A REVISED PERIOD OF V1828 SAGITTARII

by

DEBORAH CARMICHAEL
Maria Mitchell Observatory
Nantucket, Massachusetts

Abstract

New observations indicate a decrease in period but do not distinguish between a smooth and an abrupt change.

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In 1958, Andrea Kundsin used Harvard MF plates taken from 1924 to 1951 to determine that V1828 Sgr is a Cepheid with a period of 12.985 days (Hoffleit 1959). This summer I used a series of approximately 500 plates taken at the Maria Mitchell Observatory from July, 1957, to July, 1975, to update the published period. The observations from the more recent plates showed that the old reciprocal period of 0.077012 could not be used to describe the current period. The reciprocal period had increased to 0.07709 and the period therefore decreased to 12.972 days. The Nantucket observations are satisfied by the relation, JD(max) = 2442275 + 12.972n, in the interval JD 2436037 to JD 2442596.

In a plot of O-C of maxima versus JD, if the early observations are arbitrarily displaced by one whole cycle relative to the late observations, a parabola can be fit to the O-C values. This indicates a possible phase correction,

$$\Delta\phi = kn^2, \text{ where } k = 7.7\times10^{-6}$$
$$n = (JD - 2440000)/P_o,$$
$$P_o = 12.972 \text{ days.}$$

Here the change in phase is expressed in decimal parts of a cycle. These corrections bring the early and late observations into reasonable agreement. However, there are very few observations at any phase, and no observations at maximum, between JD 2428000 and 2436000. Hence it is not possible with the present data to decide whether the change of period was abrupt or progressive. The parabolic correction to the phases does not decrease the scatter of the observations below that found by using the constant period for the early observations and a different constant period of the late group.

REFERENCE

Hoffleit, D. 1959, A. J., 64, 147.