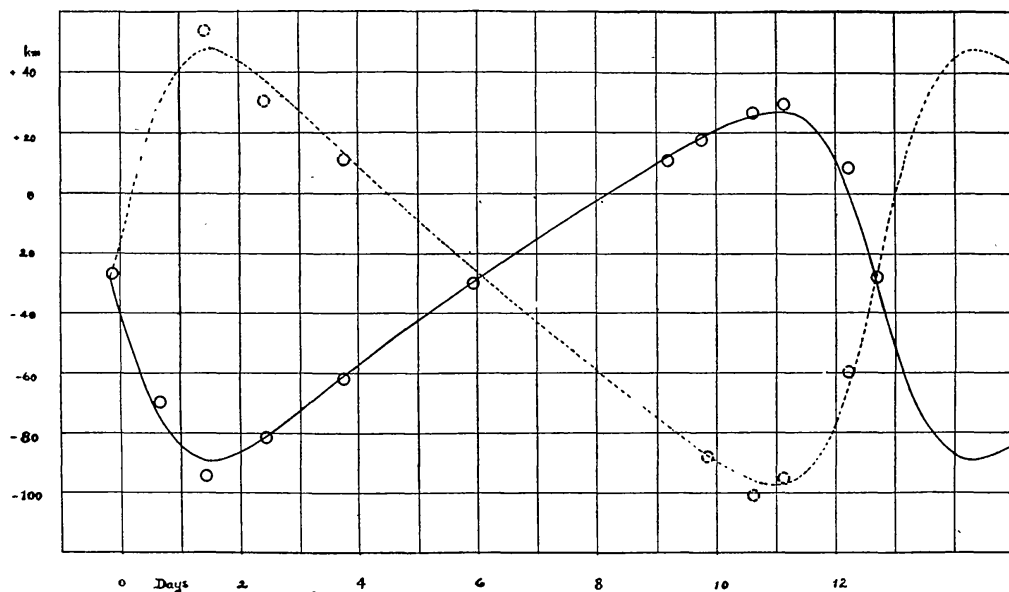


THE SPECTROSCOPIC ORBIT OF BOSS 3793 (FOLLOWING)

BY W. E. HARPER

THIS star (1900 $\alpha = 14^{\text{h}} 46^{\text{m}}.3$, $\delta = +49^{\circ} 07'$, vis. mag. 6.8, type F5) was announced as spectroscopic binary number 151 from this observatory. To the original three plates twenty-six have been added this year, but, owing to the partial superposition of the component spectra which characterize the star, three of these and one of the original three have been discarded. The final solution rests upon seven plates where the lines are single and eighteen which should show them as double, though the second component being somewhat the weaker was definitely measured on but twelve of these. All spectra were made upon Seed 30 plates using the single prism spectrograph at the Cassegrain focus of the 72-inch telescope.



Velocity Curves of Boss 3793 (follow) with Grouped Observations.

Using the period of 12.822 days, arrived at by connecting up with the early measures, the observations were grouped into twenty normal places, eleven representing component I and nine component II. The least-squares solution resulted in considerable

improvement in the elements as the sum of the squares of the residuals for the normal places was reduced forty per cent. The probable error of a plate was ± 2.9 and ± 4.0 km. per sec. for components I and II respectively. In the accompanying graph the dotted curve represents component II.

The star whose spectroscopic orbit is thus determined is the fainter following star of the visual double 39 Boötis. The other preceding component of visual magnitude 5.6 and same type is distant about $3''.5$. Its velocity from six accordant measures given in Vol. II, No. 1 of our *Publications*, is -32.0 km. per sec. Three accordant measures this year give the almost identical result of -31.9 km. per sec. The velocity of the system of the spectroscopic following star is seen from our final values to be -28.0 km. per sec., and this difference of 4 km. per sec. taken into consideration with a common proper motion might seem to suggest a physical connection. Dr. Aitken has kindly looked up the recent micrometer measures of the pair and he thinks there is practically no evidence of relative motion. Were such found an approximate value of its parallax could be obtained. A preliminary value of the absolute magnitude of the fainter star would be 2.5 corresponding to a parallax of $0''.014$. The preceding star is intrinsically fainter, being about 3.0 absolute magnitude, which corresponds to a parallax of $0''.030$.

