

This document was produced  
by scanning the original publication.

Ce document est le produit d'une  
numérisation par balayage  
de la publication originale.

PUBLICATIONS  
OF THE  
DOMINION OBSERVATORY  
OTTAWA, CANADA  
Vol. IV, No. 2

MEASURES OF RADIAL VELOCITY OF BOSS 4826, 7 VIRGINIS,  
BOSS 4721, 59 HERCULIS AND  $\mu$  VIRGINIS

BY J. B. CANNON, M.A.

MEASURES OF RADIAL VELOCITY OF BOSS 4826

The following measures were made of this star, ( $\alpha = 18^{\text{h}} 57^{\text{m}} \cdot 8$ ,  $\delta = 26^{\circ} 10'$ ). The range is small, probably not greater than might be expected as the probable error in measurement. The mean of the measures is probably very close to the radial velocity of the star.

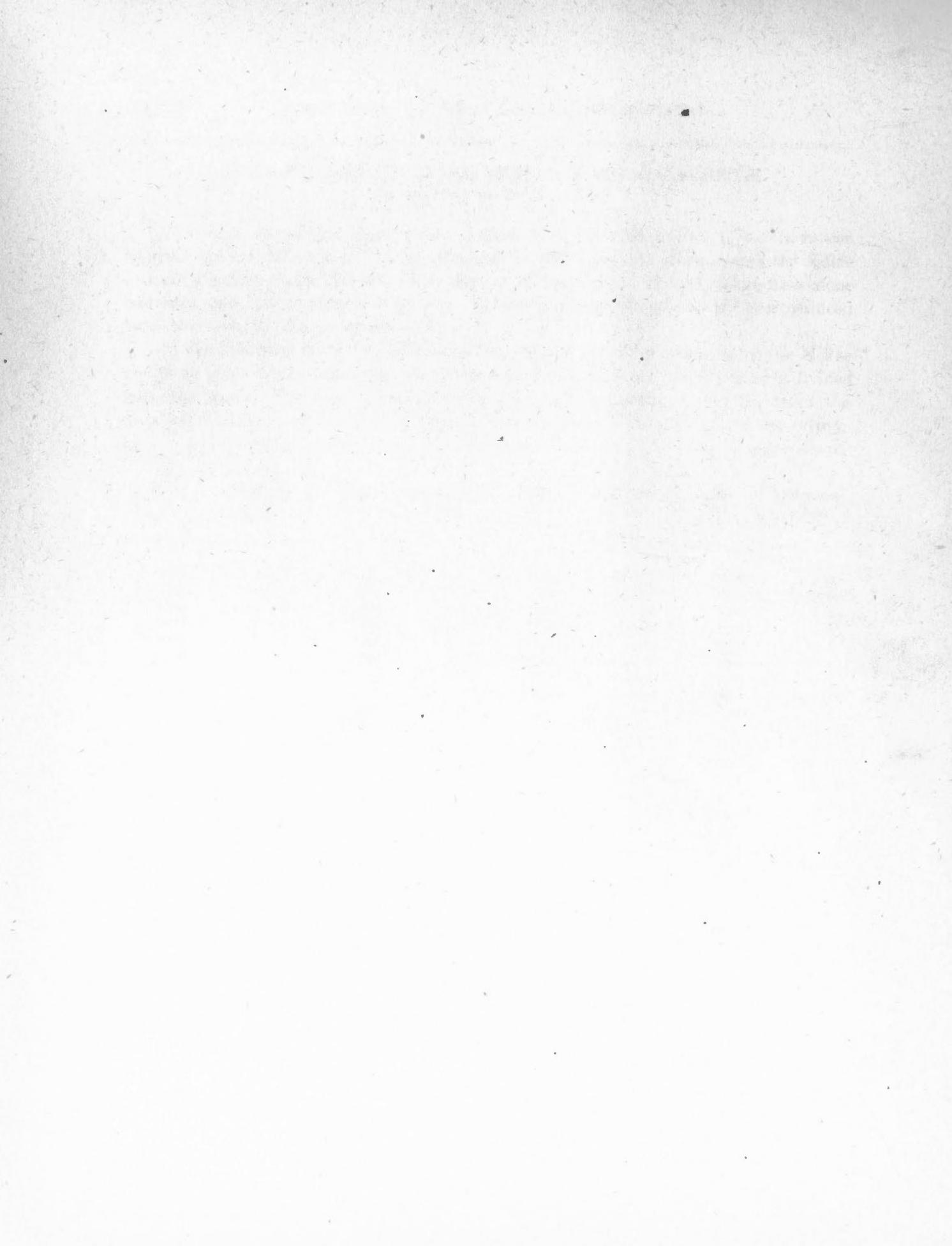
The first table gives a list of the lines measured.

LINES MEASURED

Wave-length	Element	Wave-length	Element
4572·156.....	Ti	4340·634.....	H
4549·766.....	Fe	4315·178.....	Fe-Ti
4415·301.....	Fe	4289·915.....	Ci-Ti
4404·927.....	Fe		

OBSERVATIONS

Plate	Date	Velocity
7045.....	1915, June 2·760	-28·4 km. per sec.
7703.....	1916, " 22·712	-32·4 "
7713.....	" 30·604	-33·3 "
7718.....	July 5·792	-31·5 "
7729.....	" 13·636	-28·8 "
7758.....	" 24·818	-32·6 "
	Mean =	-31·2 km. per sec.



## MEASURES OF BOSS 4826

$\lambda$	7045		7703		7713		7718		7729		7758			
	Vel.	Wt.	Vel.	Wt.										
4572·156	-28·35	$\frac{1}{4}$	-49·55	$\frac{1}{2}$	-40·82	$\frac{1}{4}$	-30·75	$\frac{1}{4}$	-48·18	$\frac{1}{4}$	-28·51	$\frac{1}{2}$	.....	.....
4549·766	-28·11	$\frac{1}{4}$	-39·32	$\frac{1}{4}$	-21·68	$\frac{1}{4}$	-25·60	$\frac{1}{4}$	-17·64	$\frac{1}{4}$	-28·72	$\frac{1}{4}$	.....	.....
4415·301	-42·22	$\frac{1}{2}$	.....	.....	.....	.....	-20·48	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....
4404·927	.....	.....	-30·58	$\frac{1}{4}$	-37·28	$\frac{1}{2}$	-32·82	$\frac{1}{4}$	-15·12	$\frac{1}{4}$	.....	.....	.....	.....
4340·634	.....	.....	-43·80	$\frac{1}{4}$	-37·12	$\frac{1}{4}$	-31·16	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....
4315·178	-62·39	$\frac{1}{4}$	-36·18	$\frac{1}{2}$	-39·52	$\frac{1}{2}$	-44·65	$\frac{1}{2}$	-33·12	$\frac{1}{4}$	.....	.....	.....	.....
4289·915	.....	.....	-30·11	$\frac{1}{2}$	-43·32	$\frac{1}{4}$	-36·46	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....
Weighted														
mean	-39·93		-38·37		-37·06		-33·32		-28·51		-28·58		.....	.....
V <sub>a</sub>	+11·73		+6·20		+3·86		+2·29		-12		-3·55		.....	.....
V <sub>d</sub>	+·08		+·05		+·21		-·14		+·10		-·23		.....	.....
Curv.	-·28		-·28		-·28		-·28		-·28		-·28		.....	.....
Radial Velocity														
	-28·4		-32·4		-33·3		-31·5		-28·8		-32·6		.....	.....

Dominion Observatory

Ottawa

December, 1916.

## MEASURES OF RADIAL VELOCITY OF 7 VIRGINIS

BY J. B. CANNON, M.A.

