THE VISUAL LIGHT CURVE OF OW GEMINORUM, FEBRUARY 1995

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Abstract

February 1995 brought the first opportunity to study a primary eclipse of the star OW Geminorum with the star well placed for observation. Visual observations made during the eclipse were used to construct the light curve and determine the time of minimum.

1. Introduction

OW Geminorum was discovered during the course of a photographic sky patrol by amateur astronomer Dan Kaiser in March 1988. Visual and photographic observations quickly identified the star as an eclipsing variable with an amplitude of approximately two magnitudes and a primary eclipse lasting 12 to 14 days (Kaiser *et al.* 1988). A study of the Harvard plate collection by Kaiser yielded a period of 1258.59 days (Kaiser 1988). Williams photoelectrically detected a shallow secondary minimum at phase 0.23 in January 1989 with an amplitude of 0.1 magnitude (Williams 1989). In September 1991, the next scheduled primary minimum was observed, but the star was poorly situated near the sun in the early morning sky. R.F. Griffin and A. Duquennoy published the results of radial velocity and spectroscopic observations in April 1993, giving the derived physical parameters of the system (Griffin and Duquennoy 1993).

2. Discussion

Since the 1991 primary minimum was observed under such poor circumstances, the next scheduled primary eclipse in February 1995 was eagerly awaited by both professional and amateur astronomers. Terrell *et al.* (1994) mounted an international photoelectric campaign to observe the star. In conjunction with this effort, AAVSO observers participating in the variable star topic on the GEnie on-line computer service decided to coordinate their own visual observations of the eclipse. These observations, along with many more collected by the AAVSO Eclipsing Binary Committee, form the basis of the light curve and time of minimum presented here.

Seventeen observers submitted 155 observations (Table 1). The observations from JD 2449740 to 2449780 were used to form the light curve in Figure 1. Of these, 97 were selected to calculate the time of minimum using a Basic computer program that calculates the minimum based on the method developed by Kwee and Van Woerden (1956). The resulting geocentric time of minimum was

$$JD_{min} = 2449760.857 \pm 0.052 \quad (1)$$

This compares favorably with the calculated time of minimum based on the ephemeris given by Williams and Kaiser (1991):

$$JD_{min} = 2449760.93 \pm 0.4 \quad (2)$$

No attempt was made to determine the heliocentric time of minimum because it would only have a minimal effect in the third decimal place and the error in the ephemeris and the calculated time of minimum is much greater than this.

3. Acknowledgements

I would like to give special thanks to all of the observers of OW Gem who contributed to this study. In addition, thanks go to Dan Kaiser for gathering observations and promoting interest in this star, and to Marvin Baldwin for compiling the observations.

References

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Table 1. Visual observers of OW Geminorum.

Observer	*No. of Observations*	*Observer*	*No. of Observations*
Baldwin, M.	12	Kaiser, D.	7
Baroni, S.	11	Lenz, G.	10
Collins, P.	10	McDonald, P.	12
Cudnik, B.	10	Nall, M.	13
Dill, A.	3	Reinhard, P.	5
Dillon, W.	1	Samolyk, G.	13
Foglia, S.	9	Stephan, C.	15
Hager, T.	3	Weier, D.	7
Hays, R.	14		

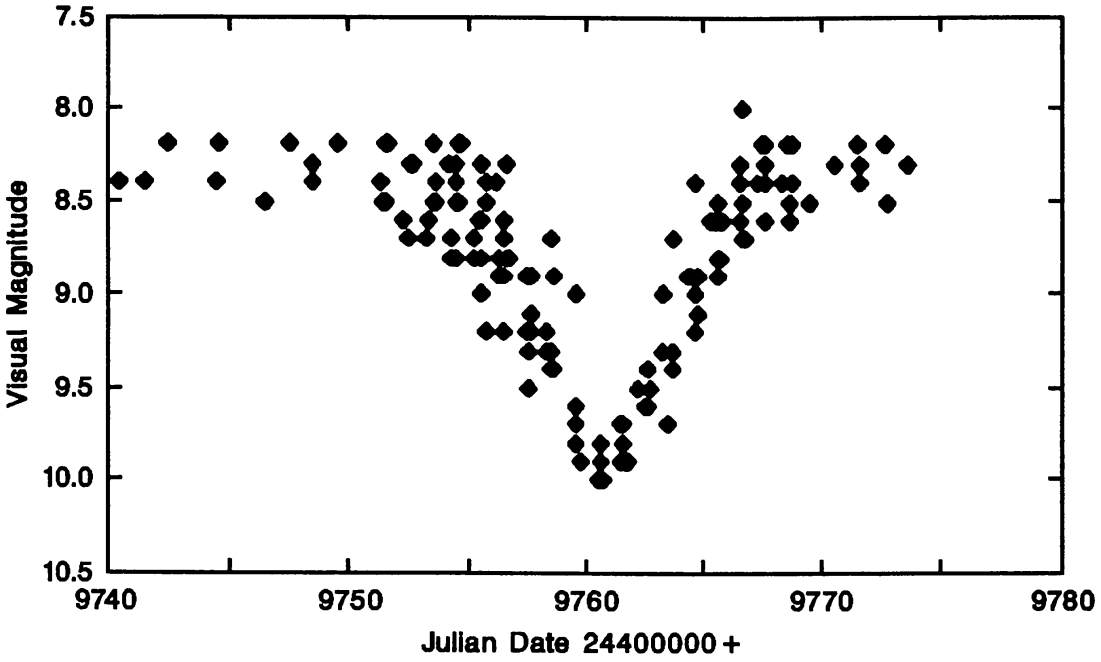

Figure 1. Visual observations of OW Gem during its primary eclipse in February, 1995.