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PHOTOMETRIC LIGHT-CURVES  
OF BRIGHT SOUTHERN BV-STARS  
ECLIPSING BINARIES

General remarks: The light-curves are derived from sky patrol plates of Bamberg Southern Station. The exposure time of these plates is one hour, and decreasing sensibility of the photographic plates during this time causes distortion of the light-curves of short period variables especially near minima (e.g. see light-curve of BV 419 fig.2). Another effect of long exposure time is the small depth of minima of short period variables. The amplitude of BV 419 for instance should be larger than  $0^m.3$ . All Julian Dates are heliocentric mid-exposure times of the sky patrol plates.

BV 418 = HD 156 545 ( $A_0$ ) (Fig. 1)

Min = JD 243 8196.413 +  $2^d.3129$  . E . EA, Ampl.  $1^m.5$

Comparison - stars

HD 158 081 ( $A_0$ )  $8^m.1$

HD 156 922 ( $G_5$ )  $9^m.6$

The period, derived by W. STROHMEIER<sup>1a/</sup>, could be improved by including new plate material and had to be slightly shortened.

Individual minima (fainter than  $9^m.6$ )

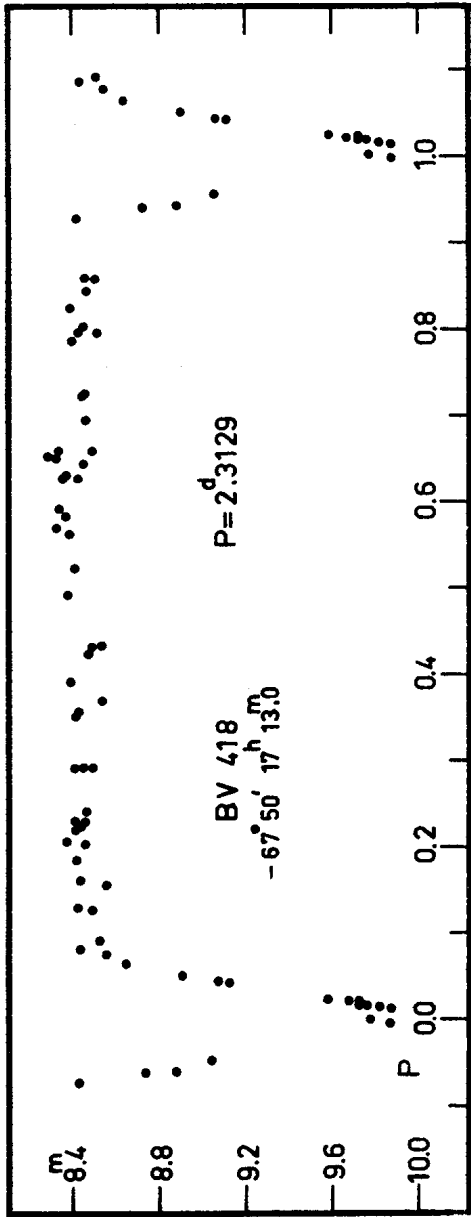


Fig.1

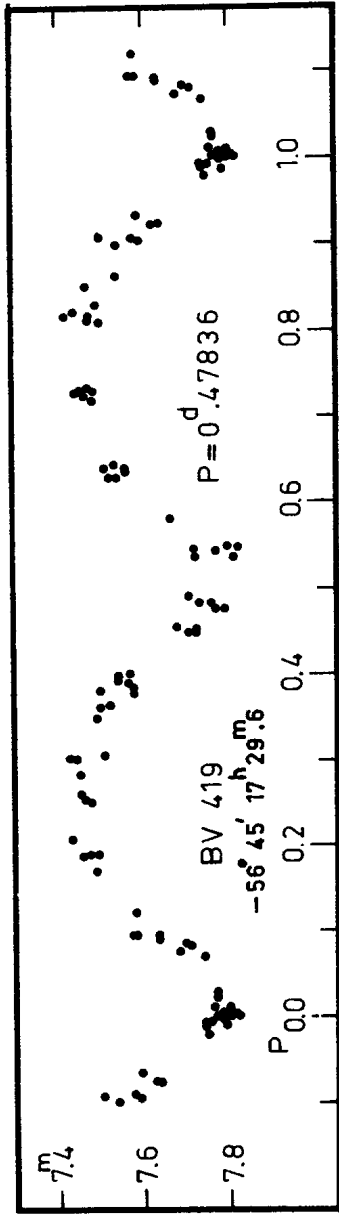


Fig.2

Minima	E	O - C
JD 243 8196.448	0	+ 0. <sup>d</sup> 013
8254.276	25	+ 0.040
8529.472	144	+ 0.001
.517	144	+ 0.046
8580.340	166	- 0.014
.386	166	+ 0.032
8587.344	169	+ 0.051
8638.219	191	+ 0.042