Six plates of 7 Virginis ( $\alpha = 11^{\text{h}} 55^{\text{m}} 3$ ,  $\delta = +4^{\circ} 08'$ ) were taken in the years 1915 and 1916. The measures give a range of 16 km. which is not enough to declare it a spectroscopic binary, considering the number and character of the lines measured. The star is of spectral type A, the lines measured are  $\lambda\lambda 4549, 4481, H_{\gamma}, H_{\delta}$  and  $K$ .

The measures follow :—

Plate	Date	Julian Day	Velocity
6979.....	1915, May 10·628	2,420,628·628	+ 5·2 km. per sec.
6994.....	" 14·621	632·621	- 3·1 "
7531.....	1916, Feb. 29·785	923·785	+ 3·1 "
7607.....	April 10·589	964·589	- 11·8 "
7623.....	" 28·559	982·559	+ 4·2 "
7686.....	June 5·646	2,421,020·646	- 0·5 "
Mean =			- 0·5 km. per sec.

## MEASURES OF 7 VIRGINIS

$\lambda$	6979		6994		7531		7607		7623		7686			
	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.
4549·766	+15·81	$\frac{1}{4}$									+27·70	$\frac{1}{4}$		
4481·400	+19·58	$\frac{1}{4}$	+20·70	$\frac{1}{2}$	- 8·51	$\frac{1}{2}$	+ 0·25	$\frac{1}{2}$	+42·25	$\frac{1}{2}$	+39·40	$\frac{1}{2}$		
4340·634	+30·20	$\frac{1}{4}$	+25·55	1	- 8·37	$\frac{1}{2}$	- 0·56	$\frac{1}{2}$	+12·50	$\frac{1}{2}$	+26·02	$\frac{1}{4}$		
4101·890			+10·84	$\frac{1}{4}$			+ 5·05	$\frac{1}{2}$						
3970·177							-10·12	$\frac{1}{4}$						
3933·825	+34·19	$\frac{1}{2}$	+19·87	$\frac{1}{2}$	- 0·32	$\frac{1}{2}$	+ 2·07	$\frac{1}{2}$	+15·66	$\frac{1}{2}$	+10·41	$\frac{1}{4}$		
Weighted mean	+ 28·56		+ 21·58		- 5·73		- 0·20		+ 23·47		+ 28·58			
$V_a$	- 22·96		- 24·24		+ 9·12		- 11·42		- 19·07		- 28·57			
$V_d$	- .10		- .12		- .02		+ .14		+ .09		- .25			
Curv.	- .28		- .28		- .28		- .28		- .28		- .28			
Radial Velocity	+ 5·2		- 3·1		+ 3·1		- 11·8		+ 4·2		- 0·5			

Dominion Observatory

Ottawa

December, 1916.

## MEASURES OF RADIAL VELOCITY OF BOSS 4721

BY J. B. CANNON, M.A.

Eight plates of Boss 4721 ( $\alpha = 18^{\text{h}} 33^{\text{m}} \cdot 5$ ,  $\delta = +33^{\circ} 24'$ ) were taken in the years 1915 and 1916. The total range is about 11 km., probably due to error in wave-length or measurement. So far as these plates go the velocity of the star may be considered constant and approximately equal to the mean below.

## LINES MEASURED

Wave-length	Element	Wave-length	Element
4549.766.....	<i>Fe</i>	4128.211.....	<i>Si</i>
4481.400.....	<i>Mg</i>	4101.890.....	<i>H</i>
4340.634.....	<i>H</i>	3933.825.....	<i>Ca</i>
4131.047.....	<i>Si</i>		

## OBSERVATIONS

Plate	Date	Velocity
7042.....	1915, June 1.741	-23.6 km. per sec.
7051.....	June 6.706	-28.3 "
7099.....	July 13.660	-29.8 "
7154.....	Aug. 11.660	-30.4 "
7687.....	1916, June 5.734	-23.3 "
7734.....	July 14.660	-32.8 "
7792.....	Aug. 18.590	-34.1 "
7799.....	Aug. 25.573	-32.0 "
	Mean	= -29.3 km. per sec.

## MEASURES OF BOSS 4721

$\lambda$	7042		7051		7099		7154		7687		7734		7792	
	Vel.	Wt.												
4549·766	-32·18	$\frac{1}{4}$	-42·21	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4481·400	-40·40	$\frac{1}{4}$	-28·69	$\frac{1}{4}$	-23·08	$\frac{1}{4}$	-9·10	$\frac{1}{4}$	-20·09	$\frac{1}{4}$	-14·83	$\frac{1}{4}$	-20·08	$\frac{1}{2}$
4340·634	-35·63	$\frac{1}{4}$	-32·52	$\frac{1}{4}$	-32·08	$\frac{1}{2}$	-17·11	$\frac{1}{4}$	-35·77	$\frac{1}{2}$	-23·62	$\frac{1}{2}$	-31·28	$\frac{1}{2}$
4131·047	-20·10	$\frac{1}{4}$	-30·81	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....	-33·42	$\frac{1}{4}$	.....	.....
4101·890	.....	.....	.....	.....	-17·44	$\frac{1}{2}$	-34·20	$\frac{1}{2}$	.....	.....	.....	.....	-10·02	$\frac{1}{2}$
3933·825	.....	.....	-44·23	$\frac{1}{4}$	-31·56	$\frac{1}{4}$	.....	.....	-31·22	$\frac{1}{4}$	-56·60	$\frac{1}{4}$	.....	.....
Weighted mean	- 32·08		- 35·69		- 27·25		- 20·48		- 30·71		- 30·41		- 22·55	
$V_a$	+ 8·73		+ 7·55		- 2·26		- 9·58		+ 7·60		- 2·74		- 11·21	
$V_d$	+ .07		+ .13		+ .04		- .10		+ .07		+ .02		- .02	
Curv.	- .28		- .28		- .28		- .28		- .28		- .28		- .28	
Radial Velocity	- 23·6		- 28·3		- 29·8		- 30·4		- 23·3		- 32·8		- 34·1	

MEASURES OF BOSS 4721—*Concluded*

$\lambda$	7799											
	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.
4481·400	−17·82	½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4340·634	−19·94	½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4101·890	−28·53	½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
3933·825	−11·05	½	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Weighted mean	− 19·18	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$V_a$	− 12·55	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
$V_d$	− .04	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Curv.	− .28	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
Radial Velocity	− 32·0	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....

Dominion Observatory

Ottawa

December, 1916.

## MEASURES OF RADIAL VELOCITY OF 59 HERCULIS

BY J. B. CANNON, M.A.

Twenty-five plates of this star ( $\alpha = 16^{\text{h}} 58^{\text{m}} 4\text{s}$ ,  $\delta = 33^\circ 42'$ ) were taken in the year 1915. A number of the plates seem to indicate that there may be a variation in the radial velocity, but the average deviation from the mean is less than 5 km., which is perhaps as small as one could expect if the velocity of the star were constant. The lines measured are:—

Wave-length	Element	Wave-length	Element
4549·766.....	<i>Fe</i>	4215·668.....	<i>Fe</i>
4481·400.....	<i>Mg</i>	4128·211.....	<i>Si</i>
4352·006.....	<i>Cr-Mg</i>	4101·890.....	<i>H</i>
4340·634.....	<i>H</i>	4045·975.....	<i>Fe</i>
4233·328.....	<i>Mn-Fe</i>	3933·825.....	<i>Ca</i>

## OBSERVATIONS OF 59 HERCULIS

Plate	Date	Julian Day	Velocity
	1915		
6943.....	April 20·834	2,420,608·834	— 8·4 km. per sec.
6955.....	" 28·863	616·863	+ 1·2
6975.....	May 9·753	627·753	-18·8
7017.....	" 27·692	645·692	-11·4
7031.....	" 30·758	648·758	- 4·6
7060.....	June 16·667	665·667	-23·7
7069.....	" 20·706	669·706	- 7·5
7074.....	" 25·589	674·590	-23·5
7092.....	July 9·639	688·639	-19·4
7096.....	" 12·618	691·618	- 2·3
7101.....	" 14·635	693·635	-12·2
7105.....	" 15·665	694·665	-14·9
7108.....	" 19·681	698·681	- 9·2
7115.....	" 22·690	701·690	-11·8
7122.....	" 26·647	705·647	-15·0
7127.....	" 27·640	706·640	-17·0
7132.....	" 29·663	708·663	-13·1
7140.....	Aug. 5·633	715·633	-10·9
7143.....	" 9·621	719·621	-16·8
7147.....	" 10·621	720·621	-21·0
7162.....	" 23·545	733·545	-16·9
7169.....	" 26·594	736·594	- 6·3
7186.....	Sept. 1·576	742·576	-14·3
7234.....	" 11·524	752·524	-23·5
7267.....	" 19·562	760·562	-13·3
Mean =			-13·4 km. per sec.

