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RECENT MINIMA OF THE SUBDWARF ECLIPSING BINARY BD-7^o3477 (=HW Vir)

During a photoelectric UBV survey of UV-bright objects, Menzies & Marang (1986) discovered the B-type subdwarf BD-7^o3477 (=HW Vir) to be an eclipsing binary with a very short period of 2^h48^m. In a preliminary analysis, Menzies & Marang (1986) determined the temperature of the primary to be 26000K and the secondary probably ~4500K, the radii of both components to be near 20% of their separation, and plausible masses of 0.25 and 0.12 solar masses. This model suggests that the system could have passed through a "common envelope" stage and is probably similar in evolutionary status to AA Dor (e.g. Hilditch & Kilkenny 1980; Paczynski 1980; Kilkenny 1986).

Because of the possibility of eventually detecting the effects of gravitational radiation (only on timescales of a few hundred years) and, more realistically, of seeing the effects of mass loss or mass exchange, it has seemed worthwhile to establish accurate ephemerides for these evolved binaries by continued monitoring.

Menzies & Marang (1986) used 27 timings of primary minima obtained in 1984-85 to establish a rather accurate ephemeris for the HW Vir system and in this note we report four further timings from 1989. The data were obtained with the 0.5m telescope and modular photometer of the South African Astronomical Observatory. For each eclipse, a series of 20-second continuous observations with a Johnson B filter was made, with occasional breaks for sky background measurement; a typical primary eclipse result is shown in Figure 1. From these data, the following times of primary minima were determined:

HJD	Est.error	Cycle
2447684.32597	+0.00003	16739
7687.24396	0.00003	16764
7688.29443	0.00005	16773
7689.22817	0.00003	16781

where the cycle number is based on the Menzies & Marang (1986) ephemeris and the observation at cycle 16773 is less accurate because the early part of the descending branch of the eclipse was missed. A linear least squares

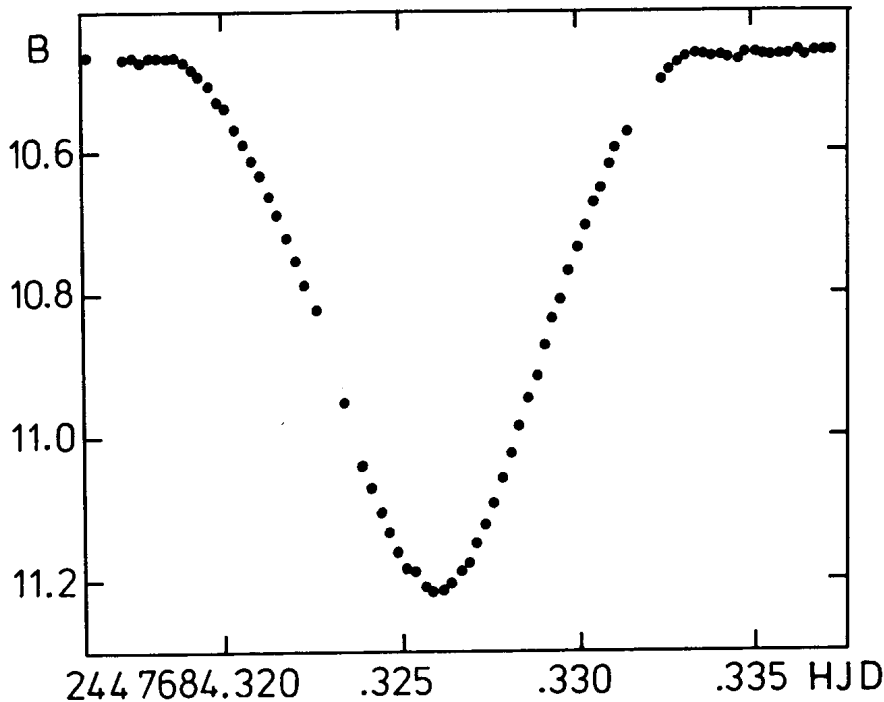


Figure 1. Primary minimum of HW Vir on HJD 2447684 observed with continuous 20-second integrations. Gaps occur where sky background measurements were made.

solution, including the Menzies & Marang data gives an ephemeris:

$$\text{HJD (primary min)} = 2445730.556074 + 0.1167196311 \cdot n \\ \pm 0.000014 \pm 0.0000000024$$

Formally, a quadratic solution with a decreasing period term is a slightly better fit to the data, however this is a very weak result, probably not significant, and further observations over one or more years will be required to test this suggestion.

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