BV 419 = HD 159 441 (A<sub>3</sub>) (Fig. 2)

Min = JD 243 8196.392 + 0.<sup>d</sup>47836 . E . EW, Ampl. 0<sup>m</sup>.3

Comparison - stars

HD 158 852 (A<sub>0</sub>) 7<sup>m</sup>.35 (mean values of Harvard and Cape catalogues)

HD 159 772 (B<sub>9</sub>) 8<sup>m</sup>.05

The period of 0.<sup>d</sup>47836 is 3/4 of the period estimated by W.STROHMEIER<sup>1b</sup>/.

Individual minima (fainter than 7<sup>m</sup>.75)

Minima	E	O - C	Minima	E	O - C
JD 243 8196.395	0	+0. <sup>d</sup> 005	JD 243 8277.225	169	-0. <sup>d</sup> 010
8224.363	58.5	+0.014	8498.482	831.5	+0.006
8230.368	71	+0.012	8501.573	638	-0.013
8236.322	83.5	-0.013	8549.423	738	+0.001
8254.277	121	+0.003	8555.421	750	+0.020
8255.233	123	+0.003	8560.424	761	0.000
8260.272	133.5	+0.021	8561.381	763	0.000
8261.225	135.5	+0.015	8583.385	809	0.000
8266.226	146	-0.007	8584.340	811	-0.002
.272	146	+0.039	8585.299	813	+0.001

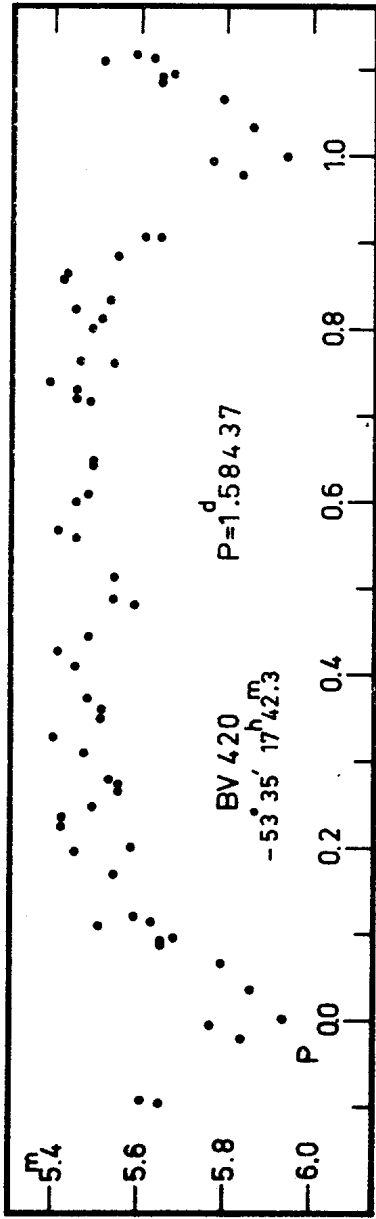


Fig.3

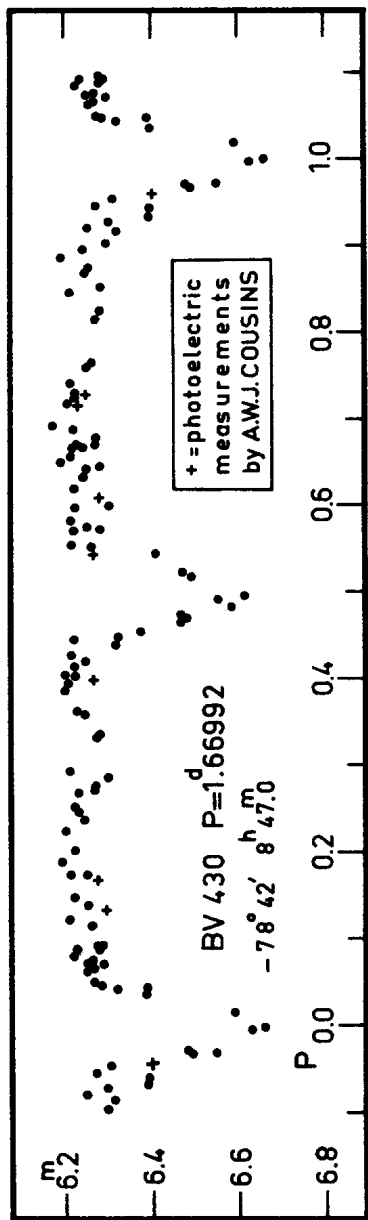


Fig.4

BV 420 = HD 161 783 (B<sub>3</sub>) (Fig. 3)