## MEASURES OF 59 HERCULIS

$\lambda$	6943		6955		6975		7017		7031		7060		7069	
	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.
4549.766	-37.51	$\frac{1}{2}$	-7.97	$\frac{1}{2}$	-25.61	$\frac{1}{2}$	-9.54	$\frac{1}{2}$	-4.72	$\frac{1}{2}$	-17.38	$\frac{1}{2}$	+18.04	$\frac{1}{2}$
4481.400	-22.20	$\frac{1}{2}$	-1.83	$\frac{1}{2}$	-10.86	$\frac{1}{2}$	-27.68	$\frac{1}{2}$	-6.73	$\frac{1}{2}$	-26.69	$\frac{1}{2}$	-6.36	$\frac{1}{2}$
4352.006	-20.55	$\frac{1}{2}$	.....	.....	.....	.....	-12.26	$\frac{1}{2}$	-13.73	$\frac{1}{2}$	-28.71	$\frac{1}{2}$	.....	.....
4340.634	-8.66	$\frac{1}{2}$	-6.19	$\frac{1}{2}$	-34.50	$\frac{1}{2}$	+2.81	$\frac{1}{2}$	+7.09	$\frac{1}{2}$	-14.52	$\frac{1}{2}$	-9.91	$\frac{1}{2}$
4233.328	-3.84	$\frac{1}{2}$	-15.44	$\frac{1}{2}$	.....	.....	.....	.....	+0.51	$\frac{1}{2}$	-10.57	$\frac{1}{2}$	+4.66	$\frac{1}{2}$
4215.668	-4.91	$\frac{1}{2}$	-12.06	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....	+9.59	$\frac{1}{2}$
4128.211	.....	.....	.....	.....	-19.25	$\frac{1}{4}$	-8.18	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....
4101.890	-17.79	$\frac{1}{2}$	+6.12	$\frac{1}{2}$	-30.22	$\frac{1}{2}$	-2.97	$\frac{1}{2}$	.....	.....	-18.84	$\frac{1}{2}$	-7.92	$\frac{1}{2}$
4045.975	-17.15	$\frac{1}{2}$	-14.38	$\frac{1}{2}$	-24.42	$\frac{1}{2}$	-12.01	$\frac{1}{2}$	-14.39	$\frac{1}{2}$	.....	.....	.....	.....
3933.825	.....	.....	.....	.....	-24.70	$\frac{1}{4}$	-18.82	$\frac{1}{2}$	-3.34	$\frac{1}{2}$	-8.91	$\frac{1}{4}$	-2.22	$\frac{1}{2}$
Weighted mean	-18.27	.....	-6.77	.....	-23.97	.....	-11.65	.....	-3.88	.....	-18.46	.....	-1.15	.....
$V_e$	+10.11	.....	+8.19	.....	+5.38	.....	+0.45	.....	-0.41	.....	-5.03	.....	-6.08	.....
$V_d$	$\pm$ .00	.....	+.07	.....	+.06	.....	+.07	.....	-.04	.....	+.03	.....	-.07	.....
Curv.	- .28	.....	- .28	.....	- .28	.....	- .28	.....	-.28	.....	-.28	.....	-.28	.....
Radial Velocity	-8.4	.....	+1.2	.....	-18.8	.....	-11.4	.....	-4.6	.....	-23.7	.....	-7.5	.....

## MEASURES OF 59 HERCULIS—Continued

$\lambda$	7074		7092		7096		7101		7105		7108		7115	
	Vel.	Wt.												
4549·766	-13·58	$\frac{1}{2}$	-12·38	$\frac{1}{2}$	+13·21	$\frac{1}{2}$	-15·82	$\frac{1}{2}$	-11·89	$\frac{1}{2}$	+ 0·26	$\frac{1}{2}$	+ 7·05	$\frac{1}{2}$
4481·400	-24·80	$\frac{1}{2}$	-21·94	$\frac{1}{2}$	- 0·12	$\frac{1}{2}$	+ 8·85	$\frac{1}{2}$	+ 6·24	$\frac{1}{2}$	+ 1·25	$\frac{1}{2}$	+ 3·12	$\frac{1}{2}$
4352·006	.....	.....	.....	.....	.....	.....	.....	.....	+ 0·34	$\frac{1}{2}$	+16·15	$\frac{1}{2}$	.....	.....
4340·634	-14·30	$\frac{1}{2}$	- 4·91	$\frac{1}{2}$	+10·46	$\frac{1}{2}$	+ 7·10	$\frac{1}{2}$	-11·71	$\frac{1}{2}$	.....	.....	.....	.....
4233·328	.....	.....	.....	.....	+19·68	$\frac{1}{2}$	.....	.....	+ 0·51	$\frac{1}{2}$	+ 5·28	$\frac{1}{2}$	- 5·38	$\frac{1}{2}$
4215·668	- 6·84	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4101·890	.....	.....	.....	.....	.....	.....	- 7·22	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....
4045·975	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	- 1·24	$\frac{1}{2}$
3933·825	.....	.....	+ 6·92	$\frac{1}{2}$	+ 6·44	$\frac{1}{2}$	+ 2·07	$\frac{1}{2}$	.....	.....	+ 6·04	$\frac{1}{2}$	.....	.....
Weighted mean	- 16·03	.....	- 8·53	.....	+ 9·15	.....	- 0·31	.....	- 2·70	.....	+ 3·81	.....	+ 1·78	.....
$V_a$	- 7·32	.....	- 10·56	.....	- 11·18	.....	- 11·59	.....	- 11·84	.....	- 12·58	.....	- 13·07	.....
$V_d$	+ .14	.....	- .04	.....	- .01	.....	- .05	.....	- .11	.....	- .14	.....	.16	.....
Curv.	- .28	.....	- .28	.....	- .28	.....	- .28	.....	- .28	.....	- .28	.....	- .28	.....
Radial Velocity	- 23·5	.....	- 19·4	.....	- 2·3	.....	- 12·2	.....	- 14·9	.....	- 9·2	.....	- 11·8	.....