Dominion Astrophysical Observatory,
Victoria, B.C.,
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FINAL ELEMENTS

P	= 12.822 days	
e	= .394	$\pm .001$
ω_1	= $97^\circ.05$	$\pm 2^\circ.49$
ω_2	= $277^\circ.05$	$\pm 2^\circ.49$
γ	= -28.23 km.	± 0.57 km.
K_1	= 58.31 km.	± 0.94 km.
K_2	= 72.19 km.	± 1.42 km.
T	= J. D. 2,422,379.490	$\pm .057$ days
$a_1 \sin i$	= 9,450,000 km.	
$a_2 \sin i$	= 11,700,000 km.	
$m_1 \sin^3 i$	= 1.27	\odot
$m_2 \sin^3 i$	= 1.03	\odot

The Spectroscopic Orbit of Boss 3793 (Following)

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OBSERVATIONS OF BOSS 3793 FOLLOWING

Plate Number	Date	Julian Date	Phase	Component I				Component II			
				Vel.	n	Wt.	0-C	Vel.	n	Wt.	0-C
3672	1920 Feb. 22	2,422,377.026	10.358	+26.2	13	1.5	+2.7	-105.8	12	1.0	-12.4
3813	" 29	2,384.031	4.541	-37.2	10						
4155	Apr. 24	2,439.871	9.093	+ 8.3							
7205	1922 Feb. 23	3,109.999	12.477	-21.1	14	1.5	-6.5				
7226	" 25	3,111.934	1.590	-96.1	18	1.5	-7.3	+ 53.3	4	0.5	+ 5.9
7255	" 27	3,113.948	3.604	-67.5	11	1.5	-4.1	+ 9.4	1	0.5	- 5.6
7300	Mar. 17	3,131.013	7.847	-16.9	17						
7365	" 25	3,139.902	3.914	-53.0	15	1.5	+6.0	+ 13.1	1	0.5	+ 3.5
7382	" 26	3,140.985	4.997	-29.6	19	1.4					
7402	Apr. 3	3,148.853	0.043	-30.0	16	1.5					
7459	" 14	3,159.917	11.107	+27.2	11	1.0	+0.2	- 94.3	9	1.0	+ 2.7
7465	" 16	3,161.838	0.206	-35.4	15						
7507	" 24	3,169.881	8.249	-12.2	10						
7517	" 28	3,173.846	12.214	+ 8.5	3	0.5	+1.2	- 59.8	3	0.5	+ 4.8
7552	May 8	3,183.808	9.354	+13.4	17	1.5	0.0	- 82.6	6	0.7	- 2.0
7569	" 11	3,186.804	12.350	-21.1	11	1.5					
7582	" 14	3,189.757	2.481	-78.1	9	1.0	+2.0				
7586	" 14	3,189.922	2.646	-84.0	9	1.0	-6.0				
7605	" 25	3,200.798	0.700	-72.2	7	1.0	+5.0				
7660	June 12	3,218.723	5.803	-32.3	15	1.4	-0.3				
7685	" 17	3,223.756	10.836	+26.5	16	1.5	+0.1	- 95.7	9	1.0	+ 1.3
7723	" 26	3,232.718	6.976	-27.4	15	1.4					
7775	July 3	3,239.805	1.241	-93.0	17	1.5	-5.4	+ 54.4	5	0.5	+ 9.0
7782	" 4	3,240.725	2.161	-82.4	12	1.0	+2.3	+ 34.4	2	0.5	- 6.8
7792	" 11	3,247.747	9.183	+10.8	16	2.0	-1.0	- 71.2	4		
7799	" 12	3,248.725	10.161	+21.7	15	1.5	-0.7	- 91.5	11	1.3	- 0.1
7809	" 13	3,249.729	11.165	+31.7	9	1.0	+4.9	- 96.2	4	0.5	+ 0.6
7817	" 15	3,251.756	.370	-36.6	8						
7848	" 28	2,423,264.814	.606	-64.9	4	0.5	+8.5				