

# epsilon aurigae

1982-84  
ECLIPSE

PHOTOMETRY:

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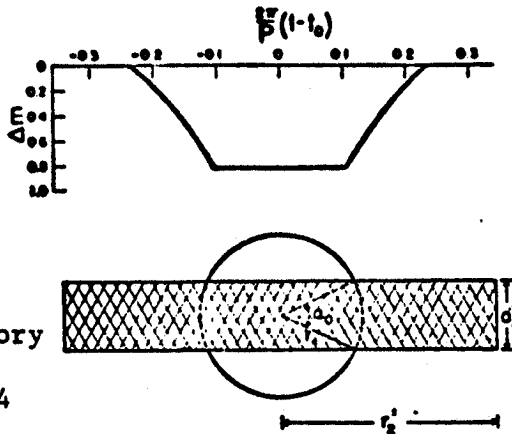


FIG. 1.—A schematic diagram of our model for  $\epsilon$  Aurigae and its resulting light-curve during eclipse. It is assumed that we observe this system edge-on. Consequently, the rotating gaseous disk around the secondary component will appear to be a dark rectangle which obscures the primary component during eclipse. The light-curve at the top of the figure is derived by assuming a uniform stellar disk.

Huang 1965 Ap.J. 141

CAMPAIGN  
NEWSLETTER #1

SPECTROSCOPY:

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18.Jan.82

Dear Colleagues;

We are pleased to bring to you the first Epsilon Aurigae Campaign Newsletter in anticipation of the upcoming eclipse. It is hoped that this vehicle will serve to quickly disseminate information to interested observers. We hope to begin assembling a representative light curve for inclusion in future issues so as to advise everyone of the exact progress of the event.

The poster on this topic presented at the recent AAS meeting in Boulder drew a lot of attention and useful comments. We are developing an inventory of observers and techniques. These should ultimately include infrared photometry, infrared spectroscopy and infrared polarization, UBVRI and other filter photometry, visual 'photometry', high dispersion spectroscopy (particularly of H- $\alpha$ , helium lines and Na D), precision low dispersion spectrophotometry and of course UV studies. Please inform us of your specific observing modes, frequencies, etc., so that we can put the most appropriate observers in contact with each other.

Attached are several pages from the poster session which may prove informative. These include eclipse predictions, comments on photometry and on this campaign. In addition to welcoming your correspondence, we encourage you to submit names of interested parties for inclusion on our mailing list.

May you have clear skies (particularly since the season for getting baseline data is half over)!

NOTE: to remain on the mailing list, please complete the attached form.

## THE 1982-84 ECLIPSE CAMPAIGN

BECAUSE ASTRONOMICAL INSTRUMENTATION HAS EVOLVED SIGNIFICANTLY SINCE THE PREVIOUS (1955-57) ECLIPSE, A CO-ORDINATED UV-OPTICAL-IR CAMPAIGN OF OBSERVATIONS WILL BE FRUITFUL IN IMPROVING OUR KNOWLEDGE OF THIS INTERESTING BINARY. DURING THE LAST CAMPAIGN (WOOD, 1958), TEN PHOTOMETRIC AND SEVEN SPECTROSCOPIC OBSERVERS PARTICIPATED (CONSULT GLYDENKERNE 1970 FOR REFERENCES). FOR THE PRESENT CAMPAIGN, THE INTERNATIONAL AMATEUR PROFESSION PHOTOELECTRIC PHOTOMETRY GROUP (DESCRIBE IN THIS POSTER) AND OTHER PROFESSIONAL ASTRONOMERS WILL PURSUE MULTICOLOR PHOTOMETRY. OPTICAL SPECTROSCOPY AT HIGH DISPERSION WILL OCCUR AT NUMEROUS SITES, INCLUDING KPNO, TEXAS, LICK, HAWAII, TRIESTE AND TOKYO. UV SPECTRA WILL BE OBTAINED WITH THE ORBITING INTERNATIONAL ULTRAVIOLET EXPLORER SATELLITE. IR PHOTOMETRY, POLARIMETRY AND SPECTROSCOPY ARE BEING PLANNED AS WELL AND SHOULD PROVE OF GREAT INTEREST.

WE INTEND TO CIRCULATE A NEWSLETTER TO ALL INTERESTED PARTIES IN AN EFFORT TO CO-ORDINATE AND OPTIMIZE THE OBSERVATIONS OF THIS SYSTEM. THE NEWSLETTER IS SIMPLY DESIGNED TO PRIMARILLY REPORT THE CHANGING STATUS OF THE LIGHT CURVE AND TO EXCHANGE RAPIDLY DEVELOPING INFORMATION ARISING FROM NEW DATA. COMMENTARY ON PHOTOELECTRIC AND VISUAL PHOTOMETRY AND ON SPECTROSCOPY ARE WELCOMED. INTERESTED PARTIES ARE ENCOURAGED TO SIGN UP FOR THE NEWSLETTER MAILING LIST, AND IF SO INSPIRED, TO VOLUNTEER FOR THE OBSERVING EFFORT BY SIGNING ON THE OBSERVING INVENTORY ATTACHED TO THIS POSTER. A JOINT PUBLICATION DESCRIBING THE LIGHT CURVE FROM THE PHOTOMETRY IS ENVISAGED.