## MEASURES OF 59 HERCULIS—Continued

$\lambda$	7122		7127		7132		7140		7143		7147		7162	
	Vel.	Wt.												
4549·766	— 2·35	$\frac{1}{2}$	— 9·54	$\frac{1}{2}$	— 5·10	$\frac{1}{2}$	+ 2·22	$\frac{1}{2}$	+ 0·78	$\frac{1}{2}$	— 9·15	$\frac{1}{2}$	+ 1·44	$\frac{1}{2}$
4481·400	+ 3·87	$\frac{1}{2}$	+ 0·25	$\frac{1}{2}$	+ 3·86	1	+ 4·95	1	— 1·37	1	— 10·59	1	— 2·82	$\frac{1}{2}$
4352·006	— 9·54	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4340·634	+ 9·01	$\frac{1}{2}$	+ 0·34	$\frac{1}{2}$	+ 6·64	$\frac{1}{2}$	— 5·62	$\frac{1}{2}$	— 1·80	$\frac{1}{2}$	+ 1·24	$\frac{1}{2}$	+ 10·46	$\frac{1}{2}$
4233·328	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	— 3·42	$\frac{1}{2}$	.....	.....
4101·890	— 18·56	$\frac{1}{2}$	— 16·05	$\frac{1}{2}$	— 15·75	$\frac{1}{2}$	+ 16·41	$\frac{1}{2}$	.....	.....	+ 7·42	$\frac{1}{2}$	.....	.....
4045·975	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	— 8·47	$\frac{1}{2}$
3933·825	+ 16·22	.....	+ 12·25	$\frac{1}{2}$	+ 3·34	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....
Weighted														
mean	— 0·94		— 2·71		+ 1·45		+ 4·58		— 0·94		— 5·00		— 0·13	
$V_a$	— 13·71		— 13·86		— 14·14		— 15·05		— 15·47		— 15·57		— 16·39	
$V_d$	— ·12		— ·11		— ·16		— ·14		— ·14		— ·14		— ·09	
Curv.	— ·28		— ·28		— ·28		— ·28		— ·28		— ·28		— ·28	
Radial Velocity	— 15·0		— 17·0		— 13·1		— 10·9		— 16·8		— 21·0		— 16·9	

## MEASURES OF 59 HERCULIS—Concluded

$\lambda$	7169		7186		7234		7267							
	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.
4549·766	+10·33	$\frac{1}{4}$	+ 8·53	$\frac{1}{4}$	+ 0·52	$\frac{1}{2}$	- 4·71	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....
4481·400	+11·60	$\frac{1}{2}$	- 0·99	1	-10·22	$\frac{1}{2}$	+ 6·36	1	.....	.....	.....	.....	.....	.....
4340·634	+ 9·91	$\frac{1}{2}$	.....	.....	-14·06	$\frac{1}{2}$	- 2·48	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....
4101·890	.....	.....	.....	.....	+ 7·52	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....
3933·825	.....	.....	+11·05	$\frac{1}{2}$	-14·86	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....
Weighted mean	+ 10·66		+ 2·60		- 6·95		+ 2·77		.....	.....	.....	.....	.....	.....
$V_a$	- 16·47		- 16·51		- 16·18		- 15·58		.....	.....	.....	.....	.....	.....
$V_d$	- .16		- .16		- .13		- .22		.....	.....	.....	.....	.....	.....
Curv.	- .28		- .28		- .28		- .28		.....	.....	.....	.....	.....	.....
Radial Velocity	- 6·3		- 14·3		- 23·5		- 13·3		.....	.....	.....	.....	.....	.....

Dominion Observatory

Ottawa

December, 1916.

MEASURES OF RADIAL VELOCITY OF  $\mu$  VIRGINIS

BY J. B. CANNON, M.A.

Sixty-one plates of this star ( $\alpha=14^{\text{h}} 37^{\text{m}} 8\text{s}$ ,  $\delta=-5^{\circ} 13' 4''$ ) were taken here, fifty in the years 1913 and 1914, and eleven in 1916. These latter were taken close together to test for a short period. Ten measures were published in *L.O.B. 199*, which are given in Table I. The total range in the ten plates was 19 km., a rather small range to work on with our dispersion, but it was thought that a greater range might appear. The type is F5, and magnitude 4.0. The earlier plates were measured by Mr. Parker, who was working on the star at that time. The measures are now published because it is hardly probable that an orbit could be obtained with the present equipment, and, indeed, doubtful from our results if the star is a binary. There is the possibility that it may be a binary with a long period. The measures of 1913 and 1916 seem to be generally more positive than those of 1914. The thirty-one plates of 1913 give a mean of +8.9; nineteen taken in 1914, a mean of +2.8; and eleven in 1916, a mean of +7.7. It would be necessary to continue for some years and take a considerable number of plates each year to make sure of this.

TABLE I  
LICK OBSERVATORY OBSERVATIONS

Date	Velocity	Date	Velocity
1898, Apr. 15.861.....	+ 6	1907, Apr. 8.921.....	+11
1899, Feb. 15.013.....	$\pm$ 0	1910, Feb. 11.097.....	+ 2
1899, May 2.802.....	+ 1	1911, Apr. 20.815.....	+ 1
1904, May 23.786.....	- 2	1911, Apr. 30.852.....	+ 6
1905, Apr. 10.840.....	+17		
1906, Apr. 2.974.....	+ 5		
	+ 8		

TABLE II  
OBSERVATIONS OF  $\mu$  VIRGINIS

Plate	Date	Julian Day	Velocity
1913			
5354	Feb. 6.931	2,419,805.931	+14.1
5378	" 17.851	816.851	+11.9
5405	" 25.881	824.881	+14.5
5423	Mar. 7.861	834.861	+ 9.0
5443	Apr. 1.812	859.812	+ 4.2
5452	" 7.776	865.776	+11.7
5461	" 9.756	867.756	+10.4
5465	" 13.772	871.772	+ 2.4
5474	" 14.771	872.771	+13.2
5478	" 15.801	873.801	+ 9.5
5482	" 16.705	874.705	+ 8.6
5494	" 20.703	878.703	+ 7.6
5508	" 24.681	882.681	+10.8
5516	" 29.811	887.811	- 0.7
5526	May 1.670	889.670	+16.5
5541	" 7.691	895.691	+10.8
5546	" 11.769	899.769	+10.6
5552	" 14.687	902.687	- 1.4
5556	" 25.699	913.699	+12.2
5561	" 29.458	917.458	+ 9.4
5564	June 4.734	923.734	+ 8.3
5570	" 8.665	927.665	- 0.5
5574	" 9.637	928.637	+10.6
5581	" 13.639	932.639	+ 8.3
5587	" 16.644	935.644	+ 3.0
5593	" 18.649	937.649	+11.0
5600	" 25.651	944.651	+14.0
5607	July 7.630	956.630	- 0.4
5614	" 11.642	960.642	+ 2.4
5618	" 14.626	963.626	+17.0
5625	" 21.601	970.601	+15.5
1914			
5960	Feb. 23.828	2,420,187.828	+ 5.5
5965	" 24.909	188.909	+ 6.5
6001	Mar. 30.767	222.767	+12.4
6004	" 31.771	223.771	+ 1.0
6011	Apr. 3.758	226.758	- 0.7
6018	" 6.749	229.749	+ 6.9
6023	" 9.711	232.711	-10.4
6034	" 16.717	239.717	+ 3.3
6056	May 1.734	254.734	+ 5.1
6062	" 6.685	259.685	+ 7.7
6065	" 7.673	260.673	- 2.7
6068	" 8.748	261.748	- 3.2
6073	" 14.682	267.682	+ 9.0
6075	" 15.752	268.752	+ 7.3

TABLE II  
OBSERVATIONS OF  $\mu$  VIRGINIS—Concluded

Plate		Date	Julian Day	Velocity
1914				
6113	June	17·658.....	2,420,301·658	— 1·3
6119	"	19·612.....	303·612	+ 3·4
6133	"	26·646.....	310·646	+ 5·4
6143	July	3·594.....	317·594	— 2·8
6173	"	13·602.....	327·602	+ 0·9
1916				
7552	Mar.	17·769.....	940·769	+10·5
7553	"	17·800.....	940·800	+13·9
7567	"	22·797.....	945·797	+ 7·8
7568	"	22·842.....	945·842	+10·6
7574	"	23·833.....	946·833	+ 7·6
7579	"	28·780.....	951·780	+ 8·0
7580	"	28·808.....	951·808	+ 3·0
7581	"	29·807.....	952·807	+ 1·8
7582	"	29·837.....	952·837	+ 5·3
7588	"	30·753.....	953·753	+ 7·0
7589	"	30·778.....	953·778	+ 9·3

