1078phmz.proj.1495.

KG
11366
v.491

Fundamental Stars
Observations and Reductions
From 18h 45m to 21h 34m
α Ursæ Min. 61 Cephei, δ Ursæ Min. 1 Ursæ Min
1878

Charles W. Sever, University Bookstore, Cambridge.

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For an explanation of the arrangement of the computation, see the Introductory page in Book I.

In reducing the dates Nov. 2 - Dec. 16, Rro and Rbr were computed with the wrong signs for stars below the equator. A correction in red was accordingly applied to the final values.

The four close polars are included in this book. From the book especially devoted to the reduction of these stars, the final means in R.A., and the Circle Readings corrected for Ri and Rmd were copied and the reduction completed. The apparent places of these stars were taken from the American Ephemeris instead of the Cat. of 539 stars. The corrections in R.A. and Dec. given consequently include the reduction from the former to the latter catalogues.

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β Lyrae

$18^h\ 45^m\ 34^s$
$+33^\circ\ 13'\ 19''$
+98 9 29
1878

α_0	$34^s.480$	
Corr. α	+ .052 / + .085	
$\frac{d\alpha}{dt}$		
δ_0	19''.14	
Corr. δ	+.26	
$\frac{d\delta}{dt}$		

log ain δ	9.73869
" cos δ	9.92250
" 15 cos δ tan i	0.02782 / 857
tan δ	+.65
sin z	+.16

log R₁	1.43355
" R₂	1.13288
R₁	$27^s.14$
R₂	13.58
I	2.61

	Aug. 18 (19)			Aug. 22			Sept. 7			Sept. 8		
	m s	m s	m s									
18h	46 12.6	–	46 34.12	47 4.7	–	–	46? 11.6	–	–	48 6.0	–	47 27.12
	14.7	–	36.70	6.9	–	–		–	–	–	–	29.35
	16.9	–	39.28	9.1	–	–		–	–	10.3	–	31.90
	18.7	–	41.67	11.2	–	–		–	–	–	–	34.00
	20.2	–	44.20	13.1	–	–		–	–	14.0	–	36.69
		14.90	47.78		11.60	46 44.47		5.42	45? 38.00		–	40.34
		17.42	50.20		14.10	46.81		7.80	40.69		–	42.77
		19.90	52.78		16.72	49.42		9.82	42.80		–	45.38
		22.38	55.28		19.10	52.00		12.60	45.30		–	47.66
		24.90	57.67		21.78	54.32		15.00	47.82		–	50.00
	—		1.50			57.10		—	51.61		—	53.90
	39.19	52.77	3.88			0.56		—	54.10		31.81	56.48
	52.74	.74	6.30		49.40	49.40	3.12	42.96	42.96	56.57	45.23	59.00
	6.36	.78	8.80		3.04	.46	5.43	56.52	.94	59.05	58.96	1.53
	19.90	.76	11.32		16.66	.52	8.00	10.13	.99	1.34	—	3.84
						49.460						
TS	46 16.62			47 9.00			[48] 46 11.6			48 10.10	136.00	
Tm			46 52.762			47 3.040			[47] 42.963			47 45.333
App R.A.			45 37.56			37.49			37.215			37.195
T–R.A.			+1 15.20			1 25.55			2 5.75			2 8.14
Corr'd T–R.A.			+1 15.15			1 25.50			2 5.70			2 8.09
			+1 15.12			1 25.47			2 5.67			2 8.06
ΔT + m			–1 14.26			–1 24.50			–2 4.57			–2 7.17
n tan δ			– .91			– .99			– .96			– .90
Red. to 1878.0			– 3.08			– 3.01			– 2.74			– 2.72
			–1 18.25			–1 28.50			–2 8.27			–2 10.79
R.A. 1878.0			45 34.51			34.54			34.69			34.54

	Aug. 18	Aug. 22	Sept. 7	Sept. 8
Tm – TS	$+36^s.14$	–5.96	–28.64 / +31.36	–24.77
log i'	1.55799	0.77525n	1.45697n	1.39393n
" Rim'	1.58656n	0.80382	1.48554	1.42250
	10' 3'	10 3	10 2	10 2
E	49''.5 +.26	1.9 +.17	[52] 25.2 +.46	37.2 +.43
F	51.2 +.33	5.2 +.29	40.3 +.30	40.5 +.30
G	13.8 –.19	26.5 –.02	0.8 +.08	2.3 +.09
H	8.0 +.21	21.7 +.34	53.6 +.23	55.1 +.23
	1.65 .61	14.20 78	107	49.75 105
Mean Reading	14 0.62	13 13.82	12 47.48	12 48.78
Rim	– 38.60	6.36	30.59	26.45
Corr'd Reading	13 22.02	13 20.18	13 18.07	13 15.23
δ + 33°	9' 26''.33	9 28.17	9 30.28	9 33.102
= +9	9 12			
μ + log tan z	0.96750			
B + I + γ	– 1375	– 185	+499	+269
log Rf	0.95375	0.96565	0.97249	0.97019
Rf	– 8.99	– 9.24	– 9.39	– 9.34
Rnl	– .32	– .01	– .21	– .16
Rro	– .12	– .10	– .22	– .25
Rlr	– .15	– .20	– .27	– .26
Σ	– 9.58	– 9.55	– 10.09	– 10.01
Corr'd δ	9 16.75	9 18.62	9 20.19	9 23.11

Mean App. δ	9 16.75 / 13 29.1	+4' 10''.92		18.62 / 29.9	+4 10.03		20.19 / 32.1	+4 10.85		23.11 / 32.2	+4 9.72	
		– .16			– .16			– .15			– .14	
		– 10.00			– 10.84			– 13.00			– 13.10	
Δ	+4 12.3	+4 0.76		11.3	+43 59.07		11.9	+3 57.70		9.1	+3 56.48	
Corr'd Δ	12.6			11.6			12.2			9.4		
Dec 1878.0		13' 17''.5			17.7			17.9			19.6	

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α		δ		α		δ	
Aug. 8	m s 45 37.68	′ ″ 13 27.0		Sept. 17	m s 45 37.01		′ ″ 13 33.1	
13	.63	28.1		22	36.90		33.4	
18	.56	29.1		27	.78		33.6	
23	.48	30.0		Oct. 2	.66		33.7	
28	37.40	30.8		7	36.55		33.8	
Sept. 2	.31	31.5						
7	.22	32.1						
12	.12	32.6						
17	37.01	33.1						

Sept. 16 — Sept. 17 — Sept. 18 — Sept. 22

48	1.2	47	33.70		47.10	47	48.6	47	—		49.75	47	340	47	3800		52.10	47	38.3	47	48.05		1.63
	4.2		36.00		49.70		51.0		—		52.28		360		4100		54.63		40.0		50.67		4.12
	6.3		38.72		52.20		53.0	41.22	41.22		54.70		386		4360		57.10		42.0		53.10		6.58
	8.9		41.15		54.90		55.1	40.99	43.60		57.26		406		4600		59.57		45.0		55.30		9.00
	10.8		43.53		57.28		57.6	40.88	46.10		59.70		429		4843		2.00		46.9		58.00		11.63
48	53.2		28.00		0.88	48	45.0		—		3.30	48	500		3300		5.74	48	42.3		42.55		1.36
	55.1		31.40		3.32		47.0		—		5.73		521		3536		8.23		44.3		44.85		17.80
	57.6		32.90		6.00		48.3		—		8.28		546		3783		10.58		47.0		47.33		20.26
	59.9		35.30		8.33		50.9		—		10.83		568		4037		13.08		49.0		49.10		22.61
	1.5		37.82		10.75		52.4		—		13.15		588		4276		15.66		51.3		52.20		25.00
			38.62		14.60			41.03	8.17		16.85				4341		19.32				53.06		28.28
			52.24		17.00			54.74	.32		19.38				5708		21.83				6.59		31.36
			5.86		19.58			8.26	.26		21.75				10.66		24.20				20.21		33.70
			19.48		21.93			21.83	.25		24.38				24.29		26.77				33.68		36.30
			32.08		24.36			—			26.78				37.86		29.30				47.21		38.78
										100													
48	6.28	29.28			6	47	53.06					47	38.42	53.30				47	42.44	1.08.75			
48	57.46			48	58.58	48	48.72				48	8.250	48	54.46			48	10.660	48	46.78			48	20.150
				45	37.027						45	37.005						36.98						36.89
					+148.83							+151.25					2	33.68					2	43.26
					+148.78							+151.20					2	33.63					2	43.21
					+148.75							+151.17					-2	33.60					2	43.14
				-2	27.94						-2	30.35					-2	32.80					-2	42.29
				—	.86						—	.84					—	.84					—	.96
				—	2.55						—	2.52					—	2.50					—	2.41
				-2	31.35						-2	33.71					-2	36.14					-2	45.66
					34.51							34.54						34.52						34.49
	−0.42	−51.60				+ 1519		− 40.47				+ 3224		− 43.80				+ 3771		− 2663				
	9.62325n	1.71265n				1.18156		1.60713n				1.50840		1.64147n				1.57646		1.42537n				
	9.65077	1.74017				1.20908n		1.63465				1.53697n		1.67004				1.60503n		1.45414				
	182	122				10 13		570												39				
	10 3	10 2				10 3		10 2				10 2		10 2				10 3		10 2				
	4.6 +.21	7.2 +.17				20.9 +.56		21.3 +.49				38.8 +.46		18.9 +.46				43.7 +.37		36.0 +.44				
	7.3 +.30	11.2 +.34				24.1 +.19		24.7 +.25				41.4 +.24		20.7 +.29				48.1 +.34		40.7 +.30				
	28.8 +.04	32.0 .00				46.4 −.49		46.3 −.56				3.7 +.17		44.3 −.52				9.1 +.03		1.0 +.08				
	22.1 +.34	25.8 +.47				39.2 +.26		39.8 +.39				56.7 +.02		37.9 +.42				0.9 +.06		54.4 +.23				
	14.70 +.89	+.98	19.60			33.65 +.52		+.57	33.80			57.25 .89		65	31.60			56.40 .80		105	48.50			
	13 15.70	12 19.05				13 32.65		12 33.02				13 50.15		12 30.45				13 55.45		12 48.02				
	.45	54.98				−16.18		43.12				− 34.43		46.78				− 40.28		28.454				
	13 16.15 .00	14.03	+.14 3			16.47	−.04	16.14	+.10			13 15.72		13 17.23				13 15.17		13 16.476				
	9 32.20	34.32				31.88		32.21				9 32.63		31.12				9 33.18		31.88				
		34.19				31.92		32.11												9				
9	9.07																							
	0.9674																							
	+.026					− 060						− 1486						+ 207						
	0.9700					0.9614						0.95264						0.96957						
	− 9.33					− 9.15						− 8.97						− 9.32						
	.00	− .66				− .06		− .41				− .26		− .48				− .35		− .18				
	− .29 33	− .21 23				− .32 35		− .23 26				− .38		− .25				− .39		− .28				
	− .22	− .24				− .13		− .14				− .22		− .16				− .20		− .26				
	− 9.848	−10.446				− 9.689		− 9.936				− 9.83		− 9.86				−10.26		−10.04				
	9 22.80	23.88				9 22.22		22.28				9 22.80		21.26				9 22.92		21.85				
	2	73				3		15										2						
	9 23.12 02	+4 9.84				9 22.25 19		+4 10.82				22.03	+4	10.93				2438	+4	10.64				
	13 33.0	— .13				13 33.12		— .13				33.2	—	.12				33.4	—	.12				
		− 13.90						− 14.00					−	14.10					−	14.30				
	+4 9.9 100	+3 55.81				4 10.9		+3 56.69				11.2	+3	56.71				11.0	+3	56.22				
	10.3					11.2						11.5		18.7				11.3		18.6				
	13	18.8						18.9						14.5						14.1				

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	α		δ	
Oct. 27	45m 36.12s		13′ 32.7″	
Nov. 1				
6	35.93	8	31.4	8
11	85		30.6	8
16	35.78	7	29.8	

1878

Nov. 10

m s	m s	m s
− 30.5	− 29.80	− 42.56
33.0	31.52	44.97
34.8	34.12	47.60
37.7	36.50	49.96
39.5	38.90	52.48
	23.30	56.18
	25.80	58.62
	28.22	1.10
	30.71	3.52
	33.24	6.00
	34.01	9.72
	47.51	12.15
	1.08	14.75
	14.69	17.20
	28.25	19.62
[49] 35.10	554	
		[50] 1.108
		45 3586
		+ 4 25.25
		+ 4 25.20
		25.17
		− 4 24.48
		− .70
		− 1.38
		− 4 26.56
		45m 34.55s

+ 26.01

1.411514

1.44371 m

10′ 3′

E	39.8″	+.44
F	43.0	+.29
G	55.1	−.18
H	53.3	+.06
	47.45	1.61

13 47.80
− 27.78
13 20.02

+33° 9′ 28.33″

+ 4.80
1.9 1.530
− 6.45
− 1.17
− .49
− .15
− 10.26
9′ 18.07″
9 18.07
13 30.7 +4′ 12.98″
− .13
+4′ 12.6″ − 11.60
12.9 +4 1.25
13′ 14.3″

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ι Lyrae

$19^h\ 2^m\ 57^s$

$+35^\circ\ 54'\ 35''$

+6 28 13

1878

α_0	$56\overset{s}{.}922$	
Corr. α	− .072 / + .019	
$\frac{d\alpha}{dt}$		
δ_0	34.51″	
corr. δ	+.84	
$\frac{d\delta}{dt}$		

log sin δ	9.76827
" cos δ	9.90846
" 15 cos δ tan i	0 01 ~~348~~ 453
tan δ	+.72
sin z	+.11

I 2.55

Aug. 25

h	m s	m s	m s
19	3 57.4	3 57.72	4 18.72
	54.0	2.30	16.23
	55.5	4.82	18.84
	57.1	7.33	21.~~66~~
	0.4	10.20	23.83
		53.80	—
		58.32	—
		0.90	32.65 32.65
		3.30	.77 35.32
		6.00	.90 38.00
		4.87	41.70
		18.82	44.33
		32.77	46.83
		46.87	49.47
		0.86	52.00

3 55.68 16419

4 32.838
2 59.914
+1 32.92
+1 32.~~94~~
+1 32.90

−1 31.80
− 1.06
− 2.99
−1 35.85

2 56.99

Aug. 26

4 3.0	4 24.0
4.4	4.90
6.4	7.31
9.5	10.10
12.0	12.53
	38.57
	1.10
	3.44
	5.92
	8.53
	7.45
	21.36
	35.29
	49.44
	3.50

4 7.06 17704

Aug. 27

4 16.22	3 54.0	4 5.00	4 —
18.82	56.1	10.10 .09 7.54	24.00 21.45
21.40	58.0	.10 10.10	.00 24.00
23.90	0.3	1—	.09 26.64
26.46	2.3	—	.00 29.10
30.35		1.00 3.53	33.00
32.36		6.80	35.46
35.40		8.52	38.00
37.88		11.10	40.48
40.45			43.10
44.30		10.10	47.00
46.82		24.02	49.40
49.43		38.01	52.10
51.90		52.05	54.64
54.77		6.03	57.10

3 58.14 19021

4 35.408
59.90
1 35.51
1 35.5~~2~~3
1 35.49

−1 34.48
− 1.02
− 2.98
−1 38.48

56.93

4 38.042
59.88
1 38.16
1 38.~~17~~
1 38.14

−1 37.17
− 1.00
− 2.96
−1 41.13

56.91

Aug. 29

4 1.5	4 10.27	4 24.10
4.0	12.73	26.62
6.9	15.28	29.30
9.0	17.88	31.84
11.0	20.50	34.28
	6.20	38.00
	8.72	40.66
	11.28	43.18
	13.80	45.88
	16.50	48.33
	15.33	52.27
	29.23	54.68
	43.21	57.24
	57.28	59.78
	11.30	2.43

4 6.~~52~~48 ~~15~~21 635

4 43.~~8~~70
59.85
1 43.42
1 43.4~~4~~3
1 43.40

−1 42.31
− 1.08
− 2.93
−1 46.32

56.95

Reductions

Aug. 25	Aug. 26	Aug. 27	Aug. 29
+ 37.16	+ 28.36	+ 39.90	+ 36.79
1.57008	1.45255	1.60097	1.56573
1.58461 n	1.46708 n	1.61550 n	1.58026 n
30′ 2′	30 2	30 2	30 2
E 30.7″ +.52	22.8 +.51	34.2 +.48	30.7 +.52
F 35.4 +.21	25.8 +.25	36.2 +.22	33.2 +.21
G 54.8 −.30	56.9 −.57	57.0 −.08	53.9 −.38
H 52.3 +.25	43.1 +.35	54.0 +.23	50.8 +.26
42.75 .68	54	45.60 85	42.30 61
32 43.30	32 34.65	32 45.35	32 42.15
− 38.43	− 29.31	− 41.26	− 38.04
32 4.87	32 5.34	32 4.09	32 4.11
+35° 50′ 43.48″	50 43.01	50 44.26	50 44.24
+6 27 55			
0.81460			
− 877	−721	−980	−740
0.80583	0.80739	0.80480	0.80720
−6.39	−6.42	−6.38	−6.41
− .36	− .21	− .42	− .36
− .11	− .10	− .11	− .14
− .17	− .14	− .21	− .15
−7.03	−6.87	−7.12	−7.06
50′ 36.45	36.14	37.14	37.18

50′ 36.45 +4′ 10.49″	36.14 +4 10.93	37.14 +4 11.13	37.18 +4 10.47
54 47.0 − .11	47.2 − .11	47.4 − .11	47.7 − .11
− 12.50	− 12.70	− 12.90	− 13.20
+4′ 10.6″ +3 57.88	11.1 +3 58.12	10.3 +3 58.12	10.5 +3 57.16
11.4	11.9	11.8	11.3
54′ 34.3″	34.3	35.3	34.3

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	α m	α s		δ ′	δ ″	
Aug. 8	2	60.13		54	43.3	
13		60.08	5		44.5	12
18		60.02	6		45.6	11
23		59.95	7		46.6	10
28		59.87	8		47.5	9
Sept. 2		.78	9		48.3	8
7		.69	9		49.0	7
12		.59	10		49.6	6
17		59.48	11		50.2	6

Sept. 1

4	12.3	4	16.42	4	30.34
	15.0		19.00		33.00
	17.8		21.50		35.57
	20.0		24.00		38.10
	22.0		26.54		40.57
5	30.0		12.43		44.45
	32.9		15.00		47.00
	34.5		17.57		49.57
	36.0		20.00		52.00
	38.1		22.63		54.60
		21.49			58.39
		35.50			1.00
		49.52			3.48
		3.50			6.00
		17.53			8.62

4 17.44 24754

4 49.508
59.79
1 49.72
1 49.74
1 49.70

−1 48.73
− 1.04
− 2.87
−1 52.64

56.87

+ 32.07
1.50610
1.52063n

30 2

25.8 +.54
27.9 +.23
50.8 −.52
46.4 +.32
38.30 .57

32 37.72
− 33.16
32 4.56

50 43.79

− 1884
0.79576
− 6.25
− .27
− .16
− .14
− 6.82
36.97

36.97 +4 10.81
48.2 − .11
− 13.70
+4 11.2 +3 57.00
12.0
54 34.0

Sept. 2

4	11.6	4	18.92	33.00
	13.0		21.45	35.39
	14.3		23.97	37.92
	16.2		26.47	40.43
	17.4		29.04	43.00
5	30.0		14.90	46.90
	32.9		17.56	49.43
	34.5		20.00	52.00
	36.0		22.58	54.52
	38.1		25.00	57.12
			23.96	0.90
			37.95	3.50
			51.99	6.00
			6.01	8.53
			20.01	11.14

4 14.50 25992
5 34.30

4 51.984
2 59.776
+ 112.21
+ 112.22
+ 112.19

−1 51.22
− 1.04
− 2.85
−1 55.11

56.87

+ 37.48 − 42.32
1.57380 1.62655n
1.58728n 1.64003
833 108

30 2 30 1

31.0 +.52 7.9 +.23
32.8 +.21 9.1 +.25
56.2 −.14 32.8 −.07
50.2 +.27 27.6 +.65
43.60 +.86 20.35 +1.06

32 42.55 31 19.35
− 38.66 43.66
32 3.89 −.10 3.01 +.10

50 44.46 45.34
44.56 45.24

6 27 54
0.8146
− 168
0.7978
− 6.28
− .38 − .46
− .24 16 − .12 08
− .22 − .26
− 7.12 04 − 7.12 04
50 37.34 52 38.22 0

50 37.78 86 +4 10.70
54 48.34 − .10
− 13.80
4 10.8 5 +3 56.80
11.3 34.7 33.7

Sept. 9

4	25.9	4	37.26	51.20
	28.0		39.88	53.67
	29.9		42.28	56.20
	32.2		44.85	58.80
	34.4		47.45	1.49
5	40.4		33.37	5.15
	43.3		35.62	7.76
	45.8		38.33	10.25
	48.2		41.00	12.93
	50.8		43.60	15.45
			42.34	19.30
			56.27	22.08
			10.31	24.48
			24.44	26.98
			38.38	29.42

4 30.08 5174
5 45.70

5 10.348
2 57.645
+ 130.70
+ 130.71
+ 130.68

−2 9.79
− .97
− 2.72
−2 13.48

56.87

+ 40.27 − 35.35
1.60498 1.54839n
1.61846n 1.56187
951 292

30 2 30 1

30.7 +.52 13.4 +.36
35.5 +.22 17.3 +.25
55.0 −.28 37.7 −.28
50.6 +.26 32.9 +.62
42.85 +.72 25.55 +.95

32 42.95 31 25.32
− 41.54 36.46
32 1.41 −.10 1.78 +.09

50 46.94 46.57
47.04 46.48

− 029
0.8117
− 6.48
− .42 − .32
− .24 − .18
− .18 − .24
− 7.32 − 7.17
50 39.62 7 39.40 31

50 39.51 +4 10.15
49.3 − .10
− 14.80
4 9.8 +3 55.25
10.6
34.8

Sept. 10

4	28.4	4	39.70	53.72
	30.9		42.18	56.24
	33.0		44.70	58.83
	34.8		47.22	1.30
	36.5		49.73	3.78
5	31.2		35.82	7.66
	34.0		38.20	10.18
	36.1		40.68	12.73
	37.7		43.42	15.25
	40.1		46.00	18.05
			44.71	21.70
			58.77	24.20
			12.77	26.82
			26.81	29.35
			40.82	32.00

4 32.78 6388
5 35.82

5 12.776
59.625
2 13.15
2 13.16
2 13.13

−2 12.20
− 1.02
− 2.70
−2 15.92

56.86

+ 40.00 − 23.04
1.60206 1.36248n
1.61659n 1.37701

30 2 30 1

31.8 +.51 27.2 +.53
35.2 +.21 30.6 +.17
55.9 −.17 51.1 −.51
50.2 +.27 47.3 +.42
43.85 .82 .61 39.15

32 43.28 31 39.05
− 41.36 23.83
32 1.92 32 2.88

50 46.43 50 45.47

− 741
0.80719
− 6.41
− .42 − .14
− .27 − .16
− .20 − .15
− 7.30 − 6.86
50 39.13 38.61

38.87 +4 10.82
49.4 − .10
− 14.90
10.5 +3 55.82
11.3 34.7 35.0

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1878

	α	δ
Sept. 17	2m 59.48	54′ 50.″2
22	.37	50.6
27	.25	50.9
Oct. 2	.18	51.1
7	59.01	51.3

Sept. 17

m	s	m	s	m	s
4	46.5	4	57.70		11.64
	48.6		6.20		14.15
	50.2		2.82		16.82
	52.8		5.20		19.36
	55.3		7.80		21.92
5	56.6		53.77		25.68
	59.2		56.26		28.30
	1.9		58.83		30.82
	4.3		1.48		33.33
	6.0		4.00		35.86
			2.74		39.73
			16.77		42.15
			30.80		44.70
			44.73		47.22
			58.86		49.85
4	50.68		15390		
6	1.60			5	30.780
				2	59.475
					+151.30
					+151.31
					+151.28
				−2	30.39
				−	.93
				−	2.55
				−2	33.87
				2	56.91

s: +40.10 −30.82

1.60314	1.48883 m
1.61662 m	1.50231
767	336
30′ 2″	30′ 1″

30.″3	+.52	20.″2	+.49
34.1	+.21	23.7	+.20
54.6	−.32	44.5	−.53
49.3	+.28	40.6	+.52
42.45	+.69	3	+.68
32	42.″08	31	32.″25
	−41.36		31.79
32	0.72	−.10	4.04
			+.08
+35°	50′	47.″63	44.″31
		47.73	44.23
+ 6°	27′	51″	

08146
− 050
0.8090 11 11

−	6.44		
−	.42	−	.25
−	.18 27	−	.14 15
−	.17	−	.17
	−7.21 30		−7.08 01
50′	40.″42		37.″81
	3		22
+ 35°	50′	38.″82	44.″82
	54	50.22	− .09
	′	″	− 15.70
+ 4	11.4	+3	55.03
	12.2		
	54′	33.″9	

Sept. 18

m	s	m	s	m	s
4	52.0	5	0.15		14.19
	54.0		2.66		16.77
	56.0		5.18		19.22
	58.1		7.80		21.75
	59.8		10.20		24.10
5	5.5		56.16		28.12
	54.7		58.63		30.63
	56.6		1.26		33.18
	58.2		3.75		35.86
	0.7		6.43		38.35
			5.20		42.20
			19.21		44.63
			33.23		47.27
			47.27		49.83
			1.25		52.43
4	55.98		16616		
5	56.34			5	33.232
				2	59.45
				2	33.78
				2	33.79
				2	33.76
				−2	32.82
				−	.93
				−	2.53
				−2	36.28
					56.95

s: +3725 −23.11

1.57113	1.36380 m
1.58566 m	1.37833
30′ 2″	30′ 1″

28.3	+.54	26.2	+.53
31.3	+.21	29.8	+.17
52.2	−.43	51.8	−.48
46.7	+.31	46.3	+.43
40.75	63		65
32	39.88	31	38.52
−	38.52		23.90
32	1.36	32	2.42
			39.00
	50′ 46.″99		45.93

− 1439
0.80021

−	6.31		
−	.36	−	.14
−	.27	−	.16
−	.16	−	.14
−	7.10	−	6.77
50′	39.89		39.16
50	39.52	+4	10.93
54	50.3	−	.09
		−	15.80
4	10.8	+3	55.04
	11.6		
			34.6

Sept. 19

m	s	m	s	m	s
4	52.9	5	2.45		16.48
	54.6		5.10		19.05
	56.8		7.60		21.61
	58.8		10.27		24.23
	1.2		12.60		26.71
5	3.2		5.44		30.50
	1.5		1.10		33.00
	3.1		3.76		35.50
	4.8		6.33		38.20
	6.6		8.90		40.68
			7.60		44.47
			21.62		47.00
			35.58		49.50
			49.55		52.10
			3.71		54.68
4	56.86		17806		
6	3.04			5	35.612
					59.43
				2	36.18
				2	36.19
				2	36.16
				−2	35.20
				−	.99
				−	2.51
				−2	38.70
					56.91

s: +3875 −2743

1.58827	1.43823 m
1.60280 m	1.45276
30′ 2″	30′ 1″

28.5	+.54	31.3	+.50
31.8	+.21	24.7	+.19
53.2	−.43	46.6	−.56
47.1	+.31	40.7	+.52
40.85	63		65
32	40.15	31	33.82
−	40.07		28.36
32	0.08	32	1.68
			46.67
	50′ 48.″27		

− 636
0.80824

−	6.43		
−	.39	−	.20
−	.27	−	.16
−	.16	−	.16
−	7.25	−	6.95
50	41.02		39.72
	40.37	+4	10.13
	50.54	−	.08
		−	15.90
	10.0	+3	54.15
	10.8		34.5
			35.2

Sept. 22

m	s	m	s	m	s
4	57.7	5	9.54		23.70
	59.2		12.10		26.28
	2.2		14.73		28.76
	4.3		17.22		31.18
	6.8		19.67		33.68
6	2.2		5.60		37.43
	23.9		8.10		40.20
	26.1		10.58		42.63
	28.5		13.36		45.28
	30.7		15.84		47.83
			14.65		51.60
			28.72		54.00
			42.67		56.78
			56.71		59.32
			10.76		186
5	2.04		21351		
6	26.28			5	42.702
					59.36
				2	43.34
				2	43.35
				2	43.32
				−2	42.33
				−	1.07
				−	2.44
				−2	45.84
					56.86

s: +40.66 −43.58

1.60917	1.63929 m
1.62370 m	1.65382
[illegible]	
30′ 2″	30′ 2″

30.4	+.52	3.3	+.10
35.3	+.21	8.7	+.35
55.6	−.21	28.4	+.01
48.5	+.29	23.2	+.47
43.00	81		93
32	42.45	32	15.90
−	42.05	[31]	45.06
32	0.40	32	0.96
			15.85
	50′ 47.″95		47.39

+ 267
0.81727

−	6.57		
−	.43	−	.49
−	.27	−	.13
−	.20	−	.23
−	7.47	−	7.42
50	40.48		39.97
	40.22	+4	10.64
	50.6	−	.08
		−	16.10
	10.4	+3	54.46
	11.2		
			34.7

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Sept. 23

70	5	2.0	5	11.72		2.553	5	13.5	5	22.32		36.30
28		3.5		14.10		28.10		15.6		25.00		39.00
76		6.5		16.63		30.71		18.0		27.40		41.50
18		8.2		18.23		33.38		20.6		29.88		43.84
68		11.0		21.72		38.90		21.7		32.53		46.48
43	6	29.0		7.73		39.70	6	34.1		18.46		50.37
20		30.4		10.33		42.20		36.3		20.96		53.00
63		31.8		12.80		44.73		39.0		23.48		53.54
28		34.0		15.41		47.40		41.2		26.00		58.00
83		36.7		18.00		50.05		43.0		28.66		0.46
60				16.68		53.90				27.43		4.37
00				38.72		56.38				41.42		6.70
78				44.82		58.41				55.47		9.52
32				58.87		1.35				9.42		11.85
86				12.85		4.00				23.51		14.48
	5	6.24	22394				5	17.88	27725			
02	6	32.38			5	44.788	6	38.72			5	55.450
6						59.34						59.22
34					2	45.45					2	56.23
35					2	45.46					2	56.24
332					2	46.45					2	56.21
33					−2	44.89					−2	55.22
07					−	.93					−	1.01
44					−	2.42					−	2.30
814					−2	47.94					−2	58.53
86						56.85						56.92

		+ 3855		− 4759				+ 3757		−43.27
		1.58602		1.67752				1.57484		1.63619
		1.60055		1.69205				1.58937		1.65072
				[0]						
	30	2	30	1			30	2	30	1
	27.9	+.54	59.3	+.07			27.1	+.54	4.4	+.17
	31.8	+.21	3.6	+.31			30.9	+.21	7.9	+.24
	51.5	−.50	22.8	−.21			49.9	−.54	26.8	−.10
	46.7	+.31	19.3	+.46	11.05		45.2	+.33	24.1	+.66
	39.70	56	[31.7]	63			38.50	54		97
	32	39.48	32	11.25			32	38.28	31	15.80
	−	38.86		49.21			−	38.85		44.74
	31	59.62	32	0.46			31	59.43	32	0.54
	50	48.73		47.89			50	48.92		47.81
		+ 909						+ 805		
		0.82369						0.82265		
		− 6.66						−6.65		
		− .38		− .60				− .89		− .49
		− .27		− .12				− .23		− .12
		− .14		− .16				− .14		− .24
		−7.45		−7.54				−7.39		−7.50
	50	41.28		40.35			50	41.53		40.31
		40.82	+4	18.07				40.92	+4	11.04
		50.7	−	.08				50.9	−	.07
			−	16.20					−	16.40
	+4	9.9	+3	53.79				10.0	+3	54.87
		10.7						10.8		35.5
			54	34.6						36.7

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K Cygni

$19^h\ 14^m\ 17^s$

$+53°\ 8'\ 37''$

$-10\ 45\ 49$

1878

Aug. 13

α_0 $16^s.858$

corr. α $+.047$ $+.134$

$\frac{d\alpha}{dt}$

δ_0 $37''.26$

corr. δ $+.83$

$\frac{d\delta}{dt}$

Aug. 14

log gau δ 9.90317

" cos δ 9.77802

" 15 cos δ sin 1' 9.88[illegible]409

tan δ +1.33

sin z −.19

Aug. 17

log R_1 1.57803

" R_2 1.27736

R_1 $37^s.85$

R_2 18.94

I 3.43

Aug. 18

h	m	s	m	s	m	s													
19	14	40.0	14	—	—		14	53.5	14	—	15	0.52	rej.		15	1.0	14	—	10.22
		43.0		—	—			58.0		—		3.78				4.2		—	13.62
		47.0		—	—			0.9	48.30	48.30		7.47			14	7.1	58.28	58.28	17.00
		50.0		—	—			4.1	.57	52.00		10.83				10.6	.31	1.74	20.52
		53.7		—	—			8.8	.42	55.28		14.10				12.7	.09	4.95	23.82
					14	39.66													
						42.57				57.33		19.18						7.00	29.00
					A+2	46.00				0.87		23.00						10.50	32.53
						49.52				4.10		26.36						13.90	35.90
						53.22				7.60		29.83						17.30	39.37
										11.10		33.32						20.70	42.90
			46.84	23.33		38.00													
			4.92	23.86	A+1	1.46				48.43		38.33						58.23	47.98
						5.00				7.34		41.85						17.04	51.48
						8.46				26.34		45.00						35.94	54.95
						11.70				45.13		48.48						54.95	58.42
										4.20		52.00						13.88	1.90
	14	46.74					15	1.06	13.44						15	7.12	18.04		
					15	23.895					15	26.288							15	36.008
					14	19.778						19.755								19.675
					+ 1	4.12					1	6.53							1	16.33
					+ 1	4.07					1	6.48							1	16.28
					+ 1	3.99					1	6.40							1	16.20
					− 1	1.90					− 1	4.86							− 1	14.34
					−	2.06					−	2.05							−	1.86
					−	2.92					−	2.90							−	2.82
					− 1	6.88					− 1	9.31							− 1	19.02
					m	s														
					14	17.02						16.98								16.99
		s																		
		+ 3.15						+ 25.23								+ 28.89				
		1.56996						1.40192								1.46075				
		1.45405$_n$						1.28601$_n$								1.34484$_n$				
		15′ 3′						— —				15 3				15 3				
E		39.″9 +.44						29.4 +.59				36.7 +.49				30.8 +.58				
F		39.7 +.21						30.2 +.16				37.1 +.16				31.6 +.15				
B		59.2 +.14						50.2 −.46				58.1 +.09				31.8 −.41				
A		57.0 +.02						46.2 +.16				54.1 +.05				46.5 +.15				
		49.55 81						39.80 44				47.40				41.30 47				
		18′ 48.95						[18] 39.00				18 46.50				18 40.18				
		− 28.45						− 19.32								− 22.12				
		18 20.50						18 19.68								18 18.06				
		° ′ ″																		
+53		4′ 27.85						4 28.67								4 30.29				
−10		45 50																		
		1.03930																		
		−1259						−1106								−1294				
		1.02671						1.02824								1.02636				
		+10.63						+10.67								+10.63				
		− .36						− .16								− .22				
		− .11						− .10								− .11				
		− .20						− .11								− .12				
		+9.96						+10.30								+10.18				
		4′ 37.81						4 38.97								40.47				
		4 37.85	+4′	11.16				38.97	+4	11.29						40.47	+4	10.92		
		8 48.47	+	.20				48.75	+	.20						49.86	+	.19		
			−	11.20					−	11.80							−	12.60		
		+4 10.7	+4	0.16				9.8	+3	59.99						9.4	+3	58.51		
		11.5						10.6								10.2				
			8′	38.0						39.0								39.0		

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	α			δ	
	m s		'	"	
Aug. 8	14 19.86	8	8	47.0	14
13	.78	10		48.4	14
18	.68	11		49.8	12
23	.57	12		51.0	12
28	19.45			52.2	

Aug. 20

15 53.7	—	15	—
56.3	—		—
59.5	—	22.33	22.33
25	—	.23	25.66
6.2	—	.34	29.20
	12.26		34.42
	15.52		37.77
	19.00		41.26
	22.50		44.81
	26.00		48.10
	—		53.32
	22.30	41.24	56.77
	41.27	.27	0.12
	0.24	.30	3.77
	19.06	.21	7.23
15 59.44			
		15	41.255
			19.63
		1	21.62
		1	21.57
		1	21.49
		−1	19.65
		−	1.88
		−	2.77
		−1	24.30
			16.96

− 1819
1.25983n
1.14392
15 2

53.4 +.17
54.6 +.36
13.9 −.25
11.3 +.40
3.65 68
18 3.30
13.93
18 17.23
4 31.12

−1832
1.02098
+10.49
− .08
− .09
− .17
+10.15
41.27

4127	+4	10.22
5049.3	+	.19
	−	13.10
+4 9.1	+3	57.31
9.9	8	38.6

Aug. 25

14 55.0	15 8.70	15 27.65
0.3	12.32	31.00
3.0	15.50	34.33
5.6	19.00	37.75
9.2	22.32	41.40
	—	46.57
	—	50.10
	—	53.46
	—	56.74
	—	0.27
	15.57 53.42	5.47
	34.43 .37	9.00
	53.48 .43	12.30
	12.32 .38	15.62
	—	19.20
15 2.62		
		15 53.400
		19.52
		1 33.88
		1 33.83
		1 33.75
		−1 31.84
		− 1.96
		− 2.66
		−1 36.46
		16.94

+ 5078
1.70569
1.58978n
15 3

43.8 +.36
47.0 +.34
4.4 +.17
1.4 +.07
54.10 94
18 54.15
− 38.88
18 15.27
4 33.08

− 841
1.03089
+10.74
− .68
− .16
− .24
+ 9.66
42.74

4274	+4	10.49
51.5	+	.19
	−	14.20
8.8	+3	56.48
9.6		39.2

Aug. 26

15 2.0	15 11.35	15 30.05
7.0	14.70	33.66
10.2	18.23	37.00
12.7	21.46	40.50
16.0	24.86	43.86
	27.10	49.20
	30.33	52.48
	33.87	55.92
	37.52	59.50
	40.70	2.87
	18.12	7.95
	37.01	11.41
	55.99	14.82
	14.90	18.42
	33.90	21.90
15 9.58	279.92	
		15 55.984
		19.49
		1 36.49
		1 36.44
		1 36.36
		−1 34.50
		− 1.88
		− 2.63
		−1 39.01
		16.97

+ 4640
1.66652
1.55061n
— —

42.0 +.40
42.7 +.28
1.9 +.18
58.4 +.02
51.95 88
[18] 51.25
− 35.53
18 15.72
4 32.63

−688
1.03242
+10.77
− .56
− .16
− .22
+ 9.83
42.46

4246	+4	10.93
51.8	+	.19
	−	14.50
9.3	+3	56.62
10.1		39.1

Aug. 27

15 2.4	15 14.00	32.70
6.7	17.30	36.40
9.0	20.83	39.70
12.2	24.21	[43.20] 41.20
16.3	27.73	46.63
	28.50	51.67
	33.20	55.22
	36.60	58.74
	39.92	2.00
	43.50	5.63
	20.81	10.57
	39.73	14.10
	58.65	17.60
	17.56	21.05
	36.54	24.50
15 9.32	293.29	
		15 58.658
		19.47
		1 39.19
		1 39.14
		1 39.06
		−1 37.20
		− 1.86
		− 2.61
		−1 41.67
		16.99

+ 4934
1.69320
1.57729n
[3]
15 4

43.8 +.36
44.5 +.32
3.7 +.17
0.1 +.04
(18) 53.75 89
19 53.02
− 37.78
18 15.24
3 33.11
4

− 941
1.02989
+10.71
− .64
− .16
− .22
+ 9.69
42.80

4280	+4	11.13
52.0	+	.19
	−	14.70
9.2	+3	56.62
10.0		39.4

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1878

	m	s	′	″	
Aug. 28	14	19.45	13	8 52.2	10
Sept. 2		.32		53.2	
7		.18	14	54.2	10
12		19.03	15	55.1	9
17		18.87	16	55.8	7
22		.71	16	56.4	6
27		.54	17	56.9	5
Oct. 2		.37	17	57.3	4
7		18.19	18	57.5	2

Aug. 29

h	m	s	m	s	m	s
19	15	18.0	15	19.05	15	38.26
		20.6		22.60		41.58
		24.3		26.00		45.00
		27.0		29.40		48.43
		29.8		32.85		51.90
	17	5.2		—		57.00
		7.6		—		0.48
		11.3		—		3.90
		14.2		—		7.29
		17.3		—		10.66

25.98	3.83	15.88		
45.03	.97	19.37		
3.87	.87	22.87		
22.82	.88	26.24		
—		29.73		

15 23.94

Sept. 1

15	16.8	15	25.50	44.30	
	19.0		29.00	47.78	
	22.7		32.28	51.20	
	26.1		35.67	54.53	
	28.3		39.05	58.00	
			41.10	3.22	
			44.58	6.67	
			47.91	10.30	
			51.35	13.58	
			54.90	17.00	

32.90	3.22	22.10		
51.16	6.67	25.60		
10.15		29.00		
29.00		32.40		
47.96		35.90		

15 22.58 50.57

Sept. 2

15	17.1	15	27.97	46.77	
	19.6		31.28	50.18	
	22.3		34.67	53.78	
	25.9		38.22	57.22	
	29.3		41.70	0.63	
17	5.2		43.60	5.75	
	7.6		47.00	9.30	
	11.3		50.50	12.64	
	14.2		53.90	16.12	
	17.3		57.40	19.60	

34.77		24.68	
53.72		28.13	
12.68		31.52	
31.51		34.82	
50.48		38.40	

15 22.84 6316

Sept. 9

15	29.8	15	45.94	4.88
	32.6		49.53	8.45
	35.7		52.63	11.86
	39.6		56.22	15.44
	41.9		59.95	19.00
17	0.9		1.92	24.14
	4.0		5.20	27.50
	9.0		8.70	30.77
	11.5		12.10	34.57
	14.0		15.53	37.90

52.85		43.40
11.93		46.48
30.97		50.80
49.94		53.43
8.69		56.80

15 35.92 16438

16	3.888	16	10.114	16 12.632	16 30.876
14	19.42		19.34	14 19.313	14 19.13
1	44.47	1	50.77	+113.32	+131.76
1	44.42	1	50.72	+113.27	+131.71
1	44.34	1	50.64	+113.19	+131.63
−1	42.34	−1	48.75	−1 51.24	−2 9.82
−	1.99	−	1.92	− 1.93	− 1.80
−	2.56	−	2.48	− 2.45	− 2.26
−1	46.89	−1	53.15	−1 55.62	−2 13.88
m	s				
14	17.00		16.96	17.01	+17.00

+ 39.95	+ 47.53	+49.79	− 58.49	+ 54.96 − 37.00
1.60152	1.67697	1.69714	1.76708	1.74005 1.56820
1.48561	1.56106	1.58018	1.65012	1.62309 1.45124
		123	117	414 229
15′ 3′	15 3	15 3	15 2	15 3 15 2

36.8 +.48	40.2 +.44	42.1 +.40	18.2 +.44	44.9 +.34 35.5 +.45
57.2 +.16	40.3 +.22	41.1 +.23	19.7 +.30	46.8 +.34 37.8 +.25
56.4 −.04	1.2 +.17	3.2 +.18	41.1 −.41	5.2 +.16 5.1 −.08
52.6 +.06	58.1 +.02	58.5 +.02	35.6 +.44	1.6 +.08 51.8 +.35
44.60 .66	50.70 .85	52.65 +.83	+.77 29.65	55.05 +.92 +.87 46.30
18 45.75	18 49.95	18 51.22	17 28.65	18 54.62 17 45.55
− 30.59	− 36.40	−38.03	44.68	−41.98 28.26
18 15.16	18 13.55	18 13.19 −.10	13.33 +.11	18 12.64 −.11 13.81 +.07
+53° 4′ 33.19	4 34.80	4 35.16	35.02	35.71 34.54
		35.26	34.91	35.63 34.47
				82
719		10 45 56		
− 809	− .1862	1.0393		− 027
1.02287	1.02068	− 168		1.0366
		1.02225		
+ 10.47	+ 10.49	+ 10.53		+ 10.88
− .42	− .59	− .65	− .89	− .79 − .36
− .19	− .23	− .34 23	− .23 15	− .35 − .25
− .16	− .21	− .21	− .19	− .23 − .22
+1.000	+ 9.46	+ 9.33 44	+ 9.22 30	+ 9.51 + 10.05
4 43.19	4426	4 44.49	34.24	4 45.27 44.59
		10	1	33 52
4 43.19 +4 10.47	4426 +4 10.81	4 44.36 45 +4 10.70		4 44.90 45.42 +4 10.15
8 52.45 + .19	53.05 + .18	8 53.25 + .18		54.6 + .17
− 15.20	− 15.80	− 16.00		− 17.39
+4 9.3 +3 55.46	8.8 +3 55.19	4 8.98 +3 54.88		4 9.72 +3 53.02
10.1	9.6	9.6		10.0
8′ 38.7	39.5	39.3		38.4

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Sept. 14 | Sept. 15 | Sept. 16 | Sept. 19

Sept. 14				Sept. 15			Sept. 16			Sept. 19		
16 39.3	—	16 17.70	16 0.6	16 1.70	20.60	16 2.0	16 4.00	22.75	16 0.4 4.4	16 11.35	29.97
42.1	—	21.30	3.1	5.15	24.13	6.1	7.32	26.40	7.3	14.80	33.42
44.7	—	24.52	✓ 6.0	8.70	27.58	✓ 10.0	11.00	29.70	10.4	18.20	37.00
47.6	—	28.00	9.2	12.00	30.90	13.0	14.30	33.20	14.0	21.42	40.38
51.3	—	31.53	12.4	15.48	34.32	16.4	16.72	36.78		25.00	43.87
17 41.0	14.60	36.79	17 34.3	17.30	39.57	17 39.2	19.78	41.72		—	49.20
43.2	18.20	40.20	37.2	20.86	42.80	44.7	23.00	45.20		—	52.53
46.4	21.55	43.57	✓ 39.9	24.35	46.40	✓ 48.9	26.62	48.80		—	55.90
49.0	24.90	47.00	42.9	27.67	49.82	52.5	30.00	52.15		—	59.20
51.5	28.28	50.60	45.9	31.00	53.20	54.5	33.40	55.66		—	2.78
	—	53.72		8.61	58.35		10.67	0.70		18.15 56.00	8.00
	24.61 43.55	59.00		27.51	1.85		29.76	4.15		36.93 55.87	11.40
	43.63 .63	2.50		46.36	5.40		48.71	7.58		55.92 55.92	14.83
	2.58 .64	6.00		5.30	8.72		7.63	11.15		14.85 55.91	18.33
	21.51 .66	29.68		24.24	12.18		26.56	14.58		—	21.70

16 45.00 | 16 6.26 23202 | 16 9.50 24333 | 16 7.30

17 46.22 | 17 40.04 | 17 47.96

16 43.620	16 46.464	16 48.666	16 55.925
14 18.958	14 18.926	14 18.8984	18.798
+144.66	+147.48	+149.77	2 37.13
+144.61	+147.43	+149.72	2 37.08
+ 144.53	+ 147.35	+ 149.64	2 37.00
−2 22.62	−2 25.47	−2 27.98	−2 35.21
− 1.86	− 1.83	− 1.77	− 1.83
− 2.10	− 2.07	− 2.04	− 1.94
−2 26.58	−2 29.37	−2 31.79	−2 38.98
17.04	17.03	16.88	16.94

Sept. 14		Sept. 15		Sept. 16		Sept. 19
− 1.38 / +58.62	− 62.60	+ 40.14	− 53.64	+ 39.17	− 59.29	+ 48.62
0.13988n	1.79657n	1.60358	1.72949n	1.59295	1.77298n	1.68681
0.02292	1.67961	1.48662n	1.61253	1.47599n	1.65602	1.57090n
397	8066	767	358	704	707	
15 3	15 2	15 3	15 2	15 3	15 2	15 3
1.2 +.17	16.1 +.39	32.3 +.57	25.2 +.54	31.4 +.58	25.1 +.54	39.2 +.46
1.5 +.26	17.9 +.32	✓ 35.9 +.15	✓ 28.8 +.23	✓ 34.1 +.14	✓ 28.2 +.23	39.9 +.21
23.1 −.18	38.9 −.32	54.8 −.21	48.4 −.57	53.6 −.32	47.8 −.57	1.4 +.17
14.0 +.39	31.8 +.47	47.8 +.13	41.3 +.37	46.4 +.15	40.2 +.39	53.9 +.05
12.15 +.64	+.86 27.50	43.55 +.64	+.57 36.80	42.50 +.55	+.59 36.45	50.30 .89
18 9.95	17 26.18	18 42.70	17 35.92	18 41.38	17 35.32	18 48.60
1.05	47.82	− 30.66	40.98	−29.92	45.29	− 37.23
18 11.00 +.01	14.00 +.12	18 12.04 −.08	16.90 +.10	18 11.46 −.07	20.61 +.11	18 11.37
4 37.35	34.35	36.31	31.45	36.89	27.74	4 36.98
37.34	34.23	36.39	31.35	36.96 / 37.03	27.63 / 27.52	
			rej.		rej.	
−.07		− .002		+ .033		−.618
1.0314		1.0391		1.0426		1.03312
+ 10.75		+10.94		+11.03		+10.79
00	− 1.03	− .42	− .75	− .40	− .92	− .62
− .28 32	− .22 24	− .33 37	− .23 26	− .33 37	− .23 26	− .38
− .16	− .22	− .16	− .14	− .14	− .15	− .22
+ 10.31 27	+ 9.28 6	+ 10.03 999	+ 9.82 79	+10.16 2	+ 9.73	+9.57
4 47.66 1	43.63 49	46.34 8	41.27 14	47.05 8	37.47 36	46.55
4 45.64 55	+4 9.90	4 46.34 8	rej.	4 47.05 8	rej.	46.55 +4 10.13
55.4	+ .16	55.55	+4 10.45	55.7	+4 9.84	56.1 + .15
	− 18.10		+ .16		+ .15	− 18.80
+4 9.8	+3 51.96	4 9.2	− 18.30	4 8.76	− 18.40	9.5 +3 51.48
10.6		10.0	+3 52.31	9.4	+3 51.59	10.3
	8 37.5		38.7		38.7	38.0

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β Cygni

19h 25m 48s

+27° 42′ 16″

+14 40 32

1878.