Min = JD 243 8230.519 + 1<sup>d</sup>.58437 . E . EA, Ampl. 0<sup>m</sup>.5<sup>1b/</sup>

Comparison - stars

HD 167 128 (B<sub>5</sub>) 5<sup>m</sup>.50  
HD 161 917 (A<sub>0</sub>) 6<sup>m</sup>.15

(by photometric connexion to stars from  
COUSINS' catalogue<sup>2/</sup>)

Individual minima (fainter than 5<sup>m</sup>.75)

Minima	E	O - C
JD 243 8235.330	3	+0. <sup>d</sup> 058
8254.278	15	-0.007
8585.386	224	+0.032
8620.274	246	0.000
8636.211	256	+0.093

BV 430 = HD 75 747 (A<sub>5</sub>) (Fig. 4)

Min = JD 243 8380.515 + 1.<sup>d</sup>66992 . E . EA, Ampl. 0<sup>m</sup>.4

Comparison - stars

HD 75 416 (B<sub>9</sub>) 5<sup>m</sup>.36  
HD 72 922 (K<sub>0</sub>) 6<sup>m</sup>.70

(COUSINS' catalogue<sup>2/</sup>)

The period, estimated by W.STROHMEIER<sup>1c/</sup>, had to be slightly shortened. A.W.J. COUSINS was so kind to communicate his photoelectric measurements to W.STROHMEIER. These measurements are from 1960 and have been very useful in improving the period.

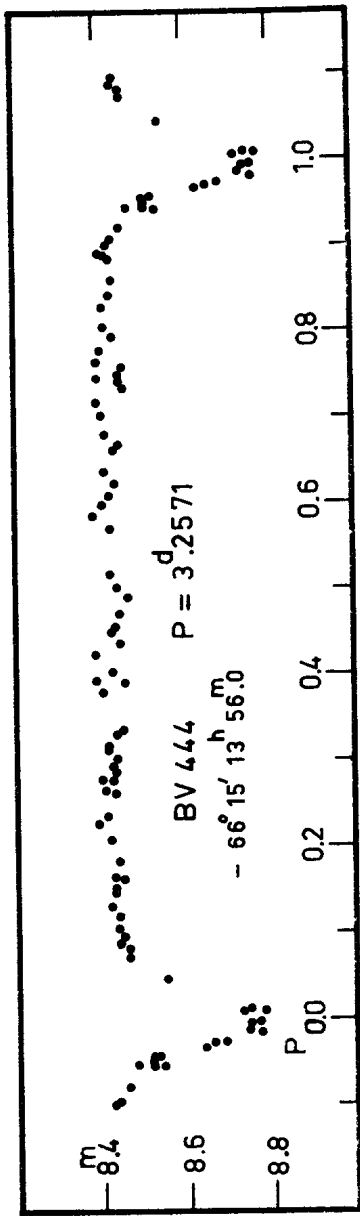


Fig.5



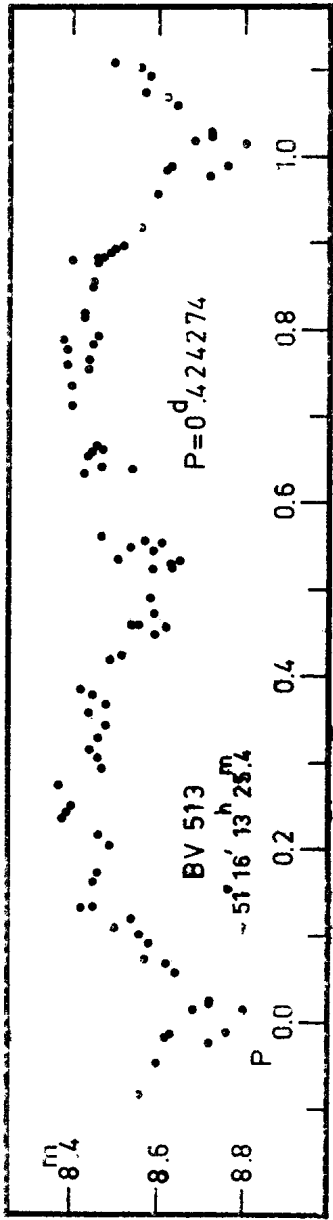


Fig.6

Individual minima (fainter than  $6^m.55$ )

