A PERIOD CHANGE IN V783 CYGNI

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Abstract

From 496 magnitude estimates on photographic plates, an increase in the period of V783 Cygni has been determined.

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V783 Cygni is listed in The General Catalog of Variable Stars (GCVS) as an RR Lyrae type variable. The GCVS gives the elements as: Period: 0.62069443 days, Epoch: Julian Day 2433261.0374.

Magnitude estimates were made on 496 plates in the Nantucket collection. Twenty-one composite light curves were constructed using the elements stated above. Fourteen of these composite light curves were based on observations from within one calendar year. The other seven curves were the result of combining two years of observations. Twelve of the graphs had between 20 and 30 points, three had more than 30 points, six had less than 20 points.

A mean light curve was then drawn, combining all observations from Julian Day 2424695 to Julian Day 2440508. The mean light curve, drawn on tracing paper, was laid over each of the composite light curves and the value of O-C was read off as a phase shift. The resulting O-C diagram is shown in Figure 1. The error bars were obtained by reading off the extreme limits of position of the mean light curve at which the mean curve still fits the data.

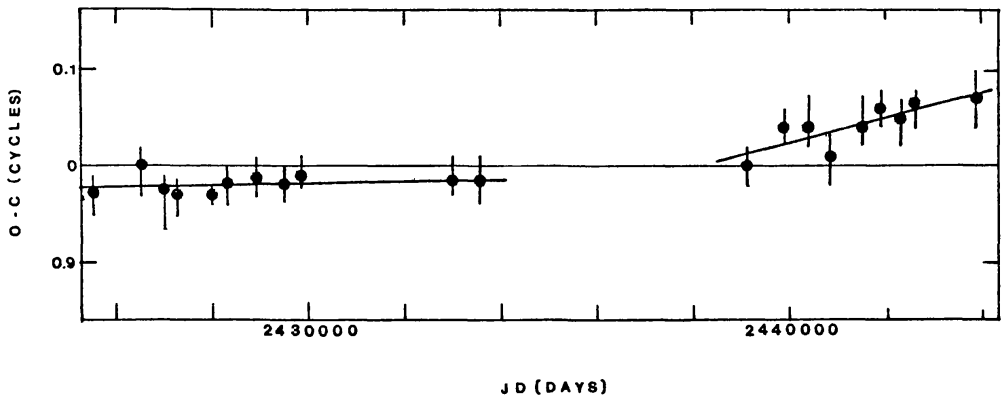

Figure 1. O-C diagram for V783 Cygni.

Two straight lines were fitted to the data points on the O-C diagram by the method of least squares. The first 11 points were used to determine the first line, and the last 10 points determined the second line. From the slopes and intercepts of the two lines the following elements were determined:

From	To	Period	Epoch
J.D. 2424695	J.D. 2433919	0.62069487 Days ±0.00000041 Days M.E.	J.D. 2433261.029 ±0.004 M.E.
J.D. 2438973	J.D. 2444089	0.6206994 Days ±0.0000012 Days M.E.	J.D. 2441122.778 ±0.035 M.E.

I find that prior to Julian Day 2433919 the period of V783 Cygni is slightly longer than the previously published figure. However, the difference is on the order of my mean error. After Julian Day 2438973 I find that V783 Cygni has a period which is longer by 0.00074% ±0.00020 M.E. of the previous period.

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REFERENCE

Kukarkin et al. 1969, The General Catalog of Variable Stars, Moscow.