

VISUAL OBSERVATIONS OF AW UMA IN 1995

Summary: about 200 visual estimates of AW UMa, an EW-type eclipsing binary, carried out in 1995 confirmed the validity of the ephemeris (1).

Introduction

AW Uma is an eclipsing variable star of EW type, with light variation between 6.84 and 7.10 magnitude in the V band. Thus, the small light amplitude, equal to 0.26 magnitude, could exclude the possibility to observe visually this star obtaining good results. In the GCVS 1985 the following ephemeris is reported for AW UMa:

$$\text{Min.I (Hel.J.D.)} = 44664.7993 + 0.4387299 * E \quad (1)$$

which was used in this work.

Moreover, components of AW UMa's binary system have very different sizes, thus minima are one total and one annular.

Results and discussion

Between February and April 1995 I carried out about 200 visual estimates of AW UMa, using GEOS chart C84. In the following table the heliocentric times of light minimum are reported obtained processing visual data by SOP⁽¹⁾ program. Furthermore O-C's values in respect with the previous ephemeris (1) and the type of observed minimum, primary or secondary, are reported too:

Tab.1 : AW UMa times of minimum in 1995

DATE	U.T.	HJD	O-C(1)	TYPE
1 Feb	20.37	49750.359 ± 0.008	0.022	II
2 Feb	22.36	49751.442 ± 0.005	0.008	I
6 Feb	20.57	49755.373 ± 0.003	-0.009	I
19 Feb	19.28	49768.311 ± 0.004	-0.014	II
20 Feb	22.02	49769.418 ± 0.004	-0.004	I
9 Mar	19.55	49786.330 ± 0.006	0.017	II
20 Mar	19.16	49797.303 ± 0.005	0.022	II
22 Mar	23.40	49799.486 ± 0.004	0.011	II
23 Mar	20.17	49800.345 ± 0.003	-0.007	II
19 Apr	20.01	49827.334 ± 0.005	0.000	I

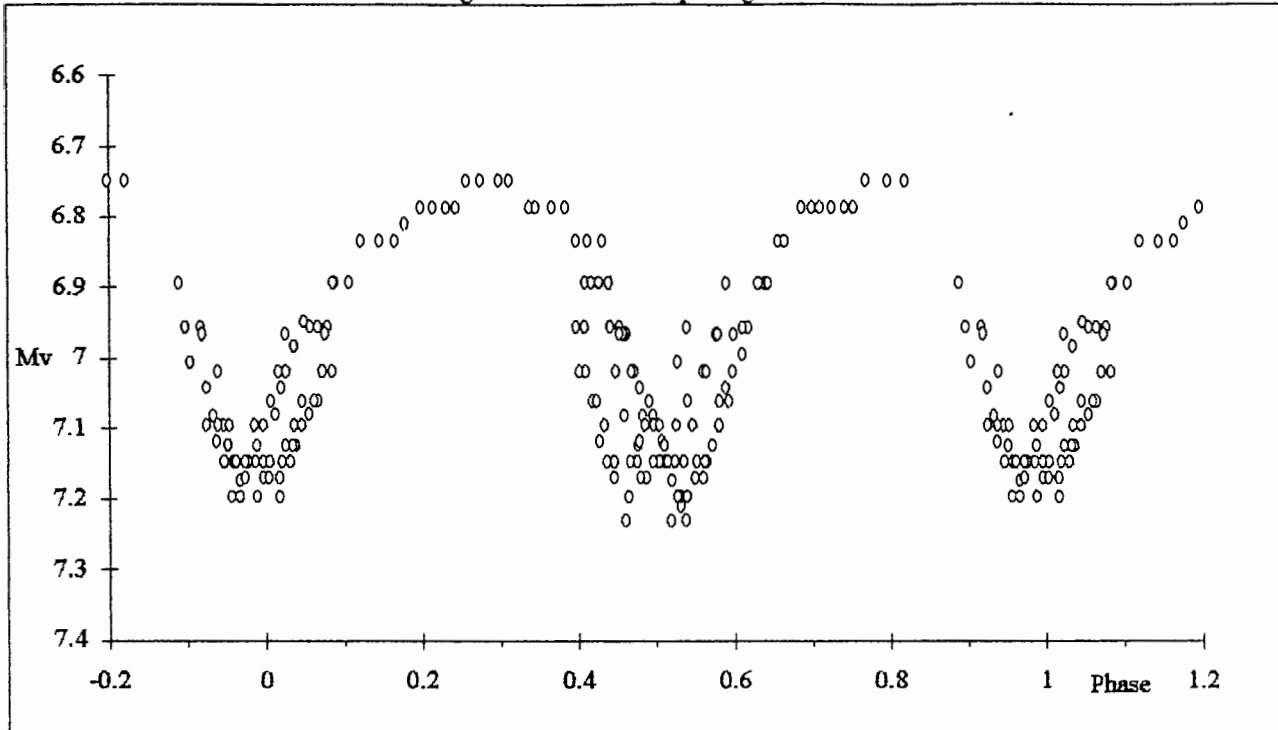
As we see, O-C(1)'s values are very scattered, confirming the eclipsing curve and the following search of the time of the light minimum is difficult to achieve through visual observations. However data in table 1 confirm the validity of ephemeris (1) because we obtain a mean O-C equal to:

$$O-C_{\text{mean}} = 0.005 \pm 0.013 \text{ day}$$

The *compositage*

Visual estimates in 1995 were used to plot a *compositage* which is reported in the next page:

Fig.1 : AW UMa's compositage in 1995



In spite of the small amplitude of brightness, the *compositage* showed a rather regular trend, confirming the value of visual estimates, also in regard to very little amplitude variable stars. Besides, it is important to note the different amplitude of the two minima owing to two different types of eclipses, as reported in the introduction.

Conclusions

The present work confirmed the validity of ephemeris (1), contained in the GCVS 85, for the eclipsing binary AW UMa in 1995. Infact the analysis of the 10 light minima visually observed showed a mean O-C almost zero.

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References:

- (1) A.GASPANI, *Stochastic Optimization Program*, ver. 5 (priv.comm.)