Minima	E	O - C
JD 243 8380.537	0	+0. <sup>d</sup> 013
8385.542	3	+0.008
8406.412	15.5	+0.005
8442.353	37	+0.020
8472.333	55	-0.037
8493.232	67.5	-0.012
8503.263	73.5	-0.001

BV 444 = HD 122 314 (A<sub>5</sub>) (Fig. 5)

$$\text{Min} = \text{JD } 243 \text{ } 8229.200 + 3^{\text{d}}.2571 \cdot E \cdot \text{EA}, \text{Ampl. } 0^{\text{m}}.35^{\text{1d}}/$$

Comparison - stars

HD 121 810 (B<sub>9</sub>)  $8^m.10$  (mean values of Harvard and Cape catalogues)  
 HD 122 131 (F<sub>0</sub>)  $8^m.70$

The magnitudes of the comparison - stars, used in photometry of BV 444, have little accuracy because of the largely differing values in the Harvard and Cape catalogues. The amplitude of  $0^m.35$  derived for BV 444 therefore should be understood in connection with a difference of  $0^m.60$  between both comparison - stars.

Individual minima (fainter than  $8^m.70$ )

Minima	E	O - C
JD 243 8229.216	0	+0. <sup>d</sup> 016
8473.467	75	-0.015
.512	75	+0.029
8499.488	83	-0.052
8548.331	98	-0.065
8584.202	109	-0.022
.247	109	+0.047

BV 513 = HD 117 470 (A<sub>0</sub>) (Fig. 6)

$$\text{Min} = \text{JD } 243 \text{ } 8190.253 + 0^{\text{d}}.424274 \cdot E \cdot \text{EB}, \text{Ampl. } 0^{\text{m}}.3^{\text{1e}}/$$

Comparison - stars

HD 118 014 (A<sub>0</sub>)  $8^m.3$  (mean values of Harvard and Cape catalogues)  
 HD 117 785 (A<sub>2</sub>)  $8^m.8$