MEASURES OF  $\mu$  VIRGINIS

$\lambda$	5354		5378		5405		5423		5443		5452		5461	
	Vel.	Wt.												
4549.736	-11.47	$\frac{1}{2}$	-15.87	$\frac{1}{2}$	-2.80	$\frac{1}{4}$	.....	.....	-14.12	$\frac{1}{4}$	.....	.....	.....	.....
4481.514	-4.26	$\frac{1}{2}$	-11.31	$\frac{1}{4}$	-15.22	$\frac{1}{4}$	.....	.....	+14.88	$\frac{1}{4}$	-18.29	$\frac{1}{2}$	.....	.....
4340.677	-13.29	$\frac{1}{2}$	-6.35	$\frac{1}{2}$	-21.28	1	-19.65	$\frac{1}{2}$	-12.14	$\frac{1}{2}$	+5.45	$\frac{1}{2}$	+0.93	$\frac{1}{2}$
4290.034	.....	.....	-28.60	$\frac{1}{4}$	.....	.....	-9.42	$\frac{1}{4}$	.....	.....	+0.85	$\frac{1}{4}$	-5.07	$\frac{1}{4}$
4233.415	-12.42	$\frac{1}{2}$	-17.31	$\frac{1}{2}$	+10.77	$\frac{1}{2}$	-12.20	$\frac{1}{4}$	.....	.....	-4.34	$\frac{1}{4}$	+10.08	$\frac{1}{2}$
4215.689	.....	.....	-30.61	$\frac{1}{4}$	-9.44	$\frac{1}{2}$	-8.04	$\frac{1}{2}$	.....	.....	-4.86	$\frac{1}{4}$	-5.01	$\frac{1}{2}$
4101.852	-28.31	$\frac{1}{2}$	-24.73	$\frac{1}{4}$	-20.10	$\frac{1}{2}$	-18.56	$\frac{1}{2}$	-6.24	$\frac{1}{2}$	+5.87	$\frac{1}{4}$	+20.32	$\frac{1}{2}$
4071.901	.....	.....	-7.38	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....	.....	.....	+4.12	$\frac{1}{2}$
4045.861	-14.37	$\frac{1}{2}$	-28.23	$\frac{1}{4}$	-8.04	$\frac{1}{2}$	-17.10	$\frac{1}{2}$	-9.50	$\frac{1}{2}$	.....	.....	-7.95	$\frac{1}{2}$
4026.352	-21.81	$\frac{1}{2}$	-5.68	$\frac{1}{2}$	-10.56	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....	.....	.....
Weighted mean	-15.13	.....	-15.80	.....	-11.53	.....	-14.08	.....	-9.29	.....	+1.14	.....	+0.56	.....
$V_a$	+29.39	.....	+27.94	.....	+26.23	.....	+23.41	.....	+13.65	.....	+10.90	.....	+9.97	.....
$V_d$	+.02	.....	+.12	.....	+.01	.....	-.04	.....	-.04	.....	-.00	.....	.04	.....
Curv.	-.28	.....	-.28	.....	-.28	.....	-.28	.....	-.28	.....	-.28	.....	-.28	.....
Radial Velocity	+14.1	.....	+11.9	.....	+14.5	.....	+9.0	.....	+4.2	.....	+11.7	.....	+10.4	.....

MEASURES OF  $\mu$  VIRGINIS—Continued

$\lambda$	5465		5474		5478		5482		5494		5508		5516	
	Vel.	Wt.												
4549·736	+ 9·86	$\frac{1}{4}$	+10·12	$\frac{1}{4}$	+20·24	$\frac{1}{4}$	- 1·73	$\frac{1}{2}$	+ 6·26	$\frac{1}{4}$	+ 6·51	$\frac{1}{4}$	- 6·79	$\frac{1}{2}$
4481·514	.....	.....	-18·54	$\frac{1}{4}$	+ 7·21	$\frac{1}{4}$	- 5·92	$\frac{1}{2}$	+ 1·18	$\frac{1}{4}$	+ 9·96	$\frac{1}{4}$	.....	.....
4340·677	- 8·94	1	+14·56	$\frac{1}{2}$	- 5·31	$\frac{1}{2}$	+ 5·09	$\frac{1}{2}$	+ 9·71	$\frac{1}{2}$	- 0·58	$\frac{1}{2}$	- 8·20	$\frac{1}{2}$
4290·034	-16·67	$\frac{1}{4}$	- 2·82	$\frac{1}{4}$	+ 8·20	$\frac{1}{4}$	- 4·16	$\frac{1}{2}$	+10·98	$\frac{1}{4}$	+11·96	$\frac{1}{4}$	+ 8·95	$\frac{1}{2}$
4233·415	+ 8·08	$\frac{1}{4}$	+19·41	$\frac{1}{4}$	+ 0·84	$\frac{1}{4}$	+12·49	$\frac{1}{2}$	+10·86	$\frac{1}{4}$	- 0·92	$\frac{1}{2}$	+14·38	$\frac{1}{2}$
4215·689	+ 4·79	$\frac{1}{4}$	+20·40	$\frac{1}{2}$	-10·04	$\frac{1}{4}$	- 1·06	$\frac{1}{4}$	- 6·84	$\frac{1}{2}$	+16·39	$\frac{1}{4}$	+ 4·19	$\frac{1}{2}$
4101·852	-13·94	$\frac{1}{2}$	+ 5·29	$\frac{1}{2}$	- 4·55	$\frac{1}{2}$	- 0·92	$\frac{1}{2}$	- 0·27	$\frac{1}{2}$	+22·28	$\frac{1}{2}$	+ 2·51	$\frac{1}{4}$
4071·901	.....	.....	.....	.....	- 8·40	$\frac{1}{4}$	+ 9·57	$\frac{1}{2}$	+ 4·54	$\frac{1}{4}$	+ 5·86	$\frac{1}{2}$	.....	.....
4045·861	+ 5·19	$\frac{1}{2}$	- 5·18	$\frac{1}{4}$	+19·32	$\frac{1}{2}$	- 2·08	$\frac{1}{2}$	+ 0·14	$\frac{1}{2}$	+ 6·84	$\frac{1}{2}$	- 7·65	$\frac{1}{2}$
4026·352	-10·53	$\frac{1}{4}$	.....	.....	- 0·89	$\frac{1}{4}$	- 4·75	$\frac{1}{2}$	-10·37	$\frac{1}{2}$	- 3·81	$\frac{1}{2}$	.....	.....
Weighted mean	- 5·24		+ 6·31		+ 2·78		+ 2·07		+ 3·22		+ 8·10		- 0·34	
$V_a$	+ 8·04		+ 7·11		+ 7·05		+ 6·79		+ 4·65		+ 2·67		+ ·12	
$V_d$	- ·08		- ·03		- ·10		± ·00		- ·03		+ ·12		- ·18	
Curv.	- ·28		- ·28		- ·28		- ·28		- ·28		- ·28		- ·28	
Radial Velocity	+ 2·4		+ 13·2		+ 9·5		+ 8·6		+ 7·6		+ 10·8		- 0·7	

