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TIME OF MINIMUM DETERMINATION FOR AS CAMELOPARDALIS

AS Cam (HD 35311) is an important system in the study of relativistic apsidal motion. It is one of only a few binary systems with observed apsidal motion significantly less than what is predicted by general relativity and standard classical theory (Guinan et al., 1987a). Yet more binary systems are being found to behave in this fashion, such as V541 Cygni and V1143 Cygni as well as DI Her, the prototype apsidal motion system (Lines et al., 1989; Guinan et al., 1987b). This phenomenon is not yet completely understood, and may be more common in eccentric eclipsing binary systems than was initially thought.

I observed AS Cam on several nights in January 1989, and obtained two sets of data when the star was near the center of primary eclipse. I used the USAF Academy 61 cm telescope with an uncooled EMI 9789 photomultiplier tube to conduct standard uvb differential photometry. The stars HD 34463 and HD 34886 were used as comparison and check respectively, and neither one showed any sign of variability. On 27 Jan 1989 UT, AS Cam was observed from just prior to until approximately one hour after primary minimum. This data is plotted in Figure 1.

The data was reduced using estimated first order extinction coefficients, and curve fitting was accomplished using a second order polynomial fit to a fine-mesh cubic spline. Error bars are not included for individual points on the graph, but the maximum error for any point is 0.03 magnitude. As Figure 1 shows, the time of minimum is almost identical for all three filters, and analysis of the fit gives the average time of primary eclipse as:

$$T(\text{minimum}) = \text{HJD } 244\,7553.6410 \pm 0.0022.$$

Using the ephemeris of Guinan et al., the (O-C) = -0.0012.

Unfortunately, all further attempts to observe AS Cam at minimum during the next two months were fruitless due to bad weather at my location.

AS Cam 27 Jan 1989 v, b, u filters

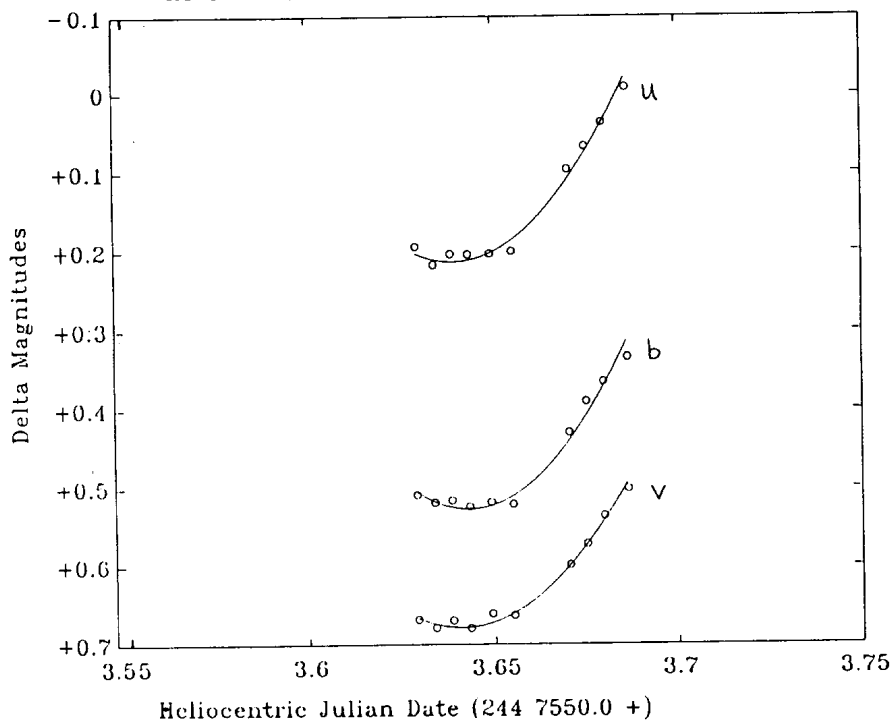


Figure 1

Hopefully other observers have obtained further timings of primary and secondary minimum, so that the motion of this system can be further refined.

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CHRISTOPHER J. COULS  
 Department of Physics  
 USAF Academy  
 Colorado Springs CO 80840

## References:

- Guinan, E.F., Maloney, F.P., and Boyd, P.T.: 1987a, I.B.V.S. No. 3029.  
 Guinan, E.F., Najafi, S.I., Zamani-Noor, F., Boyd, P.T., and Carroll, S.M.:  
 1987b, I.B.V.S. No. 3070.  
 Lines, R.D., Lines, H., Guinan, E.F., and Carroll, S.M.: 1989, I.B.V.S.  
 No. 3286.