α	48.095	
corr. α	−.022	
	+.001	
dα/dt		
δ₀	16.49″	
corr. δ	−.63	
dδ/dt		

log sin δ	9.66737
" cos δ	9.94712
" 15 cos δ tan i	0.05214n
	319
tan δ	+.53
sin z	+25

log R₁	1.40893
" R₂	1.10826
R₁	25.64
R₂	12.83
I	2.33

Aug. 13

h m s	m s	m s
19 26 41.6	26 23.80	26 36.72
43.1	26.25	39.10
45.3	28.56	41.33
47.4	30.90	43.64
50.0	33.18	46.00
	19.94 15.28	49.73
	.86 17.53	52.00
	.88 19.88	54.23
	.85 22.18	56.60
		59.00
	28.54	2.43
	41.36	4.84
	54.31	7.05
	7.09	9.36
	19.88	11.78
26 45.48	27 1.18	

26 54.236
25 51.46
+1 2.78
+1 2.80
+1 2.78
−1 1.93
− .82
− 3.36
−1 6.11
25m 48.13s

Aug. 14

26 17.1	26 26.40	26 39.10
19.7	28.64	41.40
21.6	31.05	43.73
23.6	33.23	46.23
25.2	35.66	48.46
	17.60	51.81
	20.00	54.27
	22.20	56.70
	24.50	59.00
	27.00	1.29
	31.00	4.80
	43.78	6.12
	56.61	9.50
	9.35	12.00
	22.26	14.33
26 21.44	28 3.00	

26 56.600
51.45
1 5.15
1 5.17
1 5.16
−1 4.89 (3)
− .82
− 3.35
−1 8.56
48.04

Aug. 17
rej.

Aug. 20

27 4.8	26 −	26	−
6.8	−	58.93	56.60
8.7	−	58.87	58.87
11.1	−	59.05	1.38
13.2	−	59.11	3.77
		32.86	7.23
		35.22	9.63
		37.58	11.84
		39.90	14.30
		42.20	16.55
			20.00
	58.99	11.82	22.28
	11.91	.91	24.68
	24.70	.87	27.10
	37.55	.91	29.42
27 8.92			

27 11.780
51.40
1 20.38
1 20.40
1 20.38
−1 19.68
− .75
− 3.30
−1 23.73
48.05

Aug. 13:

+8.76s
0.94250
0.99569n
40′ 4′
e 16.8″ +.46
f 19.6 +.13
g 40.5 −.42
h 36.3 +.20
28.65 .37
44 28.30
− 9.90
44 18.40
+27° 38′ 29.95″
+14 40 8
1.17860
−1240
1.16620 1.16570
−14.65
− .02
− .14
− .09
−14.90
38′ 15.05″
38 15.05 +4′ 11.16″
42 26.65 − .26
− 10.40
+4 11.8 +4 0.50
11.2
42′ 15.6″

Aug. 14:

+35.16
1.54605
1.59924n
40 4
46.2 +.18
48.1 +.20
7.7 −.05
4.0 +.12
56.95 45
44 56.50
− 39.74
44 16.76
38 31.59
1070
−1120
1.16790 1.16740
−14.70
− .28
− .15
− .11
−15.24
16.35
16.35 +4 11.29
27.05 − .26
− 10.60
10.7 +4 0.43
10.1
16.8

Aug. 17:

40 3
22.9 +.59
25.3 +.18
46.3 −.49
41.0 +.23
34.60
43 33.88

Aug. 20:

+2.86
0.45637
0.509516n
40 4
8.3 +.29
11.6 +.19
30.4 +.02
27.1 +.22
19.35 72
44 19.35
− 3.23
44 16.12
38 32.23
−1808
1.16072
−14.76
− .00
− .13
− .18
−14.77
17.46
17.46 +4 10.22
28.25 − .26
− 11.80
10.8 +3 58.16
10.2
15.6

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	α m	α s		δ ′	δ ″	
Aug. 8	25	51.49	3	42	25.7	11
13		.46			26.8	
18		.42	4		27.8	10
23		.37	5		28.8	10
28		51.32	5		29.7	9
Sept. 2		.25	7			

Aug. 26

26	48.3	26	56.40	27	9.00	27	5.3	26	59.00	27	11.86	26	56.7	27	4.13	27	17.00	26	59.6	27	8.10	27	21.50
	50.3		58.56		11.37		7.1		1.38		14.12		58.8		6.41		19.35		2.1		10.42		23.18
Reject	57.8		1.00		13.83		9.3		3.86		16.56		0.9		8.83		21.67		4.5		12.63		25.52
	53.8		3.28		16.20		11.0		6.00		18.78		1.0		11.23		24.00		6.7		15.05		27.81
	55.8		55.3		18.44		12.8		8.40		21.18		5.1		13.52		26.24		8.4		17.41		30.25
28	5.2		47.44		22.00				50.33		24.67				53.33		29.72				59.33		33.36
	7.3		49.87		24.25				52.50		27.00				55.79		32.10				1.57		35.89
	9.2		52.26		26.50				54.82		29.30				0.12		34.41				4.00		38.28
	11.7		54.60		29.00				57.22		31.67				2.50		36.76				6.34		40.70
	14.0		57.00		31.24				59.57		33.97				4.80		39.10				8.66		43.06
			0.95		34.72				3.73		37.48				8.82		42.67				12.72		46.47
			13.77		37.10				16.50		39.87				21.65		45.00				25.55		48.78
			26.60		39.43				29.32		42.00				34.42		47.31				38.30		51.22
			39.43		41.80				42.07		44.52				47.31		49.64				51.17		53.53
			52.23		44.10				54.89		46.78				0.15		51.94				3.98		55.86
28	9.48	13.298				27	9.10	14.651				27	0.50	17.235				27	4.26	19.172			
				27	26.596					27	29.302					27	34.470					27	38.344
					51.338						51.33						51.30						51.275
				1	35.26					1	37.97					1	43.17					1	47.07
				1	35.28					1	37.99					1	43.19					1	47.09
				1	35.26					1	37.97					1	43.17					1	47.07
				−1	34.52					−1	37.22					−1	42.34					−1	46.30
				−	.75					−	.74					−	.79					−	.79
				−	3.24					−	3.23					−	3.20					−	3.18
				−1	38.51					−1	41.19					−1	46.33					−1	50.27
					48.09						48.11						48.14						48.07
		− 4288				+ 2020				+ 3397						+ 3408							
		1.63225m				1.30535				1.53110						1.53250							
		1.68544				1.35854m				1.58429m						1.58569m							
		40 3				40 4				40 4						40 4							
		17.0 +.49				27.2 +.54				40.3 +.30						41.4 +.28							
		20.2 +.25				31.2 +.02				43.7 +.16						43.8 +.17							
		39.2 −.29				49.7 −.59				2.8 +.03						2.8 +.03							
		34.7 +.31				48.4 +.09				58.3 −.02						0.2 00							
		28.10 76				38.115 86				51.55 47						52.10 48							
		43 27.78				44 38.38				44 51.28						44 52.05							
		48.47				− 22.83				− 38.40						− 38.52							
		44 16.25				44 15.55				44 12.88						44 13.53							
		38 32.10				38 32.80				38 35.47						38 34.82							
		− .657				− .908				− .700						− .947							
		1.17183				1.16937				1.17160						1.16876	1.16863						
		− 14.784				− 14.786				− 14.853						− 14.764							
		− .41				− .09				− .26						− .26							
		− .14				− .18				− .24						− .29							
		− .19				− .02				− .12						− .12							
		− 1.658				− 15.05				− 15.45						− 15.41							
		16.52				17.75				20.02						19.41							
		16.52	+4	10.93		17.75	+4	11.13		20.02	+4	10.47				19.41	+4	10.96					
		29.4	−	.25		29.6	−	.25		29.9	−	.24				30.2	−	.24					
			−	12.90			−	13.10			−	13.40					−	13.70					
		+ 4 12.9	+3	57.78		11.8	+3	57.78		9.9	+3	56.83				10.8	+3	57.02					
		12.3				11.2				9.3						10.2							
			42	14.3				15.5				16.9						16.4					

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1878

	α		δ	
	m s		' "	
Aug. 28	25 51.82		42 29.7	
Sept. 2	.25	7	30.5	8 / 7
7	.17	8	31.2	6
12	.09	8 / 9	31.8	6
17	51.00	9	32.4	4
22	50.91	10	32.8	4
27	.81	10	33.2	3
Oct. 2	.71	10	33.5	2
7	50.61		33.7	

Sept. 1

h 19	m s 27 50.3	m s 27 —	m s 27 49.00
	52.6	—	51.25
	53.0	40.70 40.70	53.63
	56.7	.67 43.00	55.90
	58.0	.79 45.45	58.30
			1.64
			4.00
			6.45
			8.73
			11.00
		—	
		—	
		40.72 40.72	
		53.62 .79	
		6.36 .72	
	27 54.52		

27 40.743
25 51.26
+1 49.48
+1 49.50
+1 49.48
−1 48.78
− .76
− 3.16
−1 52.70
m s
25 48.04

Sept. 2

27 2.0	27 13.00 15.35	25.94 28.12
4.3	17.68	30.55
6.0	20.13	32.78
8.3	22.38	35.30
10.7	~~25.94~~	
	17.71 43.35	
	30.54 .37	
	—	
	—	
	—	
27 6.26		

27 43.360
25 51.246
+1 12.12
+1 12.14
+1 12.12
−1 51.27
− .77
− 3.15
−1 55.19
48.17

Sept. 9

27 22.5	27 31.52	44.33
24.2	33.82	46.48
26.0	36.00	48.90
28.0	38.40	51.27
30.2	40.82	53.68
28 37.0	22.68	56.95
39.1	25.00	59.43
40.7	27.48	1.60
42.2	29.67	4.00
44.2	32.00	6.35
	36.11	9.88
	48.93	12.20
	1.67	14.54
	14.55	16.85
	27.36	19.28
27 26.18	862	
28 40.64		

28 1.724
25 51.134
+1 30.59
+1 30.61
+1 30.59
−2 9.84
− .72
− 3.04
−2 13.60
48.12

Sept. 12

27 30.0	27 38.50	51.55
32.0	41.10	53.77
34.0	43.41	56.18
36.0	45.75	58.53
38.1	48.10	[0.77] 1.77
28 34.1	30.00	4.23
36.5	32.32	6.61
38.4	34.65	9.00
40.9	37.00	11.42
42.6	39.28	13.68
	43.43	17.20
	56.16	19.50
	8.99	21.82
	21.83	24.12
	34.65	26.50
27 34.02	4506	
28 38.50		

28 9.012
51.085
2 17.93
2 17.95
2 17.93
−2 17.22
− .73
− 2.99
−2 20.94
48.07

Sept. 1	Sept. 2	Sept. 9		Sept. 12	
s − 13.78	+ 37.10	+ 35.54	− 38.92	+ 34.99	− 29.49
1.13925	1.56937	1.55072	1.59017n	1.54394	1.46967n
1.19244n	1.62151n	1.60286n	1.64231	1.59713n	1.52286
	256	391	336		
' ' 40 3	40 4	40 4	40 3	40 4	40 3
" 48.2 +.29	44.3 +.21	40.7 +.30	16.3 +.48	39.1 +.33	26.6 +.61
49.7 +.34	45.8 +.19	43.8 +.17	19.8 +.25	42.3 +.13	30.0 +.15
11.3 −.08	7.2 −.03	3.1 +.03	39.3 −.29	3.2 +.03	50.9 −.43
6.3 +.21	1.9 +.05	57.8 −.02	34.7 +.32	56.8 −.03	45.5 +.16
59.75 .76	55.75 +.42	51.90 +.48	+.76 27.80	51.15 46	38.75 49
43 58.88	44 54.80	44 51.35	43 27.52	44 50.35	43 38.25
15.58	− 41.83	−40.07	43.88	− 39.55	33.33
44 14.46	44 12.97 −10	44 11.28 −10	11.40 +11	44 10.80	44 11.58
+27° 38 33.89	38 35.28	38 37.07	36.95	38 37.55	36.77
	35.48	37.17	36.84		

(left margin, Sept. 1: ☉ ☽ ♀ ♃)

14 40 3
1.1781
−168
1.1613

Sept. 1	Sept. 2	Sept. 9		Sept. 12	
−1841		− 026		−1235	
1.16[illegible]9	1.1613	1.1755		1.16[illegible]5	
−14.[illegible]	− 14.50	− 14.98		−14.6[illegible]	
− .04	− .31	− .28	− .34	− .28	− .19
− .24	− .44 29	− .43	− .31	− .48	− .36
− .19	− .10	− .12	− .19	− .12	− .12
−14.9[illegible]	−15.3[illegible] 20	−15.81	− 15.82	−15.53	−15.32
38 18.98	38 20.03 28	21.36 3	21.13 02	22.02	21.45
38 18.98 +4 10.81	38 20.03 28 +4 10.70	38 21.30 19 +4 10.15		21.74 +4 9.49	
42 30.4 − .24	42 30.5 − .24	31.5 − .22		31.8 − .21	
− 13.90	− 14.00	− 15.00		− 15.30	
+4 11.4 +3 56.67	4 10.52 +3 56.46	4 10.3 +3 54.93		10.1 +3 53.98	
10.8	9.6	9.7		9.5	
42' 15.7"	16.7	16.1		15.7	

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Sept. 14			Sept. 15			Sept. 16			Sept. 19		
27 34.1	27 44.00	56.90	27 36.0	27 46.90	59.70	27 38.1	27 49.52	2.28	27 47.6	27 56.53	9.53
35.6	46.50	59.23	38.0	49.30	2.00	40.2	51.94	4.56	49.6	59.00	11.76
37.8	48.80	1.60	40.7	51.62	4.42	42.5	54.15	6.83	51.0	1.30	14.20
39.7	51.00	3.90	42.3	54.00	6.78	44.8	56.44	9.20	52.6	3.53	16.42
42.0	53.59	6.12	44.3	56.30	9.10	47.0	58.73	11.52	54.5	6.00	18.77
28 41.0	35.40	9.80	28 53.6	38.20	12.58	28 58.5	40.53	15.10	29 4.3	48.00	22.30
43.4	37.63	12.00	55.7	40.63	15.00	0.2	43.10	17.40	6.3	50.18	24.46
45.5	40.00	14.38	57.6	43.00	17.38	2.8	45.46	19.67	8.3	52.55	27.00
47.8	42.38	16.90	59.5	45.46	19.65	4.5	47.70	22.10	10.2	55.00	29.26
49.8	44.80	19.10	2.4	47.77	21.94	6.2	50.00	24.34	12.4	57.22	31.50
	48.78	22.40		51.62	25.52		54.16	27.80		1.27	35.10
	1.55	24.82		4.40	27.70		6.88	30.00		14.14	37.40
	14.44	27.10		17.31	30.00		19.72	32.45		26.90	39.70
	27.14	29.50		30.08	32.42		32.44	34.80		39.74	42.10
	40.04	31.90		43.01	34.74		45.36	37.17		52.59	44.38
27 37.84	7195		27 40.26	8642		27 42.52	9856		27 51.06	13464	
28 45.50		28 14.390	28 57.76		28 17.284	29 2.44		28 19.712	29 8.30		28 26.928
		25 51.050			25 51.032			25 51.014			53 47.96
		+143.34			+146.25			+148.70			2 36.97
		+143.36			+146.27			+148.72			2 36.99
		+143.34			+146.25			+148.70			2 35.97
		-2 22.64			-2 25.50			-2 28.00			-2 35.28
		- .74			- .73			- .70			- .73
		- 2.95			- 2.94			- 2.92			- 2.86
		-2 26.33			-2 29.17			-2 31.62			-2 38.82
		48.06			48.11			48.09			48.11
+36.55	-31.11		+37.02	-40.48		+37.19	-42.73		+35.87	-41.37	
1.56289	1.49290		1.56844	1.60724		1.57043	1.63073		1.55473	1.61669	
1.61483	1.54504		1.62058	1.65938		1.62257	1.68267		1.60792	1.66988	
508	609		163	6043		362	392				
40 4	40 3		40 4	40 3		40 4	40 3		40 4	40 3	
41.1 +.29	24.6 +.61		41.1 +.29	13.8 +.42		40.9 +.29	10.9 +.35		38.9 +.33	12.2 +.38	
44.2 +.17	28.3 +.16		45.6 +.19	18.8 +.26		44.1 +.17	14.8 +.29		41.4 +.11	14.7 +.29	
5.0 +.01	49.3 -.48		4.2 +.03	37.0 -.22		2.9 +.03	33.3 00		2.1 +.03	35.3 -.08	
57.1 -.03	40.1 +.24		57.9 -.02	31.1 +.34		57.9 -.02	28.0 +.34		54.6 -.01	29.3 +.34	
53.05 +.44	36.95 +.53	36.95	52.65 +.49	+.80	25.40	51.90 +.47	+.98	22.10	50.50 .46	.93	23.75
44 51.85	43 35.58		44 52.20	43 25.18		44 51.45	43 21.75		44 49.25	43 22.88	
-41.12	35.08		-41.74	45.64		-41.93	48.18		- 40.55	46.76	
44 10.73 -.10	10.66 +.08		44 10.46 -.10	10.82 +.11		44 9.52 -.11	9.93 +.12		44 8.70	44 9.64	
38 37.62	37.69		37.89	37.53		38.83	38.42		38 39.65	38.71	
37.72	37.61		37.99	37.42		38.94	38.30				
- 077			+ 001			+ 035				-603	
1.1704			1.1782			1.1816				1.1729	
-1480			-15.07			-15.19				-14.86	
- .30	- .22		- .31	- .37		- .31	- .42			- .29	- .38
- .43 49	- .32 36		- .43 49	- .31 34		- .43 49	- .30 34			- .48	- .34
- .11	- .13		- .12	- .20		- .12	- .24			- .12	- .23
-15.64 70	-15.47 51		-15.93 99	-15.9 58		-16.05 11	-16.15 19			-15.75	-15.81
21.98 22.02	22.22 .18		21.96 22.00	21.58 44		22.78 83	22.27 11			23.90	22.90
38 22.10 06	+4 9.90		38 21.77 42	+4 10.45		38 22.52 47	+4 9.84			23.40	+4 10.13
32.1	- .21		32.2	- .20		32.3	- .20			32.6	- .19
	- 15.60			- 15.70			- 15.80				- 16.10
+4 10.0	+3 54.09		4 10.25	+3 54.55		4 9.8	+3 53.84			9.2	+3 53.84
9.4			9.9			9.2				8.6	
	42 16.2			16.3			16.3				17.2

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γ Aquilæ

19h 40m 28s
+10° 19' 2"
+32 3 46
1878.

α 27s.570
corr. α −.005 +.001
dα/dt
δ0 1".51
corr. δ +.10
dδ/dt

log gam δ 9.25309
" cos δ 9.99292
" 15 cos δ tan 0.09794m 899
tan δ +.18
sin δ +.53

log R1 1.36313
" R2 1.06246
R1 23s.07
R2 11.55
I 2.10

(α and γ)

Aug. 14			Aug. 17		Aug. 18			Aug. 20			
h m s	m s	m s	rej.								
19 41 35	41 8.90	41 20.22		41 29.7	41 18.63	30.18	41 16.3	41 24.00	41 35.50		
5.1	10.80	22.42		31.5	20.60	32.22	18.7	26.10	37.60		
6.6	13.00	24.53		33.8	22.83	34.42	20.4	28.18	39.71		
8.1	15.00	26.52		36.0	24.92	36.52	22.2	30.30	41.74		
11.2	17.22	28.66		39.0	26.90	38.60	24.2	32.32	43.88		
	55.00	31.67			9.08 488	41.80		42 10.18	47.05		
	57.10	33.73			9.10 7.00	43.88		12.18	49.16		
	59.26	36.00			9.00 9.00	46.00		[14.23] 15.23	51.33		
	1.27	38.10			—	48.00		16.35	53.38		
	3.39	40.26			—	50.10		18.55	55.57		
	12.98	43.23			22.78	53.37		28.18	58.61		
	24.47	45.41			34.39	55.40		39.69	0.70		
	35.95	47.58			45.96	57.52		51.30	2.76		
	47.56	49.69			57.52	59.65		2.77	4.80		
	59.20	51.90			9.06	1.68		14.30	7.00		
41 6.90	18.16			41 34.80	22.71		41 20.36	25.24			
		41 36.032				41 45.942			41 51.248		
		40 31.28				40 31.26			31.25		
		+1 4.75				1 14.68			1 20.80		
		−1 4.42				−1 14.43			−1 19.74		
		− .28				− .25			− .26		
		− 3.71				− 3.69			− 3.68		
		−1 8.41				−1 18.37			−1 23.66		
		40m 27s.62				27.57			27.59		
	+ 29.13				+ 11.94			+ 30.89			
	1.46434				1.07700			1.48982			
	1.56333m				1.18599m			1.58881m			
	5 2		Astrical.		5 2			5 2			
E	36.2 +.44				12.1 +.30			37.1 +.43			
G	40.7 +.30				17.2 +.32			43.3 +.38			
L	3.7 +.10				29.2 −.33			2.9 +.09			
M	57.7 +.21				1821.8 +.47			58.1 +.21			
	48.95 1105				76			50.00 111			
	7 49.58				7 25.08			7 50.35			
	− 36.59				− 14.66 15.00			− 3880			
	7 12.99				7 10.42 10.58			7 11.55			
	° ' "										
	+10 15 35.36				15 37.93 38.27			15 36.80			
	+32 3 3										
	1.55680										
	−1025				−1229			−1719			
	1.54655				1.54451			1.53961			
	−35.20				−35.04			−34.59			
	− .08				− .01			− .09			
	− .08				− .07			− .08			
	− .26				− .19			− .28			
	−35.62				−35.31			−35.04			
	14 59.94				15 2.96			1.76			
	14 59.94	+4 11.29			15 2.96	+4 10.92		1.76	+4 10.22		
	19 11.1	− .55			11.83	− .54		11.9	− .54		
	' "	− 9.60				− 10.10			− 10.40		
	+1 11.4	+4 1.14			8.6	+4 0.28		10.1	+3 59.28		
	11.5				8.7			10.2			
		19' 0".9				3.2			1.0		

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	m	°		′	″	
Aug. 8	40	31.29		19	10.1	
13		.28	1		10.9	8 7
18		.26	2		11.6	7
23		.23	3		12.3	6
28		31.19	4		12.9	5
Sept. 2		31.14	5		13.4	

Aug. 22   Ex

41 30.0	41 29.00	40.63
32.7	31.05	42.65
35.8	33.37	44.70
37.9	35.38	47.00
38.9	37.51	49.10
	15.05	52.05
	17.10	54.29
	19.27	56.20
	21.42	58.32
	23.72	0.26
	33.26	3.70
	44.82	5.87
	56.22	8.00
	7.93	10.10
	19.31	12.00
41 35.06	28154	
		41 56.308
		31.235
		1 25.07
		−1 24.72
		− .27
		− 3.67
		−1 28.66
		27.65

Aug. 25

41 33.20	41 36.21	41 47.69
34.8	38.33	49.80
37.2	40.50	51.86
39.3	42.55	54.00
41.2	44.60	56.10
	22.42	59.30
	24.42	1.35
	26.53	3.45
	28.64	5.56
	30.87	7.60
	40.44	10.82
	51.89	12.88
	3.45	15.00
	15.04	17.18
	26.58	19.34
41 37.10	1740	
		42 34.80
		31.21
		1 32.27
		−1 31.93
		− .27
		− 3.64
		−1 35.84
		27.64

Aug. 26

41 31.1	41 −	41 50.33
32.8	−	52.30
35.2	−	54.44
37.3	−	56.52
39.0	−	58.53
	24.79	1.73
	27.00	3.82
	29.00	6.00
	31.28	8.10
	33.32	10.18
	—	13.37
	54.42 5.97	15.48
	5.967 5.967	17.53
	17.55 6.00	19.66
	29.08 6.01	21.73
41 35.08		
		42 5.988
		31.204
		1 34.78
		−1 34.55
		− .25
		− 3.63
		−1 38.43
		27.56

Aug. 31

41 46.7 49.2	41 50.72	42 2.05
51.0	52.67	4.05
52.1	54.63	6.17
54.3	56.81	8.42
	58.86	10.48
	36.66	13.62
	38.78	15.68
	41.00	17.78
	43.08	19.84
	45.20	22.00
	54.74	25.18
	6.23	27.22
	17.78	29.34
	29.37	31.48
	40.94	33.61
41 50.66	8906	
		42 17.812
		31.16
		1 46.65
		−1 46.34
		− .27
		− 3.59
		−1 50.20
		27.61

Aug. 22	Aug. 25	Aug. 26	Aug. 31
+ 2125	+ 2638	+ 3091	+ 2718
1.32736	1.42127	1.49010	1.43377
1.42635m	1.52026m	1.58909m	1.53276m
5 2	5 2	5 2	5 2
21.0 +.49	29.1 +.53	35.9 +.44	31.4 +.52
27.8 +.23	37.0 +.23	42.1 +.34	36.8 +.23
48.14 −.57	57.0 −.08	2.6 +.09	57.9 −.02
42.3 +.36	50.3 +.27	56.1 +.22	52.4 +.25
34.70 51	43.05 95	49.25 109	44.65 98
7 34.88	7 43.35	7 49.18	7 44.62
− 26.69	− 33.13	− 38.82	− 34.10
7 8.19	7 10.22	7 10.36	7 10.52
15 40.16	15 38.13	15 37.99	15 37.83
−49	−762	−618	−929
1.55631	1.54918	1.55062	1.54451
−36.00	−35.41	−35.53	−35.28
− .04	− .06	− .09	− .07
− .08	− .11	− .11	− .16
− .13	− .24	− .27	− .24
−36.25	−35.82	−36.00	−35.75
3.91	2.31	1.99	2.08

Aug. 22		Aug. 25		Aug. 26		Aug. 31	
3.91	+4 10.03	2.31	+4 10.49	1.99	+4 10.93	2.08	+4 10.96
12.2	− .54	12.6	− .53	12.87	− .53	13.2	− .51
	− 10.70		− 11.10		− 11.20		− 11.70
+4 8.3	+3 58.79	10.3	+3 58.85	10.7	+3 59.20	11.1	+3 58.75
8.4		10.4		10.8		11.2	
	19 27		1.2		1.2		0.8

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	α m s		δ ′ ″	
Aug. 28	40 31.19		19 12.9	
Sept. 2	.14	5	13.4	5
7	.09	5	13.9	5
12	31.03	6	14.3	4
17	30.96	7	14.7	4
22	.89	7	15.0	3
27	.81	8	15.2	2
Oct. 2	.73	8	15.3	1
7	30.64	9	15.4	1

1878

Sept. 1

h m s	m s	m s
19 42 51.7	41 55.00	42 4.60
53.6	57.20 57.10	–
55.3	.10 59.24	–
58.2	.14	
	.23 1.43	–
0.2	[3.61] ~~4.60~~	–
	39.00	–
	41.28	–
	43.82	–
	45.43	–
	47.58	–
	57.14 ~~59.27~~ 8.80 20.31 ~~20.34~~	27.78
	20.35	30.00
	—	31.81
	31.95 20.40	33.90
	43.32 20.25	36.24
42 55.80		

42 20.302
40 31.15
+1 49.15

−1 48.81
− .26
− 3.58
−1 52.65

m s
40 27.65

s
− 35.50
1.55023 n
1.64922 n
5′ 1′

	″	
h	12.7	+.34
f	17.3	+.25
g	41.2	−.44
α	34.0	+.61
	26.95	1.76

6 26.30
44.59
7 10.89

+10° 15′ 37.46″

−18.12
1.53868
−34.57
− .11
− .08
− .19
−34.95
15 2.51

15 2.51 +4′ 10.81″
19 13.3 − .51
″ − 11.80
+4 10.8 +3 58.50
10.9
19′ 1.0″

Sept. 15

42 20.3	42 29.60	41.00
22.2	31.63	43.28
24.2	33.72	45.32
25.9	35.90	47.38
28.2	37.92	49.50
43 33.1	15.70	52.53
34.7	17.65	54.60
36.1	19.75	56.72
37.6	21.92	58.90
39.4	24.00	1.00
	33.75	4.00
	45.30	6.15
	56.75	8.32
	8.29	10.40
	19.80	12.58
42 24.16	28389	
43 36.18	~~42 56.778~~	42 56.778
		40 30.985
		+145.79

−2 25.55
− .25
− 3.41
−2 29.21

27.57

+32.62 | −39.40
1.51348 | 1.59550 n
1.61142 n | 1.69344
247 | 449
5 2 | 5 1

34.6 +.45	4.0 +.17
41.4 +.38 (24)	11.1 +.38 (35)
2.0 +.09	32.1 −.05
52.9 +.24	23.4 +.66
48.30 +1.10	~~18.~~ +1.63 18.05
7 47.72	6 17.65
−40.87	49.37
7 6.85 −.10	7.02 +.12
15 41.50	41.33
41.60	41.21

32 2 57
1.5568
+006
1.5574

−36.09	
− .10	− .14
− .25 28	− .12 13
− .28	− .26
−36.72 75	−36.61 62
15 4.78 85	4.72 59

15 4.75 2 +4 10.45
19 14.56 − .43
− 13.00
4 9.8 (9) +3 57.02
10.0
1.7

Sept. 16

42 24.3	42 32.00	43.50
25.9	34.15	45.70
27.9	36.23	47.70
30.0	38.30	49.76
32.3	40.40	51.88
43 31.9	18.15	55.00
34.0	20.18	57.18
35.7	22.20	59.30
37.3	24.33	1.40
38.8	26.50	3.48
	36.22	6.70
	47.71	8.70
	59.27	10.80
	10.81	12.90
	22.27	14.95
42 28.08	29628	
43 35.54	~~42 59.256~~	42 59.256
		40 30.971
		+148.29

−2 28.02
− .24
− 3.40
−2 31.66

27.60

+31.18 | −36.28
1.49388 | 1.55967 n
1.59182 n | 1.65761
287 | 866
5 2 | 5 1

32.6 +.50	7.9 +.23
39.6 +.34 (28)	14.6 +.34 (35)
0.4 +.07	34.3 −.12
50.9 +.26	26.8 +.65
46.50 +1.11	21.10 +1.01
7 45.88	6 20.90
−39.07	45.46
7 6.81 −.09	6.36 +.11
41.54	41.99
41.63	41.88

+038
1.5606

−36.36	
− .09	− .12
− .25 28	− .12 13
− .28	− .25
−36.98 37.01	−36.86
4.56 62	5.14 .02

15 4.85 2 +4 9.84
14.64 − .42
− 13.10
4 9.8 +3 57.32
9.9
1.1

Sept. 17

42 27.0	42 34.45	46.00
28.6	36.50	48.00
30.7	38.63	50.00
32.5	40.73	52.20
34.9	42.80	54.30
43 32.0	20.58	57.45
34.2	22.63	59.50
35.7	24.90	1.58
37.8	26.83	3.64
39.3	29.00	5.73
	38.62	9.00
	50.10	11.13
	1.58	13.18
	13.19	15.22
	24.79	17.40
42 30.74	828	
43 35.80		43 1.656
		40 30.957
		+150.70

−2 30.47
− .23
− 3.39
−2 34.09

27.57

+30.92 | −34.14
1.49024 | 1.53326 n
1.58818 n | 1.63120
923 | 225
5 2 | 5 1

33.1 +.50	11.8 +.32
39.7 +.39 (38)	17.7 +.44 (25)
0.1 +.06	39.3 −.36
52.1 +.25	31.8 +.63
46.60 +1.09	+.84 25.55
7 46.25	6 25.15
−38.74	42.78
7 7.51 −.10	7.93 +.10
40.84	40.42
40.94	40.32

−046
1.5522

−35.66	
− .09	− .11
− .25 28	− .13 14
− .27	− .21
−36.27 30	−36.12
4.57 64	4.24 20

15 4.44 2 +4 10.82
14.7 − .42
− 13.20
4 10.3 +3 57.20
10.4
1.6

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For Nov. 5 v. under β Aquilae 7 pages further on.

Sept. 18

42 30.0	42 36.86	48.33
31.6	39.00	50.38
33.3	41.05	52.48
35.0	43.10	54.60
37.2	45.15	56.73
43 40.8	23.00	58.80
43.0	25.00	1.85
45.7	27.10	4.05
47.0	29.20	6.20
48.5	31.32	8.36
	41.03	11.47
	52.50	13.56
	4.07	15.67
	15.70	17.82
	27.12	20.00
42 33.42	20.42	
43 44.88		43 40.84
		40 30.94
		2 33.14
		−2 32.87
		— .23
		— 3.37
		−2 36.47
		27.61

+3066 | −4080
1.48657 | 1.61066n
1.58556n | 1.70965

5 2 | 5 1

33.8 +.48	4.9 +.18
39.0 +.27	9.1 +.25
0.5 +.07	31.8 −.05
52.9 +.24	23.9 +.66
47.15 106	18.35 104
7 46.55	6 17.42
— 38.51	51.25
7 8.04	7 8.67
15 40.31	39.68

−1342
1.54338
−34.94
— .09 | — .16
— .28 | — .13
— .26 | — .26
−35.57 | −35.49
4.74 | 4.19

4.46 | +4 10.93
14.7 | — .41
 | — 13.20
+4 10.2 | +3 57.32
10.3
19 | 1.8

Sept. 19

42 32.7	42 39.18	50.80
35.2	41.30	52.90
37.3	43.56	55.00
38.6	45.54	57.05
40.8	47.63	59.10
43 36.2	25.42	2.23
38.0	27.40	4.35
39.7	29.61	6.41
41.3	31.77	8.52
42.9	33.80	10.72
	43.44	13.80
	54.97	16.00
	6.45	18.05
	18.04	20.20
	29.60	22.15
42 37.12	32.50	
43 39.62		43 6.500
		30.93
		2 35.57
		−2 35.26
		— .25
		— 3.36
		−2 38.87
		27.63

+2938 | −3312
1.46805 | 1.52009n
1.56704n | 1.61908

5 2 | 5 1

31.4 +.52	12.9 +.35
37.2 +.23	19.2 +.24
59.2 +.03	40.2 −.41
50.2 +.27	31.0 +.64
45.30 105	82 26.55
7 44.50	6 25.82
— 36.90	41.60
7 7.60	7 7.42
40.75	40.93

−581
1.55099
−35.56
— .08 | — .10
— .27 | — .14
— .26 | — .20
−36.17 | −36.00
4.58 | 4.93

4.76 | +4 10.13
14.9 | — .41
 | — 13.40
10.1 | +3 56.32
10.2
 | 1.1

Sept. 22

42 35.5	42 46.12	57.60
37.0	48.34	0.04
39.0	50.48	2.05
41.8	52.63	4.10
43.2	54.73	6.33
43 45.2	32.48	9.30
46.5	34.53	11.45
48.6	36.73	13.54
50.6	38.75	15.76
52.5	41.00	17.82
	50.46	20.88
	2.08	23.00
	13.57	25.20
	25.16	27.30
	36.70	29.40
42 39.30	67.97	
43 48.68		43 13.594
		30.886
		2 42.71
		−2 42.41
		— .27
		— 3.32
		−2 46.00
		27.59

+3429 | −3509
1.53517 | 1.54518n
1.63416n | 1.64417

5 2 | 5 1

36.5 +.44	8.9 +.26
43.7 +.35	16.1 +.25
3.2 +.09	35.3 −.16
54.4 +.23	27.6 +.65
49.85 114	100 22.10
7 49.95	6 21.98
— 43.07	44.07
7 6.88	7 6.05
41.47	42.30

+389
1.56069
−36.37
— .11 | — .11
— .28 | — .14
— .28 | — .25
−37.04 | −36.87
4.43 | 5.43

4.93 | +4 10.64
15.0 | — .39
 | — 13.60
10.1 | +3 56.75
10.2
 | 1.7

Sept. 28

42 54.7	42 59.10	10.66
57.0	1.23	12.72
58.7	[3.33] 2.33	14.87
1.0	5.35	16.90
3.6	7.52	19.05
44 4.0	45.30	22.20
6.0	47.40	24.32
7.6	49.50	26.35
9.2	51.55	28.45
11.2	53.70	30.52
	3.31	33.73
	14.84	35.85
	26.37	38.00
	37.98	40.05
	49.49	42.20
42 59.00	131.99	
44 7.60		43 26.398
		30.79
		2 55.61
		−2 55.29
		— .25
		— 3.22
		−2 58.76
		27.64

+2740 | −4120
1.43775 | 1.61490n
1.53674n | 1.71389

5 2 | 5 1

27.6 +.54	1.6 +.14
34.8 +.21	7.9 +.24
54.2 −.30	27.2 −.09
47.2 +.31	21.8 +.65
40.90 71	94 14.40
7 40.95	6 14.62
— 34.41	51.75
7 6.54	7 6.37
41.81	41.98

+930
1.56610
−36.82
— .07 | — .16
— .24 | — .11
— .24 18 | — .29
−37.31 | −37.33
4.50 | 4.65

4.58 | +4 11.04
15.2 | — .36
 | — 13.70
10.6 | +3 56.98
10.7
 | 1.6

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α Aquilæ

19^h 44^m 50^s	α	49.846^s	log sin δ	9.17209	log R_1	1.36090
$+8°$ $32'$ $50''$	Corr. α	− .072 / − .003 (red)	" cos δ	9.99515	" R_2	1.06023
+33 49 58	$\frac{d\alpha}{dt}$		" 15 cos δ tan i	0.10 ~~0.17~~ m 122	R_1	22.96
1878	δ_0	$50.27''$	tan δ	+.15	R_2	11.49
	Corr. δ	−.01	sin z	+.56	I	2.09
	$\frac{d\delta}{dt}$	(Y … α)				

Aug. 18 (19 struck out)

h m s	m s	m s
19 45 33.2	45 41.05	45 52.60
35.5	43.20	56.78 54.80
37.0	45.40	.89 56.80
39.0	47.50	.80 —
40.7	49.48	—
	—	—
	—	—
	—	—
	—	—
	—	—
	45.33 8.29	—
	56.82 8.31	—
	—	—
	—	—
	—	—

45 37.08

46	8.300
44	53.61
+ 1	14.69
+ 1	14.70
+ 1	14.69 (red)
− 1	14.44
−	.21
−	3.76
− 1	18.41
44^m	49.89^s

Aug. 20

45 36.3	45 46.35	45 57.90
39.1	48.50	0.00
41.0	50.62	2.10
42.9	52.70	4.18
44.7	54.77	6.20
	46 32.23	9.45
	34.37	11.50
	36.38	13.60
	38.52	15.67
	40.70	17.77
	50.59	20.82
	2.07	23.00
	13.60	24.95
	25.02	27.10
	36.44	29.22

45 40.80 (~~88~~) 6772

46	13.544
	53.60
1	19.94
1	19.95
1	19.94 (red)
−1	19.74
−	.21
−	3.75
−1	23.70
	49.84

Aug. 22

45 43.1	45 51.60	46 2.73
44.9	53.61	4.90
46.3	55.63	7.00
48.0	57.61	9.20
49.7	59.80	11.24
	37.36	14.40
	39.35	16.41
	41.50	18.60
	43.33	20.58
	45.66	22.85
	55.65	26.00
	7.01	27.87
	18.57	29.90
	30.01	31.90
	41.44	34.37

45 46.40 9268

46	18.536
	53.585
1	24.95
1	24.96
1	24.95 (red)
−1	24.74
−	.23
−	3.74
−1	28.71
	49.83

Aug. 26

45 51.7	46 1.22	46 12.80
53.6	3.38	15.00
55.6	5.48	17.00
57.3	7.40	19.05
59.0	9.57	21.10
	47.05	24.13
	49.25	26.20
	51.36	28.24
	53.33	30.31
	55.40	32.43
	5.41	35.64
	16.99	37.68
	28.28	39.68
	39.78	41.88
	51.28	44.00

45 55.44 14174

46	28.348
	53.56
1	34.79
1	34.80
1	34.79 (red)
−1	34.56
−	.21
−	3.71
−1	38.48
	49.87

Declination reduction

	Aug. 18	Aug. 20	Aug. 22	Aug. 26
	$+31.22^s$	+32.74	+32.14	+32.91
	1.49443	1.51508	1.50705	1.51733
	1.59565 n	1.61630 n	1.60827 n	1.61855 n
	50′ 3′	50 3	50 3	50 3
E	45.8″ +.33	48.9 +.27	43.5 +.37	47.7 +.30
F	50.8 +.33	54.3 +.27	50.1 +.34	52.5 +.30
G	12.3 −.12	14.4 −.22	9.5 +.01	13.4 −.18
H	2.9 +.13	7.3 +.22	2.2 +.10	5.0 +.19
	59.05 .67 (red)	1.65 54 (red)	56.50 82 (red)	0.55 61 (red)
	53 57.95	54 1.22	53 56.32	53 59.65
	− 39.41	− 41.33	− 40.58	− 41.55
	53 18.54	53 19.89	53 15.74	53 18.10
+8°	29′ 29.81″	28.46	32.61	30.25
+33	49 9			
	1.58610			
	−1215	−1768	−37	−604
	1.57395	1.56842	1.58573	1.58006
	−37.49	−37.02	−38.52	−38.02
	− .07	− .08	− .08	− .08
	− .10	− .10	− .12	− .16
	− .17	− .14	− .20	− .15
	−37.83	−37.34	−38.92	−38.41
	28′ 51.98″	51.12	53.69	51.84

Aug. 18		Aug. 20		Aug. 22		Aug. 26	
28 51.98	+4′ 10.92″	51.12	+4 10.22	53.69	+4 10.03	51.84	+4 10.98
33 0.7	− .57	1.0	− .57	1.2	− .57	1.7	− .56
	− 10.40		− 10.70		− 10.90		− 11.40
+4′ 8.7″	+3 59.95	9.9	+3 58.95	7.5	+3 58.56	9.9	+3 58.97
	32′ 51.9″		50.1		52.3		50.8

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	α			δ	
	m s			′ ″	
Aug. 8	44 53.63			32 59.2	
13	.62	1		60.0	8
18	.61	1		60.7	7
23	.58	3		61.3	6
28	53.55	3		61.9	6
Sept. 2	.50	5		62.4	5
7	.45	5		62.9	5
12	.39	6		63.3	4
17	53.32	7		63.6	3

Aug. 31

46 38.2	46 –		46	2446
39.7	–			2652
41.6	17.10	17.10		2864
43.6	.06	19.15		3074
45.3	.14	21.32		3276
		58.80		3600
		0.85		3800
		3.00		4020
		5.10		4223
		7.18		4432
	17.10			4726
	28.63			4946
	40.15			5158
	51.53			5363
	2.99			5573
46 41.68	20040			
			46	40.080
				53.52
			1	46.56
			1	46.57
			1	46.56
			–1	46.35
			–	.22
			–	3.67
			–1	50.24
				49.84

– 1.60
0.20412n
0.30534
50 3
3.8 +.20
8.1 +.30
28.4 +.03
21.9 +.34
16.10 87
53 15.55
2.02
53 17.57
29 30.78

–924
1.54686
–37.74
– .00
– .20
– .22
–38.16
5262
5262 +4 10.96
2.2 – .54
– 11.90
+4 9.6 +3 58.52
32 51.1

Sept. 1

47 10.8	46 –		46 –
12.2	–		–
14.7	–	31.34	31.34
17.0	–	.11	33.20
19.0	–	.14	35.32
	–	42.58	38.40
	–	.59	40.50
	–	.70	42.70
	–	.61	44.70
	–		–
	—		–
	31.20	42.69	–
	42.62	.62	–
	—		–
	—		–
47 14.74			
		46	42.655
			53.508
		1	49.15
		1	49.16
		1	49.15
		–1	48.82
		–	.22
		–	3.66
		–1	52.70
			49.96

– 3209
1.50637n
1.60759
50 2
25.2 +.54
30.2 +.22
52.3 –.47
44.9 +.33
38.75 62
52 38.15
40.51
53 18.66
29.69

–1803
1.56807
–36.99
– .08
– .16
– .16
–37.39
52.30
5230 +4 10.81
2.3 – .54
– 12.00
10.0 +3 58.27
50.6

Sept. 12

46 40.7	46 43.74		53.10
42.4	45.78		57.26
44.6	48.00		57.31
46.2	50.00		1.37
48.1	52.00		3.57
47 42.1	29.61		6.60
43.8	31.66		8.68
45.7	33.80		10.77
47.7	35.86		13.00
49.6	38.00		15.00
	47.90		17.90
	59.31		20.05
	10.81		22.18
	22.18		24.35
	33.79		26.43
46 44.40	5399		
47 45.78		47	10.798
			53.39
		2	17.41
		2	17.42
		2	17.41
		–2	17.27
		–	.21
		–	3.54
		–2	21.02
			49.78

+ 2640 | – 3498
1.42160 | 1.54382n
1.52282n | 1.64504
50 3 | 50 2
36.3 +.49 | 18.7 +.45
42.3 +.27 | 25.2 +.25
4.1 +.17 | 47.2 –.57
54.1 +.05 | 38.5 +.42
50.20 98 | ~~32.95~~ 55 32.95
53 49.20 | 52 32.40
– 33.33 | 44.16
53 15.87 | 53 16.56
32.48 | 31.79

–1206
1.54404
–37.50 |
– .05 | – .09
– .38 | – .25
– .24 | – .14
–38.17 | –37.98
54.31 | 53.81
5406 +4 9.49
3.3 – .48
– 13.00
9.2 +3 56.01
50.1

Sept. 14

46 41.0	46 49.10	0.65
42.9	51.20	2.75
44.7	53.30	4.78
46.8	55.32	6.87
48.7	57.38	8.90
47 44.8	35.00	12.00
46.5	37.10	14.00
48.3	39.22	16.12
49.9	41.27	18.30
52.0	43.43	20.38
	53.26	23.53
	4.79	25.53
	16.16	27.68
	27.65	29.62
	39.20	31.90
46 44.82	8106	
47 48.30		47 16.212
		44 53.359
		+142.85
		+142.86
		+142.85
		–2 22.70
		– .21
		– 3.51
		–2 26.42
		49.79

+ 31.39 | – 32.09
1.49679 | 1.50637n
1.59696n 801 | 1.60654 759
50 3 | 50 2
42.0 +.40 | 21.9 +.50
47.6 +.34 | 28.5 +.23
9.5 +.01 | 49.8 –.55
56.4 +.02 | 38.1 +.42
55.75 +.77 | +.60 35.85
53 ~~8~~ 53.95 | 52 34.58
– 39.53 | 40.41
53 14.42 –.10 | 14.99 +.10
29 33.93 34.03 | 33.36 33.26

49 5
1.5864
– 073
1.5788
–37.91
– .08 | – .08
– .35 39 | – .23 26
– .19 | – .15
–38.53 57 | –38.37 40
28 55.40 6 | 54.79 86
28 55.26 16 +4 9.90
32 63.4 – .47
– 13.10
4 8.2 +3 56.33
51.5

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1878

Sept. 15

Sept. 17	44m 53.32		33′ 3.6
22	.25	7	3.9
27	.17	8	4.1
Oct. 2			
7	53.01		4.3

19	46m 43.8	46m 52.00	3.48
	46.0	54.00	5.58
	48.0	56.05	7.67
	49.7	58.22	9.72
	51.5	0.27	11.73
	47 48.0	38.00	14.83
	50.5	39.90	16.92
	52.4	42.00	19.00
	54.0	44.28	21.00
	56.8	46.38	23.17
		56.11	26.42
		7.63	28.50
		18.48	30.42
		30.53	32.60
		42.11	34.73
	46 47.80	9.536	
	47 52.34		47 19.072
			44 53.345
			+145.73
			+145.74
			+145.73
			−2 25.56
			− .21
			− 3.50
			−2 29.27
			44m 49.80

Sept. 16

	46 44.4	46 54.50	6.00
	46.2	56.50	8.00
	48.2	58.68	9.95
	49.9	0.70	12.20
	52.2	2.86	14.30
	47 57.4	40.40	17.38
	58.8	42.42	19.35
	0.2	44.62	21.46
	2.4	46.60	23.74
	4.2	48.73	25.83
		58.65	28.95
		10.09	31.00
		21.55	33.10
		33.11	35.20
		44.55	37.30
	46 48.18	10795	
	48 0.60		47 21.590
			44 53.331
			+148.26
			+148.27
			+148.26
			−2 28.03
			− .20
			− 3.48
			−2 31.71
			49.88

Sept. 17

	46 48.2	46 56.88	8.20
	49.9	59.00	10.25
	51.6	1.00	12.40
	53.0	3.15	14.60
	54.8	5.20	16.60
	47 49.9	42.66	19.50
	51.8	44.90	21.90
	53.5	46.90	24.00
	55.6	49.02	26.00
	57.9	51.00	28.23
		1.05	31.30
		12.41	33.48
		23.90	35.38
		35.46	37.52
		46.92	39.60
	46 51.50	11983	
	47 53.74		47 23.966
			44 53.316
			+150.65
			+150.66
			+150.65
			−2 30.48
			− .19
			− 3.47
			−2 34.14
			49.83

Sept. 18

	46 5.8	46 39.27	10.61
	5.22	1.32	12.70
	5.42	3.42	14.80
	5.63	5.54	17.00
	5.80	7.60	19.10
	48 1.5	45.10	22.20
	2.7	47.20	24.32
	4.8	49.33	26.32
	6.3	51.42	28.45
	8.2	53.50	30.57
		3.43	33.73
		14.84	35.75
		26.37	37.90
		37.48	39.93
		49.31	42.00
	46 54.30	13188	
	48 4.70		47 26.37
			53.30
			2 33.06
			2 33.07
			2 33.06
			−2 32.88
			− .19
			− 3.45
			−2 36.52
			49.84

	+ 31.27	− 33.27	
	1.49513	1.52205m	
	1.49530m	1.52222	
	635	327	
	50′ 3″	50′ 2″	
67	40.8 +.42	19.1 +.46	
Ryl	48.3 +.38	27.1 +.84	
	7.8 +.10	46.2 −.55	
	57.7 +.02	36.6 +.43	
	54.30+.88	37.65+.58	32.65
	53 53.65	52 32.25	
	−39.38	41.90	
	53 14.27 −.10	14.15 +.10	
+ 8°	29′ 34.08	34.20	
	34.18	34.10	
+ 33°	49′ 5″		
	1.5861		
	+.008		
	1.58669		
	−38.63		
	− .08	− .09	
	− .35 39	− .23 25	
	− .22	− .14	
	−39.28 32	−39.09 11	
	28′ 54.82 6	55.11 54.99	
	28′ 54.82 +4	10.45	
	32 63.5 −	.46	
	−	13.20	
	+4 8.86 +3	56.79	
		51.7	
		32′ 51.7	

	+ 33.41	− 39.01	
	1.52388	1.59118m	
	1.53405m	1.60135	
	62 546 10	240	
	50′ 3″	50′ 2″	
	43.0 +.38	12.8 +.32	
	50.4 +.34	19.7 +.38	
	9.1 +.03	39.7 −.35	
	0.8 +.06	30.9 +.48	
	56.05+.81	+.75	26.25
	53 55.82	52 25.78	
	−40.08	49.13	
	53 13.74 −.10	14.91 +.12	
	34.61	33.44	
	34.71	33.32	
	+038		
	1.5900		
	−38.90		
	− .09	− .13	
	− .35 39	− .22 24	
	− .20	− .19	
	−39.54 8	−39.44 6	
	56.07 .13	54.00 53.86	
	28 54.540 +4	9.84	
	32 63.5 −	.45	
	−	13.20	
	4 9.0 +3	56.19	
		50.4	

	+ 32.47	− 29.77	
	1.51148	1.47378m	
	1.52165m	1.48395	
	61 270	57 500	
	50′ 3″	50′ 2″	
	43.9 +.36	24.8 +.54	
	50.6 +.27	32.2 +.21	
	10.5 −.04	81.4 −.50	
	0.9 +.06	43.1 +.35	
	57.20+.71	+.60	38.10
	53 56.48	52 37.88	
	−40.89	37.49	
	53 15.59 −.10	15.37 +.09	
	32.76	32.98	
	32.86	32.89	
	− 046		
	1.5815		
	−38.15		
	− .08	− .07	
	− .35 39	− .23 26	
	− .18	− .15	
	−38.76 80	−38.63 3	
	54.00 6	54.38 26	
	28 54.19 14 +4	10.82	
	32 63.6 −	.45	
	−	13.30	
	4 9.4 +3	57.07	
		51.2	

	+ 32.06	− 38.34	
	1.50596	1.58365m	
	1.60718m	1.68487	
	50′ 3″	50′ 2″	
	45.9 +.33	15.2 +.37	
	50.5 +.34	21.2 +.29	
	11.9 −.10	42.7 −.47	
	2.1 +.09	33.2 +.47	
	58.90 66	66	28.95
	53 57.60	52 28.08	
	− 40.47	48.40	
	53 17.13	53 16.48	
	29 31.32 .2	31.87	
	−.330		
	1.57280		
	−37.39		
	− .08	− .11	
	− .39	− .25	
	− .16	− .16	
	−38.02	−37.91	
	53.28	53.96	
	53.58 +4	10.93	
	53 3.7 −	.44	
	−	13.40	
	4 10.1 +3	57.09	
		50.7	

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For Nov. 2, 3, 4, 5 v. under β Aquilae 2 pages farther on.

