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NEW ECLIPSING BINARY RESULTS OBTAINED WITH A RETICON DETECTOR

For approximately the last year we have been using the self-scanned Reticon detector of the McDonald Observatory 2.7 m and 2.1 m coude spectrographs to observe eclipsing binaries. The 2.7 m detector consists of a linear array of 1024 photodiodes, and has been described by Vogt, Tull, and Kelton (1978). We discuss below some of our results which may be of immediate interest to other observers.

KP Aql - This faint system ( $9^m.7$  pg) is strongly double-lined on our Reticon scans. Cailliatte (1951) reported spectral types of A in primary minimum and K in maximum light. Our  $4.4 \text{ \AA/mm}$  scans of this system indicate a pair of nearly equal early F stars. Ibanoglu and Gulmen (1974) have published a photometric orbit.

CW CMa - UVB colors indicate a slightly reddened AOV, and this is consistent with our Reticon scans. Williamon (1976) has published a photometric orbit with a derived light ratio of 1.26 in the blue, which may not be consistent with the observed near-equality of line strengths in our double-lined scans.

YZ Cas - Kron (1942) determined the light ratios of this system (A2V+F5V) to be 15 in the blue and 9 in the red. Lines of the secondary are easily seen on Reticon scans having signal-to-noise ratios (S/N) in excess of 300 taken in the  $6400 \text{ \AA}$  region. The maximum depth of the secondary absorption lines is about 2% which is consistent with Kron's light ratio. Linewidths of the two components differ by a factor of about 2.

V442 Cyg - In the photographic study of this system, Ikauniex (1946) suggested that the period was probably twice the one he derived, which is the period given in the GCVS. Our scans of this faint ( $10^m 0$  pg) system are strongly double-lined, indicating that this suggestion is correct and the period is about 2.386 days. The light ratio based on the line strengths is about 1.2. The GCVS spectral type of F4 may be slightly too early, but is close to correct. A new photometric study of this system based on photoelectric data is badly needed.

TX Leo - In the  $6400 \text{ \AA}$  region no sign of the secondary is seen on scans with S/N in excess of 1000.

FL Lyr - Cristaldi (1965) had to assume third light ( $L_3 = 0.335$ ) to get a photometric solution to his photoelectric data. This assumption has been criticized by Koch, Plavec and Wood (1970). Our scans are strongly double-lined, but show no sign of a third component. The inferred light ratio is about 1.5. The photometric orbit should be redetermined from new photoelectric data.

EE Peg - This system is similar to YZ Cas in the sense that it consists of an early A and an early F main sequence pair. Linnell's (1973) solution to Ebbighausen's (1971) data gives a light ratio in the blue of 9. Lines of the secondary are easily seen on  $6400 \text{ \AA}$  Reticon scans having S/N greater than 300. The deepest lines of the secondary are about 2%.

V906 Sco - A double-lined orbit was computed from low-dispersion spectrograms by Abt *et al.* (1970), but our high-resolution scans show that the system is triple-lined. The orbit of Abt *et al.* (1970) is therefore suspect since at low-resolution the third component would blend with lines of the other two. At  $4481 \text{ \AA}$  Mg II the third component is about 0.3 the width of the other two components and has the same depth. The period of the third component is not yet known. The photometric orbit of Leung and Schneider (1975) needs to be recomputed with allowance for third light.

TX UMa - Weak (1 %), broad lines of the secondary are seen in scans of the 6400 Å region having S/N greater than 300. Some emission is present at H $\alpha$ .

We intend to continue observing these and several other systems in the future, and eventually to obtain absolute properties of the component stars.

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References:

Abt, H. A., Levy, S. G., Baylor, L. A., and Hayward, R. R. 1970. Ap.J.,

159, 919.

Cailliatte, M. Ch. 1951. J. Obs., 34, 57.

Cristaldi, S. 1965. Pub. Catania. N.S., 68, 6 .

Ebbighausen, E. G. 1971. A.J., 76, 460.

Ikaunlex, J. J. 1946. Var. Stars, 6, 16.

Kron, G. E. 1942. Ap. J., 96, 173.

Leung, K. and Schneider, D. P. 1975. Ap. J., 201, 792.

Linnell, A. P. 1973. Ap. Sp. Sci., 22, 13.

Vogt, S. S., Tull, R. G., and Kelton, P. 1978. Applied Optics, 17, 574.

Williamon, R. M. 1976. A. J., 81, 1134.