Before deciding to do any photoelectric photometry of  $\epsilon$  Aur, please be aware of the many serious difficulties inherent in the project:

1. It is very bright, so there might be serious problems with photocell saturation and/or pulse coincidence.
2. The suggested comparison star,  $\lambda$  Aur, is enough fainter that a different major gain step might be required if you use a DC amplifier.
3. Because  $\epsilon$  Aur and  $\lambda$  Aur are  $5^\circ$  apart and because observations should continue as they get very low in the sky, you must explicitly determine extinction coefficients on every night.
4. Although the difference in B-V between  $\epsilon$  Aur and  $\lambda$  Aur is fairly small, you must know your transformation coefficient

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EPSILON AURIGAE NEWSLETTER RESPONSE FORM

\*\*\* To remain on the mailing list, this form must be returned \*\*\*

Yes, I am interested in participating in the Epsilon Aur campaign, please keep me on the mailing list:

NAME: \_\_\_\_\_

ADDRESS: \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Include postal code if applicable.

PHONE: \_\_\_\_\_

TELEX: \_\_\_\_\_

Observing modes: (e.g. UBVR photometry) \_\_\_\_\_

PLEASE RETURN COMPLETED FORM TO R.E.Stencel, Epsilon Aur Campaign  
 J.I.L.A., Univ. of Colorado,  
 Boulder, Colorado 80309 U.S.A.

and given in Table 5.