MEASURES OF  $\mu$  VIRGINIS—Continued

$\lambda$	5526		5541		5546		5552		5556		5561		5564	
	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.
4549·736	+15·03	$\frac{1}{2}$	+ 6·79	$\frac{1}{2}$	+ 5·19	$\frac{1}{2}$	+16·93	$\frac{1}{2}$	+32·10	$\frac{1}{2}$	+27·81	$\frac{1}{2}$	+38·02	$\frac{1}{2}$
4481·514	.....	.....	+16·71	$\frac{1}{2}$	+11·26	$\frac{1}{2}$	+10·91	$\frac{1}{2}$	+22·10	$\frac{1}{2}$	+37·69	$\frac{1}{2}$	.....	.....
4351·962	+24·76	$\frac{1}{2}$	+19·88	$\frac{1}{2}$	.....	.....	- 0·03	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....
4340·677	+25·99	$\frac{1}{2}$	+ 9·56	$\frac{1}{2}$	+14·20	$\frac{1}{2}$	+ 0·12	$\frac{1}{2}$	+22·66	$\frac{1}{2}$	+ 8·87	$\frac{1}{2}$	+18·00	$\frac{1}{2}$
4290·034	+ 9·75	$\frac{1}{2}$	+ 1·84	$\frac{1}{2}$	+13·62	$\frac{1}{2}$	+15·45	$\frac{1}{2}$	+24·37	$\frac{1}{2}$	.....	.....	+22·88	$\frac{1}{2}$
4271·674	+19·94	$\frac{1}{2}$	+13·32	$\frac{1}{2}$	+25·29	$\frac{1}{2}$	- 4·00	$\frac{1}{2}$	+18·20	$\frac{1}{2}$	+35·82	$\frac{1}{2}$	+24·21	$\frac{1}{2}$
4233·415	- 1·56	$\frac{1}{2}$	+15·94	$\frac{1}{2}$	+19·00	$\frac{1}{2}$	+ 8·42	$\frac{1}{2}$	+26·48	$\frac{1}{2}$	+24·65	$\frac{1}{2}$	+29·52	$\frac{1}{2}$
4215·689	+27·22	$\frac{1}{2}$	.....	.....	.....	.....	+15·51	$\frac{1}{2}$	.....	.....	+25·32	$\frac{1}{2}$	+25·82	$\frac{1}{2}$
4101·852	+30·42	$\frac{1}{2}$	+14·31	$\frac{1}{2}$	+26·29	$\frac{1}{2}$	- 2·97	$\frac{1}{2}$	+23·80	$\frac{1}{2}$	+19·32	$\frac{1}{2}$	.....	.....
4071·901	+12·36	$\frac{1}{2}$	+25·30	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4045·861	+11·88	$\frac{1}{2}$	+22·60	$\frac{1}{2}$	+ 9·04	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....
Weighted mean	+ 17·55		+ 14·92		+ 16·67		+ 6·04		+ 24·77		+ 23·54		+ 25·20	
$V_a$	- 0·80		- 3·77		- 5·62		- 7·15		- 12·24		- 13·80		- 16·47	
$V_d$	+ .09		± .00		- .14		- .04		- .10		- .07		- .18	
Curv.	- .28		- .28		- .28		- .28		- .28		- .28		- .28	
Radial Velocity	+ 16·5		+ 10·8		+ 10·6		- 1·4		+ 12·2		+ 9·4		+ 8·3	

MEASURES OF  $\mu$  VIRGINIS—Continued

$\lambda$	5570		5574		5581		5587		5593		5600		5607	
	Vel.	Wt.												
4549·736	+27·40	$\frac{1}{2}$	+40·87	$\frac{1}{2}$	+ 2·53	$\frac{1}{2}$	+25·98	$\frac{1}{2}$	.....	.....	+48·05	$\frac{1}{2}$	+40·02	$\frac{1}{2}$
4481·514	- 4·14	$\frac{1}{2}$	+28·01	$\frac{1}{2}$	.....	.....	+21·52	$\frac{1}{2}$	.....	.....	+38·06	$\frac{1}{2}$	+19·28	$\frac{1}{2}$
4340·677	+28·02	$\frac{1}{2}$	+24·79	$\frac{1}{2}$	+29·65	$\frac{1}{2}$	+27·22	$\frac{1}{2}$	+32·64	$\frac{1}{2}$	+32·50	$\frac{1}{2}$	+15·12	$\frac{1}{2}$
4290·034	+32·98	$\frac{1}{2}$	+32·05	$\frac{1}{2}$	+30·92	$\frac{1}{2}$	+15·64	$\frac{1}{2}$	+37·06	$\frac{1}{2}$	+32·92	$\frac{1}{2}$	+44·70	$\frac{1}{2}$
4271·674	+22·67	$\frac{1}{2}$	.....	.....	+29·36	$\frac{1}{2}$	+13·30	$\frac{1}{2}$	+32·42	$\frac{1}{2}$	+33·97	$\frac{1}{2}$	+32·52	$\frac{1}{2}$
4233·415	+16·59	$\frac{1}{2}$	+29·72	$\frac{1}{2}$	+20·40	$\frac{1}{2}$	+29·90	$\frac{1}{2}$	+31·92	$\frac{1}{2}$	+50·10	$\frac{1}{2}$	+26·76	$\frac{1}{2}$
4215·689	.....	.....	+25·94	$\frac{1}{2}$	+36·16	$\frac{1}{2}$	+14·52	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....
4101·852	+ 5·19	$\frac{1}{2}$	+20·36	$\frac{1}{2}$	+43·01	$\frac{1}{2}$	.....	.....	.....	.....	+25·15	$\frac{1}{2}$	.....	.....
4071·901	.....	.....	.....	.....	+28·16	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....
4045·861	.....	.....	+33·10	$\frac{1}{2}$	+43·32	$\frac{1}{2}$	+36·68	$\frac{1}{2}$	+32·02	$\frac{1}{2}$	.....	.....	.....	.....
Weighted mean	+ 16·92		+ 29·31		+ 28·75		+ 24·18		+ 33·01		+ 38·15		+ 26·60	
$V_a$	- 17·02		- 18·38		- 19·85		- 20·87		- 21·54		- 23·65		- 26·47	
$V_d$	- .12		- .08		- .10		- .12		- .14		- .14		- .19	
Curv.	- .28		- .28		- .28		- .28		- .28		- .28		- .28	
Radial Velocity	- 0·5		+ 10·6		+ 8·3		+ 3·0		+ 11·0		+ 14·0		- 0·4	

MEASURES OF  $\mu$  VIRGINIS—Continued

$\lambda$	5614		5618		5625		5960		5965		6001		6004	
	Vel.	Wt.												
4549.736	+27.68	$\frac{1}{2}$	+48.03	$\frac{1}{4}$	+44.71	$\frac{1}{4}$	-22.40	$\frac{1}{4}$	.....	.....	-3.12	$\frac{1}{2}$	.....	.....
4481.514	+25.50	$\frac{1}{2}$	+40.28	$\frac{1}{4}$	+37.42	$\frac{1}{4}$	-4.95	$\frac{1}{4}$	.....	.....	.....	.....	+7.32	$\frac{1}{4}$
4351.962	.....	.....	.....	.....	+33.39	$\frac{1}{4}$	-20.61	$\frac{1}{2}$	-10.12	$\frac{1}{4}$	-19.59	$\frac{1}{4}$	.....	.....
4340.677	+44.42	$\frac{1}{2}$	+45.43	$\frac{1}{2}$	+32.76	$\frac{1}{4}$	-12.50	$\frac{1}{2}$	-17.14	1	+0.05	$\frac{1}{2}$	-12.96	$\frac{1}{2}$
4290.034	+31.78	$\frac{1}{2}$	+53.95	$\frac{1}{4}$	+62.72	$\frac{1}{4}$	-36.72	$\frac{1}{2}$	-12.22	$\frac{1}{4}$	-12.35	$\frac{1}{4}$	-33.88	$\frac{1}{4}$
4271.674	.....	.....	+48.95	$\frac{1}{2}$	+38.48	$\frac{1}{2}$	-17.06	$\frac{1}{2}$	-17.16	$\frac{1}{4}$	+12.75	$\frac{1}{2}$	-3.23	$\frac{1}{4}$
4233.415	+18.69	$\frac{1}{2}$	.....	.....	+44.12	$\frac{1}{2}$	-32.32	$\frac{1}{2}$	-29.71	$\frac{1}{2}$	.....	.....	-18.16	$\frac{1}{2}$
4215.689	+24.32	$\frac{1}{2}$	.....	.....	+42.06	$\frac{1}{2}$	-19.90	$\frac{1}{2}$	-14.97	$\frac{1}{2}$	.....	.....	-2.94	$\frac{1}{4}$
4101.852	.....	.....	+39.72	$\frac{1}{2}$	+56.92	$\frac{1}{2}$	-27.31	$\frac{1}{2}$	-24.81	$\frac{1}{2}$	-2.52	$\frac{1}{2}$	-11.76	$\frac{1}{4}$
4071.901	.....	.....	.....	.....	-19.96	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....
4045.861	.....	.....	+35.08	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....	+4.68	$\frac{1}{2}$	.....	.....
4026.352	.....	.....	.....	.....	-30.82	$\frac{1}{4}$	-24.72	$\frac{1}{4}$	+1.14	$\frac{1}{2}$	-17.90	$\frac{1}{2}$	.....	.....
Weighted mean	+ 30.14	+	45.09	+	44.37	+	- 21.09	+	- 19.75	+	- 2.05	+	- 12.96	+
$V_a$	- 27.21	+	- 27.51	+	- 28.45	+	+ 26.78	+	+ 26.53	+	+ 14.67	+	+ 14.22	+
$V_d$	- .22	+	- .21	+	- .20	+	+ .12	+	+ .04	+	+ .06	+	+ .04	+
Curv.	- .28	+	- .28	+	- .28	+	- .28	+	- .28	+	- .28	+	- .28	+
Radial Velocity	+ 2.4	+	17.0	+	15.5	+	5.5	+	6.5	+	12.4	+	1.0	+

