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B, V, R, I LIGHT CURVES OF V803 AQUILAE

The very short period eclipsing binary system V803 Aquilae was discovered by Bakos (1950). He correctly classified this system as a W UMa-type. He gave 29 epochs of minimum light and presented a photographic light curve. A finder chart was also included. Later, Harwood (1962) observed V803 Aql and noted that the finder chart by Bakos failed to show a bright star about 0.5' northward of the variable. This object was used as our check star. Also, Locher (1978) found an error in Bakos' elements. He used 26 minimum timings of his own to determine the following ephemeris:

JD Hel Min. I = 2448780.357 + 0.2634254d · E .

Moreover, Locher pointed out that V803 Aql was not observed at all between 1937 and 1973. The BBSAG Bulletin has since published well over 100 times of minimum light for this system.

The present observations were made on 1-7 June, 1989 at Kitt Peak National Observatory in Tucson, Arizona using the 0.9m #2 reflector which housed a dry-ice-cooled RCA 31034a Ga-As photometer tube. More than 500 observations were taken at each effective wavelength. The coordinates of the check, comparison and the variable star are given in Table I.

TABLE I

Star	R.A. (1950)	Dec. (1950)
V803 Aql	$18^h\ 58^m\ 04^s$	-7° 33.5'
Comparison	$18^h\ 58^m\ 11^s$	-7° 35.1'
Check	$18^h\ 58^m\ 02^s$	-7° 33.2'

Six epochs of minimum light were determined from observations made during three primary and three secondary eclipses. The first four epochs of minimum light were determined by an iterative technique based on the Hertzsprung method (1928), while the last two were determined with the bisection-of-chords method. These epochs are given in Table II. The probable errors are indicated in parentheses.

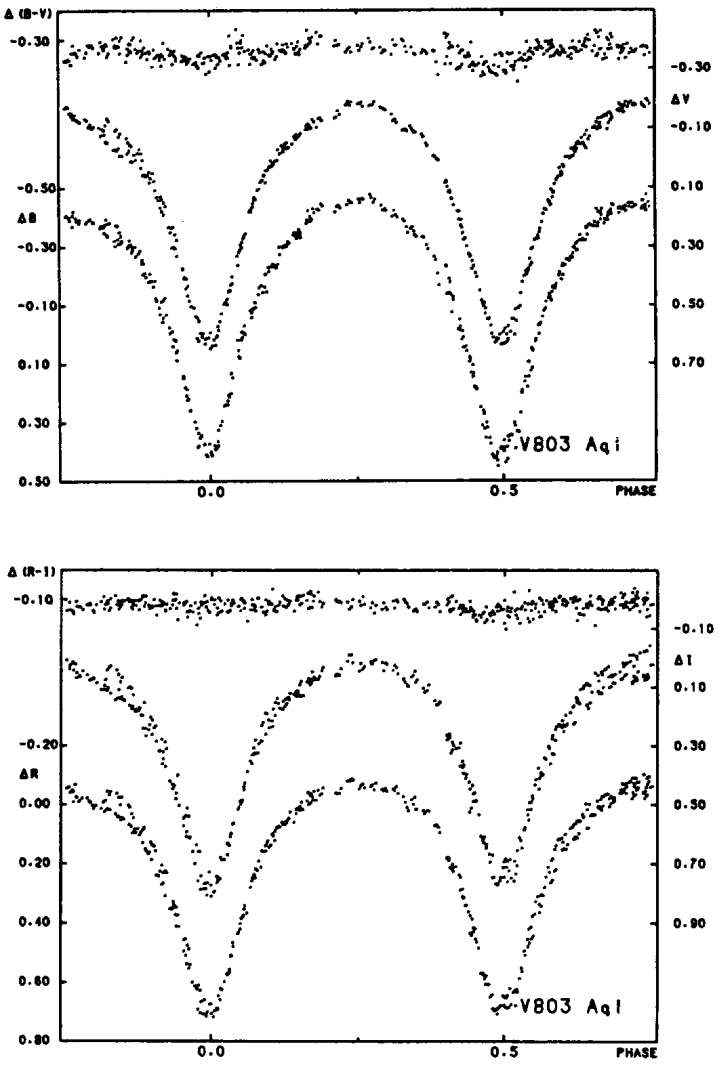

Fig. 1 - Light curves of V803 Aql as defined by the individual observations.

TABLE II

JD HEL. 2440000	Cycles	O-C
7678.8756(1)	- 22.5	- 0.0012
7680.8523(2)	- 15.0	- 0.0002
7681.9052(1)	- 11.0	- 0.0010
7683.8806(1)	-3.5	- 0.0013
7684.8043(3)	0.0	0.0004
7684.9351(6)	0.5	- 0.0004

These times of minimum light along with BBASG minima following JD 2444500 were introduced into a least squares solution to obtain the following improved linear ephemeris:

$$\text{JD Hel Min. I} = 2447684.8038 + 0.263422299\text{d} \cdot \text{E}\,.$$
$$\pm \qquad 3 \qquad 11$$

This ephemeris when used in conjunction with all previous times of minimum light indicates that there have been at least two distinct period changes: an increase followed by a recent decrease.

The light curves of V803 Aquilae defined by the individual observations are shown in Figure 1 as Δm versus phase. The analysis of the observations is underway.

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