PERIOD TEST FOR AA SERPENTIS

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Abstract

The Cepheid variable star AA Serpentis was studied on 598 Maria Mitchell Observatory plates. The new data were checked for deviations from the previously assigned period of 17.1412 days. The period remains the same, 17.14120 days ±0.00004, but a new epoch is offered.

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The last estimate given for the period of AA Serpentis, 17.1412 days, was published by Kurochkin (1955). To check this period for accuracy and change, a comparison study was conducted using photographic photometry on 598 Maria Mitchell Observatory plates.

The plates studied spanned the years from 1937 to 1984. The results confirmed and refined the established period. By comparing the observed light curves of the post-1955 data with a calculated mean light curve an O-C diagram was made. The diagram plotted Julian Date against difference in phase. The method of least-squares was applied to the data to check the period for constancy or change. The resulting equation,

$$JD_{(max)} = \begin{matrix} 2440884.59 + 17.14120\ E, \\ \pm\ 0.09 \pm\ 0.00004 \end{matrix} \qquad (1)$$

shows that the calculated period for the new data is exactly the period assigned to the star thirty years ago. The period has not changed since 1955. The duplication of this period further confirms the accuracy of that earlier estimate. The new epoch offered by the above equation is JD 2440884.59 and can replace the old epoch of JD 2432742.6, which corresponds, 474.99 cycles later, to 2440884.59. The difference probably corrresponds to a slightly different way of defining the moment of maximum.

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REFERENCE

Kurochkin, N. E. 1955, **Variable Stars** (Russian) **10**, 3, 171.