Sept. 19

46 53.6	47 16.4	13.10
55.0	37.2	15.26
57.0	57.8	17.30
59.3	80.0	19.40
1.9	100.0	21.52
47 57.2	47.58	24.55
59.1	49.72	26.70
0.7	51.72	[28.78] 29.78
2.8	53.86	30.87
4.6	56.00	32.90
	5.83	36.05
	17.32	38.18
	28.76	40.31
	40.25	42.33
	51.78	44.38

46 67.36 14394
48 0.8

47 28.788
53.29
2 35.50
2 35.51
2 35.50
−2 35.27
− .21
− 3.44
−2 38.92
49.87

+3143 −3209
1.49734 1.50637m
1.59852m 1.60759

50 3 | 50 2
43.2 +.38 | 22.3 +.50
49.1 +.34 | 28.8 +.23
9.1 +.03 | 49.8 −.54
0.6 +.05 | 39.8 +.39
56.15 80 | 58 36.05
53 55.50 | 52 35.18
− 39.68 | 40.51
53 15.82 | 53 15.69
29 32.53 | 32.66

−574
1.58036
−38.05
− .07 | − .08
− .39 | − .26
− .20 | − .14
−38.71 | −38.53
53.82 | 54.13
53.98 | +4 10.13
3.7 | − .43
| − 13.40
+4 9.7 | +3 56.30
32 50.3

Sept. 22

47 1.1	47 87.3	20.38
2.7	110.0	22.47
5.2	130.5	24.52
7.0	151.0	26.53
8.7	172.6	28.71
48 6.5	54.90	31.28
8.3	57.00	33.83
10.4	59.15	35.87
12.2	1.22	37.88
14.6	3.12	40.23
	13.03	43.20
	24.52	45.33
	35.92	47.57
	47.46	49.48
	59.08	51.70

47 4.94 18001
48 10.40

47 36.002
53.246
2 42.76
2 42.77
2 42.76
−2 42.42
− .22
− 3.40
−2 46.04
49.96

+3106 −3440
1.49220 1.53656m
1.59342m 1.63778

50 3 | 50 2
39.9 +.44 | 16.1 +.39
47.4 +.34 | 24.3 +.26
6.9 +.12 | 43.2 −.49
56.4 +.03 | 33.7 +.46
53.40 93 | 62 29.65
53 52.65 | 52 29.32
− 39.21 | 43.43
53 13.44 | 53 12.75
29 34.91 | 35.60

+406
1.59016
−38.92
− .08 | − .10
− .39 | − .25
− .23 | − .16
−39.62 | −39.43
55.29 | 56.17
55.73 | +4 10.64
3.9 | − .41
| − 13.60
8.2 | +3 56.63
52.4

Sept. 23

47 3.6	47 110.0	22.50
5.3	131.8	24.63
7.2	152.7	26.72
9.2	172.2	28.78
11.3	193.4	31.00
48 11.3	57.05	34.00
13.2	59.05	36.20
15.0	1.10	38.23
16.7	3.20	40.26
18.1	5.20	42.32
	15.20	45.38
	26.73	47.46
	38.20	49.53
	49.61	51.70
	1.12	54.00

47 7.32 19086
48 14.86

47 38.172
53.23
2 44.94
2 44.95
2 44.94
−2 44.71
− .19
− 3.38
−2 48.28
49.89

+3085 −3669
1.48926 1.56455m
1.59048m 1.66577

50 3 | 50 2
40.5 +.43 | 14.2 +.35
47.4 +.34 | 21.6 +.28
6.2 +.14 | 39.9 −.36
58.5 +.02 | 32.3 +.47
53.35 93 | 74 27.05
53 53.15 | 52 27.00
− 38.95 | 46.32
53 14.20 | 53 13.32
29 34.15 | 35.03

+1018
1.59628
−39.47
− .08 | − .12
− .39 | − .25
− .23 | − .18
−40.17 | −40.02
53.98 | 55.01
54.50 | +4 10.07
3.9 | − .40
| − 13.60
9.4 | +3 56.07
50.6

Sept. 25

47 6.0	47 147.5	26.26
7.4	168.2	28.20
9.0	189.5	30.32
10.7	210.0	32.40
12.7	230.0	34.50
48 15.2	0.51	37.60
17.1	2.60	39.68
19.0	4.77	41.72
20.6	6.82	43.84
22.2	9.00	46.00
	18.90	49.10
	30.34	51.15
	41.77	53.24
	53.27	53.35
	4.74	57.53

47 9.16 20902
48 18.82

47 41.804
53.20
2 48.60
2 48.61
2 48.60
−2 48.30
− .22
− 3.35
−2 51.87
49.93

+3264 −3702
1.51375 1.56844m
1.61497m 1.66966

50 3 | 50 2
42.9 +.38 | 16.1 +.39
48.1 +.34 | 22.0 +.28
9.1 +.03 | 43.1 −.48
0.1 +.04 | 34.8 +.45
56.00 79 | 64 29.60
53 55.05 | 52 29.00
− 41.21 | 46.74
53 13.84 | 53 15.74
29 34.51 | 32.61

−454
1.58156
−38.16
− .09 | − .12
− .39 | − .25
− .20 | − .16
−38.84 | −38.69
55.67 | 53.92
54.80 | +4 10.70
4.0 | − .39
| − 13.70
9.2 | +3 56.61
51.4

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β Aquilæ

$19^h\ 49^m\ 19^s$
$+6°\ 6'\ 12''$
$+36\ 16\ 36$
1878

Aug. 18 19

α_0 19.213
corr. α + .019
$\frac{d\alpha}{dt}$ + .008
δ_0 11.91
corr. δ −.30
$\frac{d\delta}{dt}$
Aug. 22

log ρ sin δ 9.02663
" ρ cos δ 9.99753
" Bessel's t 0.10255n
360
tan δ +.11
sin ζ +.59
Oct. 21

log R_1 1.35852
" R_2 1.05785
R_1 22.83
R_2 11.42
Oct. 22

h	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	
19	50	1.3	50	10.60	50	22.10	50	1.50	50	20.82	50	32.44	52	38.8	52	39.63	52	51.10	52	55.9	52	41.82	52	53.25	
		3.3		12.71		24.15		18.0		23.00		34.42		—		41.90		53.17		—		43.72		55.82	
		4.9		14.70		26.20		19.4		25.16		36.76		42.9		44.00		55.30		58.3		46.00		57.50	
		6.4		16.90		28.33		21.2		27.22		38.60		—		46.05		57.30		—		48.10		59.55	
		8.1		19.00		30.28		22.3		29.45		40.61		47.3		48.00		59.40		5.0		50.20		1.38	
				56.35		33.48						43.80				25.35		2.53				2.18		4.58	
				58.23		35.50						45.90				27.33		4.62				29.45		6.72	
				0.35		37.50						48.00				29.50		6.62				31.50		8.85	
				2.40		39.80						50.00				31.56		8.82				33.45		10.98	
				4.53		41.86						52.00				33.55		10.89				35.64		13.10	
				14.78		44.78				25.13	47.96	53.05				43.92		13.90				45.97		16.00	
				26.21		46.90				36.57	.79	57.10				55.25		15.90				57.43		18.30	
				37.63		48.90				47.94	.44	59.31				6.69		18.00				8.86		20.20	
				48.95		51.00				59.22	.80	1.23				18.03		20.10				20.22		22.28	
				50.37		58.15				—		3.43				29.50		22.25				31.44		24.33	
	50	4.80	18794				50	19.18					52	43.00	3339				52	59.73	4389				
					50	37.588					50	47.922					53	6.678					53	8.778	
					49	23.01						22.985					49	22.20						22.186	
					+1	14.58					1	24.994					3	44.48					3	46.59	
					+1	14.56					1	24.982					3	44.46					3	46.57	
					+1	14.57					1	24.93					3	44.47					3	46.58	
					−1	14.45					−1	24.75					−3	44.28					−3	46.46	
					−	.15					−	.17					−	.13					−	.14	
					−	3.80					−	3.77					−	2.99					−	2.97	
					−1	18.40					−1	28.69					−3	47.40					−3	49.57	
					49	19.19						19.23						19.28						19.21	
				+ 3279				+ 2874						+ 2368						+ 905					
				1.51574				1.45849						1.37438						0.95665					
				1.61934n				1.56209m						1.47798m						1.06025n					
				20 0				20 0						20 0						15 4					
6				22.0 +.45				14.8 +.01						5.7 +.07						44.6 +.21					
7				30.0 +.03				23.7 +.05						14.1 +.09						52.6 +.15					
9				50.0 −.65				43.2 −.60						34.7 −.20						12.1 −.24					
14				42.6 +.51				36.2 +.52						26.7 +.46						4.4 +.13					
				36.00 134				29.00 28						20.20 42						56.35 25					
				20 36.15				20 29.48						20 20.30						19 58.42					
				− 41.62				− 36.48						− 30.06						− 11.49					
				19 54.53				19 53.00						19 50.24						19 46.93					
			+6° 2' 5382					5535						5811						3 1.42					
			+36 15 44																						
				1.62540																					
				− 1204				− 26						− 567						+ 360					
				1.61336				1.62514						1.61973						1.62900					
				− 41.05				− 42.18						− 41.66						− 42.56					
				− .06				− .05						− .03						− .01					
				− .02				− .01						− .02						− .45					
				− .08				− .07						− .10						− .06					
				− 41.21				− 42.31						− 41.81						− 43.08					
				2' 12.61				13.84						16.30						18.34					
				2 12.61				13.04						16.30						18.34					
				6 21.7	+4'	10.92		22.2	+4	10.03				24.8	+4	11.35				24.8	+4	10.52			
					−	.80			−	.00					−	.37					−	.38			
				+4' 9.1	−	9.80		9.2	−	10.20				8.5	−	12.90				6.5	−	12.90			
				8.8	+4	0.52		8.9	+3	59.13				8.2	+3	58.08				6.2	+3	57.24			
					6'	13.1				12.2						14.4						15.6			

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Nov. 2

	m	°	′	″	
Aug. 8	49	23.03			0
13		.03			2
18		23.01			3
23		22.98			3
28		22.95			
~~Sept~~					

53	5.6	53	5.30	53	16.62
	7.0		7.28		18.60
	9.0		9.33		20.74
	11.0		11.38		22.77
	13.0		13.47		24.92
54	2.0		50.86		28.05
	3.8		52.88		30.10
	6.0		53.00		32.16
	8.0		57.10		34.23
	9.7		59.12		36.26
			9.35		32.43
			20.73		41.48
			32.16		43.63
			43.68		45.61
			54.99		47.70
53	9.12		160.81		
54	5.90			53	32.162
					22.163
				4	10.15
				4	10.13
					10.14
				−4	10.01
				−	.12
				−	2.80
				−4	12.93
					19.23

Nov. 3

	′	″	
	6	20.4	7
		21.1	6
		21.7	6
		22.3	6
		22.8	5

52	5.61	53	7.24		18.72
	5.85		9.40		20.66
	0.3		11.50		22.73
	2.3		13.43		24.76
	3.6		15.40		27.00
53	57.8		53.00		30.20
	59.5		55.00		32.05
	1.0		57.05		34.18
	2.2		59.13		36.15
	4.3		1.27		38.34
			11.39		41.40
			22.77		43.47
			34.18		45.66
			45.61		47.70
			57.09		49.83
53	0.16		171.04		
54	0.96			53	34.208
					22.00
				4	12.21
				4	12.17
					12.20
				−4	12.01
				−	.13
				−	2.79
				−4	14.93
					19.28

Nov. 5

	m	°	′	″	
Oct. 7	49	22.43			8
12		.35			8
17		.27			8
22		.19			8
27		22.11			8
Nov. 1		22.03			8
6		21.96			7
11		.90			6
16		21.84			6

52	5.93	53	11.10		22.40
	1.4		13.10		24.50
	3.0		15.15		26.50
	4.7		17.20		28.70
	6.5		19.39		30.77
54	1.56		56.68		33.92
	1.71		58.70		35.98
	1.8		0.90		38.00
	2.05		3.00		40.00
	2.23		4.92		42.18
			15.19		45.20
			26.57		47.28
			38.02		49.35
			49.39		51.50
			0.584		53.60
53	2.98		190.05		
54	18.86			53	38.002
					21.97
				4	16.03
				4	16.01
					16.02
				−4	15.92
				−	.12
				−	2.76
				−4	18.80
					19.20

Nov. 6

	′	″	
	6	24.9	0
		24.9	0
		24.8	1
		24.7	1
		24.5	2
		24.2	3
		23.9	3
		23.5	4

53	6.8	53	12.60	53	24.10
	8.2		14.70		26.40
	9.9		16.77		28.20
	12.0		18.80		30.20
	14.3		20.85		32.25
54	11.8		58.28		35.40
	12.2		0.35		37.60
	13.5		2.45		39.58
	14.8		4.49		41.60
	15.9		6.62		43.80
			16.74		46.90
			28.15		48.88
			39.68		51.00
			51.03		53.10
			2.44		55.25
53	10.24		198.04		
54	13.44			53	39.608
					21.96
				4	17.65
				4	17.65
					17.64
				−4	17.51
				−	.13
				−	2.75
				−4	20.39
					19.27

	+2304		−3374		
	1.36248		1.52815		
	1.46608	m	1.63175	m	
	20	0	15	3	
	8.1	+.13	56.0	+.20	
	17.1	+.09	5.0	+.19	
	83.2	−.15	19.0	−.24	
	27.2	+.46	15.9	+.21	
	20.65	53		31	7.50
	20	21.40	19	8.98	
	−	29.25	19	42.83	
	19	52.15	19	51.81	
	2	56.20		56.54	
		+274			
		1.62814			
		−42.48			
		− .03		− .07	
		− .03		− .45	
		− .13		− .08	
		−42.67		−43.08	
	2	13.53		13.46	
	2	13.50			
	6	24.4	+4	10.80	
			−	~~.8644~~	
	+4	10.9	−	12.50	
		10.6	+3	57.86	
				6 11.4	

	+3405		−2675		
	1.53212		1.42732	m	
	1.63572	m	1.53092		
	20	0	15	4	
	22.4	+.45	4.3	+.22	
	32.2	+.03	14.2	+.18	
	47.8	−.68	28.8	+.01	
	40.2	+.51	23.8	+.21	
	35.10	31		62	16.55
	20	35.65	19	17.78	
	−	43.23		33.96	
	19	52.42	19	51.74	
		55.93		56.61	
		+1579			
		1.64142			
		−43.77			
		− .07		− .04	
		− .07		− .47	
		− .08		− .16	
		−43.89		−44.44	
		11.74		12.17	
		12.06			
		24.4	+4	11.58	
			−	~~4.81~~	
	4	12.3	−	12.50	
		12.0	+3	58.64	
				10.7	

	+3502		−4086		
	1.54432		1.61130	m	
	1.64792	m	1.71490		
	20	0	15	3	
	26.8	+.40	49.1	+.27	
	35.2	+.04	57.0	+.23	
	46.9	−.68	6.2	−.14	
	41.6	+.51	3.8	+.15	
	36.85	36		79	57.65
	20	37.62	18	59.02	
	−	44.46		51.87	
	19	53.16	19	50.89	
		55.19		57.46	
		+1722			
		1.64262			
		−43.92			
		− .07		− .10	
		− .09		− .48	
		− .09		− .20	
		−44.15		−44.70	
		11.04		12.76	
		11.90			
		24.2	+4	12.07	
			−	~~.8845~~	
	4	12.8	−	12.30	
		12.0	+3	59.32	
				11.2	

	+2937		−3383		
	1.46790		1.52930	m	
	1.57150	m	1.63290		
	20	0	15	3	
	18.6	+.39	58.4	+.20	
	26.1	+.04	6.6	+.19	
	36.7	−.81	16.3	−.25	
	33.1	+.51	13.6	+.23	
	27.65	63		34	7.35
	20	28.62	19	8.72	
	−	37.28		42.94	
	19	51.34	19	51.66	
		57.01		56.69	
		+1444			
		1.63984			
		−43.64			
		− .05		− .07	
		− .06		− .49	
		− .16		− .08	
		−43.91		−44.28	
		13.10		12.41	
		12.76			
		24.2	+4	11.29	
			−	~~.8847~~	
	4	11.4	−	12.30	
		11.1	+3	58.52	
				11.3	

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α Aquilæ (Supplemental)

Oct. 27	44 52.69	33 4.1	
Nov. 1	.62	3.9	2
7	.55	3.6	3
11			
16	52.42	2.8	

1878

Nov. 2

	m	s	m	s	m	s
19	48	34.6	48	35.70	48	47.10
		36.3		37.80		49.25
		37.8		39.83		51.38
		40.1		41.97		53.37
		42.1		44.00		55.46
	49	40.0	49	21.46		58.60
		41.6		23.60		0.70
		43.5		25.65		2.72
		45.3		27.80		4.80
		47.2		29.85		6.90
				39.88		10.10
				51.30		12.15
				2.74		14.18
				14.21		16.26
				25.67		18.88
	48	28.18		1380		
	49	43.52			49	2.760
					44	52.60
					+ 4	10.16
					+ 4	10.17
						10.16
					− 4	10.00
					−	.17
					−	2.75
					− 4	12.92
					m	s
					44	49.84

Nov. 3

	m	s	m	s	m	s
	48	28.6	48	37.66	48	49.10
		30.3		39.80		51.32
		32.2		41.82		53.26
		34.0		44.00		55.40
		36.0		46.05		57.50
	49	34.0	49	23.62		0.50
		35.8		25.60		2.70
		37.6		27.88		4.74
		39.1		29.80		6.72
		41.0		32.00		8.82
				41.87		12.00
				53.32		14.00
				4.70		16.23
				16.17		18.32
				27.78		20.30
	48	32.22		2.384		
	49	37.50			49	4.768
						52.59
					4	12.18
					4	12.16
						12.18
					− 4	12.01
					−	.18
					−	2.74
					− 4	14.93
						49.84

Nov. 4

	m	s	m	s	m	s
	48	49.9	48	39.70		50.87
		51.4		41.80		53.18
		53.6		43.70		55.34
		54.6		45.90		57.33
		57.0		47.90		59.35
	49	35.1		25.50		2.50
		36.7		27.50		4.48
		39.2		29.60		6.60
		41.0		31.78		8.68
		43.0		33.81		10.85
				43.80		13.90
				55.21		16.00
				6.62		18.05
				18.11		20.20
				29.64		22.40
	48	53.30		3338		
	49	39.00			49	6.676
						52.673
					4	14.10
					4	14.08
						14.10
					− 4	13.99
					−	.17
					−	2.73
					− 4	16.89
						49.79

Nov. 5

	m	s	m	s	m	s
	48	31.3	48	41.42	48	53.00
		33.7		43.55		55.00
		35.3		45.67		57.17
		37.3		47.70		59.20
		39.3		49.88		1.33
	49	42.4	49	27.38		4.40
		44.6		29.60		6.49
		46.4		31.60		8.60
		48.0		33.70		10.64
		50.1		35.80		12.80
				45.64		15.90
				57.14		18.00
				8.59		20.00
				20.05		22.05
				31.62		24.20
	48	35.38		4304		
	49	46.30			49	8.608
						52.56
					4	16.05
					4	16.03
						16.05
					− 4	15.91
					−	.16
					−	2.71
					− 4	18.78
						49.83

	s		s							
	+ 24.58		− 40.76		+ 32.55	− 32.73	+ 13.38	− 32.32	+ 33.23	− 37.69
	1.39058		1.61023m		1.51255	1.51495m	1.12646	1.50947m	1.52153	1.57623m
	1.49180m		1.71145		1.61377m	1.61617	1.22768m	1.61069	1.62275m	1.67745
	1	1	1	1						
	50	3	50	2	50 3	50 2	50 3	50 2	50 3	50 2
ε	34.6	+.53	12.0	+.30	43.8 +.36	22.1 +.50	21.6 +.57	22.7 +.51	48.6 +.28	18.5 +.46
F	41.4	+.24	18.9	+.31	52.0 +.31	30.2 +.22	29.7 +.15	31.2 +.21	55.7 +.25	25.2 +.25
G	58.1	+.09	34.9	−.10	8.1 +.08	46.0 −.55	43.3 −.43	44.2 −.51	6.8 +.12	36.0 −.16
H	52.4	+.07	31.1	+.48	0.7 +.06	38.9 +.41	35.2 +.81	39.2 +.41	1.9 +.09	32.0 +.47
	49.35	99	23.71	99 23.15	55.95 80	58 34.05	32.45 60	3344 62 33.45	57.70 74	2 131 27.25
	53	46.62	52	24.22	53 56.15	52 34.30	53 32.45	52 34.32	53 58.25	52 27.92
	−	31.03		51.46	− 41.09	41.32	− 16.89	40.80	− 41.95	47.58
	53	15.59	53	15.68	53 15.06	53 15.62	53 15.56	53 15.12	53 16.30	53 15.50
	1	11		11						
+8	29	32.76		32.67	33.29	32.73	32.79	33.23	32.05	32.85
+33	49	6								
	1.58610									
	+.267				+1.569		+1.753		+1.715	
	1.58877				1.60179		1.60363		1.60325	
	−38.41				−39.98		−40.14		−40.11	
	− .05		− .14		− .09	− .09	− .01	− .09	− .09	− .12
	− .42		− .26		− .42	− .29	− .38	− .29	− .48	− .30
	− .23		− .25		− .20	− .14	− .15	− .16	− .18	− .25
	−29.49		−39.44		−40.70	−40.50	−41.68	−41.68	−41.86	−40.78
	28	53.27		53.23	52.59	52.23	52.11	52.55	51.19	52.07
	28	53.25			52.41		52.33		51.63	
	33	3.8	+4	10.80	3.8	+4 11.58	3.7	+4 11.30	3.6	+4 12.07
			−	.41		− .42		− .42		− .43
	+4	10.6	−	13.51	4 11.4	− 13.50	4 11.4	− 13.40	4 12.0	− 13.30
			+3	56.39		+3 57.64		+3 57.48		+3 58.34
				32.01		50.1		47.8		50.0

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(Supplemental)

	m	s			m	s			m	s			m	s			m	s
Oct. 27	40	30.31	8				19	15.1	2									
Nov. 1		.23	7					14.9	3									
6		.16						14.6										
11																		
16		30.04						13.8										

γ Aquilae — Nov. 5

19	44	11.1	44	19.00	44	30.60	13	36.0	13	42.50	13	56.87	30	22.1	30	36.0	31	9.0
		13.3		21.60		32.62		38.1		45.00		59.28		28.2		39.0		12.0
		14.9		23.21		34.72		40.5		47.70		2.00		34.0		41.8		15.2
		16.5		25.27		36.90		43.0		50.10		4.50		39.3		44.9		18.2
		18.2		27.45		38.90		44.7		52.80		7.20		45.7		47.6		21.2
																50.9		23.7
	45	20.0	45	5.20		42.00	14	5.62		39.63		11.00	32	5.0		53.9		26.8
		21.5		7.28		44.10		58.9		42.30		13.54		8.3		56.4		30.0
		23.2		9.25		46.25		1.0		45.00		16.20		18.5	29.8	59.6	33.8	32.7
		25.0		11.45		48.37		3.1		47.40		18.88		18.0				
		27.1		13.50		50.42		5.8		50.05		21.40		24.0		47.76		42.0
																20.98		45.1
				23.19		53.53				47.62		25.43				54.39		48.3
				34.75		55.60				1.97		27.92						51.3
				46.23		57.80				16.20		30.60				63.13		54.4
				57.77	[59.93]	1.93				30.56		33.18						57.3
				9.34		2.00				44.88		35.75						05.7
																		4.0
	44	14.80	23	28			13	40.46		8123			30	33.86			48.95	6.4
	45	23.36			44	46.256	15	1.00			14	16.246	32	13.76			31	21.043
					40	30.17					9	57.685						
					4	16.09					4	18.56						
					~~4~~	~~16.07~~					~~4~~	~~15~~						
											4	18.58						
					−4	15.91					−4	17.65						
					−	.20					—	.89						
					−	2.60					−	2.40						
					−4	18.71					−4	20.94						
					40	27.55					9	55.31						

	+	3146	−	3710			+	3579	−	4475										
	1.49776		1.56937$_m$				1.55376		1.65079$_m$											
	1.59675$_m$		1.66836				1.55915$_m$		1.65618											
	5	2	5	1			55	0	50	4			25	0	20	4				
	37.2	+.43	10.5	+.29			23.2	+.46	1.8	+.20			39.3		55.5					
	43.4	+.88	16.5	+.25			26.9	+.04	4.7	+.19			40.6		57.3					
	56.2	−.14	[28] 38.7	−.06			38.5	−.41	15.9	−.27			56.1		10.2					
	51.9	+.25	24.9	+.66			36.9	+.82	13.7	+.23			53.6		9.8					
	46.70	92		114			30.85	61		35	8.85									
	7	47.18	6	20.15			55	31.38	54	9.02			25	47.40	25	3.20				
	−	39.51		46.60			−	36.24		45.31										
	7	7.67	7	6.75			54	55.14	54	54.33										
+10	15	4068		4160	+37		27	53.21		5402										
+32	2	57			+4			50 45												
	1.55680						0.68870													
	+ ~~1430~~ 1707						+ 1564													
	1.5~~4110~~ 1.57387						0.70434													
	−3~~4.254~~ 1.49						− 5.06													
	− .09		− .13				− .34		− .53											
	− .34		− .16				− .06		− .49											
	− .23		− .28				− .15		− .09											
	−38.15		−38.06				− 5.61		− 6.17											
	15	2.53		3.54			27	47.60		47.85										
		304						4472												
	19	14.6	+4	12.07			31	69.3	+4	11.29										
			−	.41					−	.07										
	+4	11.6	−	13.10			4	11.6	−	29.10										
		11.7	+3	58.56				12.3	+3	42.12										
			19	1.6					31	29.8										

β Cephei — Nov. 3

[Inserted here by mistake.]

	30	22.1	30	36.0	31	9.0														
		28.2		39.0		12.0														
		34.0		41.8		15.2														
		39.3		44.9		18.2														
		45.7		47.6		21.2														
				50.9		23.7														
	32	5.0		53.9		26.8														
		8.3		56.4		30.0														
		18.5	29.8	59.6	33.8	32.7														
		18.0																		
		24.0		47.76		42.0														
				20.98		45.1														
				54.39		48.3														
						51.3														
				63.13		54.4														
						57.3														
						05.7														
						4.0														
	30	33.86			48	95 6.4														
	32	13.76			31	21.043														

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31 o¹ Cygni

20^h 9^m 47^s

+46° 22' 18"

− 3 59 30

1878

α₀	47.383 s	log sin δ	9.85964
Corr. α	− .019 / + .037	" cos δ	9.83883
dα/dt		" 15 cos δ tan i	9.94385 / 490
δ₀	18.49"		
		tan δ	+1.05
Corr. δ	+.54	Sin z	−.07
dδ/dt			

log R₁	1.51722
" R₂	1.21655
R₁	32.90 s
R₂	16.46
	2.99

Aug. 26 | Aug. 29 | Aug. 31 | Sept. 2

20 h	10 m 41.6 s	10 m —	11 m 4.35 s	10 46.0	10 55.70	11 12.00	11 23.2	10 59.83	11 16.00	11 3.5	11 4.38	20.88
	43.6	—	7.20	48.7	58.57	15.00	25.4	24.3	18.77	6.1	7.46	23.90
	46.0	—	10.18	51.7	1.60	17.93	27.9	5.37	22.00	9.3	10.48	26.85
	49.2	—	13.18	54.3	4.60	20.92	31.3	8.18	24.70	12.5	13.50	29.98
	52.6	—	16.10	57.5	7.57	23.94	34.3	11.32	28.20	14.7	16.42	32.90
		53.50	20.70		—	28.44		—	32.36	12 28.2	10.08	37.13
		56.46	23.66		—	31.48		—	35.43	30.8	13.12	40.33
		59.41	26.50		—	34.50		—	38.37	33.0	16.15	43.30
		2.63	29.72		—	37.40		—	41.35	35.9	19.13	46.30
		5.68	32.60		—	40.38		—	44.30	38.5	22.13	49.22
			37.17		1.61 34.51	44.90		3 5.83 38.43	48.87		10.45	53.83
	10.20 26	.66	40.10		17.96 .42	48.00		21.97 .43	51.87		26.90	56.78
	26.64	.64	43.00		34.44 .44	50.84		38.36 .36	55.00		43.26	59.60
	43.05	.59	46.00		50.87 .41	53.78		54.88 .42	57.83		59.70	2.72
	59.54	.64	49.00			56.85			0.85		16.12	5.56
	10 46.60			10 51.64			11 28.42			11 9.22	21643	
			11 26.632			11 34.445			11 38.360	12 33.28		11 43.286
			9 50.484			50.44			50.41			9 50.376
			+1 36.15			1 44.00			1 47.95			+112.91
			+1 36.17			1 44.02			1 47.97			+112.93
			1 36.11			1 43.96			1 47.91			+112.87
			−1 34.61			−1 42.43			−1 46.40			−1 51.37
			− 1.48			− 1.57			− 1.56			− 1.52
			− 3.10			− 3.06			− 3.03			− 2.99
			−1 39.19			−1 47.06			−1 50.99			−1 55.88
			9 m 47.44 s			47.38			47.37			47.41

Aug. 26	Aug. 29	Aug. 31	Sept. 2	
+40.03 s	+42.80	+ 9.94	+34.07	−49.99
1.60239	1.63144	0.99739	1.53237	1.69888 n
1.54729 n	1.57634 n	0.94229 n	1.47622 n (727)	1.64273 (378)
0' 4'	0 4	0 4	0 4	0 3
ε 53.6" +.08	54.3 +.08	25.3 +.54	45.2 +.20	31.4 +.58
ζ 54.4 +.12	55.2 +.11	26.2 +.06	45.4 +.18	31.6 +.15
η 14.4 −.34	15.9 −.39	47.1 −.60	7.7 −.05	54.0 −.29
ϑ 9.7 +.20	11.1 +.20	41.8 +.13	1.6 +.04	49.8 +.10
14.00 +.01	5.10 −.05	36.20 .13	56.45 +.37	+.54 42.70
4 3.02	4 4.12	4 35.10	4 54.98	3 41.70
− 35.26	− 37.70	− 8.76	−29.94	43.93
4 27.76	4 26.42	4 26.34	4 25.04 −.07	25.63 +.10
+46° 18' 20.59"	21.93	22.01	18 23.31 (23.38)	22.72 (22.62)
−3 59 42			3 59 44	
0.60440			0.6044	
−535	−622	−893	−166	
0.59905	0.59818	0.57547	0.5878	
+3.97	+3.96	+3.94	+3.87	
−.44	−.50	−.03	−.32	−.68
−.20	−.25	−.28	−.44 (29)	−.33 (22)
.00	+.01	−.03	−.09	−.14
+3.33	+3.22	+3.60	+3.02 (17)	+2.7 (83)
18 23.92	25.15	25.61	18 26.33 (85)	25.44 (5)

18' 23.92"	+4' 10.93"	25.15	+4 10.47	25.61	+4 10.96	18 25.88 26.00	+4 10.70
22 34.6	+ .07	35.4	+ .07	35.9	+ .07	22 36.36	+ .07
	− 16.10		− 16.90		− 17.40		− 17.90
+4 10.7	+3 54.90	10.2	+3 53.64	10.3	+3 53.63	4 10.5 (4)	+3 52.87
11.2		10.7		10.8		10.9	
	22' 18.8"		18.8		19.2		19.4 / 15.9

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α		δ		α		δ	
m	s	′	″	m	s	′	″
Aug. 8	9 50.65	22	29.4	Sept. 17	9 50.08	22	39.6
13	.62		30.9	22	49.96		40.5
18	.58		32.4	27	49.84		41.3
23	.53		33.8	Oct. 2	.71		42.0
28	50.46		35.1	7	49.58		42.5
Sept. 2	.38		36.3	12	.45		42.9
7	.29		37.5	17	.31		43.2
12	.19		38.6	22	.17		43.4
17	50.08		39.6	27	49.03		43.4

Sept. 23 | Sept. 25 | Sept. 28 | Sept. 30

12	10.0	12	–	12	13.70	11	55.3	12	0.90		17.30	11	57.5	12	8.00		24.20	11	58.0	12	11.94		28.30
	12.9		–		16.57		58.1		3.90		20.41		0.2		10.81		27.24		1.0		15.00		31.30
	15.0		–		19.70		3.02		7.05		23.40		2.7		13.80		30.05		3.8		17.90		34.17
	17.5		–		22.70		12.7		9.90		26.24		5.5		16.67		33.00		6.7		20.66		37.44
	21.0		–		25.60		4.50		12.82		29.26		9.0		19.67		36.32		9.6		23.70		40.22
13	11.6		8.00		30.18	13	2.40		6.63		33.73	12	56.9		13.53		40.70	13	2.91		17.60		44.53
	13.7		6.00		33.15		2.72		9.66		36.80		1.4		16.34		43.61		3.20		20.70		47.88
	17.2		9.10		36.10		2.82		12.50		39.73		3.7		19.44		46.62		3.47		23.70		50.72
	19.3		12.00		39.00		31.7		15.50		42.67		6.3		22.60		49.67		3.72		26.58		53.60
	22.0		14.85		42.03		34.0		18.73		45.80		8.2		25.27		52.60		3.99		29.60		56.90
			—		46.64				6.91		50.26				13.79		57.20				17.84		1.00
			19.65	36.11	49.68				23.32		53.20				30.16		0.07				34.29		4.00
			36.10	.10	52.60				39.75		56.14				46.64		3.05				50.73		7.22
			52.60	.14	55.60				56.24		59.30				3.07		6.15				7.12		10.15
			8.99	.09	58.50				12.60		2.30				19.44		8.90				23.64		13.21
12	15.28				110	12	0.26	19882				12	2.98	23310						12	3.82	25362		
13	16.76			12	36.76	13	29.22			12	39.764	13	3.30			12	46620	13	34.58			12	50.724
				9	49.93						49.88						49.81						49.756
				2	46.18					2	49.88					2	56.81					3	0.97
				2	46.20					2	49.90					2	56.83					3	0.99
				2	46.14					2	49.84					2	56.77					3	0.93
				−2	44.78					−2	48.38					−2	55.35					−2	57.54
				–	1.36					–	1.52					–	1.48					–	1.42
				–	2.55					–	2.50					–	2.48					–	2.37
				−2	48.69					−2	52.40					−2	59.26					−3	2.39
					47.42						47.36						47.36						47.39
	+2083		−4065				+3950		−4946				+4364		−1618				+4690		−4386		
	1.31869		1.60906	m			1.59660		1.69425	m			1.63988		1.22220	m			1.67117		1.64207	m	
	1.26359	m	1.53396				1.54150	m	1.63915				1.58478	m	1.16710				1.61607	m	1.58697		
	0 4		0 3				0 4		0 3				0 4		0 3				0 4		0 3		
	27.6 +.53		34.6 +.83				45.9 +.18		27.6 +.61				48.9 +.11		55.2 +.21				50.9 +.08		30.9 +.58		
	31.1 +.02		37.2 +.16				47.1 +.20		30.0 +.15				51.2 +.18		58.8 +.19				53.0 +.15		33.5 +.14		
	49.4 −.59		54.7 −.22				8.1 −.06		50.2 −.46				8.9 −.10		16.2 −.27				11.8 −.23		52.1 −.40		
	43.5 +.17		50.7 +.09				1.2 +.03		44.2 +.18				3.2 +.10		11.8 +.23				5.9 +.17		47.3 +.14		
	38.50 18		44.6 56		44.65		57.00 35		48		38.90		58.90 29		5.70 36		5.70		1.35 16		46		44.50
	4 37.90		3 44.30				4 55.58		3 38.00				4 58.05		4 5.50				5 0.40		3 40.95		
	− 18.35		35.81				− 34.79		43.57				− 38.44		14.69				− 41.31		38.63		
	4 19.55		4 20.11				4 20.79		4 21.57				4 19.61		4 20.19				4 19.09		4 19.58		
	18 28.80		28.24				27.56		26.78				28.74		28.16				29.26		28.77		
	+1082						−405						+1029						+74				
	0.61522						0.60035						0.61469						0.60514				
	+4.12						+3.98						+4.12						+4.03				
	− .11		− .45				− .43		− .66				− .52		− .07				− .60		− .53		
	− .46		− .37				− .49		− .36				− .45		− .37				− .40		− .30		
	− .02		− .14				− .09		− .12				− .07		− .09				− .04		− .12		
	+3.53		+3.16				+2.97		+2.84				+3.08		+3.59				+2.99		+3.08		
	32.33		31.40				30.53		29.62				31.82		31.75				32.26		31.85		
	31.86	+4	10.07				30.08	+4	10.70				31.78	+4	11.04				32.05	+4	10.58		
	40.7	+	.05				41.0	+	.05				41.5	+	.05				41.75	+	.05		
		−	22.20					−	22.50					−	23.00					−	23.30		
	+4 8.8	+3	47.92				10.9	+3	48.25				9.7	+3	48.09				9.7	+3	47.33		
	9.3						11.4						10.2						10.2				
		22	19.8						18.3						19.9						19.4		

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Oct. 1 | Oct. 2 | Oct. 3 | Oct. 8

	Oct. 1			Oct. 2			Oct. 3			Oct. 8		
h	m s	m s	m s									
20	12 2.4	12 13.82	12 30.23	12 3.2	12 15.00 18.00	31.40	12 7.2	12 17.23	12 33.53	12 1.8	12 —	43.82
	5.0	16.80	33.10	6.2	21.00	34.50	9.7	20.23	36.60	2.10	33.41 30.42	46.85
	7.9	19.75	36.25	8.7	24.00	37.45	12.7	23.20	39.76	2.40	.27 33.24	49.85
	10.6	22.60	39.10	11.5	27.00	40.33	15.6	26.05	42.65	2.66	.39 36.38	52.90
	13.3	25.70	42.20	13.6		43.45	18.2	29.24	45.67	2.93	.45 39.43	55.90
	13 1.92	19.60	46.70	13 3.05	20.77	47.80	13 8.85	23.00	—	13 2.20	—	0.36
	2.18	22.75	49.60	3.31	23.72	50.00	11.6	26.00	—	2.43	—	3.42
	2.52	25.75	52.62	3.57	26.73	54.00	14.8	29.00	56.10 57.16	2.80	—	6.28
	27.2	28.60	55.70	3.82	30.00	56.78	46.6	32.00	.11 57.10	3.07	—	9.40
	29.0	31.53	58.63	4.02	32.70	59.84	49.0	35.00	.02 2.00	3.27	—	12.42
		19.73	3.18		21.00	4.35		23.19	6.52		33.38 6.28	16.80
		36.18	6.12		37.43	7.32		39.64	9.48		49.86 .32	20.00
		52.65	9.12		53.88	10.28		56.08	12.46		6.38 .38	22.78
		9.09	12.05		10.30	13.30		12.51	15.50		22.87 .41	25.85
		25.65	15.00		26.78	16.24		29.00	18.57		—	28.90
	12 7.84	26330		12 8.64	26939		12 12.68	28042		12 23.94		
	13 24.48		12 52.660	13 35.42		12 53.878	13 43.90		12 56.384	13 27.74		13 6.348
			9 49.73			49.704			49.68			49.55
			+ 3 2.93			3 4.17			3 6.40			3 16.80
			+ 3 2.95			3 4.19			3 6.42			8 16.82
			3 2.89			3 4.13			3 6.36			3 16.76
			− 3 1.44			− 3 2.76			− 3 4.91			− 3 15.58
			− 1.50			− 1.38			− 1.50			− 1.23
			− 2.35			− 2.32			− 2.30			− 2.17
			− 3 5.29			− 3 6.46			− 3 8.71			− 3 18.98
			m s									
			9 47.27			47.42			47.37			47.37
	+ 44.82	− 31.82		+ 45.24	− 41.54		+ 43.40	− 47.82		+ 42.41	− 21.39	
	1.65147	1.50270m		1.65552	1.61847m		1.63749	1.67961m		1.62747	1.33021m	
	1.59637m	1.44760		1.60042m	1.56337		1.58239m	1.62451		1.57237m	1.27511	
	0 4	0 3		0 4	0 3		0 4	0 3		0 4	0 3	
Field	48.3 +.13	42.6 +.39		50.0 +.09	33.6 +.65		48.7 +.12	27.6 +.61		45.9 +.18	49.5 +.26	
	50.9 +.18	44.8 +.34		50.5 +.18	34.7 +.14		49.3 +.19	29.7 +.15		48.1 +.20	51.9 +.31	
	10.4 −.17	4.2 +.17		11.6 −.22	55.2 −.17		10.1 −.15	50.0 −.47		7.0 −.02	11.1 −.06	
	5.0 +.15	59.4 +.03		6.2 +.17	50.4 +.10		3.9 +.12	43.8 +.18		1.9 +.05	5.7 +.20	
	59.35 1.29	91	53.40	0.80 22	62	44.40	59.40 28	47	38.80	56.45 41	0.30 71	
	4 58.65	3 52.75		4 59.58	3 43.48		4 58.00	3 37.78		4 58.72	3 54.55	
	− 39.48	28.03		− 39.85	36.59		− 38.23	42.12		− 37.36	18.84	
	4 19.17	4 20.78		4 19.73	4 20.07		4 19.77	4 19.90		4 18.36	4 18.39	
+46°	18' 29.18	27.57		28.62	28.28		28.58	28.45		29.99	28.96	
											9	
	−4.91			−12.18			−8.57			−1.85		
	0.59949			0.59222			0.59583			0.60255		
	+ 3.98	"		+ 3.91			+ 3.94			+ 4.00		
	− .55	− .28		− .56	− .47		− .51	− .62		− .49	− .12	
	− .40	− .31		− .40	− .30		− .40	− .29		− .34	− .28	
	− .07	− .23		− .06	− .16		− .07	− .12		− .10	− .18	
	+ 2.96	+ 3.16		+ 2.89	+ 2.98		+ 2.96	+ 2.91		+ 3.07	+ 3.42	
	18' 32.44	30.73		31.51	31.26		31.54	31.36		33.06	33.38	
	18' 31.49	"		31.38			31.45			33.22		
	22 41.9	+ 4' 10.46		42.0	+ 4 10.88		42.1	+ 4 11.04		42.6	+ 4 10.80	
		+ .05			+ .04			+ .04			+ .04	
	+ 4' 11" 10.5	− 23.80		10.6	− 23.90		10.7	− 23.60		9.4	− 24.10	
	11.0	+ 3 47.11		11.1	+ 3 47.42		11.2	+ 3 47.48		9.9	+ 3 46.74	
		22' 18.6			188			189			20.0	

