silvis, and C.A. Grady (Catholic U. of America)

Previous UV studies of Be stars have demonstrated that variation in the strength of the stellar wind absorption is characteristic of high sin i Be stars. The mechanism responsible for the variation is not understood. Some proposed mechanisms are temperature or luminosity changes, potentially associated with non-radial pulsations, which would cause the UV continuum fluxes in these stars to vary. UV continuum flux data which are obtained simultaneously with observations of the stellar wind can be used to determine whether variability in the wind is correlated with continuum light variations. The IUE archival data, which span more than a decade for some stars, provide an unparalleled opportunity to explore this question. Full utilization of the IUE data, which were primarily observed in high dispersion, requires correction for the slow loss of sensitivity of the IUE SWP camera as a function of time. We have derived such a correction from IUE standard star data, and apply it to two Be stars, λ Eri (B2 IIIe) and HD 58978 (B0.5 IVe). The λ Eri data show, after correction, a slow decrease in flux beginning in 1986 and continuing through 1989. The HD 58978 data show approximately constant flux levels, except for episodes of enhanced continuum light. The relation of the UV flux variations in these stars to the wind variability is discussed.

07.14
The 12 April 1985 Flare on AD Leo
S. L. Hawley (OCIW), B. R. Pettersen (University of Oslo)

Photometric and spectroscopic observations covering the wavelength range 1200 - 8000Å are presented for a giant flare on the dMe star AD Leo. The flare radiated more than 10^35 ergs in this wavelength region and lasted for more than four hours. A flare energy budget over the entire optical and ultraviolet wavelength region is constructed as a function of time during the flare. A sample of 9 well observed flares is used to investigate the relationships between integrated properties of several flare emission features, with the result that the Ca II K line emission and the Johnson U band continuum emission both correlate well with the Hγ line emission. This extends the previously known correlation of Hγ line emission with soft X-ray emission. These correlations suggest that the observed emission features are produced under similar atmospheric conditions regardless of the total flare energy emitted. The total flare energy may thus be primarily a function of flare area and duration, and not of large differences in flare heating rate.

07.15
Starspots: The Zebra Effect
B. R. Pettersen (University of Oslo), S. L. Hawley (OCIW)

The currently accepted view of cool, dark starspots as the centers of magnetic activity on late type stars is reexamined. Application of a detailed solar analogy leads to the opposite conclusion - that the magnetically active regions are better described by a bright facular network, and that the dark areas which give rise to photometric rotational modulation are actu-

ally regions where the underlying quiet photosphere is seen. This interpretation removes several problems of the current model, including the size, location and stability of the starspots that are required to match photometric and Doppler imaging observations. It also has interesting observational implications for long term brightness variations in magnetically active stars, and for the positions of these stars in the HR diagram.

07.16
X-ray Spectra of Early-Type Stars
M. F. Corcoran and J. H. Swank (NASA/GSFC)

We present an analysis of archival SSS spectra of the early-type stars ε Ori, δ Ori, ζ Ori, π Sco, ζ Oph, HD 159176 and the Wolf-Rayet star WR 25 using recent adjustments to the SSS response based on post-mission trend analysis. The values of temperature and column density are affected but the conclusions based on previous analyses are confirmed: the X-ray temperatures of the supergiants are lower than the temperatures of the dwarf O and B stars in the sample, and the amount of overlying wind column density is small. The BBXRT mission will include observations of selected early-type stars in its observing program. Sample BBXRT spectra for these stars will be presented. We will discuss the expected impact of these new observations on knowledge of the source temperatures and wind column densities. If available, data from the BBXRT mission will also be presented and discussed.

07.17
Phase-Dependent Variability in the Wind from Vela-X1
J. Suarez (U. Az.), M. F. Corcoran and S. R. Heap (NASA/GSFC)

Using archival IUE spectra, we explore phase dependent variations in the wind from the B supergiant in the Vela-X1 system. As previously noted, ionization of the wind in the vicinity of the neutron star causes a weakening of the Si IV resonance transition (the Hatchett- McCray effect). In addition we find excess absorption associated with the Al III doublet after phase 0.5. We conjecture that the enhancement in Al III absorption is produced in a stream or "wake" following the neutron star. The wake is produced as non-accelerating ionized material near the neutron star collides with the ambient, radiatively-driven wind material. We use the observed UV spectral variations to determine the acceleration of the wind flow.

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