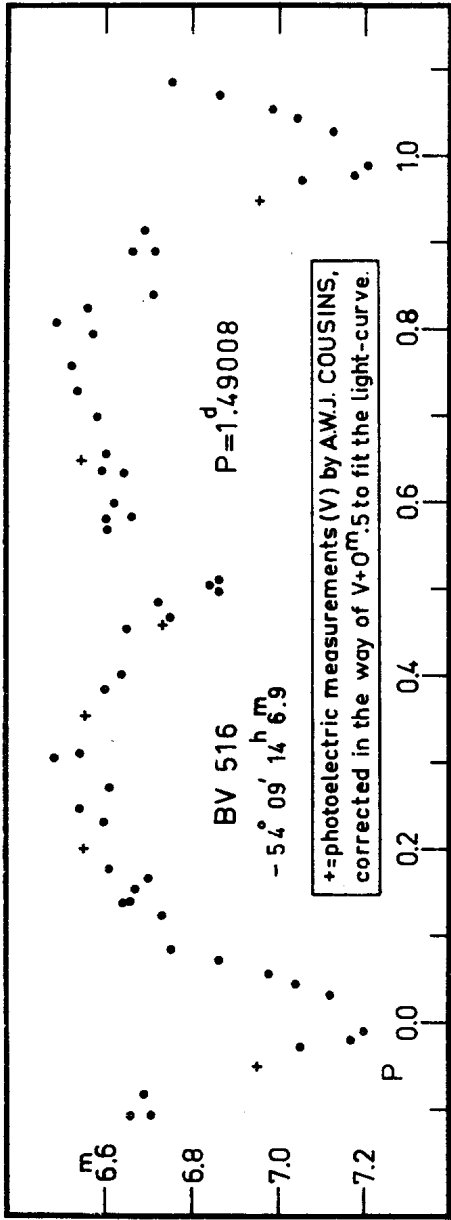


Fig.7

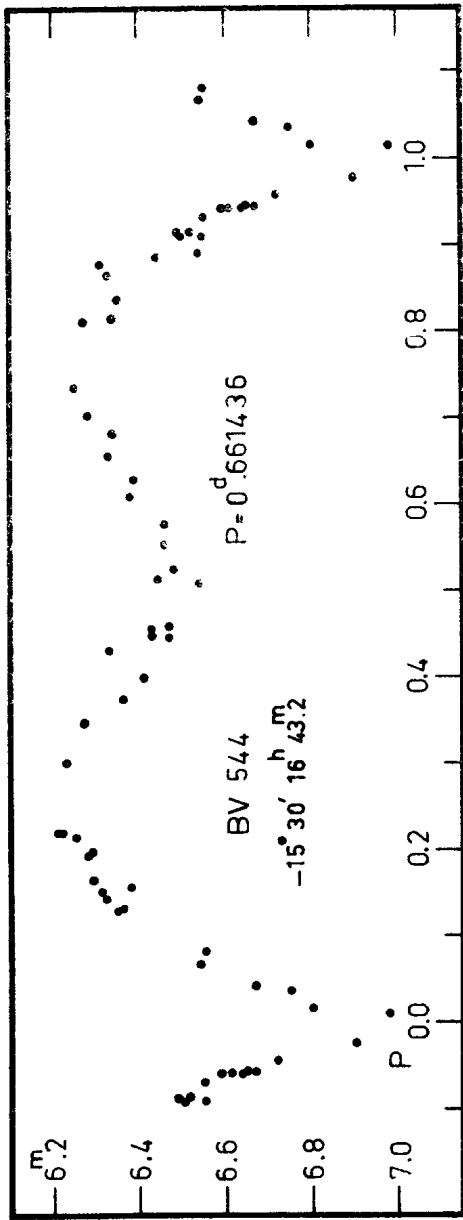


Fig. 8

Individual minima (fainter than  $8^m.70$ )

Minima	E	O - C
JD 243 8190.263	0	+0. <sup>d</sup> 010
8443.533	597	-0.012
8554.286	858	+0.006
8557.245	865	-0.005
8577.201	912	+0.010

BV 516 = HD 124 195 ( $B_9$ ) (Fig. 7)

Min = JD 243 8524.410 + 1<sup>d</sup>.49008 . E . EB, Ampl.  $0^m.65^{1e/3/}$

Comparison - stars

HD 123 515 ( $B_9$ )  $5^m.93$  (COUSINS' catalogue<sup>2/</sup>)

HD 121 336 ( $A_2$ )  $6^m.72$  (by photometric connexion to stars from COUSINS' catalogue)

As in the case of BV 430, the photoelectric measurements (1953-1956) by A.W.J. COUSINS have been very useful in improving the period.

Individual minima (fainter than  $7^m.10$ )

Minima	E	O - C
JD 243 8524.393	0	-0. <sup>d</sup> 017
8530.340	4	-0.029
8548.291	16	+0.044

BV 544 = HD 151 676 ( $A_3$ ) (Fig. 8)

Min = JD 242 5827.455 + 0<sup>d</sup>.661436 . E . EB, Ampl.  $0^m.7^{1e/}$

Comparison - stars

HD 151 527 ( $A_0$ )  $6^m.12$

HD 151 884 ( $B_8$ )  $6^m.91$

The light-curve has been derived using sky patrol plates of the Bamberg Southern Station, covering a time-interval of 85 days = 128 epochs. In deriving the period, however, sky patrol plates from Bamberg have been used additionally. By means of these plates a total time interval of 12 756 days = 19 285 epochs could be covered. The sky patrol plates of Bamberg have been estimated and minima are given in the following list:

Minima	E	O - C
JD 242 5827.413 (1/2)	0	-0. <sup>d</sup> 042
6886.451	1601	+0.037
7159.618	2014	+0.031
7212.507	2094	+0.005
7597.450	2676	-0.008
JD 243 7072.538	17001	+0.010
7076.511	17007	+0.014
7078.499	17010	+0.018
7080.455	17013	-0.011
.499	17013	+0.033

Photometric minima (fainter than 6<sup>m</sup>.70)

Minima	E	O - C
JD 243 8502.535	19163	-0.018
.558	19163	+0.005
.575	19163	+0.022
8557.424	19246	-0.028
8583.257	19285	+0.009

#### REFERENCES

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- 2/ Royal Observatory Bulletins, NUMBER 64, A.W.J.COUSINS  
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- 3/ Supplement to the General Catalogue of Variable Stars,  
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