MEASURES OF  $\mu$  VIRGINIS—Continued

$\lambda$	6011		6018		6023		6034		6056		6062		6065	
	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.
4549.736	-11.91	$\frac{1}{2}$			-33.11	$\frac{1}{2}$	-20.70	$\frac{1}{2}$	+ 6.75	$\frac{1}{2}$			- 3.36	$\frac{1}{2}$
4481.514							-15.21	$\frac{1}{2}$	+ 4.89	$\frac{1}{2}$			+ 2.28	$\frac{1}{2}$
4351.963					-24.48	$\frac{1}{2}$					+15.03	$\frac{1}{2}$	+ 1.95	$\frac{1}{2}$
4340.677	-13.18	$\frac{1}{2}$	+ 0.17	$\frac{1}{2}$			+ 8.31	$\frac{1}{2}$	+ 5.78	$\frac{1}{2}$	+15.90	$\frac{1}{2}$	- 0.68	$\frac{1}{2}$
4290.034	-13.52	$\frac{1}{2}$					-12.54	$\frac{1}{2}$			+ 6.86	$\frac{1}{2}$		
4271.674	-18.05	$\frac{1}{2}$	+ 1.92	$\frac{1}{2}$	-21.46	$\frac{1}{2}$			+ 0.45	$\frac{1}{2}$				
4233.415					-15.25	$\frac{1}{2}$	+ 6.07	$\frac{1}{2}$	+11.71	$\frac{1}{2}$	+ 0.12	$\frac{1}{2}$	-11.57	$\frac{1}{2}$
4226.954	- 7.69	$\frac{1}{2}$	-18.24	$\frac{1}{2}$	+ 0.07	$\frac{1}{2}$			+11.11	$\frac{1}{2}$	- 1.26	$\frac{1}{2}$		
4215.689													- 0.44	$\frac{1}{2}$
4101.852	-20.05	$\frac{1}{2}$	+ 0.34	$\frac{1}{2}$	-23.78	$\frac{1}{2}$	- 3.45	$\frac{1}{2}$	- 6.58	$\frac{1}{2}$	+27.28	$\frac{1}{2}$		
4071.901	- 6.63	$\frac{1}{2}$	-12.50	$\frac{1}{2}$										
4026.352	-10.29	$\frac{1}{2}$	- 5.32	$\frac{1}{2}$	-16.59	$\frac{1}{2}$	+ 3.81	$\frac{1}{2}$	+15.03	$\frac{1}{2}$	+ 9.21	$\frac{1}{2}$	+19.37	$\frac{1}{2}$
Weighted mean	- 13.45		- 4.27		- 20.32		- 3.20		+ 6.10		+ 11.13		+ 1.20	
V <sub>a</sub>	+ 12.88		+ 11.50		+ 10.11		+ 6.73		- 0.71		- 3.16		- 3.64	
V <sub>d</sub>	+ .04		+ .06		+ .12		+ .06		- .04		+ .02		+ .04	
Curv.	- .28		- .28		- .28		- .28		- .28		- .28		- .28	
Radial Velocity	- 0.7		+ 6.9		- 10.4		+ 3.3		+ 5.1		+ 7.7		- 2.7	

MEASURES OF  $\mu$  VIRGINIS—Continued

$\lambda$	6068		6073		6075		6113		6119		6133		6143	
	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.
4549·736	+ 8·14	$\frac{1}{4}$	+17·54	$\frac{1}{4}$	+18·47	$\frac{1}{4}$	+ 0·52	$\frac{1}{4}$	+37·18	$\frac{1}{4}$	+ 6·32	$\frac{1}{4}$	+21·07	$\frac{1}{2}$
4481·514	.....	.....	.....	.....	.....	.....	+36·92	$\frac{1}{2}$	+32·08	$\frac{1}{2}$	.....	.....	.....	.....
4351·962	- 2·45	$\frac{1}{2}$	- 9·04	$\frac{1}{2}$	.....	.....	+18·56	$\frac{1}{4}$	+26·52	$\frac{1}{4}$	+41·20	$\frac{1}{4}$	.....	.....
4340·677	.....	.....	+21·52	$\frac{1}{2}$	+13·33	$\frac{1}{2}$	+ 7·46	$\frac{1}{4}$	+13·09	$\frac{1}{2}$	+39·80	$\frac{1}{2}$	+15·35	1
4290·034	-17·18	$\frac{1}{4}$	+25·19	$\frac{1}{4}$	+ 5·91	$\frac{1}{4}$	+28·95	$\frac{1}{4}$	+23·62	$\frac{1}{4}$	+60·70	$\frac{1}{4}$	+30·05	$\frac{1}{4}$
4271·674	+ 1·90	$\frac{1}{2}$	+27·50	$\frac{1}{4}$	+11·34	$\frac{1}{4}$	.....	.....	+33·55	$\frac{1}{4}$	+18·76	$\frac{1}{4}$	+21·70	$\frac{1}{2}$
4233·415	+ 8·42	$\frac{1}{4}$	.....	.....	.....	.....	+33·98	$\frac{1}{4}$	+29·52	$\frac{1}{4}$	+15·88	$\frac{1}{4}$	+32·92	$\frac{1}{4}$
4226·954	+ 3·18	$\frac{1}{2}$	+ 5·03	$\frac{1}{4}$	+29·52	$\frac{1}{4}$	+19·14	$\frac{1}{4}$	+ 4·62	$\frac{1}{4}$	+37·58	$\frac{1}{4}$	+12·76	$\frac{1}{2}$
4215·689	.....	.....	.....	.....	.....	.....	+19·38	$\frac{1}{4}$	+26·22	$\frac{1}{4}$	+17·98	$\frac{1}{4}$	+26·42	$\frac{1}{4}$
4101·852	+ 7·80	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....	+32·38	$\frac{1}{4}$	+27·36	$\frac{1}{4}$	+33·20	$\frac{1}{2}$
4071·901	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	+21·08	$\frac{1}{4}$	.....	.....
4026·352	.....	.....	.....	.....	.....	.....	+16·74	$\frac{1}{4}$	+25·97	$\frac{1}{4}$	+30·21	$\frac{1}{4}$	+30·91	$\frac{1}{4}$
Weighted														
mean	+ 1·40	.....	+ 15·61	.....	+ 15·32	.....	+ 20·19	.....	+ 25·38	.....	+ 29·72	.....	+ 23·19	.....
$V_o$	- 4·18	.....	- 6·38	.....	- 7·55	.....	- 21·14	.....	- 21·77	.....	- 23·86	.....	- 25·60	.....
$V_d$	- .12	.....	- .02	.....	- .16	.....	- .16	.....	- .07	.....	- .16	.....	- .12	.....
Curv.	- .28	.....	- .28	.....	- .28	.....	- .28	.....	- .28	.....	- .28	.....	- .28	.....
Radial Velocity														
	- 3·2	.....	+ 9·0	.....	+ 7·3	.....	- 1·3	.....	+ 3·4	.....	+ 5·4	.....	- 2·8	.....

