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EVIDENCE FOR THE VARIATION OF BRIGHTNESS WITHIN THE PRIMARY MINIMA IN W UMa (BD + 56°1400)

Photometry of the star was carried out in Izmir, at Ege University Observatory with the 48 cm Cassegrain reflector and EMI 9781 A unrefrigerated photomultiplier. The first complete light curve was obtained on January 6, 1982 with excellent sky conditions (k_B = 0.16, k_V = 0.19). On January 7, 1982 only the primary minimum was repeated. Until the end of February, 1982 the variable star could not have been observed due to bad weather conditions. In March 25/26/28, 1982 one light curve was completed. The last uncomplete light curve in this season was obtained in April 6, 1982.

In previous bulletins (I.B.V.S. Nos: 2083, 2102, 2151) timings of primary and secondary minima, corresponding (O-C) values were calculated and presented together with the figures. Intercomparison among the light curves obtained in January, March, April 1982 and particularly between January and April has resulted in conspicious brightness variation (see Figure 1). The light curves obtained on January 16/17 and the last one obtained on April, 1982 exhibit marked brightness difference within the first minimum, whereas corresponding brightness difference is not so conspicious within the secondary minimum. The brightness difference within the first minimum is about 0.05 - 0.06 magnitude. In order to check if this value is correct from the point of view of observational errors, the comparison star (BD+56°1399) was re-examined and its brightness constancy was checked throughout the observations. It is clear that the comparison star exhibits no variation what so ever and its standard mean error was calculated for the nights and amounted to 0.01 magnitude.

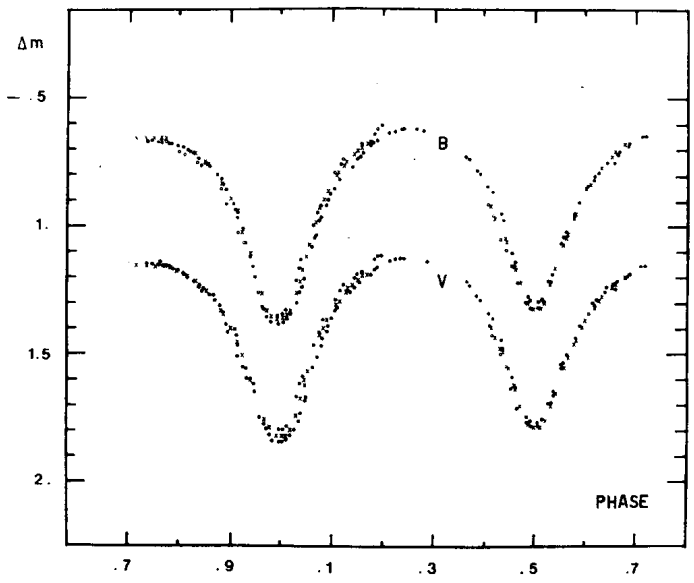

Figure 1: Differential brightness curves of W UMa obtained in January, March and April 1982. Dots, crosses and open circles correspond to the observations obtained on 16/17 January, 1982, 25/26/28 March, 1982 and April 6, 1982 respectively. The dimension of circles (open or filled) correspond to the standard mean error of 0.01 magnitude.

Therefore the brightness variation within the primary minimum is real and is about 0.05-0.06 magnitudes between January and April, 1982.

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