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PHOTOELECTRIC OBSERVATIONS OF ϵ AURIGAE DURING THE INGRESS

UBV photoelectric observations reported here were made by members of JAPOA (Japan Amateur Photoelectric Observers Association) during the period of October 1982 to March 1983 covering the ingress. Being in co-operation with the international campaign of this remarkable binary star (e.g., Campaign Letters by Hopkins and Stencel 1982), several Japanese amateur astronomers participated in the UBV observations with their own telescopes furnished with photoelectric photometers. The observers and used telescopes are as follows:

Observer	Place	Telescope
T. Abe	Niigata	30-cm reflector
S. Ohmori	Kanagawa	20-cm refractor
T. Ohki and H. Yoshinari	Fukushima	20-cm reflector

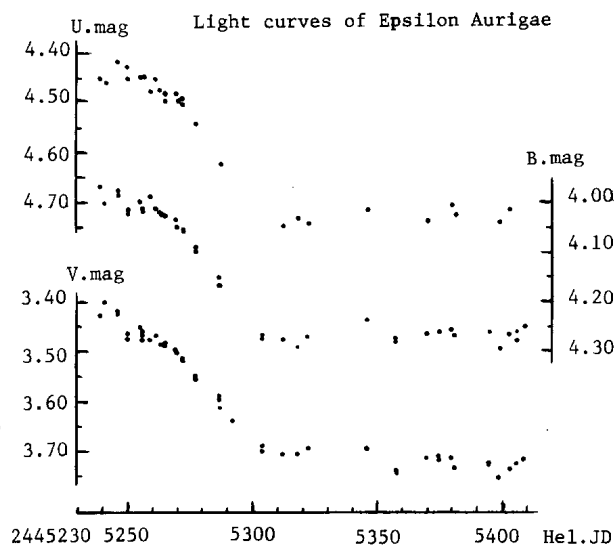


Figure 1

Table I
UBV Photoelectric Observations of Epsilon Aurigae

Date (UT)	Hel. JD 2440000+	U. mag	B. mag	V. mag	Observer
1982					
Sep. 24	5239.15	4.452	4.067	3.529	OY
Sep. 28	5241.19	4.460	4.102	3.499	OY
Oct. 3	5246.131	4.417	4.084	3.518	Ab
	.141	4.417	4.075	3.524	Ab
Oct. 7	5250.089	4.427	4.116	3.518	Ab
	.101	4.450	4.125	3.563	Ab
Oct. 12	5255.15	4.465	4.096	3.552	OY
Oct. 13	5256.126	4.451	4.119	3.577	Ab
	.16	4.450	4.113	3.559	OY
	.173	4.458	4.115	3.566	Ab
Oct. 16	5259.14	4.477	4.088	3.576	OY
Oct. 18	5261.14	4.452	4.114	3.565	OY
Oct. 20	5263.118		4.125	3.586	Om
	.121		4.122	3.587	Om
Oct. 20	.17	4.473	4.119	3.585	OY
Oct. 22	5265.107	4.495	4.127	3.582	Ab
	.116	4.497	4.129	3.580	Ab
	.17	4.497	4.128	3.589	OY
Oct. 26	5269.12	4.481	4.132	3.596	OY
Oct. 27	5270.18	4.495	4.147	3.601	OY
Oct. 29	5272.089	4.490	4.156	3.614	Ab
	.150	4.592	4.158	3.619	Ab
Nov. 3	5277.036	4.540	4.200	3.659	Ab
	.046	4.542	4.188	3.649	Ab
Nov. 12	5286.239		4.244	3.691	Om
	.242		4.249	3.691	Om
Nov. 13	5287.08	4.623	4.264	3.712	OY
Nov. 18	5292.06	4.742		3.738	OY
Nov. 30	5304.153		4.367	3.787	Om
	.164		4.374	3.800	Om
Dec. 8	5312.13	4.731	4.373	3.804	OY
Dec. 14	5318.17	4.742	4.390	3.803	OY
1983					
Jan. 11	5345.08	4.715	4.333	3.793	OY
Feb. 2	5375.002		4.361	3.810	Om
	.006		4.362	3.820	Om
Feb. 4	5370.00	4.737	4.363	3.816	OY
Feb. 14	5380.01	4.705	4.354	3.813	OY
Feb. 15	5381.10	4.724	4.365	3.835	OY
Feb. 28	5394.959		4.380	3.829	Om
	.968		4.381	3.825	Om
Mar. 5	5399.03	4.739	4.392	3.854	OY
Mar. 9	5402.99	4.714	4.363	3.837	OY
Mar. 11	5405.953		4.378	3.827	Om
	.958		4.359	3.825	Om
Mar. 14	5408.933		4.351	3.817	Om
	.936		4.348	3.814	Om

Abbreviation: T.Abe=Ab, S.Ohmori=Om, T.Ohki and H.Yoshinari=OY

Actual observations were carried out differentially with respect to λ Aur as the primary comparison star and standard stars of Johnson were also observed on each night to make it possible to reduce the individual observations to the standard UBV magnitudes. The observed nights are altogether thirty. The results of the observations are all listed in Table I and they are also plotted in Figure 1.

From the figure, we can estimate the magnitudes in UBV of the bottom level to be $U=4.74$, $B=4.28$ and $V=3.74$, respectively. The epoch of the second contact can be estimated to be about JD 2445306, which is found to be 9 days earlier than predicted by Gyldenkerne (1970).

Photometric reductions to the standard UBV system were carefully made by Ohmori with his computer PC 8801. The participated members of JAPOA would like to express their hearty thanks to Prof. M. Kitamura of Tokyo Astronomical Observatory for his encouragement and generous guidance.

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