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	α		δ	
	m s		′ ″	
Oct. 27	9 49.03	14	22 43.4	1
Nov. 1	48.89		43.2	
6	48.76	13	43.1	2
11	.63	13	42.8	3
16	48.51	12	42.3	6

Oct. 10

12	218	12	3180	12	4870	12	33.1	12	4090	12	5720	12	56.4	12	—	13	1.50	13	12.4	13	2840	13	44.88
	25.2		34.75		50.90		34.5		4380		7.00		59.7				4.45		14.2		31.50		48.80
	28.4		37.69		54.00		40.6		4685		3.13		2.5	50.90	50.90		7.48		17.4		34.40		50.90
	31.3		40.60		57.80		42.7		4965		6.00		4.7	.96	53.95		10.35		21.8		37.57		54.00
	84.3		43.64		0.30		44.1		52.79		9.19		7.8	.87	56.85		13.30		24.2		40.43		57.02
13	57.5		37.35	13	4.60	14	9.1		4640		1373	14	4.4		5065		17.70				34.32		1.50
	0.5		40.40		7.50		12.6		4950		1660		7.3		53.65		20.65				37.32		4.46
	2.9		43.40		10.50		15.5		5250		1955		9.8		56.75		23.70				40.30		7.45
	5.4		46.50		13.50		17.7		5545		2258		12.3		59.70		26.65				43.40		10.60
	7.8		49.40		16.30		19.4		5860		2560		14.8		2.70		29.75				46.40		13.55
			37.70		20.85				46.80		30.19				50.91		34.20				34.46		18.07
			53.98		23.85				3.10		33.00				7.42		37.20				51.96		21.07
			10.48		26.90				19.61		36.00				23.69		40.90				7.51		24.10
			26.88		29.90				36.11		39.12				40.23		43.20				24.01		27.07
			43.41		32.90				52.49		42.25				56.69		46.27				40.35		29.95
12	28.20	52.45				12	39.60	9.811				13	2.22	11.894				13	18.00	3.729			
14	2.62			13	10.490	14	14.86			13	19.622	14	9.72			13	23.788					14	7.458
				9	49.50						49.39						49.33					9	48.754
				3	20.99					3	30.23					3	34.46					4	18.70
				3	21.01					3	30.25					3	34.48					4	18.72
				3	20.95					3	30.19					3	34.42						18.66
				−3	19.59					−3	28.82					−3	33.13					−4	17.55
				−	1.37					−	1.35					−	1.33					−	1.21
				−	2.12					−	2.01					−	1.95					−	1.37
				−3	23.08					−3	32.18					−3	36.41					−4	20.13
					47.41						47.44						47.28						47.33
	+42.29		−52.33				+40.02		−55.24				+21.57		−45.93				+49.46				
	1.62624		1.71875m				1.60228		1.74225m				1.33385		1.66210m				1.69425				
	1.57114m		1.66365				1.54718m		1.68715				1.27875m		1.60700				1.63915m				
	0 4		0 3				0 4		0 3				0 4		0 3				0 4				
	44.6 +.21		21.6 +.57				45.1 +.20		21.2 +.56				26.9 +.54		27.2 +.61				55.7 +.01				
	49.1 +.19		26.2 +.18				48.1 +.20		23.8 +.19				29.1 +.03		29.9 +.15				58.1 +.05				
	7.5 −.04		45.0 −.47				6.4 −.01		42.6 −.41				49.6 −.59		50.5 −.45				8.1 −.06				
	1.9 +.06		39.8 +.25				2.1 +.05		39.0 +.24				44.7 +.10		45.9 +.16				5.8 +.17				
	56.05 41		53 33.30				55.75 41		4 60 31.90				38.25 .08		47 38.85				1.90 17				
	4 55.78		3 33.15				4 55.42		3 31.65				4 37.58		3 38.38				5 1.92				
	− 37.25		46.09				− 35.25		48.66				− 19.00		40.46				− 43.57				
	4 18.53		4 19.24				4 20.17		4 20.31				4 18.58		4 18.84				4 18.35				
	18 29.82		29.11				18 28.18		28.04				29.77		29.51				30.00				
	+.29						+.406						−.692						+.1474				
	0.60469						0.60846						0.59748						0.61914				
	+4.02						+4.06						+3.96						+4.16				
	− .49		− .75				− .44		− .83				− .13		− .58				− .66				
	− .34		− .25				− .34		− .24				− .37		− .29				− .60				
	− .10		− .13				− .11		− .15				− .02		− .12				− .04				
	+3.09		+2.89				+3.17		+2.84				+3.44		+2.97				+2.86				
	32.91		32.00				31.35		30.88				23.21		32.48				18 32.86				
	32.46						31.12						32.84						18 32.86				
	42.8	+4	10.48				43.0	+4	11.68				43.15	+4	10.96				22 43.1	+4	11.29		
		+	.04					+	.04					+	.04					+	.06		
	+4 10.3	−	24.30				11.9	−	24.50				10.3	−	24.70				4 10.2	−	24.60		
	10.8	+3	46.22				12.4	+3	47.22				10.8	+3	46.30				10.7	+	46.75		
			22 18.7						18.3						19.1						19.6		

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β Delphini

α_0 49.620 — log sin δ 9.38886

20h 31m 50.1s — bor. α +.038 +.061 — " cos δ 9.98658

+14° 10′ 18″ — $\frac{d\alpha}{dt}$ — " 15 cos δ sin 1 0.09 (60m 265)

+28 12 30 — $\frac{d\delta}{dt}$ 17″.91 — tan δ +.25

1878 — bor. δ +.12 — sin z +.47

I 2.13

	Sept. 9			Sept. 14			Sept. 16			Sept. 17		
	h m s	m s	m s	m s	m s		m s	m s		m s	m s	
20	33 24.5	33 36.00	47.80	33 42.9	33 46.83	0.48	33 44.3	33 54.00	5.68	33 53.0	33 58.63	8.20
	27.9	38.32	49.90	44.5	50.93	2.57	46.3	56.00	7.80	54.9	58.68	10.20
	29.8	40.50	52.00	46.8	53.00	4.70	47.8	58.20	10.00	57.0	0.80	12.34
	31.0	42.52	54.00	48.2	55.22	6.87	49.5	0.42	12.00	58.2	3.00	14.60
	32.3	44.70	56.28	50.0	57.32	9.00	51.6	2.62	14.20	0.4	5.00	16.72
	34 40.6	22.82	59.50	34 29.7	35.60	12.10		40.82	17.40		0.00	19.83
	43.5	24.78	1.73	31.7	37.70	14.26		43.00	19.60		47.51 45.38	22.00
	45.3	26.98	3.68	33.3	39.82	16.34		45.20	21.62		.53 47.53	24.15
	47.4	29.00	6.00	35.0	41.94	18.53		47.30	23.80		.55 49.68	26.25
	49.0	31.20	7.98	36.8	44.10	20.82		49.43	25.82		.47 51.73	28.50
		40.41	11.20		53.06	23.95		58.25	29.20		0.82	31.62
		52.00	13.60		4.72	26.00		9.94	31.82		12.41	33.72
		3.88	15.42		16.41	28.18		21.65	33.45		24.15	35.93
		15.53	17.64		28.17	30.30		33.47	35.60		35.89	38.00
		26.96	19.79		39.83	32.40		45.15	37.80		47.52	40.18
	33 29.10	1868		33 46.48	8219		33 47.90	10846		33 56.70	12079	
	34 45.16		34 3.736	34 33.18		34 16.438			34 21.692			34 24.158
			31 53.238			31 53.188			31 53.168			31 53.157
			+130.50			+143.25			+148.52			+151.80
			+130.46			+143.21			+148.48			+151.96
			+130.44			+143.19			+148.46			+150.94
			−2 10.02			−2 22.82			−2 28.10			−2 30.59
			− .34			− .35			− .33			− .32
			− 3.62			− 3.57			− 3.55			− 3.54
			−2 13.98			−2 26.74			−2 31.98			−2 34.45
			m s									
			31 49.76			49.70			49.71			49.71
	+34.64	−41.42		+29.96	−16.74		+33.79			+27.46		
	1.53958	1.61721 n		1.47654	1.22376 n		1.52879			1.48870		
	1.63118n	1.70881		1.56814n	1.31536		1.62039n			1.53036n		
	223	986		919	641		144			135		
	15 1	10 4		15 1	15 0		15 1			15 1		
ε	22.1 +.51	47.2 +.16		15.7 +.41	17.6 +.37		18.6 +.46			12.1 +.33		
ζ	29.4 +.18	53.6 +.14		21.7 +.22	24.9 +.04		21.7 +.22			18.6 +.24		
η	50.6 −.52	15.4 −.37		44.9 −.54	47.2 −.68		46.7 −.56			39.8 −.39		
Ν	49.1 +.53	5.9 +.17		31.2 +.64	34.5 +.52		36.3 +.58			29.8 +.65		
	49.35+.70	+1.10	1.30	30.30+.73	+.40	25 32.40	32.65+.70			25.95+.83		
	16 35.55	15 0.52		16 28.38	15 31.05		16 30.82			16 25.08		
	−42.77	51.15		−36.99	20.67		−41.72			−33.91		
	15 52.78 −.11	51.67 +.12		15 51.39 −.09	51.72 +.05		15 49.10 −.11			15 51.17 −.08		
+14°	6′ 55.57	56.68		56.96	56.63		59.25			57.18		
	55.68	56.56		57.05	56.58		59.36			57.26		
+28	11 43											
	1.4894											
	−.019			−.064			+ .049			− .035		
	1.4875			1.4830			1.4943			1.4859		
	−30.73	"		−30.41			−31.21			−30.61		
	− .16	− .21		− .12	− .04		− .15			− .10		
	− .14	− .45		− .14 15	− .05		− .14 15			− .13 14		
	− .18	− .02		− .18	− .06		− .18			− .21		
	−31.21	−31.48		−30.85 6	−30.56		−31.689			−31.056		
	6′ 24.8 49	25.27 15		26.179	26.072		27.567			26.18 20		
	6′ 24.8 21	+4 10.15		26.09 10	+4 9.90		27.376	+4 9.84		26.820	+4 10.82	
	10 35.0	− .41		35.5	− .39		35.7	− .38		35.8	− .38	
		− 17.10			− 17.60			− 17.80			− 17.90	
	+4′ 11.2	+3 52.64		4 9.4	+3 51.91		4 8.70	+3 51.66		4 9.76	+3 52.54	
	10.3	10′ 17.5		9.5	180		8.1	19.3		9.7	18.7	

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	α m	s	δ ′	″																
Aug. 28	31	53.33			10	33.3														
Sept. 2		30	3			34.0	7													
7		26	4			34.7	7													
12		21	5			35.3	6													
17		53.16	5			35.8	6													
22		10	6			36.2	4													
27		53.03	7			36.6	4													
Oct. 2		52.96	7			36.9	3													
7		52.89	7			37.2	3													
	Sept. 18				Sept. 19					Sept. 23					Sept. 25					
20	33 49.0	33 58.74		1048	33 56.1		34 1.42		1293	34 5.8		34 –		2236	34 8.9		34 14.36		2600	
20	57.1	09.0		1261	58.0		3.50		1513	7.6		14.98	12.85	2453	10.8		16.50		2820	
34	52.9	3.05		1470	57.6		5.63		1727	9.8		15.00	15.00	2660	12.6		18.63		3025	
60	54.8	52.25		1684	1.9		7.70		1940	11.2		14.92	17.05	2860	14.6		20.72		3235	
72	56.7	7.30		1900	3.8		9.73		2154	13.2		92	19.18	3080	16.7		22.77		3448	
83	35 2.4	45.70		2210	34 49.0		48.10		2468	35 12.7		57.48		3405	35 17.4		1.42		3770	
60	4.5	47.80		2428	52.8	57.1	50.24		2700	15.3		57.70		3610	19.7		3.33		3983	
15	6.8	50.00		2640	53.0	53.0	52.39		2905	17.3		1.85		3833	21.7		5.43		4200	
25	8.6	52.05		2860	53.0	53.0	54.43		3118	19.1		3.84		4050	23.7		7.45		4405	
50	10.3	54.10		3070	53.1	—	56.63		3328	21.0		6.14		4263	25.2		8.76		4628	
62		3.05		3387			5.60		3646			14.96		4588			18.60		4947	
72		14.73		3607			17.26		3843			26.58		4800			30.26		5160	
93		26.42		3822			29.04		4057			38.32		5000			41.97		5371	
00		38.19		4035			40.62		4273			50.08		5224			53.74		5547	
18		49.93		4250			52.36		4490			1.80		5428			5.48		5705	
	33 52.90	132.32			33 54.88		1.4488			34 9.52		1.9174			34 12.72		2.1005			
158	35 6.64		34	26.464	34 52.98			34	28.976	35 17.08			34	38.348	35 21.54			34	42.010	
57			31	53.145					53.133					53.08					53.05	
80			2	33.32				2	35.84				2	45.27				2	48.96	
96			2	33.28				2	35.80				2	45.23				2	48.92	
94			2	33.26				2	35.78				2	45.21				2	48.90	
59			−2	32.94				−2	35.36				−2	44.83				−2	48.46	
32			–	.32				–	.34				–	.32				–	.36	
54			–	3.52				–	3.51				–	3.46				–	3.43	
45			−2	36.78				−2	39.21				−2	48.61				−2	52.25	
71				49.68					49.77					49.74					49.76	
	+ 3.356	− 4.18			+ 29.10		− 24.00			+ 28.83		− 38.73			+ 29.29		− 39.53			
	1.52582	1.60401/m			1.46389		1.38021/m			1.45984		1.58805/m			1.46672		1.59693/m			
	1.61847/m	1.69666			1.55654/m		1.47286			1.55249/m		1.68070			1.55937/m		1.68958			
	15 1	10 4			15 1		15 0			15 1		10 4			15 1		10 4			
	19.9 +.49	49.6 +.10			13.1 +.35		8.8 +.15			12.4 +.34		48.2 +.13			15.8 +.41		50.2 +.09			
	26.3 +.19	55.4 +.10			20.6 +.22		15.2 +.09			19.7 +.23		55.8 +.09			21.4 +.22		55.6 +.10			
	48.7 −.56	17.4 −.41			42.8 −.48		36.0 −.27			38.9 −.34		14.8 −.35			43.9 −.52		16.8 −.41			
	38.2 +.56	7.1 +.18			30.7 +.64		26.9 +.46			29.0 +.65		4.5 +.14			33.3 +.62		7.0 +.18			
	34.30 68	3.50 − 03	3.50		27.95 73		43	22.40		25.65 88		01	1.50		29.85 73		3.50 − 04	3.50		
	16 33.28	15 2.38			16 26.80		15 21.72			16 25.00		15 0.82			16 28.60		15 2.40			
	− 41.54	49.73			− 36.02		29.71			− 35.69		47.94			− 36.25		48.93			
	15 51.74	15 52.11			15 50.78		15 51.43			15 49.31		15 48.76			15 52.35		15 51.33			
	6 56.61	56.24			57.57		56.92			59.04		59.59			56.00		57.02			
	+28 11 42																			
	1.48940																			
	− 1208				− 576					+ 1140					− 360					
	1.47732				1.48434					1.50080					1.48580					
	− 30.01				− 30.50					− 31.68					− 30.61					
	− .15	− .21			− .11		− .07			− .11		− .19			− .11		− .20			
	− .16	− .60			− .14		− .03			− .14		− .60			− .15		− .60			
	− .17	+ .01			− .24 18		− .11			− .22		80			− .18		+ .01			
	− 30.49	− 31.71			− 31.93		− 30.71			− 32.15		− 32.37			− 31.05		− 31.30			
	6 26.12	25.53			26.64		26.21			26.89		27.22			24.95		25.72			
	6 25.82	+4 10.93			26.42	+4	10.13			27.06	+4	10.07			25.34	+4	10.70			
	10 35.9	− .37			36.0	−	.36			36.3	−	.34			36.5	−	.38			
		− 18.80				−	18.10				−	18.40				−	18.61			
	+ 4 10.1	+3 52.56			9.6	+3	51.67			9.2	+3	51.33			11.2	+3	51.77			
	10.2				9.7					9.3					11.3					
		10 18.4					18.1					18.4					17.1			

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	Sept. 28			Sept. 30			Oct. 1			Oct. 2		
h	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s
20	34 140	34 2128	3310	34 187	34 2550	3699	34 217	34 2740	3900	34 279	34 —	4020
	163	2346	3530	215	2755	3924	240	2950	4105	293	—	4236
	190	2550	3732	234	2967	4139	262	3170	4330	413	32.77 3277	4445
	204	2748	3938	248	3180	4349	278	3370	4535	436	.71 3484	4660
	225	2982	4144	268	3390	4560	291	3580	4745	452	.74 3700	4863
	35 230	815	4476	35 244	1218	4870	85 252	1400	5065	35 282	1526	5200
	253	1022	4658	270	1424	5080	270	1613	5273	300	1743	5400
	275	1226	4900	287	1640	5300	292	1828	5487	319	1959	5610
	294	1438	5100	304	1850	5512	310	2049	5700	338	2172	5822
	311	1654	5320	320	2070	5715	327	2260	5920	357	2387	043
		25.51	5630		29.68	040		31.62	230		32.74	360
		37.31	5838		41.34	245		43.23	448		44.46	580
		48.97	070		52.95	465		54.89	662		56.15	790
		0.63	277		4.66	680		6.59	869		7.90	1000
		12.31	500		16.40	898		18.30	1086		19.57	1222
	34 18.44	24473		34 23.24	26503		34 25.76	27463		34 41.44	28081	
	35 27.26		34 48.946	35 28.50		34 53.006	35 29.02		34 54.926	35 31.92		34 56.162
			31 53.013			52.984			52.97			52.96
			+2 55.93			3 0.02			3 1.96			3 3.20
			+2 55.89			2 59.98			3 1.92			3 3.16
			+2 55.87			2 59.96			3 1.90			3 3.14
			−2 55.39			−2 59.58			−3 1.45			−3 2.80
			− .35			− .34			− .36			− .33
			− 3.39			− 3.36			− 3.35			− 3.34
			−2 59.13			−3 3.28			−3 5.16			−3 6.47
			m s 31 49.82			49.73			49.77			49.69
	s + 30.51	s − 38.31		+ 29.77	− 35.49		+ 29.17	− 34.09		+ 14.72	− 35.76	
	1.48444	1.68331m		1.47378	1.55011m		1.46494	1.53263m		1.16791	1.55340m	
	1.57709m	1.67596		1.56643m	1.64276		1.55759m	1.62528		1.26056m	1.64605	
	′ ′ 15 1	′ ′ 10 4		15 1	10 4		15 1	10 4		15 0	20 4	
Field 1	″ 14.8 +.40	″ 49.7 +.10		14.1 +.38	54.2 +.03		13.9 +.38	55.7 +.01		57.4 +.13	53.4 +.04	
2	22.9 +.21	57.0 +.07		21.2 +.22	0.2 .00		20.4 +.23	3.2 +.01		3.1 +.19	0.0 .00	
3	41.4 −.44	15.2 −.37		41.2 −.43	20.8 −.36		41.3 −.44	22.7 −.30		25.4 −.16	21.8 −.33	
4	31.7 +.63	7.5 +.18		31.2 +.64	10.7 +.20		32.1 +.63	14.8 +.19		15.6 +.69	13.0 +.20	
	28.10 80	−2.45		27.65 81	−13 37.50		27.60 80	−99 9.20		11.40 86	−0 7.60	
	′ ″ 16 27.70	′ ″ 15 2.35		16 26.92	15 6.48		16 26.92	15 9.35		16 10.38	15 7.05	
	− 37.76	47.42		− 3685	43.93		− 36.11	4220		− 1822	4426	
	15 47.94	15 49.77		15 50.07	15 49.41		15 50.81	15 51.30		15 52.16	15 51.31	
+4	6′ 58.41	″ 58.58		58.28	58.94		57.54	57.05		56.19	57.04	
	+1104			+114			−456			−1183		
	1.50044			1.49054			1.48484			1.47457		
	−31.65			−30.94			−30.54			−30.03		
	− .12	− .18		− .12	− .16		− .11	− .15		− .03	− .17	
	− .13	− .95		− .11	− .40		− .11	− .41		− .10	− .41	
	− .20	.00		− .20	+ .03		− .20	+ .02		− .22	+ .02	
	−32.10	−32.28		−31.37	−31.47		−30.96	−31.08		−30.38	−30.59	
	6′ 26.31	26.30		26.91	26.47		26.58	25.97		25.81	26.45	
	6 26.30	′ ″		26.69			26.28			26.13		
	10 36.7	+4 11.04		36.8	+4 10.58		36.85	+4 10.46		35.9	+4 10.88	
	″	− .31			− .31			− .31			− .30	
	+4 10.4	− 18.80		10.1	− 18.90		10.6	− 18.90		10.8	− 19.00	
	10.5	+3 51.93		10.2	+3 51.37		10.7	+3 51.25		10.9	+3 51.58	
		′ ″ 10 18.2			18.1			17.5			17.7	

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	α		δ	
	m s		′ ″	
Oct. 7	31 52.89		10 37.2	
12	.81	8	.4	2
17	.73	8	37.5	1
22	.65	8	.5	0
27	52.57	8	37.5	0
Nov. 1	.49	8	.4	1
6	.41	8	37.2	2
11	.34	7	36.9	3
16	52.27	7	36.6	3

Oct. 3

34 18.8	34 30.70	42.33
20.3	32.82	44.53
22.2	36.00	46.68
24.1	37.20	[48.70] 49.70
26.3	39.28	51.00
35 36.1	17.43	54.22
37.7	19.60	56.23
39.8	21.77	58.36
41.9	23.78	0.44
43.9	26.00	2.57
	35.00	5.83
	46.65	8.00
	58.36	10.10
	10.07	12.18
	21.72	14.23
34 22.34	29180	
35 39.88		34 58.360
		52.94
		3 5.42
		3 5.38
		3 5.36
		−3 4.97
		− .36
		− 3.32
		−3 8.65
		49.71

Oct. 8

34 30.0	34 43.37	52.70
31.7	45.50 45.37	55.00
34.0	.37 47.48	57.10
35.7	.35 49.78	59.23
38.0	.52 52.70	1.40
35 40.3	28.20	4.54
41.8	30.22	6.70
44.0	32.33	8.70
46.2	34.43	10.85
48.7	36.55	13.22
	45.44	16.46
	57.09	18.52
	8.80	20.70
	20.62	22.72
	32.35	24.70
34 33.88	4430	
35 44.20		35 8.860
		52.87
		3 15.99
		3 15.95
		3 15.93
		−3 15.62
		− .29
		− 3.25
		−3 19.16
		49.70

Oct. 16

34 49.3	34 58.70	35 10.40
51.0	0.90	12.50
52.8	2.90	14.65
54.6	5.10	16.87
56.7	7.25	18.98
35 58.9	45.55	22.00
0.9	47.57	24.24
2.6	49.68	26.30
4.4	51.90	28.50
6.2	54.00	30.64
	2.97	33.79
	14.68	35.95
	26.34	38.10
	38.10	40.20
	49.74	42.46
34 52.88	13183	
36 2.60		35 26.366
		52.742
		3 33.62
		3 33.58
		3 33.56
		−3 33.18
		− .32
		− 3.12
		−3 36.62
		49.75

Nov. 4

35 28.3	35 39.35	35 50.85
30.4	41.38	53.00
32.0	43.48	55.19
33.5	45.50	57.30
35.3	47.78	59.52
36 45.0	26.00	6.83 2.57
46.2	28.30	.73 4.60
47.6	30.25	.84 6.84
49.8	32.40	.82 8.95
51.9	34.67	—
	43.50	14.30
	55.17	16.37
	6.86	18.60
	18.52	20.56
	30.32	22.77
35 31.90	3431	
36 48.10		36 6.862
		31 52.44
		4 14.42
		4 14.38
		14.36
		−4 14.08
		− .29
		− 2.82
		−4 17.19
		49.67

Oct. 3		Oct. 8		Oct. 16		Nov. 4	
+ 36.02	− 41.52	+ 34.98	− 35.34	+ 33.49	− 36.23	+ 34.96	− 41.24
1.55654	1.61826m	1.54382	1.54827m	1.52492	1.55907m	1.54357	1.61532m
1.64919m	1.71091	1.63647m	1.64092	1.61757m	1.65172	1.63622m	1.70797
15 1	10 4	15 1	10 4	15 1	10 4	15 1	10 4
22.9 +.52	47.6 +.15	20.2 +.49	54.5 +.02	18.3 +.46	52.9 +.04	21.2 +.50	46.2 +.18
29.0 +.18	53.1 +.15	28.6 +.18	2.2 +.01	25.8 +.19	59.1 +.02	30.1 +.17	54.1 +.13
52.1 −.46	15.8 −.38	48.5 −.56	21.2 −.35	48.1 −.57	20.8 −.36	44.2 −.52	5.8 00
41.2 +.51	5.8 +.17	38.9 +.55	12.7 +.20	38.8 +.55	11.2 +.20	35.9 +.59	0.5 +.01
37.50 75	~~1.70~~ 9 1.70	34.35 66	~~7.85~~ −12 7.85	33.20 63	−10 56.85	32.70 74	32 56.00
16 36.30	15 0.58	16 34.05	15 7.65	16 32.75	15 6.00	16 32.85	14 56.65
− 44.58	51.39	− 43.30	43.74	− 41.45	44.85	− 43.26	51.05
15 51.72	15 51.97	15 50.70	15 51.39	15 51.30	15 50.85	15 49.59	15 47.70
6 56.63	56.38	57.65	56.96	57.05	57.47	58.76	0.65
−810		−140		−640		+1843	
1.48130		1.48800		1.48300		1.50783	
−30.29		−30.76		−30.41		−32.20	
− .17	− .22	− .16	− .16	− .14	− .17	− .16	− .21
− .13	− .40	− .11	− .36	− .12	− .41	− .16	− .54
− .19	− .02	− .16	+ .03	− .16	+ .02	− .18	− .08
−30.78	−30.93	−31.19	−31.25	−30.83	−30.97	−32.70	−33.03
25.85	25.45	26.46	25.71	26.22	26.50	6 28.06	27.62
25.65		26.08		26.36		6 26.84	
37.0	+4 11.04	37.2	+4 10.80	37.5	+4 10.96	10 37.3	+4 11.30
	− .30		− .29		− .29		− .35
+4 11.4	− 19.10	11.1	− 19.30	11.1	− 19.60	4 10.5	− 19.40
11.5	+3 51.64	11.2	+3 51.21	11.2	+3 51.07	10.6	+3 51.55
	10 17.3		17.3		17.4		18.4

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α Cygni			α_0	16.358s		log sin δ	9.84831		log R_1	1.50539		
									" R_2	1.20472		
20^h	37^m 16^s		Corr. α	+ .007 / + .055 (red)		" cos δ	9.85066		R_1	32.02s		
			$\frac{d\alpha}{dt}$			" 15 cos δ tan i	9.95 ~~568~~ 673		R_2	16.02		
+44°	50′ 42″		δ_0	42.07″					I	2.91		
− 2	27 54		Corr. δ	+.04		tan δ	+.99					
1878			$\frac{d\delta}{dt}$			sin z	−.04					
	Sept. 2			Sept. 9			Sept. 14			Sept. 23		
h	m s	m s	m s					—	—			
20	38 39.6	38 34.62	50.64	38 57.0	38 53.10	9.10	39 53.1	—	—	39 20.6	39 27.80	43.65
	42.1	37.68	53.52	59.5	55.82	11.90	55.5	—	—	22.5	30.48	46.51
	44.6	40.52	56.50	3.8	59.00	14.90	57.7	—	—	25.0	33.36	49.30
	47.2	43.44	59.30	7.2	1.76	17.80	59.0	—	—	28.2	36.20	52.16
	49.3	46.18	2.23	9.3	4.65 / 9.10	20.56	3.0		—	29.8	39.19	55.76
	39 58.0	38.68	6.52	40 10.0	57.10	24.92	40 38.5	9.71	—	40 35.8	31.70	59.60
	0.5	41.52	9.40	12.2	0.02	28.00	40.9	12.68	—	39.5	34.47	2.41
	3.6	44.48	12.55	14.7	2.86	30.90	43.7	15.50	—	41.6	37.48	5.40
	5.7	47.65	15.20	17.0	5.82	33.78	46.1	18.65	—	44.7	40.83	8.28
	7.6	50.50	18.20	19.2	8.98	36.50	48.3	21.44		46.6	43.05	11.05
		40.49	22.56		58.87	41.15		—	39 53.88		33.41	15.61
		56.44	25.52		14.85	44.00		—	56.70		49.36	18.40
		12.37	28.56		30.82	46.75		—	59.65		5.35	21.43
		28.47	31.33		46.90	49.82		59.65 43.63	2.52		21.35	24.20
		44.57	34.38		2.96	52.78		15.60 .58	5.52		37.41	27.10
	38 44.56	62.34		39 (~~38~~) 3.36	154.40		39 57.66			39 25.22	26.88	
	40 3.08		39 12.468	40 14.62		39 30.880	40 43.50		39 43.605	40 41.64		40 (~~39~~) 5.376
			37 19.557			37 19.454			37 19.370			19.193
			+112.91			+131.43			+144.23			2 46.18
			+112.90			+131.42			+144.22			2 46.17
			+ 112.85 (red)			+ 131.37 (red)			+ 144.17 (red)			2 46.12 (red)
			−1 51.43			−2 10.04			−2 22.83			−2 44.85
			− 1.44			− 1.34			− 1.38			− 1.28
			− 3.20			− 3.10			− 3.01			− 2.84
			−1 56.07			−2 14.48			−2 27.22			−2 48.97
			m s 37 16.40			16.40			16.38			16.41
	+ 27.91s	− 50.61s		+ 27.52	− 43.74		− 14.06	− 59.90		+ 40.16	− 36.26	
	1.44576	1.70424n		1.43965	1.64088n		1.14799n	1.77743n		1.60379	1.55943n	
	1.40144n	1.65992		1.39533n	1.59656		1.10367	1.73311		1.56052n	1.51616	
	249 (red)	6097 (red)		638 (red)	761 (red)		472 (red)	417 (red)				
	35′ 1	35′ 0		35 1	35 0		35 0	30 4		35 1	35 0	
[illegible]	15.6″ +.41	4.2″ +.04		12.9 +.35	7.1 +.10		33.9 +.45	52.0 +.05		21.6 +.51	12.4 +.24	
[illegible]	16.1 +.25	4.5 +.05		15.1 +.25	10.6 +.09		36.3 +.06	53.7 +.14		25.7 +.19	16.4 +.09	
[illegible]	40.7 −.42	28.7 −.10		35.9 −.19	30.3 −.07		59.1 −.09	15.0 −.36		45.2 −.84	36.3 −.29	
[illegible]	33.1 +.62	22.2 +.39		29.8 +.65	26.2 +.45		50.2 +.51	7.1 +.18		38.4 +.56	28.3 +.48	
	28.15 (red) +.86	+.38	16.45 (red)	24.40 (red) +1.06	18.7 (red) +.57	18.70 (red)	46.70 (red) +.93	+.01	3.50 (red)	33.40 (red) .72	.52	24.35 (red)
	36 26.38	35 14.90		36 23.42	35 18.55		35 44.88	35 1.95		36 32.72	35 23.85	
	− 25.20	45.70		− 24.85	39.50		12.70	54.09		− 36.35	32.82	
	36 1.18 −.06 (red)	0.60 +.11 (red)		35 58.57 −.06 (red)	58.05 +.09 (red)		35 57.58 +.03 (red)	56.04 +.13 (red)		35 56.37	35 56.17	
	~~1.24~~ (red)	~~0.49~~ (red)		~~56.63~~ (red)	~~57.96~~ (red)		~~57.55~~ (red)	~~55.91~~ (red)				
+44°	46′ 47.17″	47.75″		49.78	50.30		50.77	52.31		51.98	52.18	
	47.23 (red)	47.64 (red)		49.84 (red)	50.21 (red)		50.74 (red)	52.18 (red)				
− 2°	28′ 8″								−2	28 14		
	0.3951									0.395.20		
	− 165			−019			− 063			+1154		
	0.3786			0.3932			0.3888			0.40674		
	+ 2.39″	″		+ 2.47			+ 2.45			+ 2.55		
	− .21	− .71		− .20	− .52		− .05	− .98		− .44	− .36	
	− .13 08 (red)	− .02 11 (red)		− .13	− .03		− .07	− .45 50 (red)		− .15	− .04	
	− .22	− .10		− .26	− .14		− .23	00		− .18	− .13	
	+ 1.83 (red 8)	+ 1.56 (red 7)		+ 1.88	+ 1.78		+ 2.10	+ ~~1.02~~ .97 (red)		+ 1.78	+ 2.02	
	46′ 49.00″ .11 (red)	49.31 .21 (red)		51.68 92 (red)	~~52.08~~ 51.99 (red)		52.87 /4 (red)	~~53.33~~ 53.15 (red)		53.76	54.20	
	46′ 49.16″	+4′ 10.70″		51.876	+4 10.15		53.10 00 (red)	+4 9.90		46 53.98	+4 10.07	
	50 60.86	+ .04		62.64	+ .04		63.8	+ .03		51 56	+ .03	
		− 18.80			− 20.60			− 21.70			− 23.50	
	+4′ 11.7″	+3 51.94		4 10.8	+3 49.59		4 10.78	+3 48.23		4 11.6	+3 46.60	
		50′ 41.1″			41.5			41.2			40.6	

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	m	s		'	"	
Aug. 28	37	19.62	6	58	59.5	13
Sept. 2		.56			60.8	
7		.49	7		62.1	13
12		.41	8		63.3	12
17		19.32	9		64.4	11
22		.22	10		65.4	10
27		.11	11		66.3	9
Oct. 2		19.00	11		67.1	8
7		18.88	12		67.7	6

Sept. 30

39	32.0	39	42.00		8.00	39	32.0	39	44.00		0.03	39	33.1	39	45.33		1.32	39	35.7	39	47.55		3.57
	34.0		45.20		1.00		35.0		47.05		3.00		36.0		48.23		4.27		38.1		50.43		6.47
	36.5		48.00		3.90		36.6		49.90		5.97		38.2		51.10		7.13		40.4		53.40		9.47
	39.2		50.90		6.70		39.3		52.80		8.75		40.7		54.05		10.10		43.2		56.37		12.30
	42.5		53.70		9.60		42.7		55.74		11.68		43.7		57.00		12.90		46.5		59.20		15.28
		51.82	46.00		1.40	40	5.93		48.05		1.600	40	50.7		49.37		17.45	41	6.8		57.68		19.42
		.91	49.00		1.00		2.1		57.05		1.900		53.0		52.22		20.20		9.1		54.38		22.50
		.88	51.88		1.980		4.2		53.95		2.200		53.8		53.28		23.20		11.3		57.50		25.43
			—		22.78		7.0		56.80		2.480		57.6		58.10		26.05		13.4		0.27		28.38
			—		25.65		9.4		59.80		2.770		0.2		1.00		29.10		16.8		3.38		31.23
		47.96			30.00			49.90			32.03			51.14			33.42			53.39			35.70
		3.84			33.00			5.89			34.85			7.14			36.23			9.42			38.54
		19.85			35.95			21.90			37.82			23.20			39.17			25.37			41.34
		35.88			38.70			37.86			40.87			39.19			42.10			41.40			44.20
		51.85			41.75			53.93			43.73			55.19			45.05			57.44			47.20
39	36.84	99	38		80	39	37.12		10948			39	38.34		11586			39	40.78		12702		
				40	19.85	41	4.80			40	21.896	40	55.46			40	23.172	41	11.48			40	25.404
					19.04						19.016						18.99						18.97
				3	0.84					3	2.88					3	4.18					3	6.48
				3	0.83					3	2.87					3	4.17					3	6.42
				3	0.78					3	2.82					3	4.12					3	6.37
				−2	59.88					−3	1.215					−3	2.80					−3	4.99
				—	1.33					—	1.41					—	1.31					—	1.41
				—	2.68					—	2.66					—	2.63					—	2.61
				−3	3.59					−3	5.52					−3	6.74					−3	9.01
					16.29						16.38						16.43						16.39
					+33.04				+44.78		−42.50				+44.83		−32.29				+44.62		−46.08
					1.63387				1.65108		1.62839m				1.65157		1.50907m				1.64953		1.66351m
					1.59060m				1.60781m		1.58512				1.60830m		1.46580				1.60626m		1.62024
					35 1				35 1		35 0				35 1		35 0				35 1		35 0
					22.5 +.52				23.1 +.52		3.6 +.03				24.1 +.53		14.4 +.30				23.9 +.53		1.9 +.01
					25.9 +.19				26.6 +.19		7.2 +.07				26.5 +.19		16.4 +.09				25.9 +.19		4.1 +.04
					46.1 −.55				48.4 −.56		27.8 −.11				48.7 −.56		38.9 −.43				49.1 −.55		26.3 −.16
					38.7 +.55				41.9 +.49		23.0 +.41				41.6 +.50		31.8 +.50				40.9 +.51		19.0 +.36
					34.30 71				35.75 64		40 18.70				36.10 66		46 26.65				36.50 68		25 14.10
				36	33.30			36	35.00	35	15.40			36	35.22	35	25.38			36	34.95	35	12.82
				—	38.96			—	40.53		38.47			—	40.58		29.23			—	40.39		41.71
				35	54.34			35	54.47	35	53.87			35	54.64	35	54.61			35	54.56	35	54.53
				46	54.01				53.88		54.48				53.71		53.74				53.79		53.82
					+1.24				−4.41						−1.74						−7.98		
					0.39644				0.39043						0.38346						0.38722		
					+2.49				+2.46						+2.42						+2.44		
					−.50		—		−.55		−.49				−.55		−.29				−.59		−.58
					−.12				−.13		−.02				−.13		−.03				−.13		−.02
					−.18				−.16		−.10				−.16		−.12				−.17		−.06
					+1.69				+1.62		+1.85				+1.58		+1.98				+1.60		+1.78
									55.50		56.38				55.29		55.12				55.39		55.60
		55.70	+4	10.58					55.92	+4	10.46				55.50	+4	10.88				55.50	+4	11.04
		6.8	+	.03					7.0	+	.03				7.1	+	.03				7.25	+	.03
			−	24.70						−	24.90					−	25.00					−	25.20
		+4 11.1	+3	45.91					11.1	+3	45.59				11.6	+3	45.91				11.8	+3	45.67
			50	41.6							41.5						41.4						41.4

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	α		δ	
	m s		' "	
Oct. 7	37 18.88		51 7.7	
12	.76	12	8.3	6
17	.63	13	8.7	4
22	.50	13	9.1	4
27	18.37	13	9.3	2
Nov. 1	.24	13	9.4	1
6	18.11	13	9.3	1
11	17.99	12	9.1	2
16	17.87	12	8.8	3

1878

Oct. 8

h	m s	m s	m s
20	39 44.7	39 57.68	40 13.78
	47.0	0.73	16.63
	49.1	3.60	19.72
	51.2	6.85	22.61
	54.2	9.63	25.53
	40 58.1	1.78	29.80
	0.2	4.80	32.70
	3.3	7.70	35.71
	5.8	10.54	38.72
	7.0	13.57	41.55
		3.70	45.80
		19.65	48.70
		35.70	51.70
		51.72	54.70
		7.68	57.72
	39 49.24	17845	
	41 2.88		40 35.690
			37 18.85
			+ 3 16.84
			+ 3 16.83
			16.78
			−3 15.63
			− 1.16
			− 2.49
			−3 19.28
			37m 16.41s

Oct. 10

m s	m s	m s
39 52.2	40 2.00	40 18.00
54.2	4.90	20.75
57.2	7.90	23.82
0.2	10.75	26.67
2.8	13.68	29.60
41 2.6	6.00	34.00
5.1	9.00	37.00
7.9	11.90	39.79
10.8	14.70	42.80
13.7	17.70	45.68
	7.85	50.00
	23.77	53.00
	39.85	55.80
	55.87	58.79
	11.86	1.78
39 57.32	19920	
41 8.02		40 39.840
		18.80
		3 21.04
		3 21.03
		20.98
		−3 19.69
		− 1.29
		− 2.44
		−3 23.42
		16.42

Oct. 14

m s	m s	m s
40 0.6	40 11.15	40 27.00
2.9	14.05	29.97
5.8	16.95	32.88
9.2	19.70	35.85
12.2	22.67	38.85
41 28.9	15.20	43.15
30.9	18.00	46.00
33.7	20.90	48.95
36.2	23.90	51.82
38.4	26.95	54.69
	16.90	59.05
	32.91	2.05
	48.92	4.98
	4.97	7.85
	20.99	10.90
40 6.14	24469	
41 33.62		40 48.938
		18.70
		3 30.24
		3 30.23
		30.18
		−3 28.90
		− 1.28
		− 2.34
		−3 32.52
		16.42

Oct. 16

m s	m s	m s
40 4.1	40 15.30	40 31.25
6.7	18.20	34.15
9.2	21.00	37.00
11.7	24.00	39.90
15.0	26.90	42.77
41 36.7	19.22	47.00
39.9	22.20	50.25
43.3	25.20	53.00
45.4	28.00	55.95
47.8	30.95	58.95
	21.08	3.25
	37.01	6.18
	53.05	9.10
	9.10	12.00
	25.11	14.99
40 9.34	26535	
41 42.62		40 53.070
		18.65
		3 34.42
		3 34.41
		34.36
		−3 33.19
		− 1.26
		− 2.29
		−3 36.74
		16.33

Reductions

	Oct. 8		Oct. 10		Oct. 14		Oct. 16	
	+ 4645s	− 2719s	+ 4252	− 2818	+ 4280	− 4468	+ 4373	− 4955
	1.66699	1.43441n	1.62859	1.44994n	1.63144	1.65011n	1.64078	1.69504n
	1.62372n	1.39114	1.58532n	1.40667	1.58817n	1.60684	1.59751n	1.65177
	35' 1'	35' 0'	35 1	35 0	35 1	35 0	35 1	30 4
E	24.1" +.53	17.9" +.38	20.2 +.49	15.8 +.33	21.5 +.50	2.3 +.01	21.6 +.51	56.9 +.01
F	27.9 +.18	22.1 +.06	24.9 +.19	21.1 +.07	25.9 +.19	5.9 +.07	25.1 +.19	59.9 .00
G	47.8 −.57	42.4 −.57	45.2 −.54	40.5 −.50	46.4 −.55	25.4 −.19	47.9 −.57	19.4 −.39
H	41.6 +.50	35.9 +.52	37.1 +.57	33.9 +.51	39.1 +.55	21.2 +.38	40.3 +.52	14.8 +.19
	35.95 .64	39 30.15	32.70 .71	41 28.15	33.95 .69	27 13.85	34.75 .65	−19 8.15
	36 35.85	35 29.58	36 31.85	35 27.82	36 33.22	35 13.70	36 33.72	35 7.75
	− 42.05	24.61	− 38.49	25.51	− 38.74	40.44	− 39.58	44.85
	35 53.30	35 54.19	35 53.36	35 53.33	35 54.48	35 54.14	35 54.14	35 52.60
+44°	46' 54.85" (53.05)	54.16	54.99	55.02	53.87	54.21	54.21	55.75
	− 130		+ 169		+ 437		− 627	
	0.39390	"	0.39689		0.39957		0.38893	
	+ 2.48		+ 2.49		+ 2.51		+ 2.45	
	− .59	− .20	− .49	− .21	− .50	− .54	− .52	− .66
	− .11	− .03	− .10	− .03	− .11	− .01	− .13	− .40
	− .16	− .10	− .18	− .10	− .17	− .07	− .16	+ .05
	+ 1.62	+ 2.15	+ 1.72	2.15	+ 1.73	+ 1.89	+ 1.64	+ 1.44
	46 56.67	56.31	56.71	57.17	55.60	56.10	55.85	57.09
	56.49		56.94		55.85		56.47	
	7.85	+4' 10.80"	8.1	+4 10.48	8.5	+4 11.68	8.6	+4 10.96
		+ .02		+ .02		+ .02		+ .02
	+4' 11.4"	− 25.80	11.2	− 26.00	12.4	− 26.40	12.1	− 26.50
		+3 45.02		+3 44.50		+3 45.30		+3 44.48
		50' 41.5"		41.4		41.2		40.9

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Oct. 21 | Oct. 22 | Nov. 4 | Nov. 14

Oct. 21				Oct. 22				Nov. 4				Nov. 14			
41 53.5	—	40 —		40 18.6	40 28.40	40 44.20		41 0.4	40 55.40	41 11.50		41 46.3	41 —	41 27.85	
54.4	—	—		22.4	31.70	47.40		2.8	58.60	14.40		49.0		30.70	
56.6	—	—		25.8	34.10	50.30		5.2	1.45	17.40		51.8	17.50 17.50	33.52	
59.7	—	—		27.6	37.00	53.15		8.9	4.47	20.30		54.3	.49 20.40	36.48	
1.9	—	—		31.1	40.00	56.00		11.2	7.38	23.25		57.2	.66 23.50	39.30	
					32.50	0.53	42 3.6		59.50	27.50			18.55	43.82	
	41 30.22	40 58.25			35.40	3.40	5.9		2.58	30.45			18.55	46.65	
	33.30	1.20			38.10	6.24	49		5.44	33.52			21.50	49.45	
	36.18	4.14			41.20	9.12	9.6		8.35	36.34			24.40	52.00	
	39.01	7.00			44.22	12.00	12.0		11.30	39.25			27.45	55.45	
	42.00	10.05													
					34.24	16.50			1.46	43.55			17.56	59.80	
		14.05			50.21	19.29			17.37	46.40			33.57	2.67	
		17.00			6.26	22.27			33.41	49.50			49.44	5.60	
	4.13 4.13	20.80			22.30	25.28			49.43	52.30			5.58	8.48	
	20.01 3.99	23.10			38.28	28.18			5.43	55.39			21.49	11.35	
	36.14 4.12	25.70													
41 5.22				40 25.10	3.29			41 5.70	1.67.10			41 51.72	24.67		
		41 4.080				41 6.258		42 7.80		41 33.42.0				41 49.534	
		18.52				18.494				18.16				17.91	
		3 45.56				3 47.76				4 15.26				4 31.62	
		3 45.55				3 47.75				4 15.25				4 31.61	
		45.50				47.70				16.20				31.56	
		−3 44.38				−3 46.55				−4 14.09				−4 30.50	
		− 1.16				− 1.27				− 1.14				− 1.13	
		− 2.16				− 2.14				− 1.80				− 1.55	
		−3 47.70				−3 49.96				−4 17.03				−4 33.18	
		16.38				16.30				16.39				16.35	
−53.14				+4.16				+27.72	−34.38			−2.19			
1.72542				1.61448				1.44279	1.53631			0.34044			
1.68215				1.57124				1.39952	1.49304			0.29717			
30 4				35 1				35 1	35 0			35 0			
53.6 +.03				16.4 +.42				9.6 +.27	13.2 +.27			44.4 +.26			
56.8 +.07				20.2 +.23				14.0 +.25	17.7 +.09			47.2 +.29			
16.1 −.89				40.5 −.42				27.5 −.08	30.0 −.07			0.8 −.03			
11.1 +.20				33.2 +.62				23.5 +.66	28.8 +.49			58.3 +.54			
4.85 −.09				28.45 .85				18.55 .110	78 21.60			52.60 .106			
35 4.40				36 27.58				36 18.65	35 22.42			35 52.68			
48.10				− 37.26				− 25.09	31.12			1.98			
35 52.50				35 50.32				35 53.56	35 53.54			35 54.66			
46 55.85				5803				5479	5481			5369			
												1816			
−.418				+.387				+.1854				+ 1984			
0.39102				0.39987				0.41344				0.41 5047336			
+2.46				+2.51				+2.59				+2.60 59			
− .77				− .46				− .21	− .32			− .00			
− .41				− .13				− .14	− .04			− .12			
+ .02				− .21				− .28	− .20			− .26			
+ 1.30				+ 1.71				+ 1.96	+ 2.03			+ 2.21			
57.15				59.74				46 56.75	56.84			55.90			
57.15								46 56.80				55.90			
9.0	+4 11.35			9.1	+4 10.52			51 9.3	+4 11.30			8.9	+4 12.04		
	+ .03				+ .03				+ .03				+ .04		
+4 11.8	− 26.90			9.4	− 27.00			4 12.5	− 27.20			4 13.0	− 26.89		
	+3 44.48				+3 43.55				+3 44.13				+3 45.28		
	50.416				43.3				40.9				41.2		

