

A PERIOD CHANGE IN V957 AQUILAE

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Abstract

The period of the RR Lyrae variable, V957 Aquilae, is checked for constancy. A period change of 0.0012% in 50 years is found.

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V957 Aquilae was discovered at Nantucket in 1939 by Barbara Andrews. It is listed in the Second Supplement to the Third Edition of the General Catalogue of Variable Stars (Kukarkin et. al., 1974) as an RRab Lyrae variable with elements

$$J. D. 2436429.295 + 0.6051368E \quad (1)$$

Magnitude estimates were made from 754 plates in the Nantucket collection. Light curves were constructed for J.D. 2424350 - J.D. 2428484 using the elements in equation (1). These curves showed that the period was shorter than in equation (1), and so the new elements

$$J. D. 2428079.565 + 0.6051320E \quad (2)$$

were adopted. Light curves for J.D. 2421871 - J.D. 2443987 were plotted from these elements.

A mean light curve was then drawn, combining all observations from J.D. 2426865 - J.D. 2429144. The mean curve, copied on to tracing paper, was used to define the position of maximum on the individual light curves. The deviations, O-C, of these observed maxima from the maxima computed from equation (2) are plotted against J.D. in Figure 1. Two straight lines were fitted to the data using a least squares analysis. The first ten points were used to determine the first line, and the last nineteen points, the second line.

The following new elements were determined for J.D. 2421871 - J.D. 2428105:

$$2428154.960 + 0.6051327 E \quad (3) \\ \pm .0000014 \text{ (m.e.)}$$

and for J.D. 2428256 - J.D. 2443987:

$$2429878.043 + 0.6051399E \quad (4) \\ \pm .0000005 \text{ (m.e.)}$$

The period changed by $0.^d00000724 \pm 0.^d00000012$ (m.e.), or 0.0012% of its value.

The published period in equation (1) was determined by Tsessevich (1972). He does not say what range his elements apply for, so it is difficult to explain his shorter period.

Further work to fill in the gap on the O-C diagram would be useful.

This work was done under the guidance of Dr. Emilia P. Belserene

and was supported by NSF Grant No. AST-7807405-A01.

REFERENCES

Kukarkin, V. V. et. al. 1974, General Catalog of Variable Stars, Second Supplement, Moscow.

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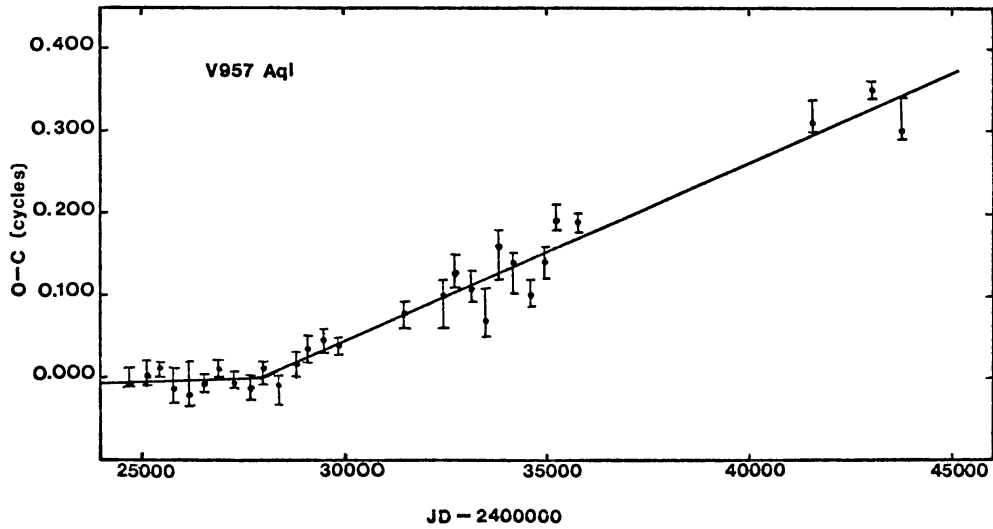


Figure 1. O-C diagram for V957 Aql. The two lines represent least squares solutions in which all the points are given equal weight. The error bars show the range over which the mean light curve would fit the observed data.