1975 BAAS...7...469C

34.13.02 An Analysis of Jupiter's Decametric Emissions as Observed with the University of Colorado Spectrograph, 1960-1974. A.C. Hiddle, U.C.O.- The 10 controlled decametric sources show emissions at certain preferred Jupiter central meridian longitudes (CML) (System III (1965)) and Io position angles ($\theta_i$). These preferred positions are not fixed; but show oscillations with a 12 year period which correlate well with the declination of the Earth as seen from Jupiter ($D_e$). The CML oscillation is well known; this data shows also a clear $\theta_i$ oscillation. The probability of emission also correlates well with $D_e$. These observations strongly support models of emission into a ruffled cone which rotates with Io suggesting that the intensity of emission in directions well above the ecliptic should be much stronger than observed from Earth. No Europa influence has been discovered, which confirms earlier studies using smaller sets of data.

WEDNESDAY, 20 AUGUST

Session 35: Montezuma Hall North, 1400-1700

35.01.05 Calcium II H and K Emission in Yellow Supergiants. D.R. Holmber & H.A. Beers, N.M.S.O.- A plane-parallel, semi-infinite chromospheric model for a yellow supergiant has been constructed and attached to a log g = 1.8 photospheric model due to Parsons (1969, Ap.J. Supp. 38, 150). The microturbulent velocity broadening of the Ca II K emission was made internally consistent with the turbulent pressure contribution to the local scale height. The theoretical, non-LTE, K-line profile is shown to be in good agreement with recently observed relative flux profiles of a Aqu and $\xi$ Gem, if the effects of partial redistribution in the scattering process are considered. When the model is scaled to the gravity of $\xi$ Aur, the temperature gradient, turbulent velocity, and scale height are consistent with available curve of growth data. Since the ratio of the Wilson measurements ($W_{\lambda}$) for the emission widths of a Aqu and $\xi$ Aur are in the same proportion as the microturbulent velocities, the implication is that microturbulence is primarily responsible for the observed emission widths. This concept is extended to classical Cepheid variables where for $\xi$ Gem observations of post maximum reversals in K-line profiles suggest an internal contradiction to the Wilson-Happel relation. However, the widths are consistent with phase variation of microturbulent velocities in Cepheids (1967, IAU Symposium, 28, p. 218).

35.02.05 Non-LTE Calculations for Ca II Lines in Late B and Hot Ap Stars. M. A. J. Snijders,* Goddard Space Flight Center. In late B and hot Ap stars the Ca II K line is used for classification and for determination of the Ca abundance. Leckrone (1974, Ap.J. Supp. 27, 167) has shown that the KX classifications obtained from the K line and the UV colors are in disagreement for stars which are flux deficient below 3000Å. Non-LTE calculations for models with the same visible flux but different UV fluxes give different Ca II lines, because the Ca II ionization equilibrium is dominated by the UV flux. For late B stars the effect is entirely due to changes in the ionization rate of the metastable 3D level, i.e. only changes below 1160Å are important. For flux deficient Ap stars the comparison of the K line and the visible colors therefore leads to discrepancies of 2 to 4 MK subclasses the effect starts at 100Å and is largest at 85Å, in agreement with Leckrone's observational results. In a hot Ap star with a constant Ca abundance but other abundances varying over the surface the radiation field and consequently the Ca II lines will also vary leading in LTE to a spurious variable abundance.

*NAS-NRC Postdoctoral Research Resident Associate

35.03.05 Changes in the K-Line of Arcturus Observed at High Resolution by SEC Vidicon Spectroscopy. W.Y. Chu, P. Adams, G.E. Bier, J.L. Linsey, C.S. Mus, J.L. Maran, and R.W. Hobbs, NASA-GSFC.- Observations with the McMath Solar Telescope and Vertical Spectrograph at KPNO and a NASA-developed SEC vidicon camera are under way to record chromospheric features and activity on a variety of stars, including some with strong ultraviolet chromospheric lines that have been observed with Copernicus. Initial results of this program include photometrically calibrated observations of the central region of the K-line of Ca II in Arcturus, made on February 1, 1975 and April 27, 1975 (0.7Å). In February, the blue and red emission components were comparable, while in April the red component was significantly stronger. The emission shifted redwards with respect to the central absorption reversal by an amount equivalent to a Doppler shift of about 7 km/sec and it appears that the central reversal remained fixed in wavelength. The results can perhaps be explained in terms of a variable mass-loss model. In particular, the April data indicate an increased degree of mass loss. The asymmetry that was found in the Ca II K-line in April is similar to one reported for the Mg II K-line as observed by Copernicus (Moos et al. 1974, Ap.J. Lett., 188, L93).

35.04.05 Fe II Emission in Late-Type Stars. Ann K. Boesgaard and Hans Boesgaard, Inst. for Astr. U. Hawaii.- Spectrograms exposed from 3100 – 3500 Å with dispersions