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ν Cygni			α_0	37.527 s		log sin δ	9.81429		log R_1	1.47629		
20h 52m 38s			corr. α	+ .005 / + .015		" cos δ	9.87976		R_2	1.17562		
+40° 41′ 53″			dα/dt			" 15 cos δ tan	9.98478n / 583		R_1 / R_2 / I	29.94 / 14.98 / 2.72		
			δ_0	53.23″								
+ 1	40 55		corr. δ	.00		tan δ	+.86					
1878			dδ/dt			sin z	+.03					
	Sept. 2			Sept. 9			Sept. 12			Sept. 14		
h	m s	m s	m s									
20	53 43.9	53 58.15	13.15	54 15.5	54 16.77	31.50	54 17.7	54 24.00	39.00	54 21.3	54 29.48	44.42
	47.4	0.88	15.82	17.8	19.40	34.18	20.4	26.78	41.74	24.5	32.20	47.00
	49.4	3.64	18.53	19.9	22.00	37.00	22.8	29.50	44.46	27.6	34.97	49.78
	51.9	6.34	21.30	22.4	24.82	39.80	25.1	32.26	47.26	30.2	37.47	52.58
	53.8	9.12	24.00		27.53	42.62	27.7	35.00	49.84	32.8	40.28	55.30
	55 2.6	58.00	28.00	53 32.5	16.44	46.78	55 40.8	23.92	54.00	55 50.0	29.30	59.38
	5.1	0.80	30.88	34.0	19.18	49.58	43.6	26.50	56.69	52.4	31.98	2.00
	7.5	3.52	33.65	35.5	21.90	52.38	46.6	29.36	59.40	54.4	34.70	4.70
	9.8	6.32	36.38	37.9	24.63	54.86	49.0	32.00	2.10	56.6	37.32	7.50
	12.5	9.00	39.10	41.5	27.38	57.60	51.6	34.77	4.80	58.7	40.15	10.20
		3.63	43.13		22.10	1.56		29.51	9.00		34.87	14.32
		18.56	45.90		37.02	4.28		44.46	11.52		49.82	16.92
		33.60	48.64		52.24	7.00		59.40	14.34		4.76	19.73
		48.61	51.26		7.04	9.85		14.39	17.10		19.73	22.48
		3.53	54.13		21.91	12.52		29.31	20.00		34.69	25.20
	53 49.28	16793		54 17.66	26031		54 22.74	29707		54 27.28	2387	
	55 7.44		54 33.586	55 36.28		54 52.062	55 46.32		54 59.414	55 54.42		55 4.774
			52 40.868			52 40.793			40.756			52 40.724
			+112.72			+131.27			2 18.66			+144.05
			+112.70			+131.25			18.64			+144.03
			−1 51.47			−2 10.08			−2 17.43			−2 22.87
			− 1.25			− 1.16			− 1.18			− 1.20
			− 3.34			− 3.27			− 3.23			− 3.20
			−1 56.06			−2 14.51			−2 21.84			−2 27.27
			m s 52 37.53			37.55			37.57			37.50
	s +44.31	s −33.85		+34.40	−44.22		+36.67	−46.91		+37.49	−49.65	
	1.64650	1.52956n		1.53656	1.64562n		1.56431	1.67127n		1.57392	1.69592n	
	1.63128n	1.51434		1.52134n	1.63040		1.55014n	1.65710		1.55870n	1.68070	
	233	539		239	145					976	175	
	45 0	40 4		45 0	40 3		45 0	40 3		45 0	40 3	
E	16.1 +.33	1.6 +.20		4.1 +.04	49.1 +.27		5.2 +.06	43.8 +.36		6.2 +.08	42.9 +.38	
F	17.9 +.09	2.7 +.15		8.0 +.08	52.3 +.31		8.4 +.08	46.0 +.33		8.7 +.09	45.4 +.32	
G	42.1 −.55	25.8 −.07		28.4 −.10	13.2 −.17		30.8 −.08	8.7 +.06		31.3 −.09	7.3 +.11	
H	34.9 +.52	18.4 +.21		22.9 +.41	8.4 +.21		22.8 +.41	2.3 +.10		22.4 +.40	58.8 +.03	
	29.10 +.39	+.49 13.70		16.25 +.43	+.62 58.15		18.00 +.47	+.85 56.25		18.75 +.48	+.84 55.10	
	45 27.75	44 12.12		45 15.85	44 0.75		45 16.80	43 55.20		45 17.15	43 53.60	
	−42.78	32.68		−33.22	42.70		− 35.49	45.40		−36.20	47.94	
	44 44.97 −.11	44.80 +.08		44 42.63 −.08	43.45 +.10		44 41.31	44 40.60		44 40.95 −.09	41.54 +.12	
+40°	38′ 3.38″ / 3.49	3.55″ / 3.47		5.72 / 5.80	4.90 / 4.80		38 7.04	7.78		7.40 / 7.49	6.81 / 6.69	
+ 1	40′ 35″											
	0.2268											
	− 165			− 017			− 1107			− 060		
	0.2103			0.2251			0.21533			0.2208		
	− 1.62			− 1.68			− 1.64			− 1.66		
	− .52	− .31		− .32	− .50		− .36	− .60		− .37	− .65	
	− .04 / 03	− .38 / 25		− .03	− .36		− .03	− .39		− .03	− .35 / 39	
	− .10	− .12		− .11	− .16		− .11	− .21		− .12	− .21	
	− 2.28 / 27	− 2.43 / 30		− 2.14	− 2.70		− 2.14	− 2.84		− 2.18	− 2.87	
	38 1.10 / 22	1.12 / 17		3.58 / .66	2.20 / 10		4.90	4.91		5.22 / .31	3.94 / 82	
	38′ 1.11 20	+4 10.70		2.88	+4 10.15		4.90	+4 9.49		4.58 / 6	+4 9.90	
	42 12.5	− .03		14.2	− .03		14.85	− .03		15.25	− .03	
		− 19.30			− 21.00			− 21.60			− 22.00	
	+4 11.4 / 3	+3 51.37		4 11.3	+3 49.12		10.0	+3 47.86		4 10.7	+3 47.87	
		41 52.6			52.0			52.8			52.4	

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	α m s		δ ′ ″	
Aug. 28	52 40.91		42 11.1	
Sept. 2	.87	4	12.4	13
7	.82	5	13.7	13
12	.76	6	14.8	11
17	40.68	8	15.9	10
22	.59	9	16.9	10
27				

Sept. 15

54	23.1	54	32.00		47.22	54	26.2	54	37.00		52.00	55	8.0	54	–		54.34	54	31.0	54	42.00		56.74
	25.7		34.95		52.00		29.3		39.78		54.80		5.1		–		57.18		33.0		44.48		57.32
	27.8		37.53		52.72		31.2		42.50		57.42		8.5	46.64	44.64		59.82		35.8		47.33		2.28
	29.9		40.30		55.20		34.0		45.10		0.28		10.7	.78	47.50		2.65		38.2		50.24		5.00
	31.9		43.00		58.48		36.0		47.90		2.82		12.8	.66	50.10		5.18		40.8		52.73		7.65
55	47.4		32.00		2.50	55	54.3		36.90		7.00	55	5.8		38.32		9.28	55	55.4		41.64		11.76
	49.4		34.80		5.00		56.7		39.72		9.60		5.8		41.80		12.10		58.3		44.46		14.50
	51.1		37.70		7.68		59.5		42.15		12.32		1.8		44.60		14.86		0.6		47.28		17.20
	54.0		40.33		10.25		2.0		45.15		15.10		4.3		47.38		17.35		3.1		50.00		20.00
	56.6		43.18		13.13		3.8		47.95		17.80		6.7		50.00		20.20		5.3		52.64		22.56
			37.56		17.43				42.46		21.92				44.69		24.22				47.36		26.80
			52.72		19.97				57.46		24.72				59.84		27.03				2.24		29.42
			7.71		22.75				12.36		27.35				14.76		29.80				17.20		32.00
			22.77		25.40				27.36		30.00				29.72		32.42				32.21		34.00
			37.60		28.30				42.37		32.83				44.62		35.10				47.21		37.82
54	27.68		38.36			54	31.34		62.01			55	8.02		7.63			54	35.76		8.22		
55	51.70			55	7.672	55	59.26			55	124.02	56	2.08			55	14.726	56	1.60			55	17.244
				52	40.708					52	40.676						40.66						40.64
					+146.96						+151.73					2	34.07					2	36.60
					+146.94						+151.71						34.05						36.58
				−2	25.73					−2	30.64					−2	32.96					−2	35.40
				−	1.18					−	1.11					−	1.11					−	1.18
				−	3.18					−	3.15					−	3.13					−	3.11
				−2	30.09					−2	34.90					−2	37.20					−2	39.67
					37.58						37.50						37.53						37.55
	+39.99		−44.03				+41.06		−46.86				+671		−4735				+4148		−4336		
	1.60195		1.64375m				1.61342		1.67080m				0.82672		1.67532m				1.61784		1.63709m		
	1.58672m		1.62853				1.59820m		1.65558				0.81255m		1.66115				1.60367m		1.62292		
	778		958				925		663														
	45 0		40 3				45 0		40 3				40 4		40 3				45 0		40 3		
	8.7 +.15		47.2 +.31				8.8 +.15		45.2 +.34				37.1 +.37		44.1 +.36				8.6 +.15		47.1 +.31		
	12.4 +.10		50.8 +.33				12.4 +.10		48.3 +.34				39.2 +.06		46.2 +.33				12.2 +.10		49.9 +.34		
	32.6 −.13		10.3 −.03				33.5 −.16		8.2 +.08				0.8 +.02		7.2 +.11				33.7 −.16		10.9 −.06		
	25.7 +.45		4.0 +.16				26.8 +.46		2.0 +.09				53.1 +.01		1.2 +.26				26.5 +.46		4.4 +.17		
	20.65 +.57		+.77	58	75		21.15 +.55		+.85	56	70		48.95 46		106	55	65		21.15 55		76	59	00
45	19.85	43	58.08			45	20.38	43	55.92			44	47.55	43	54.68			45	20.25	43	58.08		
	−38.61		42.51				−39.65		45.25			−	6.50		45.83			−	40.15		41.97		
44	41.24	−.10	40.59	+.03		44	40.73	−.09	41.17	+.11		44	41.05	44	40.21			44	40.10	44	40.05		
															5								
	38 7.11		7.76				7.62		7.18				7.30		8.14				8.245		8.30		
	7.21		7.65				7.71		7.07						7.84								
												+1	40 31										
													0.22640										
													−1155										
													0.21485										
	+ 031						− 030												− 475				
	0.22999						0.22358												0.22165				
	− 1.70						− 1.67						− 1.64						− 1.667				
	− .43		− .52				− .45		− .59				− .02		− .61				− .47		− .51		
	− .03		− .354	9			− .03		− .35	39			− .48		− .39				− .03		− .40		
	− .14		− .19				− .14		− .21				− .12		− .26				− .14		− .19		
	− 2.30		− 2.768	1			− 2.29		− 2.826				− 2.26		2.90				− 2.31		− 2.77		
	4.84		5.00				5.42		4.36				5.04		4.94				5.94		5.53		
	4.91		4.84						4.21														
	4.90	88	+4	10.45			4.84	72	+4	10.82			4.99	+4	10.93				5.74	+4	10.13		
	15.4		−	.02			16.0		−	.02			16.15	−	.02				16.38	−	.02		
			−	22.20					−	22.80				−	22.90					−	23.13		
	+4 10.5		+3	48.23			4 11.2		+3	48.80			11.2	+3	48.01				10.6	+3	47.01		
			41	531						528					530						528		

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1878

	α			δ	
	m s			′ ″	
Sept. 17	52 40.68			42 15.9	
22	.59	9		16.9	10
27	.50	9		17.8	9
Oct. 2	.40	10		18.6	8
7	40.30	10		19.3	7
12	.19	11		19.9	6
17	40.08	11		20.4	5
22	39.97	11		20.8	4
27	39.85	12		21.0	2

Sept. 23

h m s	m s	m s
20 54 44.2	54 57.16	55 6.05
46.3	54.00	8.73
48.0	56.64	11.63
50.4	59.37	14.26
53.3	2.10	17.00
55 57.8		21.25
58.7		23.86
55.7		26.57
58.0		29.42
0.2		32.00
	56.66 26.60	36.15
	11.53 .51	38.73
	26.62 .62	41.50
	41.56 .58	44.41
	2	47.00
54 48.44		
55 55.88		55 26.578
		52 40 57
		+ 2 46.01
		45.99
		−2 44.89
		− 1.14
		− 3.04
		−2 49.04
		m s
		52 37.54

Sept. 25

54 41.0	54 55.00	9.85
43.2	57.80	12.43
45.8	0.57	15.13
48.9	3.14	17.77
53.1	5.72	20.60
56 14.8	54.78	24.58
17.0	57.50	27.60
20.1	0.22	30.26
23.3	3.00	32.81
25.3	5.78	35.52
	0.45	39.70
	15.16	42.43
	30.15	45.20
	45.21	47.91
	0.26	50.83
54 46.40	15123	
56 20.10		55 30.246
		40.532
		2 49.71
		49.69
		−2 48.53
		− 1.24
		− 3.00
		−2 52.77
		37.48

Oct. 1

54 56.0	55 7.70	22.62
58.0	10.37	25.40
0.4	13.18	28.05
3.3	15.90	30.80
5.9	18.65	33.60
56 25.8	7.56	37.70
28.3	10.30	40.28
31.0	13.00	42.99
33.3	15.81	45.66
35.6	18.57	48.60
	13.16	52.57
	28.09	55.30
	43.05	57.93
	57.96	0.60
	13.05	3.39
55 0.72	21531	
56 30.80		55 43.062
		40.415
		3 2.65
		2.63
		−3 1.46
		− 1.23
		− 2.89
		−3 5.58
		37.48

Oct. 2

55 1.2	55 9.05	23.90
3.3	11.70	26.64
5.2	14.46	29.43
7.8	17.28	32.10
10.2	19.88	34.88
56 20.3 (22.3)	8.72	38.89
24.7	11.57	41.66
26.9	14.33	44.42
28.8	17.00	47.05
	19.73	49.86
	14.47	53.90
	29.39	56.60
	44.38	59.38
	59.33	2.00
	14.27	4.77
55 5.54	22184	
56 24.60		55 44.368
		40.395
		3 3.97
		3.95
		−3 2.83
		− 1.13
		− 2.87
		−3 6.83
		37.54

Reductions

	Sept. 23			Sept. 25			Oct. 1			Oct. 2		
	s	s										
	+ 38.14	− 29.30		+ 43.85	− 47.85		+ 42.34	− 47.74	1	+ 38.83	− 40.23	
	1.58138	1.46687n		1.64197	1.69767n		1.62675	1.67888n		1.58917	1.60455n	
	1.56721n	1.45270		1.62780n	1.68350		1.61258n	1.66471		1.57500n	1.59038	
	45′ 0′	40′ 4′		45 0	40 3		45 0	40 3		45 0	40 3	
ε	4″.6 +.05	0″.0 +.20		10.7 +.19	40.3 +.43		7.5 +.12	39.4 +.45		4.9 +.06	49.9 +.25	
ℱ	9.1 +.09	4.9 +.19		13.7 +.09	43.2 +.29		10.3 +.09	43.2 +.29		8.0 +.08	50.8 +.33	
ℊ	28.1 −.11	23.4 −.17		35.4 −.24	4.0 +.17		32.0 −.11	2.9 +.18		29.7 −.08	13.0 −.16	
ℋ	20.9 +.38	16.9 +.21		28.2 +.47	58.1 +.02		25.0 +.44	59.8 +.04		22.7 +.40	5.8 +.21	
	16.35 .41	1 .43	11.70	23.05 51	91	52.15	19.75 54	96	51.15	17.30 46	63	1.45
	45 15.68	44 11.30		45 22.00	43 51.40		45 18.70	43 51.32		45 16.32	43 59.88	
	− 36.92	28.36		− 42.44	48.25		− 40.98	46.21		− 37.59	38.94	
	44 38.76	44 39.66		44 39.56	44 39.65		44 37.72	44 37.53		44 38.73	44 38.82	
+40°	38′ 9″.59	8″.69		8.79	8.70		10.63	10.82		9.62	8.53 9.	
	+ 1194			− 318			− 422			− 1149		
	0.23834			0.22322			0.22218			0.21491		
	− 1″.73	″		− 1.67			− 1.67			− 1.64		
	− .39	− .23		− .52	− .67		− .49	− .61		− .41	− .43	
	− .03	− .42		− .04	− .39		− .02	− .31		− .02	− .32	
	− .10	− .11		− .13	− .23		− .14	− .24		− .12	− .16	
	− 2.25	− 2.49		− 2.36	− 2.96		− 2.32	− 2.83		− 2.19	− 2.55	
	38′ 7.34	6.20		6.43	5.74		8.31	7.99		7.43	6.98	
	38 6.77	+4′ 10″.07		6.08	+4 10.70		8.15	+4 10.46		7.20	+4 10.88	
	42 17.1	− .02		17.5	− .02		18.5	− .02		18.6	− .02	
	″	− 23.90			− 24.30			− 25.30			− 25.40	
	+ 4′ 10.3	+3 46.15		11.4	+3 46.38		10.3	+3 45.14		11.4	+3 45.46	
		41′ 52″.9			52.5			53.3			52.7	

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1878phae.proj.1495.

Oct. 3

55 1.0 | 55 11.28 | 26.16
3.1 | 14.00 | 29.00
6.2 | 16.68 | 31.68
8.3 | 19.42 | 34.37
10.7 | 22.20 | 37.20

56 25.3 | 11.20 | 41.30
27.7 | 13.78 | 44.00
30.2 | 16.68 | 46.88
32.5 | 19.47 | 49.27
34.6 | 22.15 | 52.00

16.72 | 56.16
31.68 | 58.63
46.63 | 1.52
1.59 | 4.42
16.66 | 7.23

55 5.86 | 23.28

56 30.06 | 55 46.56 | 40.375
3 6.28 | 6.26

−3 5.04
− 1.22
− 2.85
−3 9.11

37.55

+40.80 | −43.40

1.61066 | 1.63749m
1.59649m | 1.62332

45 0 | 40 3

6.3 +.09 | 45.8 +.33
9.3 +.09 | 48.3 +.34
31.7 −.10 | 10.2 −.03
23.2 +.41 | 3.3 +.14
19.00 49 | 78 58.02

45 17.62 | 43 56.90
− 33.41 | 42.01
44 36.13 | 44 38.91

38 10.22 | 9.44

−.765
0.21875
−1.65
− .45 | − .51
− .02 | − .31
− .12 | − .20
−2.24 | −2.67
7.98 | 6.77

7.38 +4 11.04
18.8 − .02
− 25.60
+4 11.4 +3 45.42

41 5.28

Oct. 10

55 1.93 | 55 26.00 | 55 40.62
2.12 | 28.60 | 43.30
2.38 | 31.23 | 46.29
2.65 | 33.90 | 48.95
29.1 | 36.70 | 51.70

56 44.7 | 28.56 | 55.62
46.8 | 28.35 | 58.50
49.4 | 81.15 | 1.10
51.7 | 33.90 | 3.80
53.8 | 36.60 | 6.52

31.29 | 11.63
46.17 | 13.32
1.11 | 16.05
16.03 | 18.60
31.11 | 21.55

55 23.98 | 5.71

56 49.28 | 56 1.142 | 40.23
3 20.91
20.89

−3 19.75
− 1.12
− 2.70
−3 23.57

37.57

+37.16 | −48.14

1.57008 | 1.68251m
1.55591m | 1.66834

45 0 | 40 3

1.4 +.01 | 38.8 +.46
6.2 +.07 | 43.7 +.30
26.2 −.16 | 1.9 +.18
18.6 +.36 | 56.7 +.02
13.80 28 | 96 54.35

45 13.10 | 43 50.28
− 35.97 | 46.60
44 37.13 | 44 36.88

11.22 | 11.47

+.247
0.22887
−1.69
− .37 | − .62
− .01 | − .27
− .07 | − .24
−2.14 | −2.82
9.08 | 8.65

886 +4 10.48
19.7 − .02
− 26.50
10.8 +3 43.96

5.28

Oct. 14

55 22.7 | 55 34.92 | 55 49.86
25.1 | 37.61 | 52.45
27.2 | 40.27 | 55.20
30.0 | 43.00 | 57.95
33.0 | 45.90 | 0.78

56 54.2 | 34.77 | 4.75
56.0 | 37.45 | 7.49
58.4 | 40.00 | 10.29
0.7 | 42.85 | 13.02
3.2 | 45.70 | 15.70

40.30 | 19.70
55.25 | 22.38
10.25 | 25.10
25.12 | 27.90
40.15 | 30.50

55 27.60 | 51.07

56 58.60 | 56 10.214 | 40.14
3 30.07
30.05

−3 28.96
− 1.11
− 2.61
−3 32.68

37.53

+42.61 | −48.29

1.62951 | 1.68386m
1.61534m | 1.66969

45 0 | 40 3

7.1 +.10 | 40.0 +.44
11.9 +.10 | 43.7 +.30
31.9 −.11 | 3.2 +.18
25.9 +.45 | 58.3 +.02
19.50 54 | 94 51.60

45 19.20 | 43 51.30
− 41.24 | 46.74
44 37.96 | 44 38.04

10.39 | 10.31

+.456
0.23096
−1.70
− .49 | − .63
− .22 | − .27
− .14 | − .24
−2.35 | −2.84
8.04 | 7.47

7.76 +4 11.68
20.1 − .02
− 26.90
12.3 +3 44.76

5.25

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1878phae.proj.1495

ε Cygni

21h 7m 45s

+29° 43′ 39″

+12 39 9

1878

Sept. 9

α 44.727

Corr. α −.057, −.067

dα/dt

δ 38.68″

Corr. δ −.79

dδ/dt

Sept. 14

log sin δ 9.69537

" cos δ 9.93871

" 15 constant 0.04378m / 478

sec δ 1.15

tan δ +.57

sin z +.22

Sept. 19

I 2.38

Sept. 23

	h	m	s	m	s	m	s														
	21	9	17.3	9	28.00	9	41.32	9	30.1	9	40.88	54.00	9	42.5	9	53.35	6.35	9	54.3	10	3.00	15.80
			19.3		30.50		43.60		31.9		43.40	56.43		44.6		53.70	8.70		56.2		5.23	18.10
			21.1		32.86		46.00		33.5		45.90	58.68		46.6		56.10	11.10		58.3		7.64	20.68
			23.6		35.28		48.38		35.4		48.00	1.00		48.9		0.50	13.50		0.3		9.82	23.05
			25.4		37.75		50.78		38.4		50.52	3.60		51.3		2.90	16.00		2.4		12.30	25.40
		10	28.3		20.53		54.20	10	49.5		33.36	7.15	10	54.9		45.51	19.43	11	8.9		33.20	28.90
			30.2		22.92		56.60		51.5		35.84	9.48		0.3		48.00	21.85		11.0		37.42	31.22
			32.1		25.20		59.00		53.6		38.00	12.00		2.1		50.43	24.25		13.0		39.78	33.63
			34.4		27.52		1.30		55.7		40.38	14.20		4.1		52.78	26.63		14.8		23.7	36.00
			36.7		30.00		3.80		57.9		42.70	16.68		6.4		55.24	29.05		17.2		45.2	38.51
					32.88		7.18				45.74	20.10				58.11	32.54				7.60	42.00
					46.02		9.72				58.74	22.50				11.13	35.00				20.61	44.37
					58.98		12.13				11.90	35.00				24.24	37.40				33.65	[46.7] 47.73
					12.11		14.62				24.96	27.40				37.32	39.68				46.81	49.27
					25.23		16.92				38.06	29.80				50.40	42.00				59.86	51.69
		9	21.34	29522				9	33.86	5940			9	46.78	12120				9	58.80	16853	
		10	32.34			9	57.044	10	53.64			10 11.880	11	2.16			10 24.240	11	12.98		10 33.706	
						7	48.242					7 48.198					48.14				48.093	
						+	130.80					+ 143.68					2 36.10				2 45.61	
						+	130.86					+ 143.74					2 36.16				2 45.67	
						+	130.87					+143.75					36.17				45.68	
						−2	10.12					−2 22.91					−2 35.42				−2 44.93	
						−	.77					− .80					− .78				− .74	
						−	3.51					− 3.47					− 3.41				− 3.37	
						−2	14.40					−2 27.18					−2 39.61				−2 49.04	
						m	s															
						7	44.64					44.70					44.63				44.67	
				s		s																
				+37.70		−33.30				+38.02		−41.76			+37.44		−37.92			+35.41		−39.27	
				1.57634		1.52244 m				1.58001		1.62076 m			1.57357		1.57887 m			1.54913		1.59406 m
				1.62007 m		1.56617				1.62374 m		1.66449			1.61835 m		1.62365			1.59391 m		1.63884
				112		722				479		554										
				40	3	40	1			40	3	40	1		40	3	40	1		40	3	40	1
Cyg				16.8	+.49	57.3	+.07			15.2	+.45	46.6	+.21		13.6	+.42	50.3	+.14		9.4	+.32	47.8	+.18
				21.6	+.23	2.6	+.30			19.8	+.25	51.3	+.42		18.2	+.27	54.8	+.37		15.5	+.28	53.8	+.39
				39.5	−.30	20.7	−.27			39.9	−.32	11.9	−.13		37.3	−.20	15.0	−.26		31.6	+.04	10.1	−.05
				34.4	+.32	15.1	+.48			30.6	+.34	[87] 30.7	+.32		30.8	+.84	7.8	+.49		26.8	+.34	3.9	+.42
				25.15	+.74		+.58	9.00		27.55	+.72		+.82		25.45	83		42.65		20.50	98	94	58.95
				43	28.08	42	8.92			43	26.38	41	57.62		43	24.98	42	1.98		43	20.82	41	58.90
					−41.69		36.83				−42.05		46.18			− 41.53		42.04			− 39.26		43.54
				42	46.39	−.10	45.75	+.09		42	44.33	−.10	42 43.80	+.12	42	43.45	42	44.02		42	41.56	42	48.44
	+29°	40′	1.96				2.60				4.02		4.55			40	4.90		4.33			6.79		4.91
					2.06		2.69				4.12		4.43										
	+12°	38′	37″												+12	38	33						
			1.1112													1.1120							
			−0.15							−.057						−.452				+.1234			
			1.1097							1.1055						0.1068				1.1234			
			−12.84							−12.75						−12.78				−13.29			
			− .32		− .26					− .34		− .41				− .33		− .34		− .30		− .34
			− .31		− .19					− .31	34	− .18	20			− .34		− .20		− .33		− .20
			− .18		− .14					− .18		− .20				− .21		− .18		− .24		− .24
			−13.68		−13.46					−13.58	61	−13.54	46			−13.66		−13.50		−14.16		−14.16
			39′	48.28		49.44				50.44		51.01				51.24		50.83		52.63		51.81	
					38		23				51		50.87										
			39′	48.74	80 +4	10.15				50.72	69 +4	9.90				51.04	+4	10.13		52.22	+4	10.07	
			43	59.45	−	.19				60.45		− .18			44	1.4	−	.17		2.1	−	.16	
					−	20.80					8	− 21.80					−	22.70			−	23.40	
			+4	10.7	+3	49.16			4	9.8	+3	47.92			4	10.4	+3	47.26		9.9	+3	46.51	
				9.9						9.0						9.6				9.1			
					43′	38.0						38.6						38.3		4.1		38.7	

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	α m s		δ ′ ″	
Aug. 28	7 48.31		43 56.8	11
Sept. 2	.29	2	57.9	11
7	.26	3	59.0	10
12	.22	4	60.0	10
17	48.17	5	61.0	9
22	.11	6	61.9	8
27	48.04	7	62.7	7
Oct. 2	47.96	8	63.4	6
7	47.88	8	64.0	

Sept. 25

80	9	53.0	10	6.40		19.57	10	4.8	10	13.20		26.20	10	5.1	10	17.57		80.53	
10		55.1		8.70		21.90		7.3		15.70		28.66		8.4		19.62		32.90	
66		57.6		11.28		24.36		9.1		18.05		31.00		10.9		22.17		35.20	
05		59.8		13.63		26.70		10.8		20.40		33.36		13.0		24.57		37.52	
40		2.6		16.00		29.13		13.6		22.80		36.05		14.9		27.00		40.05	
90	10	52.0		58.68		32.58	11	25.1		33.6		39.37	11	27.5		9.72		43.55	
22		54.2		1.10		35.10		27.2		8.00		41.82		8.02		12.17		45.98	
63		56.0		3.62		37.41		29.3		10.20		44.25		8.22		14.38		48.43	
00		58.2		6.00		39.82		31.3		12.68		46.47		8.43		16.80		50.74	
57		1.3		8.18		42.10		33.6		15.00		48.83		8.63		19.27		53.20	
00				11.20		45.70				18.03		52.50				22.17		56.66	
37				24.33		48.00				31.05		54.78				35.24		59.00	
73				87.40		50.30				44.15		57.35				48.38		1.80	
27				50.45		52.75				57.25		59.63				1.36		3.70	
9				3.52		55.31				10.29		2.00				14.47		6.14	
	9	57.64		18.90			10	9.12		22.77			10	10.46		24.62			
706	10	56.34			10	37.386	11	29.30			10	44.154	11	32.10			10	48.324	
093						48.06						48.02						47.988	
.61					2	49.32					2	56.13					3	0.34	
.67					2	49.38					2	56.19					3	0.40	
568						49.39						56.20						0.41	
93					−2	48.58					−2	55.46					−2	59.63	
74					−	.82					−	.80					−	.77	
37					−	3.33					−	3.29					−	3.26	
84					−2	52.73					−2	59.55					−3	3.66	
.67						44.65						44.60						44.66	
		+39.74		−18.96				+35.03		−45.15				+37.86		−43.78			
		1.59923		1.27784m				1.54444		1.65466m				1.57818		1.64128m			
		1.64401n		1.32262				1.58922n		1.69944				1.62296n		1.68606			
		40 3		40 2				40 3		40 1				40 3		40 1			
		16.0 +.47		11.0 +.27				9.3 +.32		41.9 +.29				12.0 +.38		42.0 +.29			
		20.4 +.25		15.2 +.33				15.0 +.29		48.2 +.43				17.2 +.27		46.9 +.42			
		89.8 −.31		34.3 −.08				30.6 +.06		3.6 +.14				34.2 −.02		4.2 +.14			
		33.1 +.33		28.0 +.47				25.4 +.34		58.9 +.30				29.1 +.34		59.2 +.30			
		27.90 74		99	22.65			19.95 101		116	52.75			23.10 97		115	53.10		
	43	27.32	42	22.12			43	20.08	41	53.15			43	23.12	41	53.08			
	−	44.06		21.02			−	38.83		50.05			−	41.97		48.54			
	42	43.26	42	43.14			42	41.25	42	43.20			42	41.15	42	41.62			
	40	5.09		5.21				7.10		5.15				7.20		6.73			
		−.288						+1.225						+.179					
		1.10832						1.12345						1.11299					
		−12.83						−13.29						−12.97					
		−.38		−.08				−.29		−.48				−.34		−.46			
		−.34		−.24				−.30		−.17				−.27		−.15			
		−.18		−.25				−.25		−.29				−.24		−.29			
		−13.72		−13.40				−14.13		−14.23				−13.82		−13.87			
		51.36		51.81				52.97		50.92				53.38		52.86			
		51.58	+4	10.70				51.94	+4	11.04				52.12	+4	10.58			
		2.84	−	.15				2.9	−	.15				3.15	−	.14			
			−	23.70					−	24.20					−	24.50			
	+4	10.8	+3	46.85				11.0	+3	46.69				11.0	+3	45.94			
		10.0						10.2						10.2					
			43	38.4						38.6						38.1			

Sept. 28

Sept. 30

Oct. 1

	10	11.0	10	19.50		32.35													
		13.1		21.81		34.82													
		15.9		24.00		37.11													
		18.1		26.45		39.51													
		18.9		28.84		41.91													
	11	15.3		11.66		43.39													
		17.4		13.95		47.90													
		19.3		16.30		50.23													
		21.6		18.74		52.55													
		23.5		21.00		55.00													
				24.12		58.48													
				37.14		00.90													
				50.21		03.25													
				3.25		5.60													
				16.34		8.00													
	10	15.60		25.106															
	11	19.42			10	50.212													
						47.97													
					3	2.24													
					3	2.30													
						2.31													
					−3	1.47													
					−	.81													
					−	3.24													
					−3	6.52													
						44.69													
				+34.61		−29.21													
				1.53920		1.46553m													
				1.58398n		1.51031													
				40 3		40 1													
				9.6 +.32		58.9 +.07													
				14.2 +.29		3.3 +.30													
				32.7 +.02		22.1 −.23													
				27.2 +.34		13.9 +.47													
				21.15 97		61	10.50												
	43	20.92	42	10.05															
	−	38.37		32.38															
	42	42.55	42	42.43															
		5.80		5.92															
		−.388																	
		1.10432																	
		−12.80																	
		−.28		−.20															
		−.26		−.18															
		−.24		−.15															
		−13.58		−13.33															
		52.22		52.59															
		52.40	+4	10.46															
		3.3	−	.14															
			−	24.60															
		10.9	+3	46.72															
		10.1																	
				38.1															

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	m s		′ ″	
Oct. 7	7 47.88		44 4.0	5
12	.80	8	4.5	
17	.71	9	4.9	4
22	.62	9	5.2	3
27	47.53	9	5.4	2
Nov. 1	.44	9	5.4	0
6	.35	9	5.4	0
11	.26	9	5.3	1
16	47.17	9	5.1	2

1878

Oct. 2 | Oct. 3 | Oct. 10 | Oct. 14

h	m s	m s	m s	m s	m s		m s	m s	m s	m s	m s	m s
21	10 11.1	10 20.58	10 33.67	10 18.1	10 23.00	36.10	10 30.5	10 37.40	10 50.40	10 41.5	10 46.60	10 57.65
	13.7	23.05	36.05	20.0	25.28	38.42	32.8	39.74	53.00	43.0	49.00	2.05
	15.9	25.42	38.47	22.2	27.78	40.66	35.4	42.25	55.26	45.3	51.35	4.40
	18.0	27.78	[40.88] 41.83	24.0	30.00	43.10	37.8	44.63	57.50	47.9	53.73	6.85
	20.0	30.10	43.25	26.0	32.36	45.52	40.0	46.95	59.92	50.6	56.20	9.20
	11 27.5	12.85	46.80	11 14.5	15.27	49.00	11 42.9	29.80	3.60	11 59.8	38.65	12.80
	29.7	15.33	49.00	16.7	17.63	57.50	44.5	32.00	6.00	1.5	41.20	15.00
	32.1	17.64	51.52	19.0	20.00	53.80	46.2	34.58	8.40	3.1	43.60	17.50
	34.3	20.00	53.90	21.2	22.37	56.10	48.3	36.80	10.78	5.2	45.95	19.80
	36.5	22.36	56.30	23.3	24.68	58.50	50.5	39.39	13.00	7.0	48.30	22.25
		25.39	59.92		27.68	2.18		42.19	16.70		51.38	25.75
		38.65	2.18		40.76	4.42		55.22	19.30		4.43	28.05
		51.50	4.53		53.78	6.85		8.36	21.59		17.47	30.55
		4.59	7.00		6.89	9.22		21.53	23.85		30.51	32.90
		17.64	9.30		19.99	11.77		34.50	26.20		43.54	35.30
	10 15.74	25.757		10 22.06	26.910		10 35.30	41.80		10 45.66	87.33	
	11 32.02		10 51.514	11 18.94		10 53.820	11 46.48		11 8.360	12 3.32		11 17.466
			7 47.956			47.94			47.83			47.76
			+3 3.56			3 5.88			3 20.53			3 29.71
			+3 3.62			3 5.94			3 20.59			3 29.77
			3.63			5.95			20.60			29.78
			−3 2.85			−3 5.08			−3 19.81			−3 29.00
			− .75			− .81			− .75			− .73
			− 3.23			− 3.21			− 3.10			− 3.03
			−3 6.83			−3 9.10			−3 23.66			−3 32.76
			m s 7 44.68			44.72			44.70			44.71

	Oct. 2		Oct. 3		Oct. 10		Oct. 14	
	s +35.77	s −40.51	+31.76	−25.12	+33.06	−38.12	+31.81	−45.85
	1.55354	1.60756n	1.50188	1.40002n	1.51930	1.58115n	1.50256	1.66134n
	1.59830n	1.65234	1.54666n	1.44480	1.56408n	1.62593	1.54734n	1.70612
	′ ′ 40 3	′ ′ 40 1	40 3	40 2	40 3	40 1	40 3	40 1
ε	″ 11.2 +.36	″ 46.0 +.22	6.6 +.25	2.9 +.09	6.0 +.23	46.2 +.22	6.2 +.24	39.4 +.34
δ	15.8 +.28	50.8 +.42	10.4 +.30	7.9 +.34	11.3 +.30	53.1 +.41	11.9 +.30	43.4 +.37
ζ	34.2 −.02	10.1 −.05	30.4 +.06	27.2 −.02	28.8 +.04	10.1 −.05	28.5 +.03	2.4 +.14
H	28.5 +.34	3.2 +.40	23.9 +.34	20.5 +.46	22.9 +.34	4.3 +.43	23.9 +.34	57.9 +.30
	22.70 ″ 96	′ 89 58.05	18.50 95	87 15.05	17.40 91	101 58.15	17.35 91	115 50.90
	43 22.42	41 57.52	43 17.82	42 14.62	43 17.25	41 58.42	43 17.62	41 50.78
	− 39.66	44.91	− 35.21	27.85	− 36.65	42.26	− 35.26	50.83
	42 42.76	42 42.43	42 42.61	42 42.47	42 40.60	42 40.68	42 42.36	42 41.61
+29	′ ″ 40 5.59	5.92	5.74	5.88	7.75	7.67	5.99	6.74

	Oct. 2		Oct. 3		Oct. 10		Oct. 14	
	−11.24		−7.66 (7.22)		+3.23		+4.73	
	1.09996		1.10388 54		1.11443		1.11593	
	−12.59	″	−12.69		−13.01		−13.06	
	− .31	− .39	− .24	− .15	− .26	− .34	− .24	− .50
	− .27	− .15	− .26	− .18	− .23	− .13	− .23	− .13
	− .24	− .25	− .24	− .22	− .23	− .25	− .23	− .29
	−13.41 ″	−13.38	−13.43	−13.24	−13.73	−13.73	−13.76	−13.98
	39 52.18	52.54	52.31	52.64	54.02	53.94	52.23	52.76
	39 52.36		52.48		53.98		52.50	
	1/4 3.4	′ ″ +4 10.88	3.55	+4 11.04	4.3	+4 10.48	4.7	+4 11.68
	″	− .14		− .14		− .13		− .13
+1′	11.0	− 24.70	11.1	− 24.90	10.3	− 25.60	12.2	− 26.00
	10.2	+3 46.04	10.3	+3 46.00	9.5	+3 44.75	11.4	+3 45.55
		′ ″ 43 38.4		38.5		38.7		38.1

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Oct. 15 | Oct. 16 | Oct. 29 | Nov. 6

Oct. 15				Oct. 16				Oct. 29				Nov. 6			
10 37.8	10 47.28	11 a.32		10 41.0	10 50.84	11 3.80		11 8.0	11 —		11 32.12	11 2.60	11 34.90	11 47.60	
48.0	49.65	2.60		43.4	53.30	6.10		10.2	23.83	21.45	34.30	28.8	37.20	50.17	
41.9	52.05	5.10		45.5	55.62	8.60		12.0	.78	23.78	36.73	30.3	39.48	52.40	
43.7	54.39	7.40		48.0	57.70	10.90		15.1	.62	26.00	39.29	32.7	41.82	54.82	
46.0	56.80	9.90		50.3	0.32	13.38		17.0	.64	28.40	41.55	35.3	44.18	57.30	
11 37.8	39.60	13.31		11 58.4	43.00	16.83		12 8.7		11.30	45.10	12 ~~34.4~~	20.80	0.95	
39.9	41.93	15.77		0.9	45.49	19.20		10.3		13.54	47.52	35.6	29.60	3.27	
42.4	44.30	18.20		3.0	47.70	21.70		12.3		16.00	49.98	38.0	31.70	5.56	
44.6	46.58	20.50		46	50.10	24.00		145		18.48	52.15	39.8	34.00	8.00	
46.1	49.10	22.90		6.8	52.59	26.50		16.3		20.75	54.60	41.6	36.53	10.35	
												43.3			
	52.03	26.50			55.60	30.00			23.72		58.30		39.52	14.00	
	5.06	28.80			8.56	32.40			36.80		0.55		42.46	16.37	
	18.14	31.20			21.65	34.70			~~40.87~~		2.88		5.63	18.70	
	31.21	33.55			34.75	37.10			2.95		5.30		18.72	21.02	
	44.30	36.00			47.78	39.57			16.01		7.70		31.77	23.53	
10 41.88	9.074			10 45.64	10.824			11 12.46	2.4935			11 30.62	2.810		
11 42.16		11 18.148		12 2.74		11 21.668		12 12.42			11 49.870	12 39.66		12 5.620	
		47.74				47.724					47.49			47.35	
		3 30.41				3 33.94					4 2.38			4 18.27	
		3 30.47				3 34.00					4 2.44			4 18.33	
		30.48				34.01					2.45			18.34	
	cccs	+ 1.45													
		−3 31.18				−3 33.26					−4 1.72			−4 17.64	
		— .75				— .72					— .69			— .66	
		— 3.01				— 3.00					— 2.76			— 2.62	
		−3 ~~34.24~~				−3 36.98					−4 5.17			−4 20.92	
		83.49													
		44.66				44.69					44.70			44.70	
	+3627	−2401			+3603	−4107			+3741	−2255			+3500	−3404	
	1.55953	1.38039$_m$			1.55666	1.61352$_m$			1.57299	1.35315$_m$			1.54407	1.53199$_m$	
	1.60433$_m$	1.42517			1.60144$_m$	1.65830			1.61777$_m$	1.39793			1.58885$_m$	1.57677	
	40 3	40 2			40 3	40 1			40 3	40 2			40 3	40 1	
	11.1 +.35	4.8 +.13			9.6 +.32	43.3 +.27			10.2 +.33	4.6 +.12			11.8 +.37	55.2 +.09	
	16.2 +.28	9.6 +.34			14.1 +.29	48.8 +.43			15.6 +.28	10.2 +.34			16.8 +.27	59.6 +.30	
	33.9 −.01	27.2 −.02			33.1 +.01	7.9 +.05			31.0 +.06	25.8 −.06			25.6 −.04	9.7 −.04	
	29.5 +.34	22.9 +.47			26.9 +.34	2.7 +.38			27.4 +.34	21.8 +.46			23.0 +.34	6.6 +.48	
	22.50 96	92	16.00		21.35 96	113	56.10		20.60 101	86	15.20		18.70 92	83	2.45
	43 22.68	42 16.12			43 20.92	41 55.68			43 21.05	42 15.60			43 19.30	42 2.78	
	— 40.21	26.62			— 39.94	45.53			— 41.47	25.00			— 38.80	37.71	
	42 42.47	42 42.74			42 40.98	42 41.21			42 39.58	42 40.60			42 40.50	42 40.52	
	40 5.88	561			737	714			877	775			785	783	
	−443				−556				+1212				+1562		
	1.10647				1.10544				1.12332				1.12682		
	−12.99				−12.75				−13.28				−13.39		
	— .31	— .14			— .31	— .40			— .33	— .12			— .29	— .27	
	— .24	— .16			— .26	— .16			— .33	— .23			— .40	— .24	
	— .24	— .23			— .24	— .28			— .25	— .22			— .28	— .21	
	−13.58	−13.32			−13.56	−13.58			−14.19	−13.85			−14.31	−14.11	
	5230	5729			5381	53.56			5958	53.90			39 53.54	53.72	
	~~51.80~~ 5230				5368				5724				39 53.63		
	4.8	+4 11.56			4.8	+4 10.96			5.4	+4 10.54			44 5.7	+4 11.29	
		— .13				— .13				— .15				— .17	
	+4 12.5	— 26.10			11.2	— 26.20			11.2	— 26.70			4 11.8	— 26.70	
	11.7	+3 45.33			10.4	+3 44.68			10.4	+3 43.69			11.0	+3 44.82	
		43 37.6				38.3				37.9				38.1	

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τ Cygni

$21^h\ 9^m\ 55^s$

$+37^\circ\ 31'\ 30''$

$+4\ \ 51\ \ 18$

1878

α_0 $55^s.286$

corr. $d\alpha$ $-.003$ $+.029$

$\frac{d\alpha}{dt}$

δ_0 $30''.15$

corr. $d\delta$ $+.74$

$\frac{d\delta}{dt}$

$\log a \sin\delta$ 9.78470

$a\cos\delta$ 9.89932

$a\cos\delta\tan i$ 0.00 ~~434~~ 539

$a\sin\delta$ 1.26

$\tan\delta$ +.77

$\sin i$ +.09

$\log R_1$ 1.45673

$\log R_2$ 1.15606

R_1 28.62

R_2 14.32

I 2.61

Sept. 9 | Sept. 14 | Sept. 19 | Sept. 23

h	m	s	m	s	m	s																	
21	11	31.4	11	36.17		50.40	12	9.7	12	—		3.00	12	31.5	12	—	12	—	12	10	12	1060		2485
		34.0		38.70		53.00		12.4		—		5.70		33.9		—	20.71	1810		3.3		1330		2747
		37.0		41.32		55.60		14.6	53.96	53.96		8.40		36.4		—	.70	20.70		1.4		1373		3000
		39.5		43.80		58.33		16.7	54.01	56.62		10.90		38.4		—	.73	2334		7.5		1850		3264
		42.0		46.48		0.60		19.2	53.95	59.17		13.43		40.6		—	.78	2600		9.6		2100		3548
	12	49.8		33.28		4.56	13	18.9		46.00		17.43	13	18.2		35.41		2988	13	24.7		783		3933
		52.0		35.86		7.27				48.62		20.00		20.3		1.05		3252		26.8		1035		4193
		54.1		38.40		10.00				51.22		22.63		22.5		3.50		3510		28.8		1310		4450
		56.0		41.00		12.50				53.87		25.30		25.0		6.24		3770		30.8		1563		4710
		58.8		43.73		15.12				56.50		27.82		27.2		8.90		4026		33.6		1827		4964
				41.29		19.20				53.97		31.60				—		4410				15.83		5361
				55.59		21.60				8.29		34.20				20.73	35.05	4672				30.11		5605
				9.89		24.20				22.64		36.90				35.09	.09	4941				44.50		5870
				24.22		26.72				36.87		39.52				49.36	.04	5200				58.72		1.33
				38.46		29.37				51.24		42.15				3.62	.00	5457				13.08		3.90
	11	36.78		49.45			12	14.52		11.301			12	36.16					12	5.36		22.224		
	12	54.14			12	9.890	13	18.90			12	22.602	13	22.64			12	35.045	13	28.94			12	44.448
					9	58.708					9	58.663						58.588						58.53
						+131.19						+143.95					2	36.46					2	45.92
						+131.15						+143.92						36.43						45.89
					−2	10.13					−2	22.91					−2	35.43					−2	44.94
					−	1.04					−	1.07					−	1.06					−	1.00
					−	3.42					−	3.87					−	3.30					−	3.24
					−2	14.59					−2	27.35					−2	39.79					−2	49.18
					m	s																		
					9	55.30						55.25						55.25						55.27
	+	33.11	−	44.25			+	8.08	−	56.30			−	1.12	−	47.60			+	39.09	−	44.49		
	1.51996		1.64591				0.90741		1.75051				0.04922		1.67761				1.59207		1.64826		
	1.52430		1.65025				0.91175		1.75485				0.05461		1.68300				1.59746		1.65365		
	535		130				280		590															
	55	0	50	4			[58] 55	4	50	3			50	4	50	3			55	0	50	4		
	"		"				"		"				"		"				"		"			
6	21.7	+.45	3.3	+.21			57.5	00	51.6	+.23			48.8	+.18	58.5	+.20			25.5	+.48	0.6	+.20		
1	26.1	+.04	6.7	+.19			59.9	03	54.0	+.28			49.1	+.19	1.7	+.12			31.1	+.03	5.8	+.20		
9	47.1	−.68	26.3	−.05			20.9	−.35	15.9	−.30			10.5	−.17	22.2	−.21			50.5	−.64	23.1	−.18		
4	40.8	+.51	21.7	+.20			13.2	+.20	8.7	+.22			3.6	+.17	15.8	+.21			44.1	+.51	18.6	+21		
	34.40	+.32		+.55	14.80		9.20	−.15		+.46	3.75		58.15	.31		.34	10.35		38.00	.38		.43	11.85	
	55	33.92	54	14.50			55 [59]	7.88	54	2.55			54	57.25	54	9.65			55	37.80	54	12.02		
		−33.44		44.69				−8.16		56.87				1.13		48.20				−39.58		45.05		
	55	0.48	54	59.19	+.11		54	59.72	−.02	59.42	+.13		54	58.38	54	57.75			54	58.22	54	57.07		
	+37°	27'	47".87		49".16			48.63		48.93				49.97		50.60				50.18		51.28		
			47.95		49.05			48.65		48.80														
	+ 4°	50'	50									+4	50	48										
	0.6887												0.68870											
	− 015							−057					− 450							+1238				
	0.6872							0.6830					0.68420							0.70108				
		−4.87		"				−4.82						−4.83						−5.02				
		− .20		− .51				− .02		− .83				− .80		− .59				− .40		− .52		
		− .05		− .38				− .4651		− .3640				− .19		− .42				− .06		− .42		
		− .08		− .14				+ .04		− .12				− .08		− .08				− .10		− .11		
		−5.29		−5.90				−5.263		−6.137				−5.43		−5.92				−5.68		−6.07		
	27	42.88 66		43.26 15				43.37 4		42.80 63				44.57		44.68				44.55		45.21		
	27	42.92	+4	10.15				43.98	+4	9.90				44.62	+4	10.13				44.88	+4	10.07		
	31	51.8	−	.08				53.0	−	.08				54.0	−	.07				54.8	−	.06		
			−	21.60					−	22.80					−	23.80					−	24.69		
	+ 4	8.9	+3	48.47			4	9.9	+3	47.02				9.4	+3	46.26				9.9	+3	45.41		
		9.6						10.7						10.1						10.6				
				31' 31".4						30.0						30.9						30.3		

