THE CHANGING PERIOD OF V2526 SAGITTARII

by

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Abstract

Observations for the years 1925-1975 of V2526 Sgr indicate that the period has increased: 31.33 days satisfies the observations prior to 1944; 31.45 days satisfies the later observations.

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The star V2526 Sgr (Cep?) was reported by Kooreman (1968) to be a possible Cepheid, although its minima are more sharply defined than the maxima. He found a period of 31.3224 days to fit the Leiden observations for 1934-44 and 1965. However, his observations for 1952 indicated a phase shift of 0.3 cycles, and this suggested a change of period.

Magnitude estimates have been made on approximately 400 plates taken at the Maria Mitchell Observatory (1957-1975), and on more than 400 Harvard plates (1925-1950). The published period is confirmed on the Harvard plates (MF, B, and RB series) up to 1944, while the later Maria Mitchell plates require a longer period, 31.45 days.

Figure 1 shows the phases of observed minima (phases are expressed in decimal parts of a period) computed with the period of 31.45 days. An attempt was made to fit a parabola to these points. The best parabolic correction term found and applied to the computed phases as $\Delta\phi = 4.2 \times 10^{-9}(JD - 2439000)^2$, shows (Figure 2) peculiar systematic trends, whereas an abrupt change of period at about JD 2431000 represents the available observations reasonably well. The shapes of the mean light curves (Figure 3) suggest that the star belongs to Population II.

Various spurious-period relationships were investigated but no other period was found that will satisfy a substantial percentage of the observations.

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REFERENCE

Kooreman, C. J. 1968, Bull. Ast. Inst. Netherlands, Supplement Series, 3, 41.

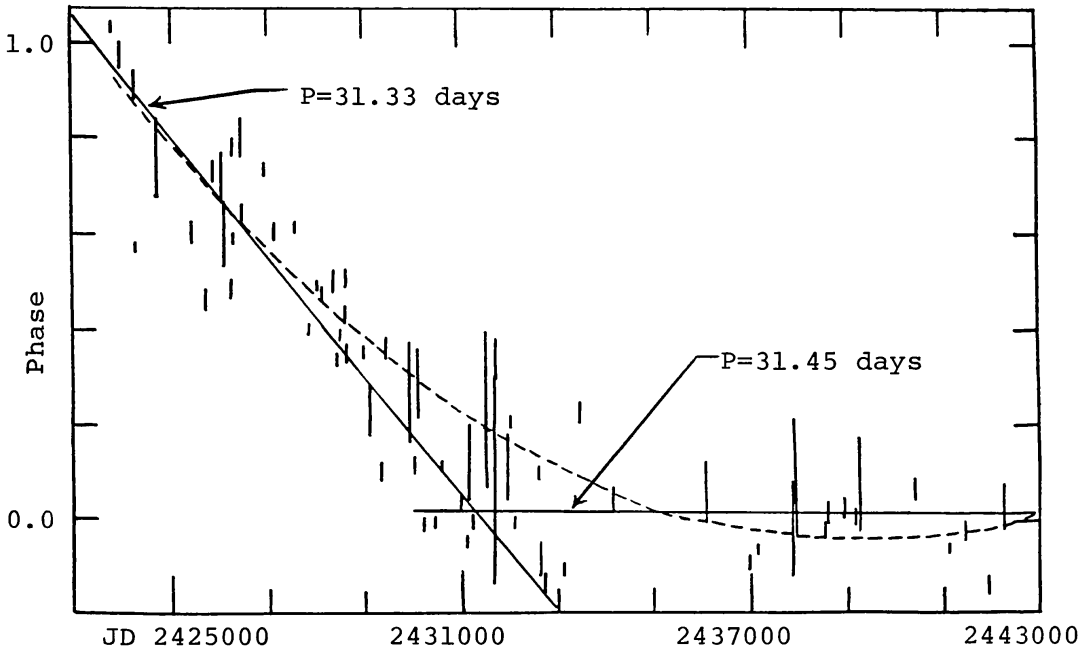

Figure 1. Phases of minima computed for P = $31^d.45$. The short vertical lines indicate span of observed minima. Abscissae are Julian Days. The dashed curve is a parabola approximately representing the observations. The two straight lines correspond to a constant period of $31^d.33$ until JD 2431000 and $31^d.45$ thereafter.

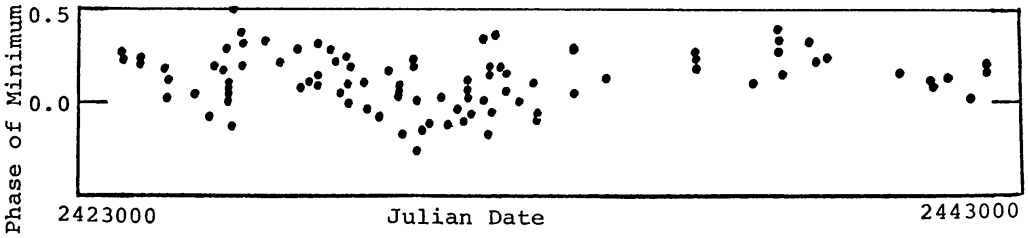

Figure 2. Phases of minimum computed according to the relation, Phase = $\phi = 0.0318(JD - 2439000) + 4.2 \times 10^{-9}(JD - 2439000)^2 - n$, where the integer n is the number of complete cycles elapsed since JD 2439000. The span of abscissae is from JD 2423000 to 2443000.

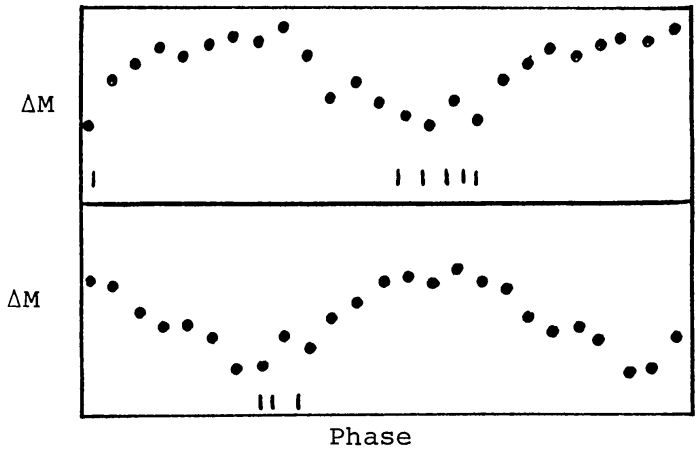

Figure 3. Mean light curves: upper diagram for the Harvard plates for 1925 - 1944; lower diagram for Nantucket plates for 1957 - 1975. Short vertical markers indicate the phases of Kooreman's published Leiden minima.