

PERIOD DETERMINATION FOR MY SCUTI

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Abstract

The linear and parabolic elements for the RR Lyrae (RRab) variable MY Scuti are computed, and the quadratic term is not found to be statistically significant.

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MY Scuti is an RR Lyrae (RRab) variable with elements by Bakos listed by Harwood (1960) as:

$$JD_{\max} = 2428729.530 + 0.573902 E. \quad (1)$$

$$\pm 0.003 \pm 0.000003$$

Magnitude estimates were made on Maria Mitchell Observatory plates dating from 1927 to August 1981. From these, the 0.57 day period was verified by inspection and by a period search program using the method of Lafler and Kinman (1965).

Light curves for nine sets of years were plotted using the elements in equation (1). A mean light curve was drawn on tracing paper; the O-C values for the nine light curves were found by the phase shift from the mean curve. The resulting O-C diagram is given in Figure 1. A straight line and a parabolic curve were fitted to the points by the method of least squares.

The straight line corresponds to the following new elements:

$$JD_{\max} = 2444140.581 + 0.57390415 E. \quad (2)$$

$$\pm 0.005 \pm 0.00000022$$

The parabolic curve corresponds to the new elements:

$$JD_{\max} = 2444140.583 + 0.5739050 E + (2.9 \times 10^{-11})E^2. \quad (3)$$

$$\pm 0.013 \pm 0.0000011 \pm (2.6 \times 10^{-11})$$

The significance of the parabolic term was tested by the method described by Pringle (1975), and was found to be probable at only the 70% confidence level, which implies a 30% probability that the E^2 term is due to chance deviations from the line. Thus the E^2 term is not considered statistically significant.

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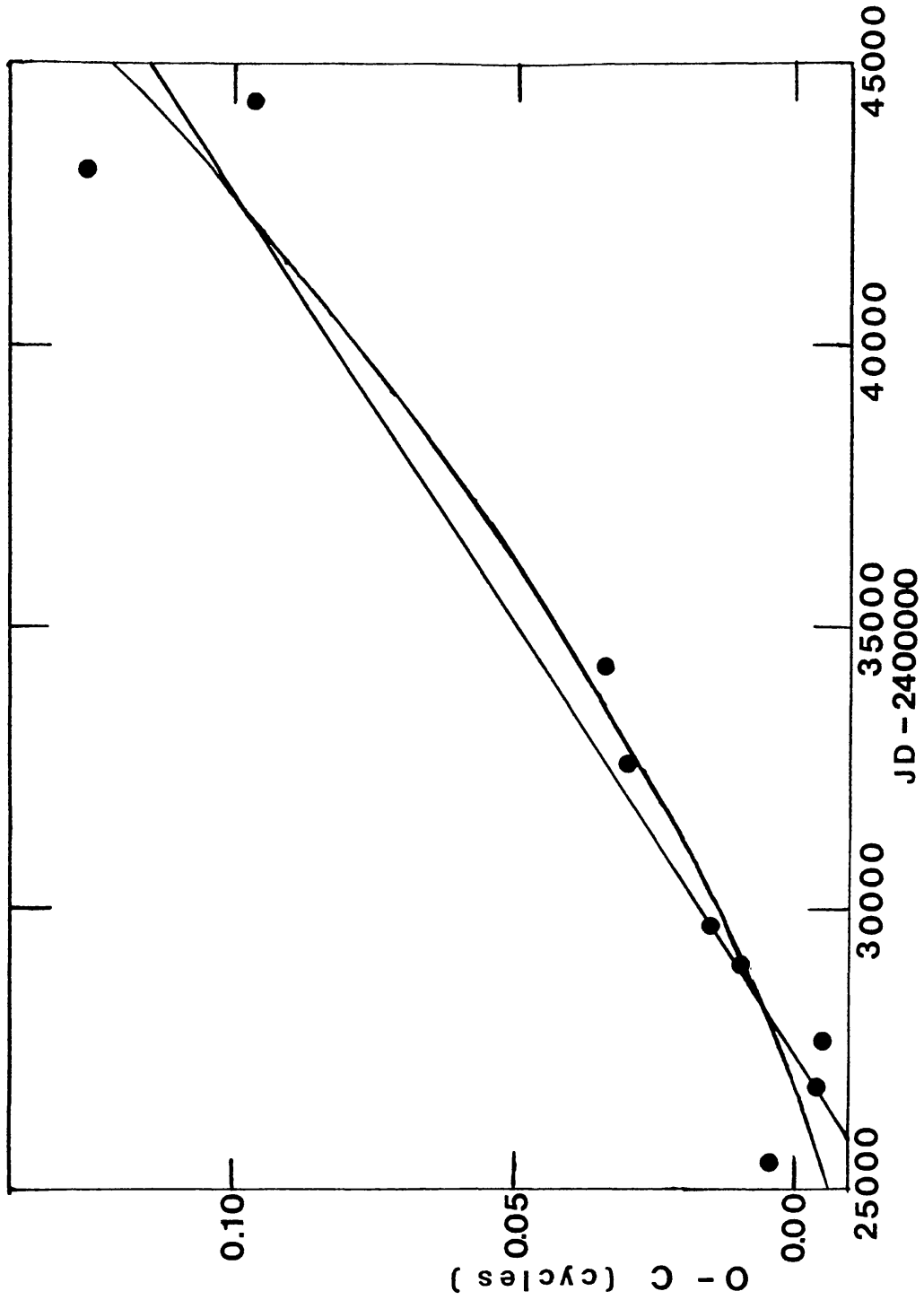


Figure 1. O-C diagram for MY Sct. Shown are the least squares solutions for a straight line and a parabola.