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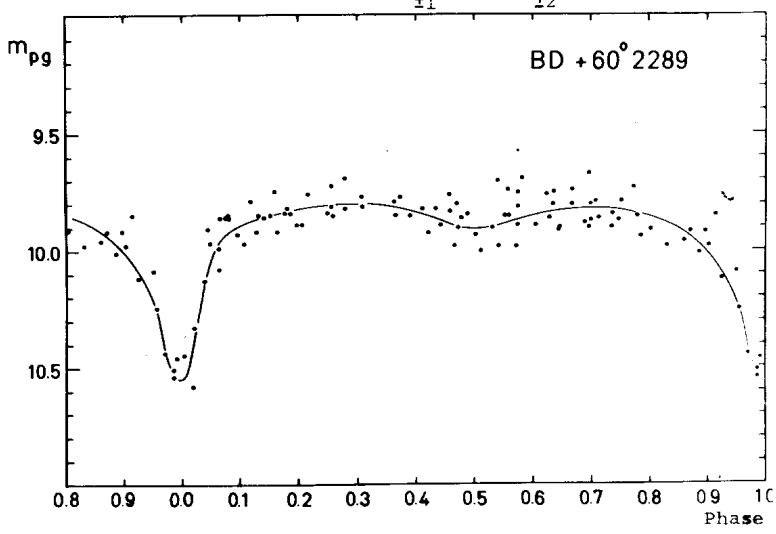
PHOTOGRAPHIC PHOTOMETRY OF BD +60°2289, A NEW BRIGHT ECLIPSING BINARY

During a variable star search in a field of 6 x 6 square degrees centered on μ Cep the star BD +60°2289 was discovered to be a new variable. Its light curve was derived by means of photographic photometry of 101 patrol plates, which have been obtained mainly between May 1969 and July 1971 with the astrograph of Hoher List Observatory (F/5; F= 1500 mm). The photometry was carried out with a Becker iris photometer using 5 suitable nearby standard stars, which have been calibrated with a UBV - sequence in the southern part of the field. This sequence itself had been derived by means of photographic transfer of a photoelectric UBV -sequence in the nearby cluster NGC 7128 (Hoag, A.A.et al. 1961, Publ. US Naval Obs. Vol. 17 part 7). The results of the photometry are given in the Table. The mean error turned out to be $\varepsilon = \pm 0^{m}.06$.

Using the 7 Minima fainter than $10^{m}.3$ the best period was found by least squares fit. The Figure shows the light curve of BD +60°2289 plotted over phase using the derived light elements

$$\text{Min} = \text{JD } 2441130.51 + 2^{d}.10438 \cdot E$$
$$\pm 1 \qquad \pm 2$$



The light curve shows that the variable is an eclipsing binary of type "EB" with

$$\text{Max} = 9^{m}.8$$
$$\text{Min I} = 10^{m}.5$$
$$\text{Min II} = 9^{m}.9$$

The scatter of the measurements, which is larger than expected from the above estimates of the error, may be due to a faint unresolved nearby star, disturbing slightly the photographic image of the variable. But it seems more probable, that this large scatter comes from an intrinsic property of the binary itself. This question, however, has to be answered by means of photoelectric investigation.

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JD_{Hel} 2400000 +	m_{pg}	JD_{Hel} 2400000 +	m_{pg}
39388.3774	$9^m.86$	40565.4283	$9^m.90$
39389.4225	9.80	40714.4922	9.81
39390.3545	9.85	40720.5475	9.84
39391.3663	9.85	40732.5136	9.92
39531.2749	9.91	40739.4409	9.92
39533.2679	10.46	40739.5089	9.89
39534.2763	9.80	40740.4590	9.90
40289.3012	9.85	40740.5500	9.88
40368.5448	9.85	40741.4680	9.92
40381.5210	9.86	40746.5280	9.90
40382.5266	9.74	40749.4620	10.12
40383.5370	10.13	40749.5260	10.25
40418.4670	9.75	40774.4590	9.91
40422.5456	9.81	40775.4563	9.82
40425.5506	10.45	40776.4458	9.87
40426.5507	9.86	40777.4987	9.84
40437.5330	9.67	40780.5467	9.90
40439.4845	9.76	40781.4579	9.85
40439.5776	9.74	40795.5605	9.98
40440.4297	9.86	40797.4648	9.90
40440.5213	9.79	40798.5572	9.81
40441.4131	9.70	40804.4658	10.08
40441.5013	9.69	40916.2948	9.89
40442.5152	9.86	40917.3677	9.86
40443.4381	9.93	40981.3246	9.97
40443.5430	9.85	41070.5608	10.00
40444.5264	10.33	41071.5601	10.51
40445.4167	9.89	41075.5595	10.01
40447.4084	9.85	41098.4976	9.94
40447.5022	9.82	41104.5131	9.91
40464.3867	9.76	41125.4750	9.89
40466.3930	9.82	41125.5243	9.86
40467.5285	10.09	41126.5015	9.93
40475.4390	9.79	41127.5126	9.89
40476.4169	9.84	41130.5065	10.44
40477.5238	9.80	41133.5026	9.92
40485.4941	9.84	41134.5151	9.98
40499.3290	9.99	41136.5318	9.96
40499.5137	9.85	41146.4461	9.98
40500.4082	9.75	41148.4885	9.98
40501.4026	9.97	41149.4907	10.58
40504.3720	9.83	41150.4323	9.98
40508.4004	9.77	41151.5262	10.54
40510.3650	9.77	41153.4429	9.92
40514.3810	9.76	41154.4291	9.85
40514.5143	9.69	41159.5091	9.85
40515.5567	9.73	41161.4474	9.87
40531.3008	9.72	41161.5259	9.84
40531.5265	9.79	41162.4551	9.82
40532.3480	9.79	41164.5128	9.75
40557.4230	9.80		