

OBSERVATIONS OF THREE VARIABLE STARS IN SCUTUM

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Abstract

UY Scuti is found to be a long period variable. The published period for AP Scuti is updated and confirmed. Through the elimination of a spurious period, a new period is determined for AA Scuti.

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The period of UY Sct has not yet been published. Data from analysis of Nantucket plates (JD 2,421,427 to JD 2,443,719) indicate that UY Scuti is a long period, semiregular variable. The light curve of UY Scuti exhibits a period of approximately 740 days interrupted by long, irregular spans at maximum brightness (Figure 1).

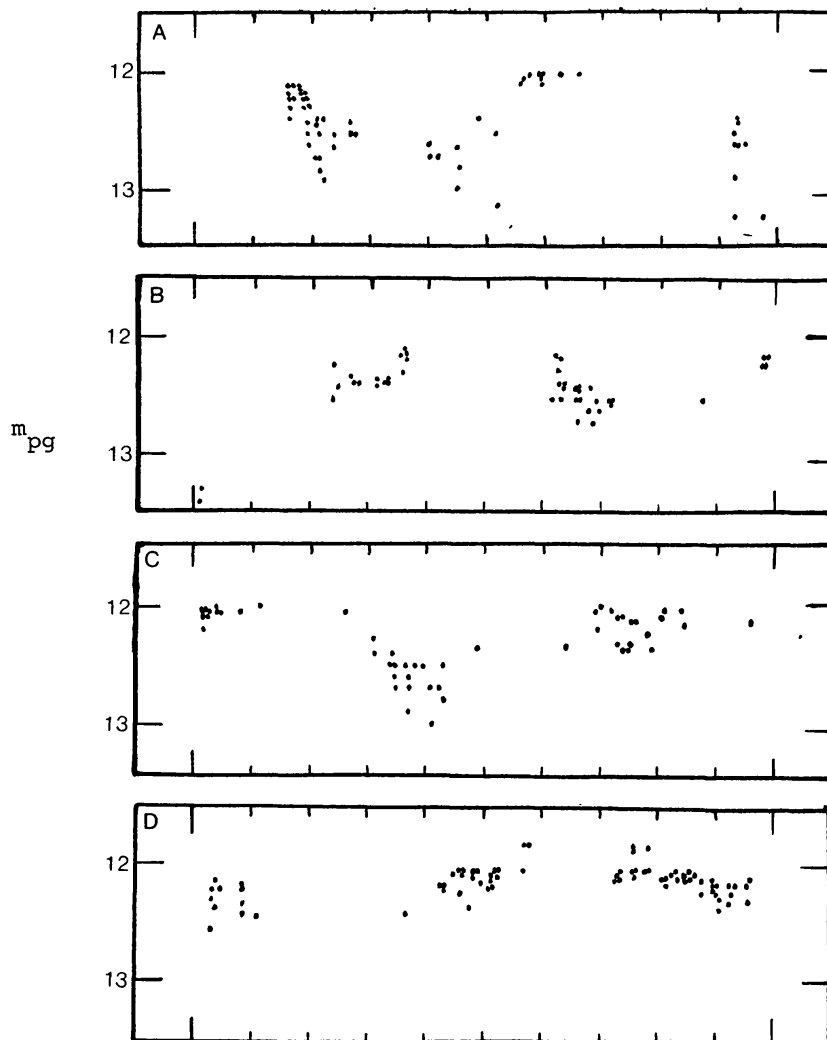


Figure 1. Light curve of UY Scuti. Sequence begins at JD 2426000, indicated by first marker in A. Each strip is equal to 1,000 days; markers are at 100 day intervals.

Using the blink comparator, I rediscovered two variable stars. AP Scuti has a published semiregular period of 104 days (General Catalog of Variable Stars). Through data obtained from more recent observations, I was able to update and confirm this period.

The rediscovery of AA Scuti has led to a new calculation of this star's period, previously published as 153 days. This original value was obtained through the work of Mrs. Doris Wills (Harwood, 1930), who at that time found one discordant point in her data (private correspondence in Maria Mitchell Observatory files). In an update on AA Scuti done by Miss Margaret Harwood in 1948 (Harwood 1960) the 153 day period was ostensibly confirmed, and a listing of dates at which maxima occurred was published.

My survey of NA plates from JD 2,424,737 to JD 2,443,719 showed AA Scuti to be at maximum brightness at times coinciding with Miss Harwood's dates. However, the light curve produced from my data exhibits maxima at intervals of 263 days (Figure 2). The 153 day period is obviously a spurious period related to the 263 day cycle in this manner: $1/p' = 1/153 - 1/365$. This relationship yields a period of 263 days.