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	α m s		δ ′ ″	
Aug. 28	9 58.79	2	31 48.8	13
Sept. 2	.77	4	50.1	12
7	.73	5	51.3	12
12	.68	6	52.5	11
17	58.62	7	53.6	10
22	.55	8	54.6	9
27	.47	8	55.5	8
Oct. 2	.39	9	56.3	8
7	58.30		57.1	

Sept. 28

12	10.2	12	21.00			3536	12	14.3	12	25.31			39.66	12	20.2	12	27.00			41.28	12	17.8	12	28.35			42.53
	12.7		23.63			3820		17.2		27.89			42.24		23.1		29.80			44.00		21.2		31.00			45.37
	16.6		26.30			4060		19.0		30.50			44.85		25.7		32.32			46.60		23.6		33.60			48.05
	17.0		29.00			4332		20.8		33.10			47.35		28.0		34.80			49.30		25.8		36.23			50.56
	21.4		31.63			4585		23.4		35.75			50.00		30.2		37.50			51.80		27.2		38.95			53.20
13	3.6		18.54			4772	13	13.8		22.60			53.98	13	34.3		24.35			53.78	13	13.3		25.83			57.05
	8.3		21.00			5230		15.4		25.00			56.60		36.5		26.85			58.42		16.0		28.33			59.70
	9.3		23.52			5305		17.7		27.70			59.20		38.3		29.60			0.88		18.2		30.78			2.10
	41.2		26.15			5768		20.0		30.33			1.75		40.4		32.13			3.53		20.7		33.56			4.84
	43.3		28.76			020		22.9		32.99			4.30		42.5		34.70			6.02		23.0		36.86			7.55
			26.31			4.10				30.51			8.00				32.32			10.12				33.63			11.46
			40.71			6.67				44.82			10.90				46.60			12.70				47.94			14.00
			54.99			9.38				59.17			13.30				0.93			15.20				2.25			16.60
			9.32			11.80				13.39			15.90				15.26			17.80				16.63			19.25
			23.59			14.56				27.72			18.67				29.53			20.48				30.94			21.82
12	15.98		27492				12	18.94		29561				12	25.44		464				12	23.12		1139			
13	38.94			12	57.984		13	17.96			12	59.122		13	38.40			13	0.928		13	18.24			13	2.278	
					58.45							58.42							58.40							58.386	
				2	56.53						3	0.70						3	2.53						3	3.89	
					5650							0.67							2.50							3.86	
				−2	55.46						−2	59.63						−3	1.47						−3	2.85	
				−	1.08						−	1.04						−	1.10						−	1.02	
				−	3.16						−	3.13						−	3.11						−	3.10	
				−2	59.70						−3	3.80						−3	5.68						−3	6.97	
					55.28							55.32							55.25							55.31	
	+39.00		−43.96					+40.18 −11.18		−18.84					+35.19		−37.47					+39.16		−15.96			
	1.59106		1.64306m					1.60401		1.27508m					1.55011		1.57368m					1.59284		1.20308m			
	1.59645n		1.64845					1.60940n		1.28047					1.55550n		1.57907					1.59823n		1.20842			
	55 0		50 4					55 0		50 4					55 0		50 4					55 0		50 4			
	25.1 +.48		1.9 +.20					25.0 +.48		26.8 +.54					21.0 +.44		7.2 +.26					25.1 +.48		29.9 +.57			
	30.7 +.03		6.1 +.20					29.9 +.03		30.8 +.02					24.4 +.05		10.1 +.19					29.0 +.23		33.3 +.01			
	48.9 −.67		24.3 −.13					50.4 −.64		49.7 −.59					45.5 −.65		30.2 +.02					51.2 −.62		55.0 −.33			
	43.9 +.51		19.5 +.21					45.2 +.51		44.9 +.10					39.8 +.51		26.2 +.22					44.2 +.51		49.0 +.05			
	37.00 35		48 13.10					37.70 38		07 38.25					33.25 35		49 18.70					38.15 40		24 42.45			
55	37.15	54	12.95				55	37.62	54	38.05				55	32.68	54	18.42				55	37.38	54	41.80			
−	39.49		44.51				−	40.68		19.08				−	35.93		37.94				−	39.65		16.16			
54	57.66	54	57.46				54	56.94	54	57.13				54	56.75	54	56.36				54	57.73	54	57.96			
	27 50.69		50.89					51.41		51.22					50.60		51.99					50.62		50.39			
	+1231							+1821							−395							−1121					
	0.70101							0.69052							0.68475							0.67749					
	−5.02							−4.90							−4.84							−4.76					
	− .40		− .50					− .43		− .09					− .33		− .37					− .40		− .07			
	− .05		− .38					− .05		− .34					− .04		− .34					− .05		− .38			
	− .09		− .12					− .10		− .02					− .09		− .12					− .10		− .06			
	−5.56		−6.02					−5.48		−5.38					−5.30		−5.67					−5.31		−5.27			
	45.13		44.87					45.93		45.84					46.30		46.32					45.31		45.12			
	4500	+4	11.04					4588	+4	10.58					4631	+4	10.46					4522	+4	10.88			
	55.7	−	.06					56.0	−	.06					56.2	−	.06					56.3	−	.06			
		−	25.50						−	25.80						−	26.00						−	26.10			
+	4 10.7	+3	45.48					10.1	+3	44.72					9.9	+3	44.40					11.1	+3	44.72			
	11.4							10.8							10.6							11.8					
			31 30.5							30.6							30.7							29.9			

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	α		δ	
Oct. 7	9m 58.30s		31′ 57.1″	
12	.21	7	57.8	7
17	.11	10	58.3	5
22	58.01	10	58.7	4
27	57.90	11	59.0	3
Nov. 1	.79	11	59.2	2
6	.69	10	59.3	1
11	.59	10	59.3	-0-
16	57.49	10	59.1	2

1878

Oct. 3 | Oct. 10 | Oct. 14 | Oct. 15

h 21

Oct. 3			Oct. 10			Oct. 14			Oct. 15		
12m 21.4s	12m 21.00s	12m 45.15s	12 53.5	12 45.00	12 59.50	12 48.3	12 54.27	13 8.60	12 45.1	12 54.80	13 9.18
24.2	23.45	47.73	55.0	47.82	2.10	49.9	56.90	11.20	47.4	57.48	11.75
27.2	26.00	50.28	58.3	50.50	4.71	52.0	59.60	13.75	49.7	0.10	14.30
29.6	38.63	52.90	0.5	53.00	7.55	55.4	2.10	16.50	52.0	2.70	17.00
31.5	41.28	55.60	3.8	55.40	10.30	57.7	4.60	19.00	54.2	5.30	19.60
13 36.8	28.05	59.43	13 56.5	42.50	13.80		51.50	22.75	14 10.5	52.15	23.45
39.0	30.63	2.10	58.4	45.00	16.45		54.10	25.45	12.3	54.80	26.18
41.1	33.33	4.57	1.1	47.65	19.00		56.85	28.10	14.2	59.40	28.72
43.2	36.00	7.30	3.2	50.30	21.70		59.33	30.84	16.3	0.05	31.28
45.3	38.58	10.00	4.7	52.95	24.32		2.00	33.36	19.4	2.65	34.00
	36.07	13.70		50.34	28.05		59.49	37.30		0.08	37.90
	50.33	16.33		4.83	30.56		13.81	39.70		14.37	40.45
	4.68	18.82		19.05	33.44		28.10	42.45		28.73	43.00
	18.92	21.55		33.32	35.95		42.45	45.18		43.01	45.50
	33.32	24.20		47.68	38.60		56.76	47.62		57.41	48.20
12 26.78	2.332		12 58.22	9.522		12 52.66	14.061		12 49.68	14.360	
13 41.08		13 46.64	14 0.78		13 19.044			13 28.122	14 14.54		13 28.720
		9 58.37			58.24			58.165			58.14
		+3 6.29			3 20.80			3 29.96			3 30.58
		6.26			20.77			29.93			30.55
										calc δ	+ 1.59
		−3 5.09			−3 19.82			−3 29.01			−3 31.18
		− 1.10			− 1.01			− .99			− 1.02
		− 3.08			− 2.95			− 2.88			− 2.85
		−3 9.27			−3 23.78			−3 32.88			−3 ~~35.05~~ 33.46
		9m 55.39s			55.26			55.24			55.26

Oct. 3		Oct. 10		Oct. 14		Oct. 15	
+ 37.88s	− 36.42s	+ 20.82	− 41.74	+ 35.46	~~24.54~~	+ 39.04	− 45.82
1.57841	1.56134n	1.30848	1.62055n	1.54974		1.59151	1.66106n
1.58380n	1.56673	1.31387n	1.62594	1.55513n		1.59690n	1.66645
55′ 0′	50′ 4′	55 0	50 4	55 0		55 0	50 3
23.8″ +.47	8.5″ +.29	4.7 +.05	1.7 +.20	19.1 +.40		23.2 +.46	57.4 +.20
27.1 +.04	11.8 +.19	10.1 +.09	6.1 +.20	24.3 +.05		28.1 +.03	0.7 +.16
49.9 −.65	34.1 −.08	29.1 −.09	24.9 −.10	44.3 −.63		48.9 −.67	21.2 −.24
42.3 +.51	27.4 +.22	23.2 +.41	21.1 +.21	38.5 +.52		43.1 +.51	15.5 +.22
36.85 37	.62 21.30	16.90 46	51 13.30	31.70 34		36.05 33	34 4.30
55 35.78	54 20.45	55 16.78	54 13.45	55 31.55		55 35.82	54 8.70
− 38.35	36.88	− ~~20.60~~ 20.98	42.26	− 35.90		− 39.53	46.39
54 57.43	54 57.33	54 ~~56.18~~ 55.70	54 55.71	54 55.65		54 56.29	54 55.09
+37° 27′ 50.92″	51.02″	~~52.17~~ 52.65	52.64	52.70		52.06	53.26

Left margin labels: E, F, G, H

Oct. 3		Oct. 10		Oct. 14		Oct. 15	
− 72.8		+ 33.2		+ 47.5		− 44.0	
0.68142		0.69202		0.69345		0.68430	
− 4.80	″	− 4.92		− 4.94		− 4.84 (4.83)	
− .38	− .35	− .12	− .46	− .33		− .40	− .56
− .05	− .34	− .02	− .29	− .03		− .04	− .29
− .09	− .16	− .12	− .13	− .08		− .08	− .08
− 5.32	− 5.65	− 5.18	− 5.80	− 5.38		− 5.35	− 5.76
27 45.60	45.37	47.47	46.84			46.71	47.50
27 45.48		47.16		47.32		47.10	
31 56.5	+4′ 11.04″	57.5	+4 10.48	58.0	+4 11.68	58.1	+4 11.56
	− .06		− .05		− .05		− .05
+4′ 11.0″	− 26.30	10.3	− 27.30	10.7	− 27.80	11.0	− 27.90
11.7	+3 44.68	11.0	+3 43.13	11.4	+3 43.83	11.7	+3 43.61
	31′ 30.2		30.3		31.2		30.7

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For Nov. 6
v. under β Aquilæ
24 pages back.

Oct. 21

12 57.7
1.2
6.5

13 9.54
12.13
14.68
17.30
19.88
6.85
9.24
11.80
14.55
17.23
14.71
29.03
43.30
57.75
11.93

13 23.80
26.45
28.95
31.69
34.28
38.10
40.64
43.35
45.90
48.50
52.60
55.18
57.70
0.29
3.00

13 1.80 21.672

13 43.344
58.025
3 45.32
45.29
−3 44.45
− .90
− 2.74
−3 48.09
55.25

Oct. 22

12 0.1
4.8
3.9
7.5
10.1

13 12.00
14.35
17.00
19.60
22.38
9.80
11.61
14.30
17.10
19.60
17.07
31.36
45.63
59.92
14.32

13 4.74 22.830

13 26.30
28.75
31.39
33.85
36.50
40.45
43.00
45.60
48.28
50.80
54.70
57.27
59.89
2.56
5.20

13 45.660
58.004
3 47.66
47.63
−3 46.62
− .99
− 2.72
−3 50.33
55.33

Oct. 29

13 17.9
20.3
22.4
25.3
28.2

13 26.80
29.40
32.05
34.40
37.10
39.94
26.38
29.01
31.70
34.38
31.95
46.12
0.49
14.78
29.68

13 40.90
43.45
46.05
48.80
51.40
55.30
57.87
0.55
3.80
5.75
9.50
12.20
14.80
17.40
20.00

14 43.3
45.4
47.6
50.5
52.2

13 22.82 242

14 47.80

14 0.484
5.785
4 2.63
2.60
−4 1.72
− .93
− 2.56
−4 5.21
55.27

Nov. 5

13 4.6
4.8
5.1
5.3
5.6

13 —
45.99 43.38
46.05 46.05
.01 48.62
.16 51.38
43.12 3.90
—
.24 48.24
.31 45.92
.28 48.50
46.05
0.18
14.54
28.81
43.24

13 51.30 7282

14 52.47
06

14 47.7
49.9
51.6
54.2
56.9

13 5.00
5.45
0.07
2.70
5.40
9.33
12.00
14.45
17.20
19.70
23.50
26.20
28.87
31.50
34.00

14 14.564
57.705
4 16.86
16.83
−4 16.01
− .84
− 2.42
−4 19.27
55.29

+41.54
1.61847
1.62386n
55 0
24.9 +.48
29.1 +.03
49.2 −.66
48.1 +.51
37.05 36
55 36.58
− 42.06
54 54.52
27 53.83
− 3.18
0.685562
− 4.85
− .46
− .05
− .09
− 5.45
4838
586
+4 11.35
− .06
+4 10.2 − 28.40
10.9 +3 42.89
31 31.3

+40.92
1.61194
1.61733n
55 0
21.4 +.44
27.3 +.04
46.7 −.67
40.6 +.51
34.05 32
55 34.00
− 41.43
54 52.57
53.78
+1.04
0.692774
− 4.93
− .45
− .05
− .08
− 5.51
50.27
587
+4 10.52
− .06
8.4 − 28.58
9.1 +3 41.96
32.2

+37.66 −47.32
1.57588 1.67504n
1.58127n 1.68043
55 0 50 3
19.9 +.42 55.3 +.21
25.4 +.04 0.0 +.16
43.6 −.61 17.0 −.29
37.8 +.52 13.3 +.23
31.75 37 31 6.15
55 31.68 54 6.40
− 38.13 47.91
54 53.55 54.31
54.80 54.04
+12.15
0.700085
− 5.02
− .37 − .59
− .05 − .41
− .19 − .08
− 5.53 − 6.10
49.27 47.94
1860
59.1 +4 10.54
− .06
10.5 − 28.90
11.2 +3 41.58
30.2

+23.26 −37.80
1.36661 1.57403n
1.37200n 1.57942
55 0 50 4
12.4 +.24 9.5 +.31
16.2 +.09 12.1 +.19
26.5 −.15 22.9 −.19
24.7 +.48 21.4 +.21
19.45 61 32 16.20
55 19.95 54 16.48
− 23.55 37.97
54 56.40 54 54.45
51.95 53.90
+18.56
0.670726
− 5.10
− .14 − .37
− .04 − .52
− .15 − .13
− 5.43 − 6.12
27 46.52 47.78
27 47.15
31 59.3 +4 12.07
− .67
4 12.2 − 29.10
12.9 +3 42.90
30.1

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β Cephei

$21^h\ 27^m\ 5^s$
$+70°\ 1'\ 30''$
$-27\ \ 38\ 42$
1878

α_0	4.763^s	log sin δ	9.97306
corr. α	+ .062 / + .087	" cos δ	9.53353
$\frac{d\alpha}{dt}$		" 15 cos δ tan i	9.63855 / 960
δ_0	$29.88''$	sec δ	2.93
corr. δ	+1.31	tan δ	+2.751
$\frac{d\delta}{dt}$		sin z	−.46

log $\frac{R_1}{R_2}$	1.52185
R_1	33.25
R_2	6.04
I	
½ I	3.02

Sept. 9

21 27 48.5	27 36.2	10.1	
53.9	39.8	12.8	
0.2	42.7	16.0	
6.1	45.5	19.2	
11.1	48.4	22.2	
	51.6	25.0	
29 35.5	54.9	27.9	
43.5	57.6	30.9	
47.0	4373 0.6	1981 34.0	
52.7			
58.9	48.59	43.0	
	22.01	46.1	
	55.28	49.0	
		52.0	
	6588	55.3	
		58.4	
		1.6	
		4.5	
27 59.96		4975 7.6	
29 47.52		29 21.960	
		27 7.927	
		+134.03	
		+133.97	
		+133.94	
		−2 10.17	
		− 3.72	
		− 3.16	
		−2 17.05	
		27 4.91	

Sept. 19

28 20.3	29 1.7	34.9
25.6	4.7	38.0
28.2	7.6	41.0
35.5	10.5	44.0
45.0	13.4	47.0
	16.6	50.0
29 54.7	20.0	53.0
2.5	23.0	55.6
7.1	1233 25.8	4226 59.1
12.0		
15.8	13.70	7.8
	46.96	11.3
	20.37	13.9
		17.2
	14104	20.3
		23.6
		26.6
		29.9
28 30.98		1833 32.7
30 6.42		29 47.018
		27 7.590
		+2 39.42
		+2 39.36
		39.33
		−2 35.46
		− 3.78
		− 2.83
		−2 42.07
		4.94

Sept. 23

29 42.1	29 10.4	44.1
54.8	13.9	46.9
58.8	17.0	48.9
3.8	19.6	53.5
10.8	22.7	56.1
	25.7	59.5
30 48.6	29.0	2.5
51.8	31.7	4.9
57.7	2048 34.8	5458 8.4
3.0		
7.8	22.76	17.1
	56.20	20.0
	29.22	23.0
		26.1
	16818	29.6
		32.4
		35.3
		38.3
29 59.46		2630 41.2
30 57.78		29 56.060
		7.44
		2 48.62
		2 48.56
		48.53
		−2 44.98
		− 3.56
		− 2.68
		−2 51.22
		4.84

Sept. 25

28 58.6	29 15.3	48.2
7.0	18.2	51.2
15.8	20.8	54.4
	23.7	57.2
	26.9	0.3
	29.9	3.3
	33.1	6.0
	36.2	9.3
	2435 39.4	19 12.0
	27.06 0.31	—
	0.21 .21	—
	—	—
29 7.13		—
		30 0.260
		7.36
		2 52.90
		2 52.84
		52.81
		−2 48.66
		− 3.98
		− 2.60
		−2 55.24
		5.02

Reductions

	Sept. 9		Sept. 19		Sept. 23		Sept. 25	
	+82.00	−25.56	+76.03	−19.41	−3.40	−61.72	+113.13	
	1.91381	1.40756n	1.88098	1.28803n	0.53148n	1.79043n	2.05358	1.72534
	1.55236n	1.04611	1.52058n	0.92763	0.17108n	1.43003	1.69318n	1.36498n
	,341	,716						
	25 1	25 0	25 0	25 0	25 0	20 4	25 0	
E	1.8 +.14	15.3 +.32	55.8 +.13	14.2 +.29	20.9 +.44	55.3 +.02	45.4 +.28	
F	2.3 +.18	16.1 +.09	56.1 +.24	14.8 +.09	22.4 +.06	56.4 +.08	44.9 +.27	
h	22.8 −.29	35.7 −.26	17.1 −.42	35.7 −.26	40.9 −.52	13.6 −.31	6.0 −.04	
H	17.2 +.68	33.3 +.51	11.1 +.72	31.2 +.50	36.6 +.52	11.3 +.20	1.1 +.59	
	12.30 +.71	+.66 25.50	6.45 .67	.62 24.95	30.90 .50	— 14.45	55.70 .107	
	26 11.02	25 25.10	26 5.02	25 23.98	25 30.20	25 4.15	25 54.35	
	− 35.68	11.12	− 33.16	8.46	1.48	26.92	− 49.34	23.17
	25 35.34 −.08	36.22 +.03	25 31.86	25 32.44	25 31.68	25 31.07	25 5.01 / 33.18	
+69°	57 13.01 / 13.09	12.13 / 12.10	16.49	15.91	16.67	17.28	16.17	
−27°	38 34		−27 38 38					
	1.4793		1.47930					
	− 013		− 424		+1283		−250	
	1.4780		1.47506		1.49213		1.47680	
	+30.06		+29.86		+31.05		+29.98	
	− 1.18	− .11	− .01	− .06	− .00	− .66	− .49	
	− .11	− .04	− .11	− .04	− .05	− .41 .51	− .09	
	− .18	− .16	− .14	− .16	− .12	.00	− .27	
	+28.59	+29.75	+28.57	+29.60	+30.88	+29.88	+29.13	
	57 41.60	41.88	45.06	45.51	47.55	47.16		
	57 41.76	+4 10.15	45.28	+4 10.13	47.36	+4 10.07	46.30	+4 10.70
	1 50.76	+ .40	54.0	+ .35	54.15	+ .33	55.1	+ .32
		− 20.90		− 24.10		− 25.30		− 25.80
	+4 9.0	+3 49.65	8.7	+3 46.38	7.8	+3 45.10	9.4	+3 45.22
	10.3		10.0		9.1		10.7	
		1' 31.4		31.7		32.5		31.5

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Sept. 7	27^m	7.99^s		1′ 50.0″	
12		7.85	14	51.7	17
17		7.68	17	53.3	16
22		7.49	19	54.8	15
27		7.29	20	56.2	14
Oct. 2		7.06	23	57.5	13
7		6.82	24	58.8	13
12		6.57	25	60.0	12
17		6.30	27	61.0	10

Sept. 28

28 541, 1.0, 3.8, 12.7, 20.0

29 21.9, 24.6, 28.0, 30.6, 33.7, 36.6, 39.9, 42.9, 45.9 — 3041

55.0, 57.8, 1.0, 3.7, 7.1, 10.0, 12.6, 15.9, 19.3 — 624

33.79 7.04
6.93 6.93

29 6.82

30 6.985
7.233
2 59.75
2 59.69
59.66

−2 55.81 (5)
− 3.87
− 2.47
−3 1.85
5.13

Sept. 30

28 32.0, 37.5, 44.0, 50.6, 54.7

30 2.8, 6.8, 13.3, 18.0, 22.9

29 25.6, 28.2, 31.4, 34.1, 37.4, 40.3, 43.4, 46.2, 49.3 — 3359

37.32
10.63
43.89
3184

59.0, 1.7, 4.4, 7.8, 10.6, 13.7, 16.6, 19.5, 22.4 — 957
32.0, 34.9, 37.8, 40.8, 44.0, 47.0, 49.7, 52.9, 55.9 — 3950

28 43.76
30 12.76

30 10.613
7.14
3 3.47
3 3.41
3.38

−2 59.66
− 3.71
− 2.38
−3 5.75
4.86

Oct. 1

28 40.7, 46.6, 52.9, 57.5, 4.3

30 22.3, 29.1, 35.5, 40.8, 46.1

29 27.2, 29.9, 33.0, 35.5, 38.7, 42.2, 45.3, 48.5, 51.4 — 3517

39.08
12.47
45.63 (74)
37.78 (29)

30 0.3, 3.5, 6.4, 9.5, 12.5, 15.3, 18.4, 21.8, 24.5 — 1122
33.8, 36.8, 39.7, 42.9, 45.7, 48.7, 51.6, 54.7, 57.8 — 4117

28 52.40
30 34.76

30 12.398 (430)
7.09
3 5.34
3 5.28
5.25

−3 1.48
− 3.92
− 2.33
−3 7.73
4.70

Oct. 2

29 56.6, 0.7, 6.4, 12.7, 17.6

31 11.1, 16.0, 21.5, 25.2, 30.2

29 28.6, 31.4, 34.3, 37.5, 40.4, 43.5, 46.6, 49.7, 52.8 — 3648

40.53
14.789 (3)
47.03
41.34 (5)

30 1.7, 4.7, 7.5, 10.8, 13.8, 16.9, 19.9, 22.8, 26.0 — 1241
34.8, 37.9, 41.0, 44.1, 47.1, 50.1, 53.0, 56.0, 59.3 — 4233

30 6.80
31 20.80

30 13.784
7.05 (3)
3 6.73
3 6.67
6.64

−3 2.88
− 3.63
− 2.29
−3 8.81
4.98

Sept. 28		Sept. 30		Oct. 1		Oct. 2	
+6066		+8685	−215	+8003	−2233	+6.98	−67.02
1.78290		1.93877	0.33244n	1.90325	1.34889n	0.84386	1.82620n
1.42250n		1.57837n	9.97204	1.54285n	0.98849	0.48346n	1.46580
25 0		25 0	25 0	25 0	25 0	25 0	20 4
47.9 +.21		58.4 +.13	20.8 +.44	54.4 +.13	10.1 +.18	22.1 +.45	49.6 +.10
49.5 +.30		59.3 +.18	21.7 +.06	54.0 +.27	10.4 +.09	22.5 +.06	49.2 +.19
7.8 −.08		18.9 −.40	41.5 −.54	16.0 −.40	31.1 −.08	43.2 −.60	9.0 −.10
3.5 +.66		14.3 +.71	36.8 +.52	10.7 +.72	26.7 +.46	39.8 +.51	6.2 +.17
57.85 109		8.65 62	48 31.15	5.20 72	65 20.60	32.65 42	26 59.30
25 57.18		26 7.72	25 30.20	26 3.78	25 19.58	25 31.90	24 58.50
− 26.45		− 37.88	0.94	− 34.90	9.74	− 3.04	29.23
25 30.73		25 29.84	31.14	25 28.88	25 29.32	25 28.86	25 27.73
57 17.62		18.51	17.21	19.47	19.03	19.49	20.62

Sept. 28			Sept. 30			Oct. 1			Oct. 2		
+1289			+214			−368			−1094		
1.49219			1.48144			1.47562			1.46836		
+31.06			+30.30			+29.90			+29.40		
− .64			− 1.32	.00		− 1.12	− .08		− .02	− .79	
− .08			− .09	− .04		− .09	− .02		− .04	− .40	
− .27			− .16	− .12		− .18	− .16		− .10	− .06	
+30.07			+28.73	+30.14		+28.51	+29.64		+29.24	+28.15	
			47.24	47.35		47.98	48.67		48.73	48.77	
47.69	+4	11.04	47.30	+4	10.58	48.32	+4	10.46	48.75	+4	10.88
56.5	+	.31	57.0	+	.30	57.3	+	.30	57.56	+	.29
	−	26.60		−	27.10		−	27.40		−	27.70
+4 8.8	+3	44.75	9.7	+3	43.78	9.0	+3	43.36	8.8	+3	43.47
10.1			11.0			10.3			10.1		
	1	32.4			31.1			31.7			32.2

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1878

Oct 3 | Oct. 10 | Oct. 14 | Oct. 15

	Oct 3			Oct. 10				Oct. 14				Oct. 15			
l 21	m 29 10.6	m 29 31.00	m 30 4.1	30 9.8	29 —	30 18.0		29 19.7	29 53.8	30 27.2		29 18.5	29 52.2	30 25.5	
	17.0	34.1	7.3	16.3	57.1 480	21.5		24.1	57.1	30.0		24.0	55.3	28.5	
	23.7	37.2	10.3	20.2	56.7 53.7	24.1		32.1	0.2	33.2		29.4	58.2	31.7	
	28.3	40.4	13.3	26.5	56.9 53.9	27.5		37.4	3.2	35.8		34.0	1.2	35.1	
	85.3	43.0	16.4	33.9	57.2 57.2	30.6		41.6	6.2	39.2		38.3	4.3	37.8	
		46.0	19.3		56.8 59.8	33.5			9.5	42.2		42.0	7.4	40.6	
31	4.8	49.0	22.1	31.3	57.1 3.1	36.4			12.2	45.4			10.2	43.9	
	8.3	52.1	25.1	36.5	56.9 6.0	39.3			15.2	48.1		30 36.6	13.4	46.8	
	11.5	3881 53.3	1462 28.3	43.2	56.9 9.0	2735 42.6		558 18.4	3523 51.2			42.0	386 16.4	3400 50.1	
	17.8			46.1								47.5			
	22.8	43.12		52.2	56.95	51.5		6.20 39.45				53.7	4.29	59.0	
		16.24			30.39	54.7		39.14 .14				57.3	37.78	2.0	
		49.56			3.50	57.2							10.87	4.8	
						0.4								7.6	
		4892		47.6	3084	3.5							11294	10.9	
				52.6		6.5								13.9	
				57.7		9.7								16.8	
				58.6		12.4								19.7	
	29 22.98		446 0 1.6	30 21.34		315 15.6		29 30.98				29 31.03		978 23.1	
	31 13.04		30 16.307	31 41.98		30 30.280				30 39.295		30 47.82		30 37.647	
			27 7.06			6.66				6.489				6.395	
			+ 3 9.31			3 23.62				3 32.85				3 31.25	
			+ 3 9.25			3 23.56				3 28.79				3 31.19	
			922			23.53				32.76				3.16	
			−3 5.14			−3 19.88				−3 29.07			carried	+ 3.69	
			− 3.92			− 3.59				− 3.64				−3 31.21	
			− 2.24			− 1.90				− 1.69				− 3.63	
			−3 11.30			−3 25.37				−3 34.30				− 1.63	
														−3 36.47	
			m s 27 5.01			4.91				5.01				32.78	
														4.87	
	s + 533	s − 567		+ 894	− 7170			+ 6831				+ 6662	− 1017		
	1.72697	1.75381n		0.93654	1.85552n			1.83448				1.82360	1.00732n		
	1.36657n	1.39341		0.57611n	1.49512			1.47408n				1.46320n	0.64692		
				0.59094											
	1 1 25 0	2 1 20 4		25 0	20 4			25 0				25 0	25 0		
E	42.6 +.29	55.3 +.02		22.9 +.46	45.6 +.19			47.9 +.21				46.7 +.23	13.6 +.28		
F	42.0 +.19	54.8 +.11		24.6 +.04	47.2 +.20			49.2 +.30				47.2 +.29	15.1 +.09		
G	4.5 −.02	15.9 −.39		44.1 −.62	4.8 +.01			9.0 −.13				7.4 −.07	34.9 −.22		
H	59.2 +.55	11.4 +.20		38.8 +.52	1.7 +.04			4.4 +.68				2.9 +.65	30.9 +.50		
	63.55 101	1 1 66.60		33.50 40	44 55.20			58.45 106				67.05 110	65 24.25		
	25 52.08	25 4.35		25 32.60	24 54.82			25 57.62				25 56.05	25 23.62		
	− 23.26	24.74		− 3.77 90	31.27			− 29.79				− 29.05	4.43		
	25 28.82	25 29.09		25 28.83 70	25 26.09			25 27.83				25 27.00	25 28.05		
+70	57 19.53	19.26		19.53 65	22.26			20.52				21.35	20.30		
	− 691			+ 420				+ 495				− 412			
	1.47239			1.48350				1.48425				1.47518			
	+29.67			+30.44				+30.50				+29.87			
	− .50	− .56		− .02	− .90			− .82				− .78	− .02		
	− .07	− .41		− .03	− .34			− .06				− .06	− .03		
	− .25	+ .02		− .10	− .11			− .26				− .28	− .16		
	+28.85	+28.72		+30.29	+29.09			+29.36				+28.75	+29.66		
	57 48.38	47.98		49.94	51.35			49.88				50.10	49.96		
	57 48.18			50.64				50.03				50.03			
	1 5.78	1 11.04		59.86	+4 10.48			60.45	+4 11.65			60.65	+4 11.56		
		+ .29		9.0	+ .28			10.6	+ .28			10.6	+ .28		
	+4 9.6	− 27.90			29.70				− 30.60				− 30.80		
	10.9	+3 43.43		10.3	+3 41.06			11.9	+3 41.36			11.9	+3 41.04		
		1 31.6			31.7				31.2				31.1		

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	α			δ		
	m	s		′	″	
Oct. 17	27	6.30		2	1.0	
22		6.02	28		1.9	9
27		5.74	28		2.6	7
Nov. 1		5.45	29		3.2	6
6		5.15	30		3.7	5
11		4.85	30		4.1	4
16		4.55	30		4.3	2

For Nov. 3 – 14 v. under λ Androm. 35 pages further on.

Oct. 16

24.9
29 30.8 35.7 41.9 47.7 · 30 38.9 45.2 50.1 58.4 2.9
29 57.9 1.3 4.2 7.3 10.0 13.1 16.3 19.0 22.3 — 914
30 31.3 34.4 37.5 40.3 43.1 46.6 49.5 52.4 55.2 — 3906
10.16 43.41 / 43.40 .40
29 36.40 / 30 50.70
30 43.405 / 6.346
3 37.06
3 37.00
36.97
−3 33.30
− 3.49
− 1.58
−3 38.37
5.03

+6700 − 730
1.82607 0.86332n
1.46567n 0.50292
25 0 25 0
45.9 +.24 13.5 +.28
46.2 +.28 14.0 +.09
7.6 −.08 35.9 −.26
2.9 +.65 30.7 +.50
56.75 109 61 24.70
25 55.65 25 23.52
− 29.22 3.18
25 26.43 25 26.70
57 21.92 21.65

−511
1.47419
+29.80
− .79 − .02
− .07 − .03
− .27 − .15
+28.67 +29.60
50.59 51.25
50.92
60.85 +4 10.96
+ .28
+4 9.9 − 31.00
11.2 +3 40.24
1 31.2

Oct. 21

29 4.7 10.4 18.0 23.3 29.7
30 8.4 11.7 14.6 17.6 20.5 23.7 26.8 29.7 32.8 — 1858
30 41.9 44.8 47.7 50.7 53.6 56.9 59.9 3.0 6.0 — 4845
20.64 53.83 27.04
16151
15.0 18.0 20.9 24.0 27.0 30.0 33.0 36.1 39.4 — 2434
29 17.22
30 53.887 / 6.06
3 47.78
3 47.72
47.69
−3 44.49
− 3.21
− 1.30
−3 49.00
4.84

+9662
1.98507
1.62467n
25 0
57.1 +.13
57.2 +.22
17.9 −.41
13.1 +.72
7.60 66
26 6.32
− 42.14
25 24.18
24.17

−265
1.44165
+29.97
− 1.64
− .09
− .16
+28.08
52.25
2 1.8 +4 11.35
+ .29
9.6 − 31.90
10.9 +3 39.74
32.0

Oct. 22

29 26.0 34.7 40.5 46.8 53.8
30 10.6 14.0 17.3 20.0 23.2 26.2 29.3 32.1 35.0 — 2077
30 44.3 47.4 50.4 53.8 56.3 59.4 2.6 5.3 8.1 — 5076
23.08 56.40 29.679
16918 / 7
17.5 20.5 23.9 26.7 29.7 32.7 35.8 38.7 41.7 — 2672
29 40.36
30 56.358 / 6.90
3 50.38
3 50.32
50.29
−3 46.66
− 3.54
− 1.25
−3 51.45
4.94

+7603
1.88098
1.52058n
25 0
49.7 +.18
57.1 +.30
11.1 −.21
6.1 +.71
0.40 98
25 59.50
− 33.16
25 26.34
22.01

+414
1.48344
+30.44
− 1.01
− .09
− .24
+29.10
51.11
1.9 +4 10.52
+ .29
10.8 − 32.00
12.1 +3 38.81
29.9

Nov. 2

30 12.4 17.0 24.3 29.8 34.5 · 31 19.7 25.3 31.5 36.8 42.0
30 33.4 36.4 39.4 42.4 45.6 48.6 51.5 54.6 57.2 — 4091
45.46 18.81 ~~53.27~~ 52.16
~~5764~~ 5643
31 6.9 9.7 12.6 15.7 18.9 21.7 24.8 28.0 31.0 — 1693
39.9 42.9 46.1 49.1 52.3 53.1 58.3 1.3 4.4 — 6 4794
30 23.60
31 31.06
18.810 / 31 ~~19.180~~ / 5.38
4 13.43
4 13.37
13.34
−4 10.20
− 3.07
− 0.62
−4 13.89
4.92

+5521 −1225
1.74202 1.08814n
1.38162n 0.72774
25 0 25 0
39.1 +.36 10.6 +.19
41.2 +.17 12.4 +.10
56.9 −.20 28.7 −.10
54.9 +.52 26.4 +.45
48.00 85 64 19.65
25 48.02 25 19.62
− 24.08 5.34
25 23.94 24.86
24.41 23.49

+443
1.48373
+30.46
− .53 − .02
− .09 − .03
− .21 − .16
+29.63 4 +30.25
57 54.05 53.74
53.90 89
2 3.3 +4 10.80
+ .34
4 9.4 − 33.40
10.7 +3 37.74
31.6

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ε Pegasi

21h 38m 12s
+9° 18' 59"
+33 3 49
1878

Sept. 25

α_0 11.611 s
corr. α + .032 + .041
$\frac{d\alpha}{dt}$
δ_0 59.33"
corr. δ −39
$\frac{d\delta}{dt}$

Sept. 28

log sin δ 9.20921
" cos δ 9.99423
" 15 cos t sin δ 0.09925m 100 30
sec δ 1.01
tan δ +.16
sin q +.55

Sept. 30

I

Oct. 1

2.10

h	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s	m	s
21	40	31.2	40	37.30		48.60	40	38.1	40	44.05		55.58	40	36.4	40	48.12		59.54	40	42.0	40	50.20	41	1.60
		32.7		38.30		50.70		40.3		46.33		57.58		38.6		50.30		1.65		43.6		52.20		3.58
		34.1		41.43		53.10		42.6		48.43		59.73		40.3		52.30		3.83		45.5		54.28		5.70
		36.1		43.49		55.10		44.3		50.19		1.80		42.2		54.45		5.95		47.5		56.30		7.80
		38.0		45.60		57.10		45.8		52.27		4.00		44.1		56.48		8.00		49.4		58.40		9.97
	41	39.1		23.05		0.30	41	43.0		30.00		7.10	41	46.2		34.12		11.00	41	48.0		36.05		12.98
		41.2		25.48		2.36		46.7		32.10		9.30		47.9		36.20		13.20		50.0		38.10		15.20
		42.7		27.52		4.52		48.6		34.37		11.28		49.3		38.30		15.39		52.8		40.29		17.38
		44.8		29.53		6.54		50.2		36.11		13.27		51.3		40.34		17.50		53.4		42.25		19.37
		47.5		31.51		8.60		52.3		38.43		15.38		53.5		42.56		19.49		55.2		44.44		21.50
				41.42		11.78				48.25		18.46				52.33		22.60				54.28		24.53
				52.90		13.80				59.74		20.56				3.80		24.67				5.73		26.68
				4.46		15.82				11.27		22.59				15.32		26.76				17.27		28.65
				15.90		18.00				22.64		24.70				26.78		28.87				28.71		30.70
				27.42		20.10				34.26		26.90				38.30		31.00				40.23		33.00
	40	34.42	2210				40	42.22	5616				40	40.32	7653				40	45.60	8622			
	41	43.10			41	4.420	41	48.56			41	11.232	41	49.64			41	15.306	41	51.68			41	17.244
					38	15.45						15.43						15.408						15.398
					+ 2	48.97					2	55.80					2	59.90					3	1.85
					+ 2	48.94					2	55.77					2	57.87					3	1.82
						48.93						55.76						59.86						1.81
					−2	48.70					−2	55.58					−2	59.68					−3	1.49
					−	.23					−	.23					−	.22					−	.23
					−	3.84					−	3.82					−	3.80					−	3.69
					−2	52.77					−2	59.58					−3	3.70					−3	5.51
					38	11.65						11.65						11.61						11.73

		+ 8.000 s		− 3.868 s				+ 2.901		− 3.733				+ 3.499		− 3.433				+ 3.164		− 3.444		
		1.47712		1.58749m				1.46255		1.57206m				1.54394		1.53567m				1.50024		1.53706m		
		1.57742m		1.68779				1.56285m		1.67236				1.64424m		1.63597				1.60058m		1.63736		
		1 1		1 1				1 1		1 1				1 1		1 1				1 1		1 1		
		5 2		5 1 [0]				5 2		5 0				5 2		5 1				5 2		5 1		
ε		24.8 +.54		56.7 +.07	13			22.3 +.50		59.0 +.13				29.4 +.53		1.4 +.14				26.0 +.54		3.2 +.15		
ζ		30.2 +.22		3.1 +.36	19			30.6 +.21		7.3 +.24				36.9 +.23		8.0 +.24				32.9 +.21		9.9 +.25		
η		51.9 −.48		23.3 −.18	26			47.5 −.57		24.0 −.23				55.3 −.24		26.9 −.09				53.1 −.43		30.0 −.23		
1		42.2 +.36		15.3 +.48	70			40.8 +.37		16.7 +.68				47.7 +.30		19.5 +.66				44.7 +.33		22.3 +.65		
		38.35 .74		61	107	76	10.00	34.90	51		82	11.50		42.35	82	6	95	14.15		39.55	65		102	16.60
		7 37.28		X 9.60				7 35.30		6 12.75				7 42.32		X 13.95				7 39.18		6 16.35		
		− 37.79		6 48.73				− 36.58	5	47.03				− 44.08		48.25				− 39.86		43.39		
		6 59.49		X 58.33				6 58.76	5	6 59.78				6 58.24		57.20				6 59.32		59.74		
+ 8		15' 48.86		50.02				49.59	60	48.57				50.11		51.15				49.03		48.61		
+33		2 49																						
		1.57340																						
		− 2.28						+ 1.29						+ 2.34						− 3.50				
		1.54112						1.58669						1.57574						1.56990				
		− 34.25						− 38.61						− 37.65						− 37.14				
		− .08		− .13				− .07		− .12				− .10		− .10				− .08		− .10		
		− .26		− .12				− .23		− .10				− .22		− .10				− .22		− .10		
		− .18		− .19				− .13		− .20				− .20		− .24				− .16		− .26		
		− 37.77		− 37.69				− 39.04		− 39.03				− 38.17		− 38.09				− 37.60		− 37.60		
		15 41.09		12.33				10.56		9.54				11.94		13.06				11.43		11.01		
		11.11						10.05						12.50						11.22				
		19 21.6	+4	10.70				21.8	+4	11.04				21.9	+4	10.58				21.95	+4	10.46		
			−	.38					−	.37					−	.36					−	.36		
		+ 4 9.9	−	22.30				11.8	−	22.50				9.4	−	22.60				10.7	−	22.60		
		9.5	+3	48.02				11.4	+3	48.17				9.0	+3	47.62				10.3	+3	47.50		
			18'	59.7						58.2					19	00.1					18	58.7		

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Sept. 17 — 38 — 15.51 — 3 — 19 — 20.8 — 5
22 — .48 — 21.3
27 — .44 — 4 — 21.7 — 4
Oct. 2 — .39 — 5 — 22.0 — 3
7 — 15.34 — 5 — 22.3 — 3
12 — .28 — 6 — 22.5 — 2
17 — .22 — 6 — 22.7 — 2
22 — .15 — 7 — 22.8 — 1
27 — 15.08 — 7 — 22.8 — 0

Oct. 2 | Oct. 3 | Oct. 10 | Oct. 14

40	41.2	40	51.40		2.80	40	48.8	40	53.70		5.24	41	6.4	41	8.40	41	19.75	41	10.3	41	17.55	41	28.90
	43.1		53.40		4.86		50.3		53.82		7.24		8.7		10.50		21.70		12.0		19.56		31.02
	45.1		53.80		7.00		52.5		57.82		9.33		10.7		12.60		23.90		14.3		21.72		33.05
	47.1		57.60		9.05		54.1		59.93		11.48		11.9		14.60		25.95		16.2		23.70		35.25
	48.8		59.70		11.22		56.1		2.05		13.62		13.0		16.55		28.00		18.3		25.65		37.15
41	47.1		8.82		14.30	41	51.8		8.70		16.70	42	12.2		54.20		31.30	42	18.6		3.35		40.29
	49.1		89.86		16.42		53.5		41.77		18.70		13.8		56.30		33.48		20.3		5.55		42.40
	51.1		91.50		18.50		53.2		43.80		20.88		15.8		58.50		35.61		22.3		7.55		44.57
	52.8		43.67		20.63		57.6		45.82		22.82		17.7		0.45		37.57		24.1		9.65		46.52
	54.4		45.76		22.72		59.3		48.05		25.05		19.3		2.62		39.60		26.3		11.80		48.45
			55.52		25.80				57.86		28.10				12.53		42.76				21.64		51.78
			6.99		27.85				9.38		30.23				23.86		44.80				33.07		53.98
			18.51		30.00				20.83		32.30				35.51		46.88				44.49		55.98
			29.86		32.05				32.29		34.40				46.94		47.80				56.03		58.10
			41.52		34.10				43.85		36.43				58.41		51.27				7.58		0.30
	40 45.06		92.51				40 52.36		10421				41 10.00		17725				41 14.22		22.81		
	41 50.90				41 18.610		41 55.48				41 20.842		42 15.76				41 35.450		42 22.32				41 44.562
					15.39						15.38						15.30						15.253
					3 3.11						3 5.46						3 20.15						3 29.31
					3 3.08						3 5.43						3 20.12						3 29.28
					30.7						5.42						20.11						29.27
					−3 2.90						−3 5.18						−3 19.92						−3 29.11
					− .21						− .23						− .21						− .21
					− 3.78						− 3.77						− 3.69						− 3.64
					−3 6.89						−3 9.18						−3 23.82						−3 32.96
					11.61						11.66						11.63						11.60
	+ 33.44		− 32.40				+ 28.48		− 34.64				+ 25.45		− 40.31				+ 30.34		− 37.76		
	1.52427		1.51055m				1.45454		1.53958m				1.40569		1.60541m				1.48202		1.57703m		
	1.62457m		1.61085				1.55484m		1.63988				1.50599m		1.70571				1.58232m		1.67733		
	5 2		5 1				5 2		5 1				5 2		5 0				5 2		5 0		
	28.9 +.53		6.7 +.20				21.6 +.50		3.7 +.16				17.8 +.43		54.7 +.13				24.0 +.53		38.5 +.13		
	36.0 +.22		13.0 +.26				28.6 +.23		9.6 +.25				26.3 +.25		2.1 +.18				31.9 +.21		6.2 +.23		
	55.9 −.17		32.9 −.07				49.9 −.54		30.5 −.03				45.1 −.53		20.1 −.38				50.9 −.52		24.7 −.19		
	47.8 +.36		24.9 +.66				39.8 +.39		21.0 +.66				35.8 +.44		13.0 +.72				42.1 +.36		17.2 +.68		
	42.40 88		105	19.80			35.75 88		104	17.10			31.45 89		65	7.40			37.45 88		85	11.60	
	7 42.15		6 19.38				7 34.98		6 16.20				7 31.25		6 7.48				7 37.22		6 11.65		
	− 42.13		40.82				− 35.88		43.64				− 32.06		50.78				− 38.22		47.57		
	7 0.02		0.20				6 59.10		59.84				6 59.19		58.26				6 59.00		59.22		
	15 48.33		48.15				49.25		48.51				49.16		50.09				49.35		49.13		
	− 10.75						− 6.67						+ 4.76						+ 5.08				
	1.56265						1.56643						1.57816						1.57848				
	− 36.53						− 36.84						− 37.86						− 37.89				
	− .09		− .09				− .07		− .10				− .05		− .13				− .08		− .12		
	− .22		− .10				− .21		− .10				− .17		− .08				− .18		− .08		
	− .22		− .26				− .14		− .26				− .15		− .16				− .14		− .21		
	−37.16		−36.98				−37.29		−37.33				−38.23		−38.23				−38.29		−38.30		
	11.27		11.17				11.96		11.18				10.93		11.86				11.06		10.83		
	11.22						11.57						11.40						10.95				
	22.0	+4	10.88				22.1	+4	11.04				22.4	+4	10.48				22.6	+4	11.68		
		−	.35					−	.35					−	.34					−	.34		
	+4 10.8	−	22.70				10.5	−	22.80				11.0	−	23.10				11.6	−	23.30		
	10.4	+3	47.53				10.1	+3	48.89				10.6	+3	47.04				11.2	+3	48.04		
			18 59.1						59.5						58.4						59.0		