The dates of the contacts for the next eclipse are predicted

TABLE 5

1. Contact	1982 July 29
2. Contact	1982 December 11
3. Contact	1984 January 9
4. Contact	1984 May 29

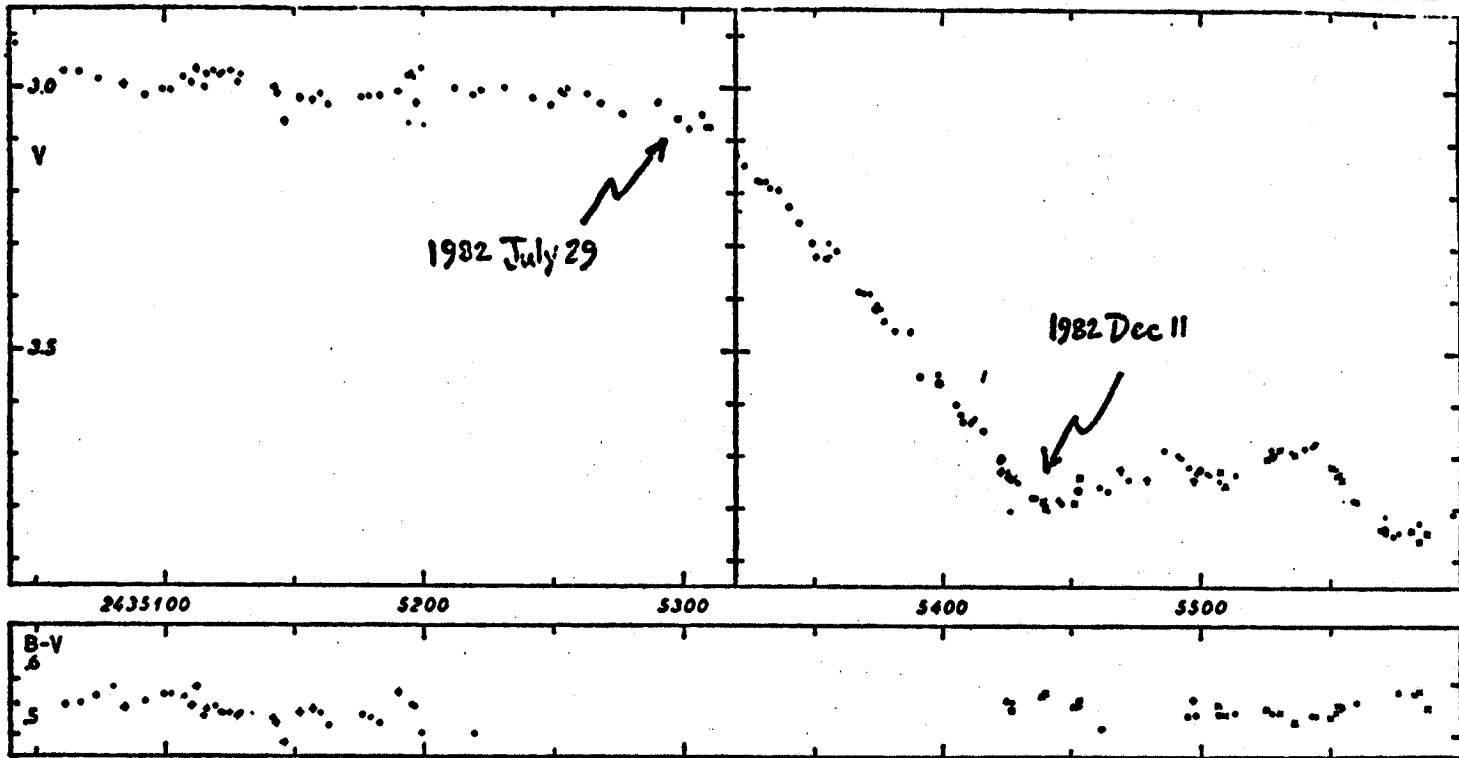


FIG. 1a. The V and B-V light-curves of  $z$  Aurigae during the pre-eclipse phases, the ingress-phase and the first part of the totality. Dots: Sophienholm Station; crosses: Stockholm Observatory; plus-signs: Flower and Cook Observatory; open circles: Hamburg Observatory.

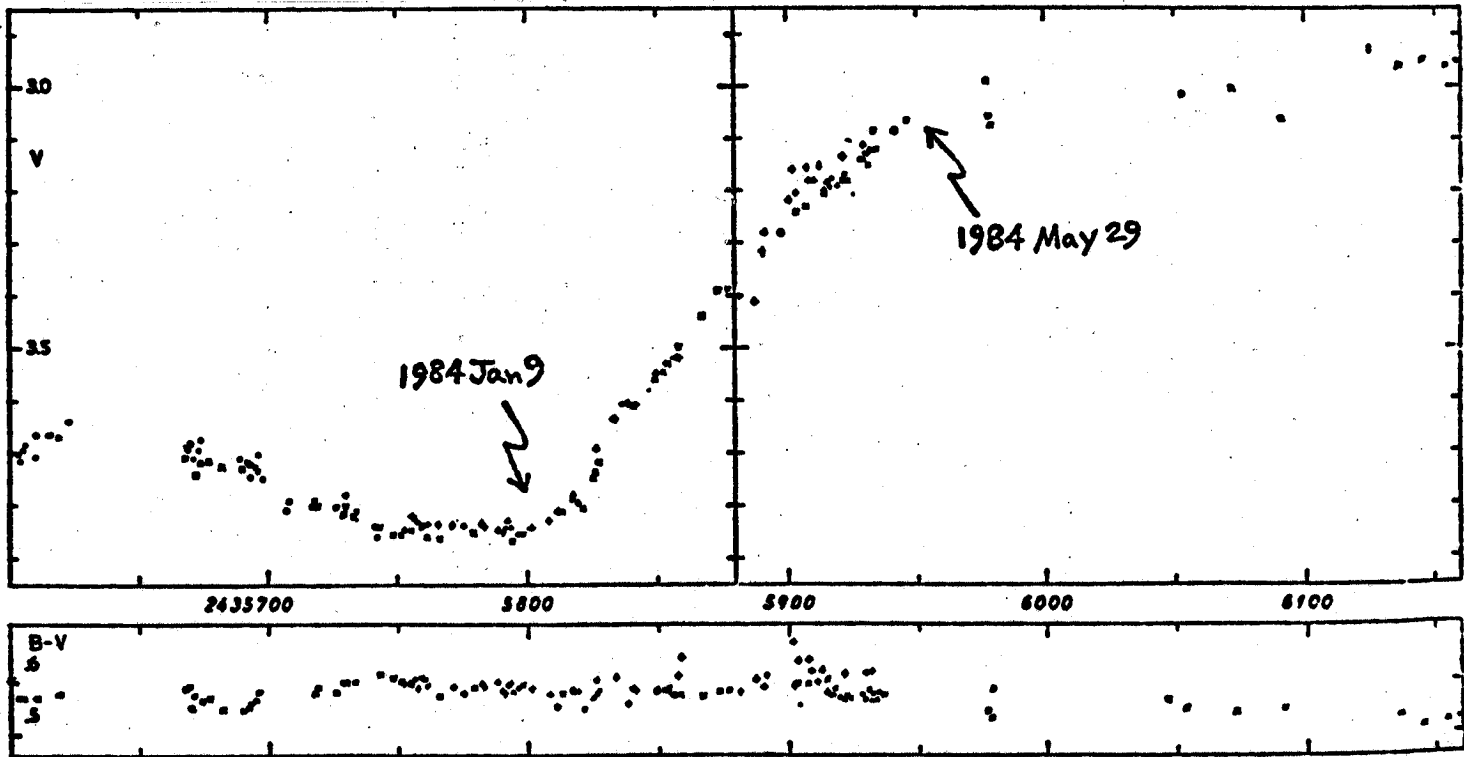


FIG. 1b. The V and B-V light-curves of  $z$  Aurigae during the last part of the totality, the egress-phase and the post-eclipse phases. Dots: Sophienholm Station; crosses: Stockholm Observatory; plus-signs: Flower and Cook Observatory; open circles: Hamburg Observatory.