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HD 93206 (CSV 6797) AN ECLIPSING SYSTEM PRESENTING OBSERVATIONAL PROBLEMS

Discordant observations of Eta Carinae by experienced visual observers led the authors to measure several of the comparison stars during 1971. One of the stars measured, HD 93206, spectral class BO, showed evidence of variability of an unusual nature, in that on every third night the values obtained were almost identical. Other observers have experienced difficulties with this star, but apparently no-one has attempted to confirm either the variability or type.

Between 1971 March 24 and 1972 February 3, fifty one photoelectric observations were made at the Auckland Observatory using the 50cm cassegrain reflector, an EMI 9502S/A photomultiplier, and standard UBV filters. On some occasions observations were made in two colours only. The star was observed differentally in relation to HD 93131 whose values were determined as:

V= 6.50, B-V= -0.03, U-B= -0.80

Stars HD 93943, HD 92964, HD 93737, HD 93695, HD 92740 and HD 92741 were also observed during the programme to ensure non-variability of the main comparison star.

The observations show that HD 93206 is an eclipsing binary, possibly of Beta Lyrae type, with a period of almost exactly six days. Both eclipses may be total, although only four observations on three nights have been made near primary eclipse. The observed range in V is from 6.22 to 6.49. The B-V colour remains constant at $\sim$+0.15.

Table 1 summarises the observations which have been reduced using the ephemeris:

JD 2441030.06 +6.000 E
$\pm$0.20 $\pm$0.007

These observations are presented graphically in Figure 1.

Table 1

Observations of HD 93206

J.D. 2441000.00	V	B-V	U-B	Phase
034.91	6.24	0.12	-0.74	0.309
078.91	6.27	0.13	-0.72	0.642
088.84	6.24	0.15	-0.73	0.297
097.76	6.22	0.15	-0.72	0.783
119.76	6.38	0.13	-0.73	0.450
123.77	6.26	0.15	-0.72	0.118
129.78	6.31	0.12	-0.72	0.121
132.77	6.27	0.14	-0.74	0.619
139.80	6.25	0.14	-0.72	0.790
139.89	6.24	0.14	-0.72	0.806
145.77	6.23	0.14	-0.71	0.785
147.78	6.31	0.14	-0.72	0.120
148.83	6.26	0.15	-0.73	0.296
150.77	6.29	0.14	-0.73	0.618
150.79	6.30	0.13	-0.72	0.622
155.84	6.41	0.14	-0.73	0.463
169.82	6.23	0.15	-0.73	0.793
171.79	6.27	0.15	-0.73	0.122
175.81	6.23	0.15	-	0.778
177.79	6.27	0.15	-	0.121
180.79	6.29	0.15	-0.72	0.621
181.90	6.26	0.15	-	0.806
182.80	6.47	0.15	-0.69	0.956
182.83	6.44	0.15	-	0.961
183.80	6.28	0.17	-0.75	0.122
183.81	6.29	0.16	-0.72	0.123
184.80	6.22	0.16	-0.72	0.290
185.79	6.39	0.14	-0.71	0.455
185.80	6.40	0.14	-	0.457
185.92	6.42	0.16	-0.70	0.477
186.79	6.30	0.12	-0.74	0.621
197.80	6.41	0.15	-0.72	0.456
198.18	6.43	0.15	-	0.520
198.81	6.28	0.16	-	0.625
209.80	6.38	0.13	-0.75	0.456
258.10	6.44	0.16	-0.71	0.507
259.03	6.29	0.16	-	0.662
264.97	6.28	0.16	-	0.651
268.06	6.29	0.14	-	0.167
269.14	6.26	0.13	-	0.347
290.96	6.49	0.15	-	0.983
296.05	6.29	0.14	-	0.831
303.05	6.47	0.15	-	0.999
341.93	6.43	0.15	-	0.479
341.95	6.44	0.15	-	0.481
342.02	6.43	0.14	-	0.493
342.09	6.42	0.16	-	0.504
342.96	6.28	0.14	-	0.651
348.94	6.25	0.14	-	0.647
349.02	6.25	0.14	-	0.660
349.96	6.27	0.16	-	0.817
350.95	6.47	0.14	-	0.982

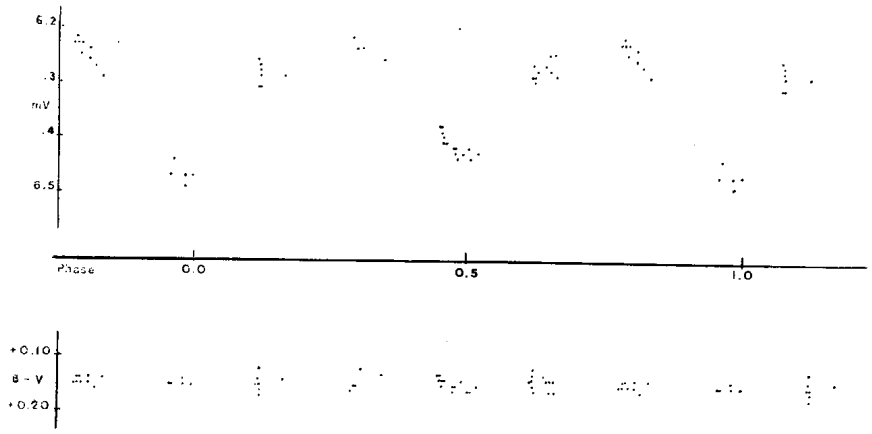

FIGURE 1 HD 93206 Photoelectric observations as listed in Table 1

Using these elements the observations do not show any significant change in phase over 300 days. Both eclipses appear to be of relatively long duration and we have not been able to observe the egress from totality, although it appears that the ingress of the secondary eclipse is being observed.

The period of this system, and the relatively small amplitude of the light variations, is such that the determination of an accurate epoch and period has proved impossible; nor has it been possible to fill the large gaps in the light curve. The solution to these problems probably lies in joint observations by several suitably located observers.

As this star is not of a type normally observed in Auckland we do not plan any further observations other than in conjuction with our study of the light variations in Eta Carinae. We are thus presenting the somewhat incomplete observations of this star in the hope that others may be encouraged to attempt observations.

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