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PHOTOELECTRIC MINIMA OF FIVE ECLIPSING
BINARIES IN CASSIOPEIA AND PEGASUS

During the summer and fall of 1978 photoelectric V-filter observations were made of primary minima of DO Cas, RZ Cas, TV Cas, TW Cas, and AT Peg with the 40-cm Cassegrain telescope of the University of Montana. The observing procedure was the same as described in IBVS No. 1478 (Margrave et al., 1978).

Table 1. Observed Heliocentric Times of Minima

<u>Star</u>	<u>Hel. JD - 2,440,000</u>	<u>O-C</u>
DO Cas	3728.8184 ± 0.0003	-0.0013
	3795.9144 ± 0.0003	-0.0026
RZ Cas	3723.8235 ± 0.0003	-0.0019
	3729.8003 ± 0.0002	-0.0014
	3760.8740 ± 0.0004	-0.0041
	3772.8246 ± 0.0002	-0.0060
	3790.7519 ± 0.0001	-0.0074
	3796.7303 ± 0.0002	-0.0052
	3803.9019 ± 0.0003	-0.0051
TV Cas	3786.7774 ± 0.0002	-0.0178
	3795.8442 ± 0.0003	-0.0140
TW Cas	3803.7904 ± 0.0005	-0.0029
AT Peg	3728.7993 ± 0.0010	-0.0512

The times of minima in Table 1 were determined both by the chord bisection method and by the least-squares fitting of a parabolic curve. The results given by the two methods are usually the same to four decimal places. When they differ by amounts of the order of the quoted standard deviations, the least-squares quadratic fit result is given here.

The ephemerides used to calculate the O-C values are given in Table 2. The large negative residuals for TV Cas are consistent with

Table 2. Ephemerides for Stars Observed

<u>Star</u>	<u>Hel. JD</u>	<u>Period (days)</u>	<u>Source</u>
DO Cas	2,433,926.4573	0.68466595	SAC 50
RZ Cas	2,429,875.6902	1.1952473	Herczeg and Friboes-Conde
TV Cas	2,443,043.6265	1.8126066	SAC 50
TW Cas	2,442,008.3850	1.428328	SAC 50
AT Peg	2,440,438.383	1.146105	SAC 50

the trend of early-occurring eclipses evident in the data of Pohl and Kizilirmak (1976) and Ebersberger, Pohl, and Kizilirmak (1978). A more accurate ephemeris for the prediction of future primary minima of TV Cas is

$$\text{Hel. JD (Min)} = 2,442,590.4728 + 1.81258632 E.$$

This ephemeris gives residuals less than 0.0025 days for the minima of the two notes cited above and the present note but is not intended as a definitive new ephemeris for TV Cas.

The very large negative O-C value for AT Peg found here continues the trend to early-occurring eclipses noted by Margrave et al. (1978). It would appear that the period decrease of AT Peg has accelerated since 1975. The following quadratic ephemeris is suggested for prediction of future primary minima of AT Peg:

$$\text{Hel. JD (Min)} = 2,440,438.3819 + 1.14611546 E \\ - 9.523 \times 10^{-9} E^2.$$

This ephemeris is based on observations only back to 1969, for which it gives a mean residual of 0.0030 days, and is intended merely to aid observers in planning observations of AT Peg. It is obvious, however, that careful attention should be given to deriving a revised ephemeris for this star.

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References:

- Ebersberger, J., Pohl, E., and Kizilirmak, A.: IBVS No. 1449, 1978.
Herczeg, T. and Friboes-Conde, H.: Astr. and Ap., 30, 259, 1974.
Margrave, T. et al.: IBVS No. 1478, 1978.
Pohl, E. and Kizilirmak, A.: IBVS No. 1163, 1976.
Rudnicki, K.: Supplemento ad Annuario Cracoviense No. 50, Krakow 1978.