MEASURES OF  $\mu$  VIRGINIS—Continued

$\lambda$	6173		7552		7553		7567		7568		7574		7579	
	Vel.	Wt.												
4549·736	+18·60	$\frac{1}{4}$	-13·87	$\frac{1}{2}$	+15·25	$\frac{1}{4}$	-16·62	$\frac{1}{2}$	-21·06	$\frac{1}{4}$	.....	.....	+ 3·18	$\frac{1}{2}$
4481·514	.....	.....	+ 1·69	$\frac{1}{4}$	.....	.....	+ 5·19	$\frac{1}{2}$	.....	.....	.....	.....	+12·70	$\frac{1}{2}$
4351·962	+29·02	$\frac{1}{2}$	.....	.....	- 6·12	$\frac{1}{2}$	.....	.....	.....	.....	+ 8·14	$\frac{1}{4}$	- 7·61	$\frac{1}{2}$
4340·677	+41·80	$\frac{1}{2}$	- 7·52	$\frac{1}{2}$	-11·71	$\frac{1}{2}$	+ 1·87	$\frac{1}{2}$	-10·01	$\frac{1}{2}$	- 1·87	$\frac{1}{2}$	-13·28	$\frac{1}{2}$
4290·034	+28·00	$\frac{1}{2}$	.....	.....	+ 0·52	$\frac{1}{2}$	+ 2·35	$\frac{1}{2}$	+10·51	$\frac{1}{2}$	.....	.....	.....	.....
4271·674	+33·11	$\frac{1}{2}$	-15·35	$\frac{1}{2}$	-19·85	$\frac{1}{2}$	-12·96	$\frac{1}{2}$	+ 2·79	$\frac{1}{2}$	-23·41	$\frac{1}{2}$	-12·03	$\frac{1}{2}$
4233·415	+33·13	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	-13·06	$\frac{1}{2}$
4226·954	+ 2·83	$\frac{1}{2}$	-17·42	$\frac{1}{2}$	- 4·13	$\frac{1}{2}$	.....	.....	-12·10	$\frac{1}{2}$	- 8·83	$\frac{1}{2}$	+ 5·56	$\frac{1}{2}$
4215·689	+27·92	$\frac{1}{2}$	- 4·68	$\frac{1}{2}$	- 1·38	$\frac{1}{2}$	.....	.....	.....	.....	+11·31	$\frac{1}{2}$	-25·67	$\frac{1}{2}$
4101·852	+44·75	$\frac{1}{2}$	-17·54	$\frac{1}{2}$	+11·09	$\frac{1}{2}$	- 9·88	$\frac{1}{2}$	+ 7·93	$\frac{1}{2}$	-17·42	$\frac{1}{2}$	-13·80	$\frac{1}{2}$
4063·612	.....	.....	+ 0·31	$\frac{1}{2}$	-20·12	$\frac{1}{2}$	.....	.....	- 6·89	$\frac{1}{2}$	-17·58	$\frac{1}{2}$	.....	.....
4026·352	.....	.....	- 5·24	$\frac{1}{2}$	-14·81	$\frac{1}{2}$	-18·96	$\frac{1}{2}$	- 0·10	$\frac{1}{2}$	-26·12	$\frac{1}{2}$	-13·20	$\frac{1}{2}$
Weighted														
mean	+ 28·80	.....	- 9·24	.....	- 5·72	.....	- 9·15	.....	- 6·27	.....	- 9·51	.....	- 7·08	.....
V <sub>s</sub>	- 27·48	.....	+ 19·84	.....	+ 19·84	.....	+ 17·19	.....	+ 17·19	.....	+ 17·43	.....	+ 15·32	.....
V <sub>d</sub>	- 17	.....	+ 12	.....	+ .08	.....	+ .02	.....	-.02	.....	.03	.....	+.05	.....
Curv.	- .28	.....	-.28	.....	-.28	.....	-.28	.....	-.28	.....	-.28	.....	-.28	.....
Radial Velocity														
	+ 0·9	.....	+ 10·5	.....	+ 13·9	.....	+ 7·8	.....	+ 10·6	.....	+ 7·6	.....	+ 8·0	.....

MEASURES OF  $\mu$  VIRGINIS—Concluded

$\lambda$	7580		7581		7582		7588		7589					
	Vel.	Wt.	Vel.	Wt.	Vel.	Wt.								
4549·736	−10·88	$\frac{1}{4}$	−11·20	$\frac{1}{4}$	+ 0·43	$\frac{1}{4}$	−21·00	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....
4481·514	.....	.....	.....	.....	.....	.....	−11·56	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....
4351·962	− 3·05	$\frac{1}{2}$	−13·81	$\frac{1}{2}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4340·677	−11·48	$\frac{3}{2}$	−10·88	$\frac{3}{2}$	− 9·42	$\frac{3}{2}$	− 3·67	$\frac{3}{2}$	− 1·71	$\frac{3}{2}$	.....	.....	.....	.....
4290·034	.....	.....	.....	.....	.....	.....	−15·98	$\frac{1}{4}$	−19·35	$\frac{1}{4}$	.....	.....	.....	.....
4271·674	−14·39	$\frac{3}{4}$	− 8·31	$\frac{3}{4}$	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
4233·415	.....	.....	.....	.....	−27·41	$\frac{1}{4}$	.....	.....	.....	.....	.....	.....	.....	.....
4226·954	−19·08	$\frac{1}{4}$	.....	.....	+ 4·46	$\frac{1}{4}$	+ 4·93	$\frac{1}{4}$	+ 9·99	$\frac{1}{4}$	.....	.....	.....	.....
4215·689	−18·72	$\frac{1}{2}$	.....	.....	.....	.....	−11·64	$\frac{1}{4}$	− 5·96	$\frac{1}{2}$	.....	.....	.....	.....
4101·852	−10·26	$\frac{1}{2}$	− 9·63	$\frac{1}{2}$	.....	.....	− 5·37	$\frac{1}{2}$	−19·74	$\frac{1}{2}$	.....	.....	.....	.....
4063·612	− 7·08	$\frac{1}{4}$	.....	.....	.....	.....	+ 1·92	$\frac{1}{4}$	+14·54	$\frac{1}{4}$	.....	.....	.....	.....
4026·352	−15·32	$\frac{1}{4}$	−28·20	$\frac{1}{4}$	−13·58	$\frac{1}{4}$	− 9·15	$\frac{1}{4}$	+ 0·30	$\frac{1}{4}$	.....	.....	.....	.....
Weighted	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....
mean	− 12·00	.....	− 12·82	.....	− 9·16	.....	− 7·32	.....	− 4·82	.....	.....	.....	.....	.....
V. <sub>a</sub>	+ 15·32	.....	+ 14·81	.....	+ 14·87	.....	+ 14·45	.....	+ 14·45	.....	.....	.....	.....	.....
V. <sub>d</sub>	− .06	.....	− .01	.....	− .09	.....	+ .09	.....	+ .04	.....	.....	.....	.....	.....
Curv.	− .28	.....	− .28	.....	− .28	.....	− .28	.....	− .28	.....	.....	.....	.....	.....
Radial Velocity	+ 3·0	.....	+ 1·8	.....	+ 5·3	.....	+ 7·0	.....	+ 9·3	.....	.....	.....	.....	.....

Dominion Observatory

Ottawa

December, 1916.