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1878

	Oct. 15			Oct. 16			Oct. 21			Oct. 22		
h	m s	m s	m s									
21	41 7.3	41 18 38	41 29 80	41 13.5	41 21.73	41 38.15	41 42.5	41 32.70	41 44 30	41 25.6	41 35 00	41 48.45
	9.2	20.40	31.87	15.3	23.70	35.24	46.7	34.80	46 30	28.1	36.92	48.49
	11.4	22.50	33.90	17.1	25.80	37.30		36.70	48 40	30.0	39.10	50.80
	13.1	24.60	36.00	18.8	27.90	39.40		38.90	50 40	32.0	41.15	52.80
	15.2	26.65	38.20	20.8	30.00	41.50	50.8	41.00	52.55	33.5	43.30	54.65
	42 18.3	4.34	41.30	42 20.0	7.65	44.60		18.70	55.80		21.10	57.72
	20.0	6.45	43.40	21.8	9.69	46.70		20.80	57.85		23.00	59.95
	22.0	8.42	45.48	23.8	11.69	48.80		22.79	59.80		25.10	2.00
	23.9	10.55	47.52	25.5	13.88	50.88		24.95	2.00		27.30	4.28
	25.6	12.65	49.66	27.3	16.00	53.00		27.00	4.10		29.25	6.30
		22.51	57.00 5280		25.83	56.00		36.82	7.50		39.09	9.42
		33.95	—		37.32	58.18		48.39	9.21		50.55	11.40
		45.47	—		48.80	0.30		59.91	11.42		2.05	13.55
		57.05	.10 5920		0.28	2.40		11.44	13.48		13.52	15.60
		8.48	.05 1.25		11.78	4.50		22.85	15.58		25.15	17.61
	41 11.24	22.46		41 17.10	24.01		41 46.67	29.41		41 29.84	10.36	
	42 21.96		41 85.492	42 23.68		41 48.802			41 59.882			42 2.072
			38 15.24			15.23			15.16			15.146
			+ 3 30.25			3 33.57			3 44.72			3 46.93
			+ 3 30.22			3 33.54			3 44.69			3 46.90
			30.21			33.53			44.68			46.87
		check	+ 1.27									
			− 3 31.24			− 3 33.32			− 3 44.51			− 3 46.68
			− .21			− .20			− .19			− .21
			− 3.63			− 2.62			− 3.55			− 3.54
			− 3 35.08			− 3 37.14			− 3 48.25			− 3 50.43
			33.81									
			38 11.68			11.66			11.63			11.64
	+ 34.25	− 36.47		+ 31.70	− 34.88		+ 13.21			+ 32.23		
	1.53466	1.56194m		1.50106	1.54258m		1.12090			1.50826		
	1.63496m	1.66224		1.60136m	1.64288		1.22120m			1.60856m		
	5 2	5 1		5 2	5 1		5 2			5 2		
Eq.	28.8 +.53	0.1 +.13		25.4 +.54	1.6 +.14		3.1 +.09			21.6 +.60		
	36.8 +.23	7.7 +.24		32.8 +.21	8.2 +.24		10.1 +.34			30.2 +.22		
	55.9 −.17	26.6 −.10		53.2 −.43	28.4 −.06		29.8 +.04			48.9 −.56		
14	48.6 +.29	19.4 +.67		44.5 +.34	21.3 +.66		21.5 +.46			40.2 +.38		
	42.35 1.88	1 19.4 13.35		39.86 66	15 98 15.00		16.45 93			35.25 54		
	7 42.52	6 13.45		7 38.98	6 14.88		7 16.12			7 35.22		
	− 43.15	45.95		− 39.94	43.94		− 16.64			− 40.60		
	6 59.37	59.40		6 59.04	58.82		6 59.48			6 54.62		
+9	15 48.98	48.95		49.31	48.53		48.87			53.73		
					9							
	− .393			− .484			− .230			+ .419		
	1.56047			1.56856			1.57110			1.57459		
	− 37.11			− 37.03			− 37.25			− 37.81		
	− .10	− .11		− .09	− .10		− .01			− .09		
	− .19	− .08		− .21	− .10		− .18			− .23		
	− .22	− .24		− .16	− .24		− .23			− .14		
	− 37.67	− 37.54		− 37.49	− 37.47		− 37.67			− 38.27		
	15 11.36	11.41		11.82	12.06							
	11.38			11.94			11.20			15.46		
	19 22.6	+4 11.56		22.7	+4 10.96		22.8	+4 11.35		22.8	+4 10.52	
		− .34			− .34			− .35			− .35	
	+4 11.2	− 23.30		10.8	− 23.40		11.6	− 23.50		7.3	− 23.50	
	10.8	+3 47.92		10.4	+3 47.22		11.2	+3 47.50		6.9	+3 46.67	
		18 59.3			59.2			58.7			62.1	

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α

	m	s
Oct. 27	38	15.08
Nov. 1		15.01 7
6		14.94 7
11		14.87 7
16		14.81 6

δ

′	″	
19	22.8	
	22.8	0
	22.7	1
	22.6	1
	22.4	2

Nov. 3

41	49.0	42	02.7	11.76
	51.6		2.38	13.87
	54.1		4.20	15.90
	56.4		6.43	18.00
	58.3		8.60	20.05
42				
	56.9		46.20	23.27
	59.4		48.20	25.38
	1.5		50.39	27.26
	3.4		52.44	29.48
	5.2		54.68	31.50

	4.38	34.45
	15.92	36.64
	27.38	38.78
	38.71	40.84
	50.38	42.81

41	53.88	13.77	
43	1.28		
	≠		
		42	27.354
		38	14.98
		4	12.37
		4	12.34
			12.33
		−4	12.25
		−	.19
		−	3.37
		−4	15.81
			11.54

	+ 3347		− 3393	
	1.52466		1.53058$_m$	
	1.62496$_n$		1.63088	
	5	2	5	1
	28.1	+.64	2.2	+.14
	36.3	+.22	9.8	+.25
	50.2	−.54	24.0	−.28
	43.3	+.35	19.1	+.67
	39.15	57	74.83	19.10
7	39.48	6	13.78	
	42.17		42.74	
6	57.31	6	56.52	
15	61.04		51.83	
	+ 1821			
	1.59161			
	−39.05			
	− .09		− .10	
	− .30		− .34.13	
	− .14		− .20.21	
	−39.58		−39.49	
15	11.46		1.34	
15	11.90			
19	22.8	+4	11.58	
		−	.41	
+4	10.9	−	23.50	
	10.5	+3	47.67	
		18	59.6	

Nov. 5

41	53.1	42	11.10	42	15.58	
	54.7		6.05		17.60	
	56.5		8.18		19.75	
	58.9		10.33		21.90	
	0.9		12.40		23.87	
43	5.6		50.15		27.80	
	7.4		52.00		29.20	
	9.1		54.25		31.30	
	10.6		56.30		33.29	
	12.5		58.48		35.47	

	8.21	38.55
	19.74	40.60
	31.25	42.77
	42.77	44.90
	54.24	46.95

41	56.82	15.21	
43	9.04		
		42	31.242
			14.95
		4	16.29
		4	16.26
			16.25
		−4	16.05
		−	.17
		−	3.34
		−4	19.56
			11.68

	+ 3442		− 37.80	
	1.53681		1.57749$_m$	
	1.63711$_n$		1.67779	
	5	2	5	0
	31.6	+.51	59.3	+.13
	38.9	+.27	6.2	+.23
	49.9	−.54	17.3	−.42
	43.2	+.35	12.4	+.77
	40.75	59	8.30	66
7	40.90	6	8.80	
	43.36		47.62	
6	57.54		56.42	
	50.81		51.93	
	+ 1903			
	1.59243			
	−39.12			
	− .10		− .12	
	− .32		− .13	
	− .15		− .16	
	−39.69		−39.53	
	11.12		12.40	
	11.76			
	22.7	+4	12.07	
		−	.42	
4	10.9	−	23.40	
	10.5	+3	48.25	
			60.0	

Nov. 10

42	6.7	42	12.69	42	24.15	
	8.9		14.70		26.18	
	10.9		16.80		28.29	
	12.2		18.90		30.33	
	14.0		21.02		32.48	
43	14.7		58.54		35.64	
	16.7		0.70		37.65	
	18.5		2.70		39.70	
	20.0		4.95		41.83	
	22.2		7.00		44.07	

	16.82	47.02
	28.29	49.14
	39.76	51.25
	51.27	53.40
	2.78	55.54

42	10.54	19.892	
43	18.42		
		42	39.784
			14.88
		4	24.90
		4	24.87
			24.86
		−4	24.69
		−	.17
		−	3.27
		−4	28.13
			11.65

	+ 2924		− 3864	
	1.46598		1.58704$_m$	
	1.56628$_n$		1.68734	
	5	2	5	1
	26.5	+.64	0.9	+.14
	34.4	+.21	8.2	+.24
	46.5	−.56	19.8	−.38
	39.6	+.40	15.0	+.28.40
	36.50	59	48.70	10.35
7	36.75	6	10.98	
	36.84		48.68	
6	59.91		54.66	
	48.44		48.69	
	+ 1157			
	1.58497			
	−38.46			
	− .07		− .12	
	− .34		− .16	
	− .15		− .12.18	
	−39.02		−38.92	
	9.42		9.77	
	9.60			
	22.6	+4	12.98	
		−	.46	
4	13.0	−	23.30	
	12.6	+3	49.22	
			58.8	

Nov. 13

42	33.9	42	17.02	42	28.60
	35.4		19.02		30.68
	37.3		21.28		32.87
	38.9		23.40		34.85
	40.7		25.50		37.02
			3.16		40.17
			5.27		42.29
			7.37		44.34
			9.50		46.40
			11.55		48.52

	21.24	51.65
	32.80	53.80
	44.34	55.84
	55.87	57.95
	7.37	0.10

42	37.24	22.162	
			42 44.324
			14.84
			4 29.48
			4 29.45
			29.44
			−4 29.27
			− .18
			− 3.23
			−4 32.68
			11.64

	+ 708			
	0.85803			
	0.95033$_n$			
	5	1		
	54.4	+.09		
	2.5	+.80		
	15.7	−.28		
	10.8	+.49		
	5.05	60		
7	5.85			
	8.92			
6	56.93			
	51.42			
	+ 744			
	1.58084			
	−38.09			
	− .01			
	− .27			
	− .15			
	−38.52			
	12.90			
	12.90			
	22.5	+4	10.41	
		−	.49	
4	9.6	−	23.20	
	9.2	+3	46.72	
			59.6	

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α Aquarii

$21^h\ 59^m\ 31^s$
$-0°\ 54'\ 43''$
$+43\ 17\ 31$
1878

α_0 31.027 — log sin δ 8.202n
Corr. α +.031 +.014 — " cos δ 9.99994
$\frac{d\alpha}{dt}$ — " Reduction 0.10 4960 601
δ_0 42".73 — tan δ −.02
Corr. δ −.12 — sin z +.69
$\frac{d\delta}{dt}$

Sept. 25 — Sept. 28 — Sept. 30 — Oct. 21

	Sept. 25		Sept. 28			Sept. 30			Oct. 21		
h	m s	m s	m s								
22	1 48.9	1 57.00	8.39	2 0.0	2 3.90	15.23	2 0.0	2 8.00	19.16	2 55.6	2 52.70 3 1.20
	50.5	57.18	10.56	1.6	5.80	17.20	1.7	10.05	21.38		54.80 6.00
	52.2	1.10	12.50	3.6	8.10	19.32	3.3	12.12	23.40	58.2	56.68 8.20
	54.2	3.20	14.52	5.3	10.00	21.42	5.2	14.23	25.58	—	58.97 10.20
	56.1	1.37	16.72	7.8	12.10	23.60	6.9	16.27	27.60	1.6	0.70 12.25
	2 5.02	4.25.1	19.70	3 2.2	4.38	26.52	3 9.1	53.45	30.74		3.780 1.522
	5.17	4.48	21.83	3.9	6.38	28.50	10.5	55.30	32.83		3.990 1.745
	5.36	4.52	23.81	5.6	8.38	30.63	11.9	57.53	34.90		4.20 1.953
	5.54	4.61	25.70	7.3	10.40	32.72	13.3	59.65	36.96		4.420 2.160
	5.76	5.02	28.00	9.1	5.43	34.71	15.4	1.72	8.90		4.630 2.360
		1.17	31.05		7.98 7.98	37.80		12.13	42.00		6.81 2.655
		12.54	33.23		19.35	39.87		23.42	44.05		8.17 2.873
		23.85	35.22		30.63	42.00		34.87	46.15		19.48 30.78
		35.25	37.30		42.02	44.18		46.14	48.20		30.74 32.82
		46.57	39.45		53.42	46.25		57.57	50.30		42.04 34.84
	1 52.38	11.938		2 3.66	15.340		2 3.42	17.413		2 58.47	9.724
	2 53.80		2 23.876	3 5.62		2 30.680	3 12.04		2 34.826		3 19.448
			59 35.12			35.10			35.084		3.487
			+2 48.76			2 55.58			2 59.74		3 44.58
			+2 48.73			2 55.55			2 59.71		3 44.55
			48.75			55.57			59.73		44.57
			−2 48.77			−2 55.57			−2 59.71		−3 44.56
			+ .03			+ .03			+ .03		+ .02
			− 4.09			− 4.07			− 4.06		− 3.84
			−2 52.83			−2 59.61			−3 3.74		−3 48.38
			59 m 31.05			31.07			31.09		31.07
		+ 3.150	− 2.992		+ 2.702	− 3.484		+ 3.141	− 3.721		+ 2.098
		1.19831	1.47596		1.43169	1.54332		1.49707	1.57066		1.32181
		1.60432	1.58197		1.53770	1.64933		1.60308	1.67667		1.42782
		20 0	15 4		20 0	15 4		20 0	15 4		20 0
E		50.8 +16	32.7 +47		45.0 +25	26.6 +54		51.5 +16	23.2 +53		39.6 +35
C		57.1 +22	39.8 +08		53.1 +28	34.8 +01		58.1 +21	30.3 +02		46.6 +29
A		19.9 −38	0.2 .00		12.9 −30	52.7 −50		20.3 −39	50.7 −56		8.7 −12
H		9.1 +73	52.2 +02		3.3 +66	44.8 +10		10.2 +73	42.0 +13		58.4 +54
		535 73	1 107	4645	58.95 89		15.3965	5.90 41		12.3695	54.15 106
		21 4.22	19 46.22		20 58.58	19 39.72		21 5.02	19 36.55		20 53.32
		− 40.21	38.19		− 34.49	44.60		− 40.09	47.50		− 26.78
		20 24.01	24.41		20 24.09	24.32		20 24.93	24.05		20 26.54
− δ		57 36.6	36.06		35.74	35.97		36.58	35.70		38.19
+43		16 14									
		1.73360									
		−187			+1398			+272			−167
		1.73173			1.74758			1.73632			1.73193
		−53.92			−55.92			−54.49			−53.94
		+ .01	+ .01		+ .01	+ .01		+ .01	+ .01		+ .00 +
		− .11	− .48		− .09	− .42		− .09	− .37		− .07 +
		− .18	− .14		− .22	− .04		− .18	− .03		− .26
		−54.29	−54.53		−56.22	−56.37		−54.75	−54.88		−54.27
		58' 29.86	30.59		31.96	32.34		31.33	30.58		32.46
		58 30.22			32.15			30.96			
		54 20.9	+4 10.70		20.9	+4 11.014		20.8	+4 10.68		20.9 +4 11.35
		' "	− .48			− .46			− .45		− .43
		+4 9.3	− 21.80		11.3	− 21.80		10.2	− 21.90		11.6 − 21.80
		9.2	+3 48.42		11.2	+3 48.78		10.1	+3 48.23		12.5 +3 49.12
			54' 41.8			43.4			42.7		43.3

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	α m s		δ ′ ″			α m s		δ ′ ″	
Sept. 17	59 35.16	2	54 21.2	2	Oct. 27	59 34.80	6	54 21.0	1
22	.14	3	21.0	2	Nov. 1	.74	6	21.1	2
27	.11	3	20.9	1	6	.68	7	21.3	2
Oct. 2	.04	4	20.8	1	11	.61	6	21.5	2
7	35.03	4	20.8	0	16	34.55	6	21.7	2
12	34.98	5	20.8	0	21	.49	6	21.9	2
17	.92	6	20.8	0	26	.43	6	22.2	3
22	.86	6	20.9	1	Dec. 1	.37	6	22.5	3
27	34.80	6	21.0	1	6	34.32	5	22.8	3

Oct. 22 — Nov. 2 — Nov. 3 — Nov. 4

2	493	2	54.93	3	6.10	3	30.3	3	–	3	28.57	3	12.6	3	20.20		31.70	3	21.7	3	22.25	3	33.53	
	520		57.20		8.15		32.3	28	29 2023		31.60		14.3		22.10		33.66		23.7		24.29		35.60	
✓	540		59.25		10.30		34.0	34	2234		33.70		16.4		24.46		35.65		25.4		26.39		37.75	
	565		1.00		12.40		35.0	31	2437		35.70		18.1		26.50		37.82		26.9		28.40		39.77	
	58.7		2.90		14.40		87.3	32	26.44		37.70		20.0		28.32		40.00		29.2		30.40		41.79	
			10.10		17.56	4	21.7		3.58		40.84	4	19.0		5.70		43.20	4	23.4		7.57		44.82	
			12.10		19.65		23.7		5.67		42.93		21.6		7.43		45.05		24.6		9.60		47.02	
			14.30		21.75		25.3		7.68		45.70		23.8		9.60		47.12		26.3		11.70		49.02	
			16.40		23.78		27.0		9.82		47.05		25.7		11.60		49.14		27.8		13.75		51.02	
			18.50		25.70		29.0		11.95		49.17		27.8		13.72		51.32		29.7		15.90		53.10	
			59.06		28.76			32 22.75			52.10				24.32		54.50				26.35		56.18	
			10.27		30.95			33.65			54.15				35.77		56.33				37.69		58.22	
			21.69		32.80			45.02			56.40				47.17		58.42				48.98		0.35	
			32.92		34.95			56.31			58.47				58.43		0.30				0.32		2.42	
			44.26		37.15			7.74			0.45				9.61		2.60				11.70		4.45	
							78	504																
2	54.10	10820				3	33.84	22.87			45008	3	16.28	23530				3	25.38	24504				
				3	21.640	4	25.34			3	44.974	4	23.58			3	47.060		26.36			3	49.008	
					34.86						34.725						34.713						34.70	
				3	46.78					4	10.28					4	12.35					4	14.31	
				3	46.75					4	10.25					4	12.32					4	14.28	
					46.77						10.27						12.84						14.30	
				−3	46.72					−4	10.26					−4	12.29					−4	14.26	
				+	.03					+	.02					+	.02					+	.02	
				−	3.83					−	3.70					−	3.69					−	3.67	
				−3	50.52					−4	13.94					−4	15.96					−4	17.91	
					31.12						31.07						31.10						31.10	
	+ 27.54					+ 11.23		− 40.33				+ 30.78		− 36.52					+ 23.63		− 37.35			
	1.43996					1.05038		1.60563n				1.48827		1.56253n					1.37346		1.57229n			
	1.54597n					1.15639n		1.71164				1.59425n		1.66854					1.47947n		1.67830			
	20 0					20 0		15 4				20 0		15 4					20 0		15 4			
	41.3 +31					26.5 +19		20.8 +52				50.1 +17		23.9 +54					42.2 +30		24.0 +54			
	49.3 +30					34.9 +02		28.8 +03				57.3 +22		32.2 +02					49.8 +30		32.7 +01			
	11.1 −21					52.8 −55		46.0 −58				14.5 −35		46.9 −60					3.3 −01		43.9 −54			
	59.3 +56					45.1 +51		39.8 +15				5.7 +71		41.1 +14					56.3 +52		38.2 +18			
	56.20 96					39.65 49		12 33.40				2.30 75		10 35.40					52.75 111		19 33.95			
	20 55.28					20 39.82		19 33.85				21 1.90		19 36.02					20 52.90		19 34.70			
	− 35.15					− 14.33		51.48				− 39.29		46.62					− 30.16		47.68			
	20 20.10					20 25.49		25.33				20 22.61		22.64					20 22.74		22.38			
	57 31.75					3694		36.98				3426		3429					3439		3403			
						3714																		
	+ 4.30					+ 4.98						+ 18.67							+ 20.12					
	1.73790					1.73858						1.75294							1.75342					
	−.5469					−.5477						−.5653							−.5652					
	+ .01					+ .00		+ .02				+ .01		+ .01					+ .01		+ .01			
	− .08					+− .08		+− .51				+− .11		+− .51					+− .10		+− .57			
	− .24					+− .12		+− .03				+− .19		+− .02					+− .28		+− .05			
	−55.028					−54.57		−54.21				−56.22		−55.99					−56.33		−56.15			
	0 5					58 31.41		31.19				30.48		30.28					30.72		30.18			
	26.77					58 31.45	−.74					30.38	−.83						30.45	−.94				
	20.9	+4	10.52			54 21.1	+4	10.80				21.2	+4	11.58					21.2	+4	11.30			
	−		.44			−		.51				−		.52					−		.52			
+4	5.8	−	21.80			4 10.3	−	21.60				4 9.2	−	21.50					4 9.2	−	21.50			
	5.7	+3	48.28			10.2	+3	48.69				9.1	+3	49.56					9.1	+3	49.28			
	✓		385			10.9		42.89				9.9		40.80					10.0		40.32			
																					41.32			

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1878

Nov. 5 | Nov. 10 | Nov. 13 | Nov. 14

Chf.

h	m	s	m	s	m	s
22	3	12.4	3	24.0	3	35.2
		14.0		26.0		37.5
		15.7		28.1		39.5
		17.2		30.3		41.6
		19.0		32.2		43.6
	4	22.9		9.4		46.7
		24.7		11.5		48.7
		26.5		13.5		50.9
		28.5		15.5		53.0
		30.2		17.5		55.0
				28.12		58.27
				39.49		0.05
				50.88		2.10
				2.16		4.20
				13.52		6.20
	3	15.66	25417			
	4	26.56			3	58.34
					59	34.69
					+4	16.14
					+4	16.11
						16.13
					−4	16.07
					+	.02
					−	3.66
					−4	19.71
					59	31.12

h	m	s	m	s	m	s
3	24.1	3	32.5		43.9	
	26.2		34.6		46.0	
	27.4		36.7		48.0	
	29.4		38.7		50.1	
	31.0		40.6		52.1	
4	30.6		17.9		55.1	
	32.4		20.0		57.2	
	33.8		22.1		59.1	
	35.9		24.0		1.1	
	37.5		26.2		3.5	
			36.64		6.69	
			48.05		8.60	
			59.34		10.66	
			10.71		12.72	
			22.07		14.93	
3	27.62	29681				
4	34.04			3	59.36	
					34.62	
				4	24.74	
				4	24.71	
					24.73	
				−4	24.71	
				+	.02	
				−	3.59	
				−4	28.28	
					31.08	

h	m	s	m	s	m	s
3	34.0	3	37.16	3	48.42	
	35.5		39.29		50.47	
	36.8		41.26		52.55	
	38.7		43.25		54.65	
	40.3		45.30		56.65	
			22.50		59.77	
			24.62		1.81	
			26.60		3.89	
			28.63		5.98	
			30.73		8.07	
			41.24		11.15	
			52.55		13.25	
			3.89		15.20	
			15.25		17.20	
			26.62		19.45	
3	37.06	1955				
				4	3.910	
					34.58	
				4	29.33	
				4	29.30	
					29.82	
				−4	29.31	
				+	.02	
				−	3.55	
				−4	32.84	
					31.07	

s	s	s	s	s
+ 3.517	− 3.573	+ 3.174	− 3.468	+ 2.685
1.546 17	1.553 03	1.501 61	1.540 08	1.428 94
1.652 18	1.659 04	1.607 62	1.646 09	1.534 95
′ ′	′ ′	′ ′	′ ′	′ ′
20 0	15 4	20 0	15 4	20 0
59.4 +.13	28.2 +.53	56.7 +.13	30.6 +.50	45.6 +.24
6.3 +.23	35.1 +.01	3.1 +.19	38.2 +.04	54.3 +.26
20.9 −.35	47.2 −.60	17.7 −.41	50.1 −.58	10.0 −.17
12.5 +.72	41.8 +.13	10.1 +.73	45.1 +.10	4.7 +.69
19.15 11.45	′ .07 3770	7.20 64	6 4035	5.80 102
21 9.78	19 38.08	21 6.90	19 41.00	20 58.65
− 44.89	45.61	− 40.52	44.27	− 34.27
20 24.89	23.69	20 26.38	25.27	20 24.38
− 0° 5′ 36.54	″ 35.34	38.03	36.92	36.03

s	s	s	s	s
+ 193		+ 1201		+ 787
1.453 94		1.445 61		1.441 47
− 36.62		− 55.67		− 55.14
+ .01	+ .01	+ .01	+ .01	+ .01
+− .14	+− .55	+− .14	−+ .61	−+ .18
+− .18	+− .02	+− .16	−+ .02	−+ .26
− 56.29	− 56.04	− 55.36	− 55.03	− 54.74
58 32.83	″ 31.38	33.39	31.95	30.77
58 32.10	−.89 ′ ″	32.67	−.93	30.77 −.78
54 21.3	+4 12.07	21.5	+4 12.98	21.6 +4 10.41
″	− .53		− .58	− .61
+4 ′ 10.8	− 21.40	4 11.2	− 21.20	4 9.2 − 21.10
10.7	+3 50.14	11.1	+3 51.20	9.1 +3 48.70
11.6	′ ″	12.0		9.9
	54 42.0		41.5	42.1
	41.3		40.6	41.3

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*Nov. 6 — Nov. 30

3	17.0	3	25.50	3	36.98	5	1.9	3	56.50	4	7.80		
	19.3		27.65		39.10		3.9		58.50		9.95		
	21.1		29.80		41.15		5.4		0.65		12.00		
	23.0		31.87		43.25		7.1		2.68		14.00		
	24.7		33.90		45.34		9.1		4.67		16.00		
4	26.7		11.80		48.40				41.90		19.10		
	29.4		13.00		50.50				43.95		21.20		
	30.8		15.00		52.65				46.00		23.25		
	33.2		17.30		54.67				47.95		25.35		
			19.40		56.60				50.20		27.40		
			29.74		59.76				0.60		30.60		
			41.16		1.90				11.95		32.60		
			52.56		3.90				23.26		34.65		
			3.91		6.00				34.65		36.65		
			15.14		8.10				45.96		38.75		
3	21.02	26251				5	5.48	11642.					
4	30.02			3	52.502					4	23.284		
					34.68						34.38		
				4	17.82					4	48.90		
				4	17.79					4	48.87		
					17.81						48.89		
				−4	17.73					−4	48.86		
				+	.02					+	.02		
				−	3.65					−	3.35		
				−4	31.36					−4	52.19		
					31.14						31.09		

+ 31.48		− 37.52				− 42.20							
1.49803		1.57426				1.62531							
1.60404		1.68027				1.73132							
20	0	15	4			15	4						
54.9	+13	26.3	+54			19.7	+50						
1.4	+17	33.3	+01			27.2	+05						
15.2	−37	43.9	−54			40.2	−40						
7.6	+73	39.5	+16			37.0	+19						
21 5.05	66		17	35.10		29.95	54						
20	4.78	19	35.75			19	31.02						
−	40.18		47.89				53.87						
20	24.60		23.84			20	24.89						
57	36.25		35.29				36.54						

+ 16.38						+ 16.01							
1.74998						1.74961							
−56.23						−56.18							
+ .01		+ .01				+ .02							
− + .13		− + .55				− + .45							
− + .16		− + .04				− + .08							
−55.93		−55.63				−55.63							
32.18		30.92				32.17							
31.55	−.88					32.17	−1.06						
21.3	+4	11.29				22.6	+4	11.13					
	−	.55					−	.80					
+4	10.2	−	21.40			4	9.7	−	20.20				
	10.1	+3	49.34				9.6	+3	50.13				
	11.0						10.7						
			42.2						42.0				
			41.3						41.0				

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γ Aquarii

$22^h\ 15^m\ 21^s$

$-2°\ 0'\ 5''$

+44 22 53

1878. Oct. 3

α_0 $21^s.263$

bor. α + .009 + .009

$\frac{d\alpha}{dt}$

δ_a 5".25

bor. δ −.40

$\frac{d\delta}{dt}$

Oct. 10

$\log \sin \delta$ 8.5431n

" $\cos \delta$ 9.99974

" $\cos \delta \tan i$ 0.10476n 581

arc δ 1.00

$\tan \delta$ −.03

$\sin i$ +.70

Oct. 14

$\log R_1$ 1.35631

" R_2 1.65564

R_1 $22^s.71$

R_2 11.37

I 2.06

Oct. 15

h	m	s	m	s	m	s													
22	17	53.7	18	3.72	18	15.78	18	10.1	18	18.35	18	29.89	18	25.8	18	27.60	18	38.90	
		53.7		5.83		17.10		11.4		20.50		31.87		27.9		29.73		40.92	
		53.8		7.85		17.28		13.5		22.60		33.95		30.0		31.84		43.00	
		53.6		10.00		21.32		15.0		24.60		36.00		31.3		33.82		45.20	
		1.3		12.05		23.42		17.2		26.75		38.00		33.2		35.90		47.30	
	18	5.90				26.48	19	21.0		3.83		41.20	19	31.7		12.95		50.37	
		0.8				28.43		23.0		5.82		43.30		33.4		15.70		52.40	
		2.3				30.65		24.9		8.01		45.25		35.2		17.20		54.45	
		4.6				32.58		26.7		10.82		47.35		37.3		19.35		56.47	
		6.4				34.58		28.3		12.00		49.50		39.8		21.44		58.67	
			7.89	30.60		37.78				22.56		52.50				31.78		1.67	
			19.26	.63		39.88				33.94		54.46				43.06		3.70	
			30.54	.54		41.20				45.32		56.64				54.47		5.88	
			41.93	.56		44.00				56.59		58.66				5.83		7.90	
						46.10				7.93		0.65				17.19		19.00	
	17	57.62					18	13.44	22	6.34			18	29.64	27	23.3			
	19	2.62			18	30.582	19	24.78			18	45.268	19	35.48			18	54.466	
					15	25.37						25.324						25.29	
					+ 3	5.21					3	19.94					3	29.28	
					+ 3	5.20					3	19.93					3	29.17	
					− 3	5.29					− 3	20.06					− 3	29.23	
					+	.04					+	.04					+	.04	
					−	4.11					−	4.06					−	4.03	
					− 3	9.36					− 3	24.08					− 3	33.22	
					m	s													
					15	21.22						21.19						21.25	

			+ 32.96	− 32.04			+ 31.83	− 39.51			+ 24.83	− 41.01			+ 30.90	− 38.22			
			1.51799	1.50569n			1.50284	1.59671n			1.39498	1.61289n			1.48976	1.58229n			
			1.62380n	1.61150			1.60865n	1.70252			1.50079n	1.71870			1.54577n	1.68810			
			25 1	20 4			25 1	20 4			25 1	20 4			25 1	20 4			
Eq			14.0 +38	50.9 +07			9.9 +28	39.2 +33			2.3 +14	38.7 +34			11.8 +32	42.9 +24			
+			20.9 +22	58.3 +04			18.9 +24	48.6 +19			11.1 +25	46.6 +20			19.9 +23	51.2 +18			
Q			44.6 −53	20.3 −37			38.6 −33	6.8 −02			31.3 −04	5.8 00			41.9 −46	10.8 −19			
H			32.1 +63	9.2 +20			28.4 +65	57.3 −03			21.9 +65	57.4 −03			32.1 +63	2.6 +07			
			20.30 110	1 11 6.560			24.25 84	47.53.00			16.65 100	57.52.25			26.85 72	36.56.85			
	26	27.90	25	4.68			26	23.95	24	52.98			26	16.65	24	52.12	26	26.42	24	56.88
	−	42.05		40.88			−	40.61		50.41			−	31.68		52.32	−	39.42		48.76
	25	45.85		45.56			25	43.34		43.39			25	44.97		44.44	25	47.00		45.64
−2°	2	57.50		57.21				54.99		55.04				56.62		56.09		58.65		57.29
+44	21	36																		
	1.75010																			
	− 588						+ 662				+ 550				− 334					
	1.74422	1.74422					1.74022	1.75672			1.73910	1.75560			1.73026	1.74676				
	− 55.42	− 55.49					− 54.98	− 57.11			− 54.84	− 56.96			− 53.73	− 55.82				
	+ .02	+ .02					+ .02	+ .03			+ .01	+ .03			+ .02	+ .03				
	− .12	− .41					− .10	− .34			− .09	− .34			− .10	− .34				
	− .18	+ .02					− .21	− .12			− .25	− .13			− .18	− .08				
	− 55.77	− 55.86					− 54.40	− 57.54			− 54.29	− 57.40			− 56.08	− 56.21				
	3	53.27		53.07				52.39		52.58		53.91		53.49		54.73		**53.50**		
	3	53.17						52.48				53.70				54.12				
	59	42.4	+ 4	11.04				42.4	+ 4	10.48		42.4	+ 4	11.68		42.5	+ 4	11.56		
			−	.44					−	.43			−	.43			−	.43		
	+ 4	10.8	−	22.80				10.1	−	22.80		11.3	−	22.80		11.6	−	22.70		
		10.4	+ 3	48.80				**9.7**	+ 3	47.25		**10.9**	+ 3	48.48		**11.2**	+ 3	48.43		
			0	5.4				5.2				5.3				5.7				

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	α		δ		α		δ	
Sept. 17	15m 25.45	2	59′ 42.8	2	Oct. 27	15m 25.15	6	59′ 42.7 / 43.5	2
22	.43	2	42.6	2	Nov. 1	.09	6	42.9	2
27	.41	2	42.5	1	6	25.03	6	43.1	2
Oct. 2	.38	3	42.4	1	11	24.97	6	43.4	2
7	25.35	3	42.4	0	16	24.91	6	43.5	2
12	.31	4	42.4	0	21	.85	6	43.7	2
17	.26	5	42.5	1	26	.79	6	44.0	3
22	.21	5	42.6	1	Dec. 1	.73	6	44.3	3
27	25.15	6	42.7	1	6	24.67	6	44.6	3

Oct. 29			Nov. 2			Nov. 3			Nov. 4		
18 50.2	19 0.25	19 11.58	19 5.3	19 8.52	19 19.93	19 2.6	19 10.56	22.00	19 4.1	19 12.48	19 23.88
51.8	2.44	13.55	7.1	10.60	21.87	4.0	12.61	24.05	5.8	14.55	26.05
53.5	4.35	15.70	8.9	12.70	24.00	5.8	14.60	26.05	7.4	16.60	28.05
55.5	6.30	17.80	10.5	14.73	26.05	7.4	16.77	28.10	9.2	18.88	30.05
57.4	8.46	19.90	12.1	16.76	28.10	9.3	18.86	30.22	11.0	20.80	32.05
20 3.1	45.45	23.00	20 7.7	53.90	31.12	20 8.0	56.00	33.33	20 12.2	58.00	35.17
5.2	47.60	25.00	9.5	56.00	33.24	9.5	58.00	35.32	13.9	0.05	37.20
6.7	49.80	27.03	11.7	57.90	35.33	11.1	0.00	37.43	15.8	2.10	39.28
8.4	51.90	29.00	13.6	0.10	37.47	12.6	2.22	39.46	17.2	4.05	41.42
10.5	54.00	31.20	15.3	2.05	39.46	14.8	4.22	41.47	19.3	6.22	43.60
	4.36	8.422		12.66	42.53		14.68	44.43		16.65	46.60
	15.71	36.38		23.79	44.60		26.08	46.63		28.02	48.60
	27.04	38.40		35.32	46.70		37.40	48.83		39.33	50.75
	38.41	40.48		46.69	48.76		48.79	51.00		50.75	52.80
	49.75	42.57		57.99	50.86		0.09	53.05		2.06	55.00
18 53.68	13.527		19 8.78	17.665		19 5.82	18.704		19 7.50	19.681	
20 6.74		19 27.054	20 11.56		19 35.331	20 11.22		19 37.408	20 15.68		19 39.362
		25.123			25.08			25.06			25.25
		4 1.93			4 10.25			4 12.35			4 14.31
		4 1.92			4 10.24			4 12.34			4 14.30
		−9 1.86			−4 10.29			−4 12.32			−4 14.29
		+ .04			+ .63			+ .04			+ .03
		− 3.86			− 3.82			− 3.80			− 3.79
		−4 5.68			−4 15.08			−4 16.08			−4 18.05
		21.37			21.25			21.37			21.31
+ 33.37	− 39.69		+ 26.55	− 36.23		+ 31.59	− 33.79		+ 31.86	− 36.32	
1.52336	1.59868m		1.42406	1.55907m		1.49955	1.52879m		1.50325	1.56015m	
1.62917m	1.70449		1.52987m	1.66488		1.60536m	1.63460		1.60906m	1.66596.	
25 1	20 4		25 1	20 4		25 1	20 4		25 1	20 4	
11.7 +32	38.2 +35		5.9 +19	45.1 +20		10.7 +29	46.0 +18		13.5 +36	44.9 +20	
20.2 +23	47.2 +20		14.4 +25	53.1 +15		19.2 +24	55.0 +11		21.8 +22	53.2 +15	
39.1 −85	5.3 +01		31.8 −05	9.2 −10		34.8 −15	9.8 −15		34.4 −12	5.3 +01	
29.9 +65	56.5 −02		23.5 +66	2.4 +07		26.7 +65	2.0 +05		26.8 +65	57.6 −02	
25.40 85	54 51.75		18.85 1095	32 52.15		22.75 103	1957.90		23.95 111	34 55.10	
26 25.22	24 51.80		26 18.90	24 57.45		26 22.85	24 58.20		26 24.12	24 58.25	
− 42.58	50.64		− 33.87	46.22		− 40.30	43.11		− 40.65	46.34	
25 42.64	42.44		25 45.03	25 43.67		25 42.55	41.31		25 43.47	41.59	
2 54.29	54.09		56.68	55.32		54.20	52.96		55.12	53.24	
+ 13.02			+ 5.26			+ 19.04			+ 20.43		
1.74662	1.76312		1.73886	1.75536		1.75264	1.76914		1.75403	1.77053	
−56.80	−57.96		−54.81	−56.93		−56.58	−58.77		−56.76	−58.96	
+ .02	+ .03		+ .01	+ .02		+ .02	+ .02		+ .02	+ .02	
− .14	− .49		− .14	− .54		− .15	− .55		− .15	− .54	
− .21	− .11		− .276	− .08		− .26	− .08		− .28	− .08	
−58.29	−58.56		−56.52	−56.29		−58.34	−58.16		−58.51	−58.32	
52.58	52.65		3 53.20	51.61		52.54	51.11		52.63	51.56	
52.62			3 52.40	−1.02		51.82	−1.01		52.60	−1.05	
42.8 +4	10.54		59 42.9	+4 10.80		43.0	+4 11.68		43.0	+4 11.30	
−	.48		−	.45.52		−	.52		−	.52	
+4 9.8 −	22.40		4 9.5	− 22.30		4 9.8	− 22.20		4 9.6	− 22.20	
9.4 +3	47.66		9.1	+3 47.98		9.4	+3 48.86		9.2	+3 48.58	
	5.0		10.1	7.4		10.4	2.0		10.2	4.4	
				3.4			3.0			3.0	

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Nov. 10 | Nov. 13 | Nov. 14 | Nov. 30

	Nov. 10			Nov. 13			Nov. 14			Nov. 30		
22	19 m 10.7	19 m 22.80	19 m 31.15	19 26.0	19 27.42	19 38.70	19 21.8	19 28.92	19 40.00	19 37.2	19 46.80	19 58.10
	13.6	24.88	36.18	28.0	29.60	40.86	23.3	30.90	42.10	38.4	48.80	0.20
	15.9	27.00	38.23	29.9	31.60	42.86	25.1	33.00	44.30	40.8	50.90	2.15
	17.5	29.00	40.40	31.8	33.55	44.95	26.5	35.00	46.40	42.4	52.90	4.22
	19.3	31.10	42.58	33.7	35.70	47.10	28.5	37.10	48.45	44.2	55.00	6.42
	20 22.7	8.25	45.45		12.90	50.44	20 31.2	14.20	[51.53] 50.53		32.12	9.44
	24.7	10.42	47.60		14.93	52.20	33.5	16.10	53.55		34.20	11.70
	26.9	12.40	49.78		17.00	54.20	35.1	18.30	55.57		36.28	13.61
	28.6	14.62	51.80		19.57	56.30	36.8	20.40	57.90		38.40	15.70
	30.8	16.53	53.90		21.10	58.35	38.8	22.55	59.74		40.45	17.65
		26.96	56.85		31.57	1.50		32.98	2.80		50.88	2.065
		38.29	58.00		42.89	3.57		44.25	4.89		2.22	23.00
		49.70	1.14		54.30	5.60		56.62	7.00		13.62	25.00
		1.07	3.16		5.60	7.70		6.94	9.00		24.98	27.10
		12.44	5.20		16.97	9.65		18.31	11.00		36.29	29.15
	19 15 4 40	24846		19 29.88	27133		19 25.04	27810		19 40.66	6799	
	20 26.74		19 49.692			19 54.266	20 35.08		19 55.620			20 13.598
			15 24.98			24.943			24.93			24.74
			+4 24.71			4 29.32			4 30.69			4 48.86
			+4 24.70			4 29.31			4 30.68			4 48.85
			−4 24.73			−4 29.33			−4 30.67			−4 48.87
			+ .03			+ .03			+ .03			+ .03
			− 3.72			− 3.68			− 3.67			− 3.48
			−4 28.42			−4 32.98			−4 34.31			−4 52.32
			m s 15 21.27			21.29			21.31			21.28
	+ 34.29	− 37.05		+ 24.39			+ 30.58	− 39.46		+ 32.94		
	1.53517	1.56879m		1.38721			1.48544	1.59616m		1.51772		
	1.64098m	1.67460		1.49302m			1.59125m	1.70197		1.62353m		
								69				
	25 1	20 4		25 1			20 4			25 1		
E	19.1 +47	47.8 +14		3.2 +15			40.9 +29			15.6 +41		
#	27.2 +19	56.1 +09		11.8 +26			49.9 +17			24.0 +20		
G	41.4 −44	9.4 −12		26.6 −10			1.9 +03			36.5 −23		
H	33.9 +61	3.6 +12		20.2 +66			55.6 −02			31.6 +63		
	38.25 1.83	' 23 5860		14.90 97			51.40 49			26.05 101		
	26 30.40	24 59.30		26 15.45			24 52.08	24 52.08		26 26.92		
	− 43.75	4427		− 31.12			− 39.02	50.35 49.20		− 42.03		
	25 46.65	46.57		25 44.33			24 13.06	25 42.43		25 44.89		
								41.28				
−2 C	2' 58.30	" 58.22		55.98				54.08		56.54		
								53.93				
	+ 12.24			+ 8.20				+ 20.90		+ 16.80		
	1.74584	1.76234		1.74480	1.75830			1.75450	1.77100	1.75010	1.76670	
	− 55.70	− 57.86		− 55.18	− 57.32			− 56.82	− 89.02	− 56.25	− 58.44	
	+ .02	+ .03		+ .01			+	+ .03		+ .02		
	− + .21	− + .65		− + .17				− + .64		− + .14		
	− + .21	− + .06		− + .24				− + .12		− + .25		
	− 57.43	− 57.12		− 56.90				− 58.23		− 58.03		
	31 58.72	58.34		52.88				52.31 52.16		54.57		
	3 53.53 −1.13			52.88 −.82				52.31 −1.52		54.54 −.78		
	59 43.3 +4' 12.98			43.4 +4 10.41				43.4 +4 12.04		44.3 +4 11.13		
	− .59			− .62				− .64		− .81		
	+4' 12.2 − 21.90			4 9.5 − 21.80				4 8.9 − 21.80		4 10.3 − 20.90		
	11.8 +3 50.49			9.1 +3 47.99				8.5 +3 49.60		9.9 +3 49.42		
	12.9			9.9				10.8		10.7		
	0' 5.8			4.9				2.7		5.1		
	3.9			4.1				+12		4.4		
								26				

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~~Lyra~~ ~~Supplemental~~

(Inserted by mistake.)