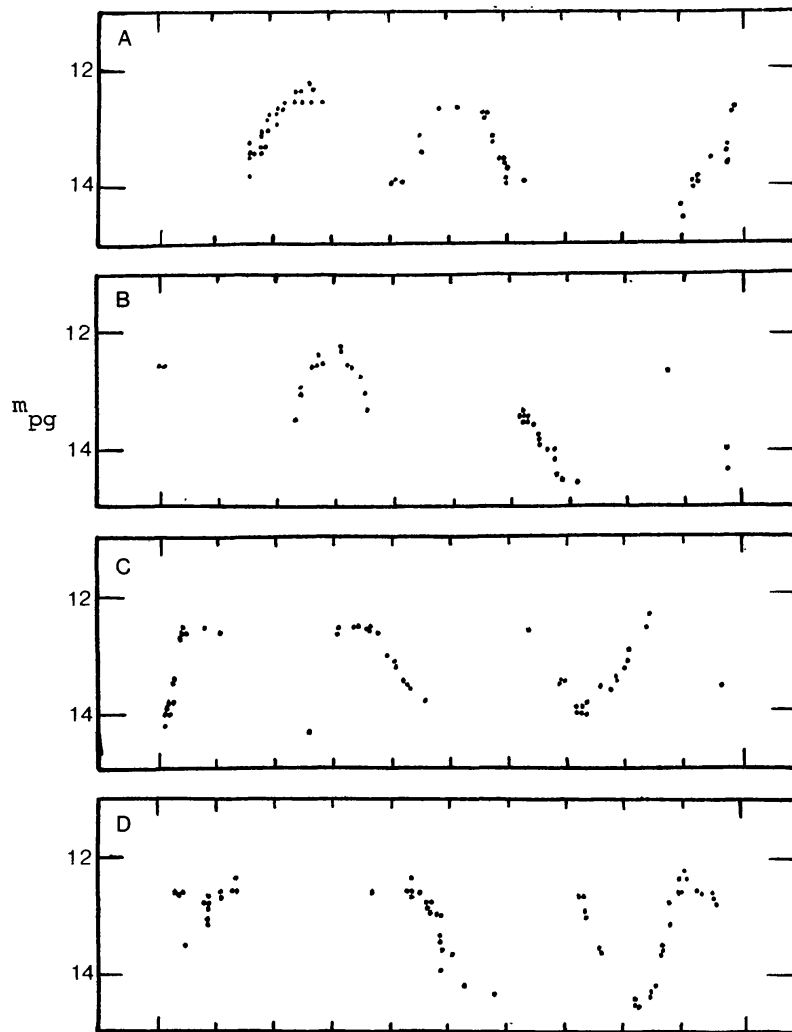


Figure 2. Light curve of AA Scuti contradicts a 153 day period. Sequence begins at JD 2426000, indicated by first marker in A. Each strip is equal to 1,000 days; markers are at 100 day intervals.

To arrive at the original value, Mrs. Wills had a total of 52 observations; Miss Harwood a total of 112. In plotting the light curve for AA Scuti, I had scrutinized over 900 Nantucket plates. The appearance of the light curve produced from these data, displaying well-defined maxima and minima, contradicts a 153 day period. I can only assume that in updating the period, a sample of observations was made which showed maxima occurring in the predicted intervals, and that these observations were taken as confirmation of a 153 day period.

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REFERENCES

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S4693, A POSSIBLE Z CAMELOPARDALIS STAR IN CYGNUS

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Abstract

The variability of S4693 has been confirmed. It is conjectured to be a Z Camelopardalis star.

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I estimated S4693, $\alpha = 19^{\text{h}}25^{\text{m}}44^{\text{s}}$, $\delta = +42^{\circ}53'2$ (1900) in Cygnus on 650 plates taken from JD 2,424,680 to 2,443,691 at the Maria Mitchell Observatory. The star exhibits irregular outbursts of more than 2.5 magnitudes. The duration of these outbursts is between 3 and 14 days. All rises to maximum are very steep, occurring in about 1 day. This description fits well with the Z Cam type stars.

A distinctive feature of the Z Cam light curve is the occasional halt at an intermediate magnitude on the descending side of the outburst. This has not been observed in S4693 but may well be happening below plate limit.

Further observations of this star's light variation and spectral type are necessary for convincing classification.

Selected parts of the light curve (Figure 1) and a finder chart (Figure 2) are given.

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