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PHOTOELECTRIC OBSERVATIONS OF THE RECENT ECLIPSE OF 22 VULPECULAE

The spectroscopic binary 22 Vulpeculae (BD +23°3944) was noted by Parsons and Ake (1983 Inf. Bull. Var. Stars No. 2334) to have recently undergone an eclipse. Their conclusion was based upon IUE spectra from April 1983 in which the spectrum of the hotter companion was absent and the FES magnitude (λ_{EFF} 5200 Å) was 0.12 magnitude fainter than on previous occasions. With a revised period they gave the approximate ephemeris:

$$2445442.2 + 249.099E.$$

To confirm 22 Vul as an eclipsing binary, it was observed on seven nights during August and September 1984 with the 41 cm. reflector of the Morgan-Monroe station of the Goethe Link Observatory. All observations were made with standard UVB filters and a 1P21 photomultiplier tube cooled with dry ice. Differential measurements were made in the pulse counting mode using BD +24°4075 as a comparison star and BD +23°3935 as a check star. A neutral density filter was used to reduce the brightness of the stars involved. Calculation showed that the largest dead time correction was less than 0.5%, hence dead time corrections were not applied. Because the variable and comparison stars are separated by more than 1°, corrections for differential extinction were applied. No attempt was made to transform to the standard system. The check star varied by less than $\pm 0^m.01$ in B and V and less than $\pm 0^m.02$ in U.

The differential magnitudes are plotted in Figure 1. From this plot several conclusions can be drawn:

1. An eclipse did occur.
2. The depth of the eclipse was approximately $0^m.05$ in V, $0^m.10$ in B and $0^m.30$ in U.
3. Duration of totality was at least eight days, as noted by Parsons and Ake.
4. Mid-eclipse occurred no earlier than J.D. 2445941.6, more than a day later than predicted by the above light elements.

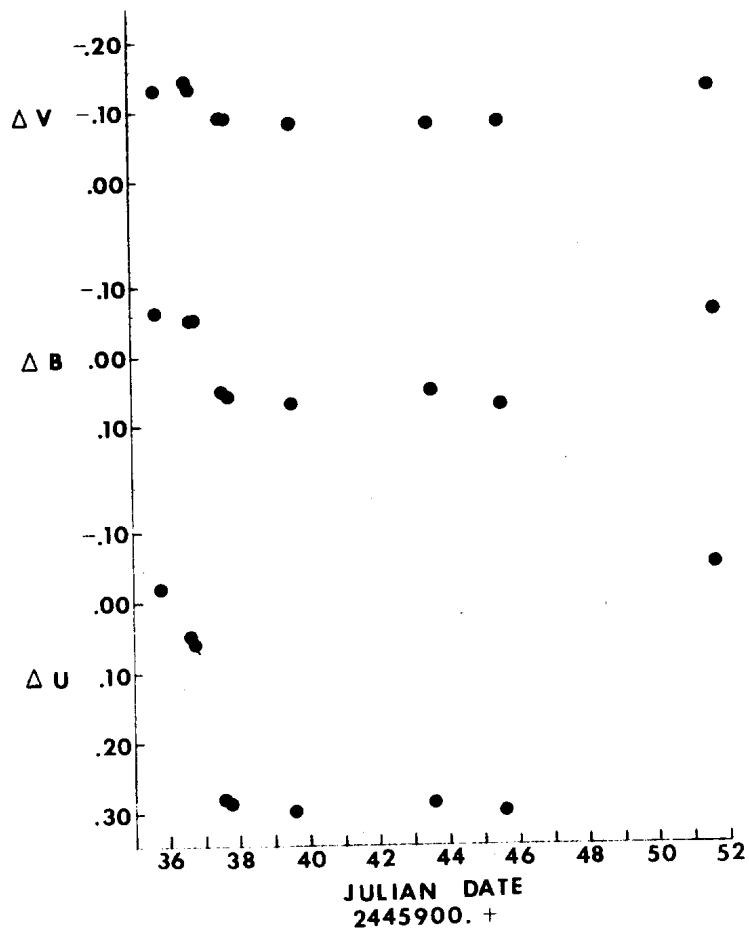


Figure 1

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