~~Nov. 3~~ Nov. 5 Nov. 6 Nov. 13

7.10			29	50.0	30	39.4	31	12.0	30	3.3	30	—	31	14.2						
9.20				56.2		42.0		15.3		6.8		43.6		16.9						
2.15				0.4		45.0		18.2		14.9		47.2		19.8						
2.22				1.2		47.8		21.2		18.5		50.0		22.0						
6.42				13.2		51.0		23.7		24.0		53.0		—						
						54.3		27.4				55.6		—						
7.44			32	15.3		57.4		30.7	32	27.0		59.2		—						
1.70				19.3		0.5		33.5		32.6		2.5		—						
3.61				25.3		3.3		36.7		37.0		5.0		—						
5.70				30.4						41.1										
4.65				35.0				45.4		46.5				47.5						
0.65								48.2						50.7						
3.00								51.5						53.6						
5.70								54.5						56.6						
7.10								57.6						59.5						
7.15								0.7						2.6						
								3.5						5.4						
								6.7						8.7						
								9.6						11.4						
598																				
74																				
586																				
585																				
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03																				
48																				
32																				
.28																				

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η Pegasi
22ʰ 37ᵐ 17ˢ
+29° 35′ 1″
+12 47 47
1878

α_0	17.094ˢ
Corr. α	−.033 + .004
$\frac{d\alpha}{dt}$	
δ_0	1.05″
Corr. δ	−.29
$\frac{d\delta}{dt}$	

log sin δ	9.69345
" cos δ	9.93934
" 15 cos δ tan i	0.04541ₙ
tan δ	+.57
sin z	+.22

log R₁	1.41671
" R₂	1.11604
R₁	26.10ˢ
R₂	13.06

Oct. 1

22ʰ 39ᵐ 37.5ˢ, 40.0, 42.1, 43.9, 46.2 | 39ᵐ 52.39ˢ, 54.75, 57.20, 59.50, 1.71 | 40ᵐ 5.40ˢ, 7.77, 10.05, 12.35, 14.83
40 53.3, 55.7, 57.6, 59.4, 1.8 | 44.60, 47.05, 49.40, 51.80, 54.00 | 18.49, 20.89, 23.12, 25.50, 27.95
57.11, 10.08, 23.19, 36.36, 49.37 | 31.65, 34.05, 36.32, 38.73, 41.05

39 41.94 | 11611
40 57.60 / 56 | 40 23.222; 37 20.915; +3 2.31; +3 2.34; 2.31
−3 1.52; — .81; — 3.82; −3 6.15
37ᵐ 17.07ˢ

Oct. 16

40 12.8, 14.9, 16.9, 19.2, 21.4 | 40 24.10, 26.40, 28.80, 31.30, 33.50 | 40 37.10, 39.40, 41.85, 44.20, 46.60
41 27.4, 29.4, 31.5, 33.5, 35.8 | 16.30, 18.55, 21.00, 23.40, 25.96 | 50.22, 52.53, 55.00, 57.30, 59.75
28.82, 41.83, 54.96, 7.99, 21.04 | 3.30, 5.60, 7.95, 10.35, 12.75

40 17.04 | 27464
41 31.52 | 40 44.928; 20.78; 3 34.15; 3 34.18; 34.15
−3 33.45; — .72; — 3.69; −3 37.86
17.07

Oct. 29

41 16.0, 17.8, 19.8, 21.7, 24.5 | 40 52.35, 54.64, 57.20, 59.50, 1.80 | 41 5.32, 7.80, 10.20, 12.60, [15.00] 16.00
41 59.7, 1.6, 3.5, 5.8, 7.9 | 44.45, 46.90, 49.22, 51.60, 54.00 | 18.53, 20.90, 23.34, 25.59, 27.94
57.10, 10.18, 23.26, 36.27, 49.23 | 31.49, 33.90, 36.35, 38.60, 41.00

41 19.96 | 11604
42 3.70 | 41 23.208; 20.62; 4 2.59; 4 2.62; 2.59
−4 1.91; — .69; — 3.53; −4 6.13
17.08

Nov. 2

40 49.4, 51.3, 53.2, 55.3, 57.5 | 41 0.70, 3.60, 6.18, 8.80, 10.10 | 13.68, 16.10, 18.40, 20.90, 23.18
42 5.7, 7.6, 9.4, 12.1, 14.1 | 52.83, 55.25, 57.58, 59.95, 2.38 | 26.70, 29.15, 31.52, 33.85, 36.27
5.88, 18.45, 31.50, 44.54, 57.80 | 39.73, 42.10, 44.48, 47.00, 49.37

40 53.34 | 15797
42 9.78 | 41 31.594; 20.563; 4 11.03; 4 11.06; 11.03
−4 10.33; — .64; — 3.47; −4 14.44
17.15

Reductions

Oct. 1		Oct. 16		Oct. 29		Nov. 2	
+41.28ˢ	−34.34ˢ	+37.89	−36.59	+3.25	−40.49	+38.25	−38.19
1.61574	1.53580ₙ	1.57852	1.56336ₙ	0.51188	1.60735ₙ	1.58263	1.58195
1.66115ₙ	1.58121	1.62393ₙ	1.60877	0.55729ₙ	1.65276	1.62804ₙ	1.62736
50′ 1′	50′ 0′	50 1	50 0	50 1	50 0	50 1	50 0
E 49.8″ +14	25.8″ +19	44.9 +24	21.5 +44	5.0 +18	14.9 +31	44.3 +25	19.3 +41
F 53.8 +34	31.9 +03	49.1 +43	27.1 +04	10.9 +25	21.3 +07	49.5 +43	25.8 +04
G 12.6 −28	50.4 −64	8.4 +03	45.9 −66	26.2 −12	36.1 −27	4.0 +14	39.7 −47
H 8.9 +50	45.0 +51	3.1 +39	41.3 +51	21.6 +65	33.4 +51	0.9 +33	38.2 +52
1.20 115	38.11 39 38.10	56.65 109	33 33.70	15.62 96	62 25.50	54.15 115	50 29.50
52 1.28	50 38.28	51 56.38	50 33.95	51 15.92	50 26.42	51 54.68	50 30.75
— 45.83	38.12	— 42.07	40.62	— 3.61	44.95	— 42.47	42.40
51 15.45	16.40	51 14.2 (3)	14.57	51 12.31	11.37	51 12.21	13.15
+29° 31′ 32.90″	31.95″	34.14 (0)	33.78	36.04	36.98	36.14	35.20

+12 47 6
1.11620
−257 | −348 | +1332 | +564
1.11363 | 1.11272 | 1.12952 | 1.12184

Oct. 1		Oct. 16		Oct. 29		Nov. 2	
−12.99		−12.98		−13.47		−13.24	
− .41	− .28″	− .34	− .32	.00	− .39	− .35	− .34
− .16	− .05	− .15	− .05	− .13	− .04	− .21	− .07
− .19	− .10	− .27	− .08	− .24	− .16	− .29	− .12
−13.75	−13.42	−13.72	−13.41	−13.84	−14.06	−14.09	−13.77
31′ 19.15	18.53	20.32	20.37	22.20	22.92	31 22.05	21.43
31 18.84		20.35		22.56		31 21.74	
35 29.1	+4′ 10.46″	31.5	+4 10.96	32.9	+4 10.54	35 33.2	+4 10.80
	− .14		− .13		− .15		− .16
+4′ 10.3″	− 28.10	11.1	− 30.50	10.3	− 31.90	4 11.5	− 32.20
10.0	+3 42.22	10.8	+3 40.33	10.0	+3 38.49	11.2	+3 38.44
	35′ 1.1″		0.7		1.0		0.2

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Sept.	m	s		Oct.	m	s		Nov.	m	s	
17	37	20.97	1	27	27	20.65	7		35	32.7	4
22		.96	2	Nov. 1		.58	7			33.1	3
27		.94	3	6		.51	7			33.4	3
Oct. 2		.91	4	11		.44	7			33.6	2
7		20.87	5	16		20.37	7			33.8	2
12		.82	5	21		.29	8			33.8	0
17		.77	6	26		.22	7			33.8	0
22		.71	6	Dec. 1		.15	7			33.6	2
27		20.65		6		20.08	7			33.4	2

Nov. 4				Nov. 5				Nov. 6				Nov. 10			
41	7.4	41	4.80	41	17.75	40	52.2	41	6.33	41	19.40	41	23.7	41	8.80	41	21.18	41	3.7	41	14.95	41	27.83
	8.8		7.15		20.05		54.3		8.69		21.80		25.2		10.45		23.52		5.8		17.36		30.30
	11.1		9.52		22.47		56.1		11.10		24.00		27.3		12.82		25.78		7.7		19.65		32.70
	13.0		11.70		24.80		58.0		13.58		26.50		30.2		15.19		28.15		10.3		22.10		35.10
	15.1		14.20		27.20		0.2		15.90		28.90		31.9		17.35		30.55		12.4		24.40		37.60
			57.80		30.80	42	15.0		58.60		32.50	42	17.7		0.30		34.10	42	24.6		7.20		41.18
			59.29		33.25		17.0		0.95		34.85		20.9		2.62		36.50		26.8		9.50		43.35
			1.65		35.53		19.8		3.38		37.30		23.3		5.00		38.88		28.7		12.00		45.77
			4.80		37.90		21.4		5.80		39.56		24.0		7.35		41.35		30.8		14.25		48.18
			6.48		40.10		23.3		8.10		42.50		26.1		9.80		43.80		33.1		16.75		50.57
			9.47		43.85				11.10		45.53				12.76		47.15				19.69		54.10
			22.45		46.20				24.12		47.92				25.84		49.45				32.71		56.53
			35.51		48.62				37.24		50.09				38.93		52.00				45.81		58.90
			48.60		50.92				50.27		52.60				51.91		54.30				58.85		1.20
			1.67		53.40				3.37		55.00				5.01		56.65				11.94		3.50
41	11.08	17770				40	56.16	18610			2	41	27.62	19445				41	7.98	22900			
				41	35.540	42	19.30			41	37.820	42	22.20			41	38.890	42	28.80			41	45.800
					20.54						20.52						20.51						20.45
				4	15.00					4	16.70					4	18.38					4	25.35
				4	15.03					4	16.73					4	18.41					4	25.38
					15.00						16.70						18.38						25.35
				−4	14.33					−4	16.11					−4	17.79					−4	24.75
				−	.65					−	.62					−	.66					−	.62
				−	3.45					−	3.43					−	3.42					−	3.36
				−4	18.43					−4	20.16					−4	21.87					−4	28.73
					17.11						17.06						17.02						17.07
	+ 24.46						+ 41.06		− 42.08				+ 11.27		− 43.31				+ 37.82		− 43.00		
	1.38846						1.61342		1.62408				1.05192		1.63659				1.57772		1.63347		
	1.43387						1.65883		1.66949				1.09733		1.68200				1.62313		1.67888		
50	1	50	0			50	1	50	0			50	1	50	0			50	1	50	0		
31.1	+.51	17.0	+.36			50.0	+.14	18.7	+.39			17.9	+.45	15.2	+.31			46.5	+.21	17.8	+.38		
37.3	+.22	22.1	+.06			54.7	+.36	24.0	+.05			23.0	+.21	19.9	+.08			51.4	+.12	23.2	+.06		
46.4	−.55	31.1	−.08			3.2	+.14	31.8	−.11			31.3	−.08	24.2	−.09			1.4	+.13	33.2	−.14		
44.1	+.47	30.2	+.50			1.9	+.36	31.4	+.50			29.6	+.65	25.4	+.48			0.9	+.56	32.8	+.51		
38.75	.85		.84	24.05		56.60	1.02		.83	25.25		24.60	1.28		.78	22.20		53.95	1.35		.81	25.50	
51	39.72	50	25.10			51	57.45	50	26.48			51	25.45	50	23.18			51	55.05	50	26.75		
−	27.16					−	4.59		4.72			−	12.51		4.08			−	41.99		4.74		
51	12.56					51	11.86		13.20			51	12.94		11.26			51	13.06		14.49		
31	35.79						36.49		35.15				35.41		37.09				35.29		33.86		
	+ 20.86						+ 20.01						+ 16.96						+ 12.53				
	1.13706						1.13621						1.13316						1.12873				
	−13.71						−13.68						−13.59						−13.45				
	− .14						− .40		− .42				− .03		− .45				− .34		− .44		
	− .19						− .23		− .05				− .17		− .05				− .25		− .05		
	− .16						− .26		− .21				− .32		− .20				− .34		− .20		
	−14.20						−14.57		−14.36				−14.11		−14.29				−14.38		−14.14		
	21.59						21.92		20.79				21.30		22.80				20.91		19.72		
	21.59						21.35						22.05						20.32				
	33.3	+4	11.30				33.4	+4	12.07				33.4	+4	11.29				33.6	+4	12.98		
		−	.16					−	.17					−	.17					−	.18		
+4	11.7	−	32.30			4	12.1	−	32.40			4	11.4	−	32.40			4	13.3	−	32.60		
	11.4	+3	38.84				11.8	+3	39.50				11.1	+3	38.72				13.0	+3	40.20		
			0.4						0.9						0.8						0.5		

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1878

Nov. 12 | Nov. 13 | Nov. 26 | Nov 30

h	m	s	m	s	m	s													Chf.
22	41	9.5	41	18.00	41	31.00	41	10.1	41	19.60	41	32.55	41	23.5	41	34.67	41	47.70	
		11.1		20.40		33.32		12.0		21.90		34.90		26.5		37.18		50.70	
		13.3		22.72		35.77		14.0		24.35		37.30		28.4		39.49		52.40	
		15.8		25.00		38.00		16.3		26.68		39.70		31.0		41.78		54.85	
		17.5		27.50		40.48		19.2		29.80		42.10		33.6		44.04		57.10	
				#															
	42	8.5		10.22		44.00	42	28.7		11.70		45.60	42	14.4		26.75		0.71	
		10.5		12.42		46.38		30.6		14.07		48.00		46.4		29.20		3.18	
		12.0		14.88		48.77		32.5		16.45		50.30		48.4		31.40		5.42	
		14.0		17.30		51.15		34.9		18.85		52.70		49.9		33.83		7.69	
		16.9		19.63		53.53		37.5		21.25		55.20		51.9		36.37		10.10	
				22.72		57.00				24.31		58.57				39.43		13.80	
				35.71		59.52				37.31		1.00				52.41		16.20	
				48.77		1.90				50.36		3.45				5.42		18.50	
				1.83		4.13				3.41		5.80				18.55		20.85	
				14.89		6.60				16.45		8.23				31.51		23.38	
	41	13.44	24392				41	14.32	25184				41	28.60	2732				
	42	12.38			41	48.784	42	32.84				50368	42	48.20			42	5.464	
					37	20.423						20.41						20.216	
					+ 4	28.36					4	29.96					4	45.25	
					+ 4	28.39					4	29.99					4	45.28	
						28.36						29.96						45.25	
					-4	27.69					-4	29.36					-4	44.62	
					-	.67					-	.64					-	.65	
					-	3.33					-	3.32					-	3.12	
					-4	31.69					-4	33.32					-4	48.39	
					m	s													
					37	17.09						17.05						17.07	
			s		s														
			+ 33.34		- 23.60			+ 36.05		- 42.47				+ 36.86		- 42.74			
			1.54827		1.37291m			1.55691		1.62808m				1.56656		1.63083m			
			1.59348		1.41832			1.60232		1.67349				1.61197		1.67824			
			50	1	50	0		50	1	50	0			50	1	50	0		50 0 50 0
6			40.5	+32	36.0	+40		42.5	+28	14.4	+30			42.6	+28	15.2	+31		50.1 +17 12.6 +25
7			45.9	+41	41.8	+19		47.5	+12	20.2	+08			47.3	+12	20.8	+07		55.2 +25 18.1 +09
9			0.3	+12	55.4	-38		58.9	+08	31.3	-09			57.2	-04	30.2	-07		5.8 -04 27.2 -13
11			59.2	+30	54.6	+52		56.4	+30	30.5	+50			55.9	+30	29.1	+49		4.4 +68 28.1 +47
			59.40	115		473	45.70	50.70	108		79	22.85		49.90	96		80	22.70	57.95 19.90
			51	51.48	50	46.95		51	51.32	50	24.10			51	50.75	50	23.82		50 58.88 50 21.50
			-	39.23		26.20		-	40.02		47.15			-	40.92		47.45		
			51	12.25		13.15		51	11.30		11.25			51	9.83		11.27		
+29			31'	36.10		35.20			37.05		37.10				38.52		37.08		
				-302					+869						+1983				
			1	11.318				1	12.489					1	13.603				
			-	12.98		"		-	13.33					-	13.68				
			-	.30	-	.14		-	.31	-	.43			-	.32	-	.43		
			-	.25	-	.10		-	.25	-	.05			-	.20	-	.05		
			-	.29	-	.18		-	.27	-	.20			-	.24	-	.20		
			-13.82		-13.40			-14.16		-14.01				-14.44		-14.36			
			31	22.28		21.80			22.89		23.09				24.08		22.72		
			31	22.04					22.99						23.40				
			35	33.6	+4	11.12			33.4	+4	10.41				33.8	+4	11.24		
				"	-	.19				-	.20					-	.24		
			+ 4	11.6	-	32.60		4	10.7	-	32.70			4	10.4	-	32.80		
				11.3	+3	38.33			10.4	+3	37.51				10.1	+3	38.20		
					1	"													
					35	0.4					0.5						1.6		

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	α		δ	
	m s		′ ″	
Dec. 6	37 20.08		35 33.4	
11	20.01	7	33.1	3
16	19.94	7	32.7	4
21	.87	7	32.2	5
26	19.81	6	31.6	6

Dec. 1 Dec. 7 Dec. 12 Dec. 14

41 29.2 41 39.95 41 52.74 41 39.4 41 47.27 42 0.25 41 42.7 41 52.73 5.73 42 54.0 42 20.66 A-1 33.50
30.9 42.20 55.22 40.8 49.58 2.50 44.9 55.10 8.10 56.0 23.20 36.00
34.3 44.65 57.65 42.4 52.00 5.00 46.7 57.47 10.48 57.6 A 25.38 —
36.9 46.77 59.90 44.6 54.27 7.40 49.5 59.80 12.80 59.2 27.70 40.80
39.0 49.20 2.27 46.5 56.60 9.75 51.3 2.15 15.25 1.5 30.05 43.25

42 43.4 32.00 5.77 42 55.4 39.40 13.30 42 55.5 44.80 18.77 A-2 46.65
45.5 34.46 8.35 57.1 41.68 15.68 57.6 47.20 21.14 49.20
47.2 36.85 10.50 59.2 44.10 18.05 59.6 49.63 23.50 51.80
48.7 39.20 13.00 1.1 46.45 20.45 1.8 52.02 25.88 54.25
50.0 41.90 15.45 3.3 49.00 22.70 3.7 54.55 28.27 56.40

44.55 19.10 51.94 26.29 57.45 31.80 —
57.56 21.35 4.98 28.68 10.47 34.10 —
10.61 23.70 18.04 31.10 23.51 36.54 25.40 25.40
23.78 25.95 31.06 33.45 36.55 38.90 38.39 .33
36.88 28.80 44.13 35.80 49.64 41.40 51.66 .56

41 34.06 53.38 41 42.74 9015 41 46.02 (47) 11762 42 57.66
42 46.96 42 10.676 42 59.22 42 18.030 42 59.64 42 23.524 42 25.430
37 20.147 37 20.06 19.99 19.96
4 50.53 4 57.97 5 3.53 5 5.47
4 50.56 4 58.00 5 3.56 5 5.50
50.58 57.97 3.53 5.47

−4 49.95 −4 57.36 −5 2.86 −5 4.84
− .63 − .65 − .59 − .63
− 3.05 − 2.97 − 2.90 − 2.87
−4 53.63 −5 0.98 −5 6.35 −5 8.34

17.05 17.05 17.17 17.09

+36.62 −36.28 +35.29 −41.19 +36.50 −36.12 −32.23
1.56372 1.55967n 1.54765 1.61479n 1.52229 1.55775n 1.50826n
1.60913n 1.60508 1.59306n 1.66020 1.56770n (60) 1.60316 1.55367

50 1 50 0 50 1 50 0 50 1 50 0 50 1

44.8 +24 24.7 +48 45.4 +23 20.2 +42 43.8 +26 22.3 +45 27.9 +53
48.1 +43 29.8 +03 49.2 +43 24.7 +04 48.6 +43 28.2 +03 33.1 +18
56.1 +03 37.7 −38 57.6 −00 31.8 −11 57.1 −04 36.3 −28 41.6 −45
57.9 +30 38.9 +52 54.1 +32 32.2 +50 55.2 +31 37.3 +52 39.1 +55
51.45 100 65 31.20 51.50 98 85 26.00 50.45 96 72 29.30 81 34.75
51 52.22 50 32.78 51 51.58 50 27.22 51 51.18 50 31.02 51 35.42
− 40.66 40.28 − 39.18 45.73 − 36.96 40.52 40.10 35.78
51 11.56 13.06 51 12.40 12.98 51 14.22 10.66 11.12 51 11.20
31 36.79 35.29 35.95 35.40 34.13 37.69 37.23 37.15

+2589 +2810 +1926 +2264
1.14207 1.14430 1.13546 1.13884
−1387 −1394 −1366 −1377
− .32 − .31 − .30 − .40 − .31 − .31 − .24
− .19 − .05 − .19 − .04 − .20 − .06 − .18
− 25 − .16 − .25 − .21 − .24 − .18 − .20
−1463 −1439 −1468 −1459 −1441 −1421 −1439
2216 2090 2127 2081 2328 2302 2276
2153 2104 2315 2276
336 +4 11.52 333 +4 11.82 330 +4 10.07 329 +4 10.53
− .26 − .28 − .29 − .29
+4 12.1 − 32.60 4 12.3 − 32.30 4 9.9 − 32.06 4 10.1 − 31.90
11.8 +3 38.66 12.0 +3 39.24 9.6 +3 37.78 9.8 +3 38.34

35 0.2 0.3 0.9 1.1

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λ Pegasi

22h 40m 39s
+22° 55′ 26″
+19 27 22
1878

α_0 39s.298
corr. α +.031 +.056
$\frac{d\alpha}{dt}$
$\Delta\delta_0$ 26″.42
corr. δ .00
$\frac{d\delta}{dt}$

log sin δ 9.59052
" cos δ 9.96427
" 15 cos δ sin 1 0.07034 m
tan δ +.42
sin i +.33

log R_1 1.39178
log R_2 1.09111
R_1 24s.65
R_2 12.33
I 2.25

	Oct. 1			Nov. 3			Nov. 10			Nov. 12		
h	m s	m s	m s	m s	m s		m s	m s		m s	m s	
22	43 10.4	43 16.35	43 28.53	44 2.49	44 26.83	38.86	44 3.82	44 38.90	44 51.20	44 27.2	44 41.93	54.20
	11.7	18.63	30.84	2.72	29.05	41.18	4.07	41.10	53.44	29.2	44.80	56.48
	13.6	20.80	33.00	2.98	31.43	43.43	4.28	43.40	55.70	31.8	46.30	58.68
	15.6	23.00	35.38	3.20	33.50	45.62	4.46	45.60	58.04	33.5	48.62	1.0
	17.8	25.22	37.65	34.7	35.50	48.00	46.6	47.96	0.30	33.9	50.90	3.28
	44 0.5	5.38	41.00	45 3.82	16.00	51.40	45 3.40	28.20	3.53	45 45.0	34.28	6.58
	2.5	7.85	43.20	3.97	18.10	53.68	3.60	30.55	5.82	47.1	38.50	8.82
	4.5	10.02	45.44	4.13	20.32	55.64	3.82	32.85	8.00	49.2	38.70	11.00
	6.8	12.20	47.69	4.35	22.66	58.20	4.02	34.80	10.22	51.3	37.94	13.26
	8.3	14.50	49.80	4.58	24.88	0.30	4.25	37.27	12.55	52.6	40.20	15.53
		20.80	53.20		31.26	3.70		43.39	15.90		46.37	18.92
		33.08	53.35		43.42	6.00		55.73	18.10		58.73	21.05
		45.43	57.60		55.84	8.10		8.02	20.40		11.04	23.30
		57.68	0.05		8.13	10.26		20.39	22.53		23.34	25.57
		10.03	2.20		20.39	12.60		32.73	25.00		35.72	27.88
	43 13.82	22.02		44 29.72	27.04		44 42.44	40.26		44 31.42	56.20	
	44 4.52		43 45.404	45 41.70		44 56.808	46 38.14		45 8.052	45 49.04		45 11.040
			40 43.195			42.883			42.80			42.773
			+ 3 2.21			34 12.93			34 25.25			34 28.27
			+ 3 2.18			4 12.90			4 25.22			4 28.24
			2.15			12.88			25.20			28.22
						12.87			25.19			28.21
			−3 1.52			−4 12.37			−4 24.76			−4 27.70
			− .60			− .51			− .46			− .50
			− 3.90			− 3.58			− 3.50			− 3.47
			−3 6.02			−4 16.46			−4 28.72			−4 31.67
			m s									
			40 39.38			39.35			39.38			39.37
	+ 3158	− 1912		+ 2609	− 4589		+ 2561	− 3009		+ 3962	− 3800	
	1.49941	1.28149 m		1.41647	1.66172 m		1.40841	1.47842 m		1.59791	1.57978 m	
	1.56975 m	1.35183		1.48681 m	1.73206		1.47874 m	1.54876		1.66825 m	1.65812	
	′ ″	′ ″		′ ″			′ ″			′ ″		
	30 1	30 0		30 1	25 4		30 1	25 4		30 1	25 4	
E	9.1 +26	10.3 +19		1.9 +14	37.2 +37		2.9 +15	58.6 .00		16.6 +42	46.0 +18	
G	14.9 +25	15.7 +09		8.3 +21	43.4 +16		8.9 +25	2.3 +01		23.7 +20	50.7 +18	
L	32.0 −05	32.8 −13		20.1 −35	54.0 −42		19.2 −40	13.1 −29		36.2 −20	3.9 +03	
H	28.3 +65	29.8 +50		18.0 +67	53.1 +01		17.1 +68	13.1 +23		36.0 +59	3.2 +10	
	29.55 111	1 165	21.55	11.00 67		12.4560	11.05 68		05.5585	26.40 101		49.52495
	31 21.08	30 22.15		31 12.08	29 46.92		31 12.02	30 6.78		31 28.12	29 55.95	
	− 37.13	22.48		− 30.68	53.96		− 30.11	35.38		− 46.59	44.68	
	30 43.95	44.63		30 41.40	40.88		30 41.91	42.16		30 41.53	40.63	
	7.0											
+22°	52 44.0	3″.72		6.95	7.41		6.44	6.19		6.82	7.72	
+19	26 34											
	1.30800											
	−251			+1960			+1258			90 −286		
	1.30549			1.32760			1.32058			1.30514		
	−20.21			−21.26			−20.92			−20.19		
	− .20	− .07		− .13	− .42		− .13	− .18		− .31	− .28	
	− .10	− .03		− .18	− .53		− .16	− .66		− .20	− .64	
	− .28	− .16		− .17	− .03		− .17	+ .01		− .25	# .12	
	−20.79	−20.47		−21.69	−22.24		−21.386	−21.75		−20.95	21.23	
	51 43.61	43.25		51 45.26	45.23		4508	4444		45.87	46.49	
	51 43.43	″		51 45.24			44.765			46.18		
	55 54.0	+4 10.46		55 57.2	+4 11.58		57.4	+4 12.98		57.4	+4 11.12	
	′ ″	− .21			− .25			− .28			− .29	
	+ 4 10.6	− 27.60		4 12.0	− 30.80		4 12.7	− 31.00		4 11.2	− 31.80	
		+3 42.65			+3 40.53			+3 41.70			+3 39.83	
		55″ 26.1			25.8			26.5			26.0	

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	α		δ	
Sept. 17	40m 43.24s		55' 51.7"	
22	.23	1	52.6	9
27	.22	1	53.4	8
Oct. 2	.19	3	54.1	7
7	43.16	3	54.8	7

	α		δ	
Oct. 27	40m 42.97s		55' 56.8"	
Nov. 1	.91	6	57.1	3
6	.85	6	57.3	2
11	.79	6	57.4	1
16	42.72	7	57.5	1
21	.65	7	57.5	0
26	.58	7	57.4	1
Dec. 1	.51	7	57.2	2
6	42.45	6	57.0	2

Nov. 13 — Nov. 14 — Nov. 24 — Nov. 26

44 36.3 | 44 43.58 | 44 55.88 | 45 40.9 | 44 — | 45 — | 45 1.0 | 45 8.65 | 45 20.95 | 45 9.9 | 45 — | 45 10.93
38.3 | 45.75 | 58.05 | 42.4 | — | — | 3.1 | A, 10.90 | 23.17 | 11.4 | — | 13.20
40.4 | 48.00 | 0.35 | 45.4 | — | — | 4.8 | 13.18 | A 25.40 | 13.5 | — | 15.50
42.5 | 50.20 | 2.53 | 46.9 | — | — | 6.4 | 15.35 | 27.70 | 15.8 | 3.05 5.30 | 17.80
44.2 | 52.50 | 4.78 | 49.6 | — | 1.70 6.20 | 9.0 | 17.60 | 29.90 | 18.4 | .10 7.60 | 19.95

45 46.5 | 32.80 | 8.20 | 34.20 | 9.55 | 46 3.5 | 33.20 | 47.85 | 23.25
48.6 | 35.10 | 10.37 | 36.40 | 11.90 | 5.5 | 35.48 | 50.18 | 25.58
50.6 | 37.33 | 12.80 | 38.80 | 14.10 | 7.2 | A 37.70 | 52.33 | 27.72
52.6 | 39.60 | 14.90 | 41.17 | 16.85 | 9.1 | 40.00 | 54.80 | 30.03
54.4 | 41.90 | 17.17 | 43.30 | 18.60 | 11.5 | 42.20 | 56.82 | 32.30

48.01 | 20.52 | — | 21.90 | — | 3.08 | 35.63
0.32 | 22.78 | 1.70 14.03 | 24.10 | 13.14 25.47 | 15.48 | 37.80
12.69 | 25.00 | 14.20 .20 | 26.30 | 25.42 .42 | 27.78 | 40.20
25.01 | 27.20 | 26.38 .05 | 28.70 | 37.72 .39 | 40.09 | 42.25
37.35 | 29.53 | 38.77 .12 | 30.90 | | 52.40 | 44.55

44 40.34 63.38 | 45 45.04 | 45 4.86 | 45 13.80 138.83
45 50.54 | 45 12.676 | 45 14.180 | 46 7.36 | 45 25.427 | 45 27.766
42.76 | 42.74 | 42.604 | 42.58
34 29.92 | 34 31.36 | 34 42.82 | 34 45.19
4 29.89 | 4 31.33 | 4 42.79 | 4 45.16
~~29.87~~ | ~~31.31~~ | ~~42.77~~ | ~~45.14~~
29.86 | 31.30 | 42.76 | 45.13
−4 29.37 | −4 30.71 | −4 42.34 | −4 44.62
— .47 | — .48 | — .47 | — .48
— 3.46 | — 3.44 | — 3.31 | — 3.28
−4 33.30 | −4 34.63 | −4 46.12 | −4 48.38

39.38 | 39.47 | 39.31 | 39.39

+3234 | −3786 | −3094 | +2057 | −4193 | +1397
1.50974 | 1.57818n | 1.49052n | 1.31323 | 1.62252n | 1.14520
1.58008n | 1.64852 | 1.56086 | 1.38357n | 1.69287 | 1.21554n

30 1 | 25 4 | 25 4 | 30 0 | 25 4 | 30 0

8.6 +25 | 46.3 +17 | 54.7 +02 | 55.5 +13 | 41.3 +28 | 46.6 +23
15.4 +25 | 53.1 +15 | 1.2 +00 | 1.3 +17 | 47.4 +20 | 53.1 +28
25.4 −15 | 3.9 +03 | 10.4 −17 | 11.2 −21 | 56.9 −14 | 1.9 −01
25.7 +66 | 1.8 +04 | 7.9 +19 | 11.4 +72 | 57.7 −02 | 1.9 +62
17.00 101 | 39 55.10 | 2.55 +04 | 3.35 81 | 32 49.10 | 54.25 112
31 18.78 | 29 56.28 | 30 3.65 | 31 4.85 | 29 50.82 | 30 55.88
— 38.03 | 44.52 | 36.38 | — 24.19 | 49.30 | — 16.43
30 40.75 | 40.80 | 30 39.93 | 30 40.66 | 40.12 | 30 39.45

52 7.60 | 7.55 | 8.42 | 7.69 | 8.23 | 8.90

+876 | +2166 | +818 | +1993
1.31676 | 1.32966 | 1.31618 | 1.32493
−20.74 | −21.36 | −20.71 | −21.28
— .20 | — 28 | — .19 | — .09 | — 35 | — .04
— .17 | — 64 | — .65 | — .13 | — .58 | — .10
— .25 | — .10 | + .01 | — .20 | — .08 | — 28
−21.36 | −21.76 | −22.21 | −21.13 | −21.762 | −21.70
46.24 | 45.79 | 46.21 | 46.56 | 46.51 | 47.20
46.02 | | 46.21 | 46.54 | | 47.20
57.4 | +4 10.41 | 57.5 | +4 12.04 | 57.4 | +4 10.48 | 57.4 | +4 11.24
— .29 | — .30 | — .35 | — .36
+4 11.4 | — 31.00 | 4 11.3 | — 31.10 | 4 10.9 | — 31.00 | 4 10.2 | — 31.00
+3 39.12 | +3 40.64 | +3 39.13 | +3 39.88

25.1 | 26.9 | 25.7 | 27.1

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	α		δ	
	m s		′ ″	
Dec. 6	40 42.45		55 57.0	
11	.38	7	56.7	3
16	.32	6	56.3	4
21	.26	6	55.8	5
26	42.21	5	55.3	5

1878

Dec. 1				Dec. 7			Dec. 8			Dec. 12		
L 22	m s	m s	m s									
	44 51.2	45 3.70	45 16.39	45 2.2	45 11.20	45 23.54	46 18.3	45 12.05	24.52	45 5.0	45 16.70	29.00
	53.5	6.20	18.49	3.6	13.43	25.77	20.8	14.42	—	7.3	18.95	31.25
	55.3	8.40	20.79	5.2	15.75	28.00	22.8	16.80	—	9.2	21.20	33.50
	57.0	10.75	23.00	7.1	17.95	30.18	24.4	18.70	—	11.2	23.30	35.70
	58.7	13.00	25.20	9.0	20.00	32.60	26.1	21.18	33.57	13.3	25.68	38.00
		53.18	28.66		0.50	36.00		~~58.20~~	36.92		6.00	41.33
		55.40	31.00		2.56	38.00		1.57	39.15		8.24	43.52
		57.55	33.22		5.20	40.20		3.85	41.40		10.45	45.80
		59.85	35.45		7.30	42.55		6.10	43.77		12.69	48.08
		2.08	37.50		9.60	45.00		8.30	45.68		14.90	50.34
								10.52				
		8.41	40.79		15.67	48.20		16.83 (6)	49.28		21.17	53.60
		20.77	43.20		28.02	50.46		29.04	51.50		33.49	55.85
		33.17	45.45		40.35	52.69		41.38	53.76		45.81	58.05
		45.48	47.95		52.68	54.80		53.71	55.82		58.09	0.27
		57.67	50.00		5.03	57.23		6.07	58.20		10.46	2.57
	44 55.14	16550		45 5.42	20175		46 22.48	20723 (68)		45 9.20	22902	
			45 33.100			45 40.350			45 41.766 (36)			45 45.804
			40 42.51			40 42.43			40 42.42			42.365
			4 50.59			4 57.92			4 58.95			5 3.44
			4 50.56			4 57.89			4 58.89			5 3.41
			~~50.54~~			~~57.87~~						~~3.39~~
			50.53			57.86						3.38
			−4 49.96			−4 57.36			−4 58.50			−5 2.86
			— .46			— .48			— .43			— .43
			— 3.21			— 3.13			— 3.12			— 3.07
			−4 53.63			−5 0.97			−5 2.05			−5 6.36
			m s 40 39.47			39.38			39.32			39.44

Dec. 1	Dec. 7	Dec. 8	Dec. 12
s + 37.96	+ 34.93	+ 41.12	+ 36.60
1.57933	1.54320	1.61405	1.56348
1.64967ₙ	1.61354ₙ	1.68439	1.63382ₙ
′ ′ 30 1	30 1	25 4	30 1
ε ″ 15.6 +41	14.4 +39	46.2 +18	15.1 +40
F 21.9 +22	20.4 +23	50.1 +19	20.2 +23
G 30.6 −.03	27.6 −.08	56.9 −.13	28.9 −.05
H 29.8 +65	25.8 +66	55.9 −.02	28.9 +65
23.10 125	21.00 120	51.55 22	22.00 123
31 24.48	31 22.05	29 52.28	31 23.28
— 44.63	— 41.07	4 48.35	— 43.04
30 39.85	30 40.98	30 40.57	30 40.24
+22° 52′ 8.50″	7.37	52 7.78 (83)	8.11
+ 25.96	+ 28.17	+ 30.56	+ 19.31
1.33396	1.33617	1.33856	1.32731
−21.58	−21.69	−21.80	−21.25
— .28	— .24	— .33	— .27
— .14	— .14	— .49	— .15
— .31	— .30	— .06	— .31
−22.31	−22.37	−22.68	−21.98
51 46.19	45.00	45.15	46.13
51 46.19	45.00	45.15	46.13
55 57.2	56.9	56.9	56.6
+4′ 11.0″	4 11.9	11.7	4 10.5

Dec. 1	Dec. 7	Dec. 8	Dec. 12
′ ″ +4 11.52	+4 11.82	+4 11.46	+4 10.07
— .39	— .41	— .42	— .43
— 30.80	— 30.50	— 30.50	— 30.20
+3 40.33	+3 40.91	+3 40.54	+3 39.44
′ ″ 55 26.5	25.9	25.7	25.6

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Dec. 14

45 6.6 45 18.70 30.90
9.6 20.80 33.10
11.9 23.00 35.35
13.7 25.20 37.70
15.8 27.45 39.85

8.00 43.10
10.00 45.50
12.30 47.68
14.40 50.00
16.80 52.10

23.03 55.70
35.38 57.80
47.68 0.10
0.06 2.30
12.30 4.40

45 11.52 23845

45 47.690
42.34
5 5.35
5 5.32
~~5.30~~
5.29
-5 4.85
— .47
— 3.04
-5 8.36

39.33

+3617
1.55835
1.62869m

30 1

14.3 +39
20.9 +22
28.6 -.06
27.4 +65
~~21.45~~ 120

31 22.80
— 42.53
30 40.27

52 8.08

+2269
1.33069
-21.41
— .25
— .15
— .30
-22.11

4597
4597
56.4 +4 10.53
— .44
+4 104 — 30.00
+3 40.09

26.1

Dec. 16

46 9.0 46 20.80 33.20
[45] 11.4 [45] 23.30 35.58
13.6 25.47 37.70
15.3 27.60 40.10
17.0 30.00 42.35

10.30 45.60
12.40 48.00
14.75 50.10
17.05 52.37
19.25 54.60

25.43 58.00
37.79 0.20
50.13 2.36
2.45 4.64
14.75 7.05

45 13.26 25055

45 50.110
42.32
5 7.79
5 7.76
~~7.74~~
7.73
-5 7.39
— .41
— 3.02
-5 10.82

39.29

+3685
1.56642
1.63678m

30 1

16.5 +42
22.1 +22
30.2 -.03
29.1 +65
~~23.35~~ 126

31 24.48
— 43.33
30 41.15

720

+2536
1.33366
-21.64
— .27
— .14
— .32
-22.30

4490
4490
56.3 +4 10.75
— .44
4 11.4 — 29.90
+3 40.41

25.3

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ι Cephei

$22^h\ 45^m\ 20^s$

$+65°\ 33'\ 31''$

$-23\ 10\ 43$

1878

Oct. 1

α_0 $20^s.371$

Corr. α $+.035$ $+.073$

$\frac{d\alpha}{dt}$

δ_0 $31''.25$

Corr. δ $+.95$

$\frac{d\delta}{dt}$

Oct. 10

$\log a \sin\delta$ 9.95923

$\log a \cos\delta$ 9.61675

$\log 15 a \cos\delta \sin 1''$ 0.72282 n

9

sec δ 2.42

tan δ +2.20

sin ζ − .39

Oct. 14

$\log R_1$ 1.73930

$\log R_2$ 1.43863

R_1 54.87

R_2 27.46

I 4.98

$\frac{1}{2}I$ 2.49

Oct. 15

	h m s	m s	m s	h m s	h m s	h m s	h m s	h m s	h m s	h m s
22	47 7.5	47 51.8	48 19.3	47 25.4	48 9.9	48 36.9	48 59.5	48 —	48 46.4	49 13.0
	11.9	54.2	21.6	30.0	12.4	39.3	2.8		48.7	16.2
	17.2	56.6	24.0	35.1	14.5	42.1	7.6		51.2	21.3
	21.7	59.1	26.7	39.5	17.0	44.7	12.0		53.8	25.6
	26.9	1.5	29.0	43.4	19.7	47.1	19.3		56.3	29.2
		4.2	31.4		22.0	49.5			58.7	
	49 1.0	6.5	34.0	48 45.5	24.1	52.3	49 38.5		1.4	49 41.5
	13.2	9.2	36.6	48.4	27.0	54.9	42.0		3.9	45.5
	15.6	150 11.9	2615 38.9	52.9	1765 27.6	n238 57.0	47.2	5067 6.3	49.9	4969 5.2
	20.6			57.6			51.3		54.4	
	24.0	1.67	46.4	1.3	19.61	4.6	56.7	—	13.9	58.5
		29.06	48.8		47.09	7.0		56.30 56.30	16.4	—
		56.36	51.3		14.49	9.6		23.72 .26	18.9	55.21 55.21
			53.4			12.0			21.3	22.70 .24
		8709	36.5		1411 9	14.3			23.7	
			39.0			17.0			26.0	
			1.2			19.5			28.8	
			3.9			22.0			30.8	
	47 17.04		5072 6.4	47 34.68		1304 24.4	49 5.24		2135 33.7	49 21.06
	49 17.68		48 29.030	48 53.14		48 47.063	49 47.14		48 56.180	49 41.96
	16		45 24.25			24.05			23.95	
			+ 3 4.78			3 23.01			3 32.33	
			+ 3 4.74			3 22.97			3 32.29	
			3 4.71			22.94			32.26	
										cos δ
			−3 1.52			−3 20.17			−3 29.82	
			− 3.13			− 2.88			− 2.84	
			− 3.88			− 3.68			− 3.58	
			−3 8.53			−3 26.73			−3 35.74	
			m s							
			45 20.50			20.33			20.54	

	s	s														
	+ 7.199	− 4.765			+ 7.238	− 6.08			− 11.96	− 5.086			− 2.584	− 5.474		
	1.85724	1.67806n			1.85962	0.78390n			1.07773n	1.70638n			1.41229n	1.78830n		
	1.58009n	1.40088			1.58244n	0.50672			0.80055	1.42920			1.13518	1.46112		
	50 1	50 1			50 3	50 3			50 3	50 2			50 2	60 2		
ζ	50.1 +25	48.2 +29			48.3 +28	7.3 +27			3.7 +19	43.4 +32			56.9 +16	40.4 +37		
ι	50.2 +34	47.5 +34			49.1 +34	8.3 +30			5.9 +30	44.9 +41			56.8 +32	40.8 +31		
β	8.9 +04	6.4 +13			7.3 +11	26.8 −02			23.6 −16	1.3 +08			10.5 −30	58.6 +01		
H	5.6 +20	3.9 +16			4.1 +16	23.6 +34			21.3 +35	1.3 +10			13.6 +39	57.5 +20		
	59.50 83	1.92	5730		5780 89	89	1705		13.65 68	87	5235		6.70 57	89	1950	
	53 58.70	56.50			53 57.20	53 16.50			53 13.62	52 52.72			53 5.95	52 49.32		
	− 3803	2517			− 88.23	3.21			632	2687			13.65	28.91		
	53 2067	58 21.67			53 18.97	19.71			53 19.94	19.59			53 19.60	18.23		
	° ′	″														
+65	29 27.68	26.68			29.38	28.64			28.41	28.76			28.75	30.12		
−23	10 49															
	1.39180															
	− 246				+ 814				+ 584				− 285			
	1.38934				1.39994				1.39764				1.38895			
	+ 24.51				+ 25.12				+ 24.98				+ 24.49			
	− .06	− .46			− .06	− .01			− .03	− .54			− .14	− .59		
	− .33	− .23			− .27	− .23			− .22	− .20			− .22	− .20		
	− .21	− .23			− .22	− .22			− .17	− .22			− .14	− .22		
	+23.94	+23.59			+23.57	+24.66			+24.56	+24.02			+23.99	+23.48		
	29 50.59	50.27			52.95	53.30			52.97	52.78			52.74	53.60		
	29 50.43	′ ″			53.12				52.88				53.17			
	33 57.85	95 +4 10.46			34 2.2	+4 10.48			33	+4 11.68			33.6	+4 11.66		
	″	+ .25				+ .24				+ .24				+ .24		
	+4 ′ 9.1	− 28.30			9.1	− 31.00			10.4	− 32.10			10.4	− 32.40		
	10.0	+3 42.41			10.0	+3 39.72			11.3	+3 39.82			11.3	+3 39.40		
		′ ″														
		33 32.8				32.8				32.7				32.6		

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α			δ			α			δ		
Sept. 17	m s 45 24.45	5	′ ″ 33 54.7	17	Oct. 27	m s 45 23.56	18	′ ″ 34 ~~7.7~~ 6.6	11		
22	.40		56.4		Nov. 1	.38		7.7	9		
27	.33	7	58.1	17	6	.20	18	8.6	8		
Oct. 2	.24	9	59.7	16	11	23.00	20	9.4	7		
7	24.13	11	61.3	16	16	22.80	20	10.1	5		
12	~~24.01~~ 24.01	11 12	62.7	14	21	.59	21	10.6	4		
17	~~23.49~~ 23.87	4	64.1	14	26	.38	21	11.0	3		
22	.72	15	65.4	13	Dec. 1	22.16	22	11.3	1		
27	23.56	16	66.6	12	6	21.94	22	11.4			
Oct. 16			Oct. 29			Nov. 4			Nov. 5		
47 47.4	48 23.0	48 50.3	48 49.0	48 50.5	49 18.2	49 16.0	49 —	49 30.3	48 29.1	49 44.8	49 31.7
53.7	25.5	53.1	43.0	53.4	20.6	20.6	—	33.0	33.6	7.08	34.3
58.2	28.2	53.5	49.0	56.0	23.1	25.7	—	35.3	38.3	9.48	36.7
3.5	30.5	58.0	54.0	58.3	25.6	28.7	12.8 10.3	37.8	45.1	11.88	39.3
9.5	33.2	0.4	58.7	0.6	28.4	33.5	12.4 12.4	40.3	46.2	14.2	41.9
	35.6	2.8		3.3	30.7		12.9 15.4	42.8		17.0	44.3
48 42.0	38.3	5.4	50 17.5	8.6	32.8		13.0 18.0	45.5	50 28.0	19.4	46.8
46.1	40.5	7.9	20.9	8.2	35.6		12.7 20.2	47.8	33.1	21.8	49.3
50.9 29.79	43.1	38 10.4	24.5	65 10.6	2530 38.0		13.0 23.0	3632 52.4	35.8	96 12.84 24.6	3761 51.8
56.7			29.6						40.1		
0.8	33.10	17.7	33.4	0.72	44.9		12.80 40.26	—	43.7	14.40	59.4
	0.42	21.3		28.11	48.0		40.36 .36	—		41.79	2.0
	27.82	22.8		55.47	50.3		—	—		9.30	4.3
		25.3			52.9			—		49	6.8
	134	27.9		8430	55.6			—		12534	9.2
		30.4			58.2			—			11.7
		32.9			0.8			—			14.2
		35.3			3.1			—			16.7
47 58.46		2504 37.8	48 48.94		4992 5.4	49 24.90		—	48 38.06		837 19.4
48 51.28		49 0.447	50 25.18		49 28.100			49 40.310	50 36.14		49 41.770 8.30
		23.89			23.48			23.26			23.23
		3 36.56			4 4.62			4 17.05			4 18.60
		3 36.52			4 4.58			4 17.01			4 18.56
		36.49			4.55			16.98			18.53
		−3 33.47			−4 1.93			−4 14.35			−4 16.12
		− 2.79			− 2.66			− 2.53			− 2.40
		− 3.52			− 3.11			− 2.89			− 2.86
		−3 39.78			−4 7.70			−4 19.77			−4 21.38
		20.67			20.40			20.54			20.45
+ 6.99	+ 9.17		+ 39.16	− 57.08		+ 15.41			+ 63.77	− 54.31	
1.79232	0.96235		1.59284	1.75648		1.18780			1.82462	1.73488	
1.51514	0.68514		1.31566	1.47930		0.91062			1.52744	1.45770	
50 3	50 3		50 3	50 2		50 3			50 3	50 2	
41.9 +40	14.2 +43		28.9 +60	35.9 +44		19.2 +53			44.9 +34	42.7 +32	
42.3 +27	14.6 +29		30.1 +15	37.9 +25		19.3 +26			44.6 +32	41.3 +32	
1.0 +17	32.8 +01		46.1 −48	63.1 −43		29.7 +06			54.2 −28	51.2 −52	
58.6 +03	31.3 +34		43.9 +18	51.2 +26		28.8 +31			55.6 +03	52.6 +24	
51.45 87	107	23.50	37.50 45	52	44.50	24.45 119			49.55 411	36	16.95
53 50.95	53 23.22		53 37.25	52 44.52		53 24.25			53 49.82	52 47.00	
− 32.74	− 4.84		− 20.69	30.15		− 8.14			− 33.69	28.69	
53 18.21	18.38		53 16.56	14.67		53 16.11			53 16.13	15.69	
29 30.14	29.97		31.79	33.68		32.24			32.22	32.66	
− 3.30			+ 13.42			+ 21.01			+ 20.14		
1.38850			1.40522			1.41281			1.41194		
+ 24.46			+ 25.42			+ 25.87			+ 25.82		
− .79	− .02		− .32	− .67		− .05			− .84	− .60	
− .30	− .27		− .36	− .27		− .37			− .46	− .34	
− .22	− .27		− .11	− .13		− .30			− .10	− .09	
+ 23.15	+ 23.90		+ 24.63	+ 24.35		+ 25.15			+ 24.42	+ 24.79	
53.29	53.87		56.42	58.03		29 5.39			56.64	57.45	
53.58			57.22			29 5.39			57.04		
3.9	+4 10.96		7.1	+4 10.54		34 8.83	+4 11.30		8.5	+4 12.07	
	+ .24			+ .27			+ .29			+ .36	
+4 10.3	− 32.70		9.9	− 35.90		4 10.9	− 37.10		4 11.6	− 37.30	
11.2	+3 38.50		10.8	+3 34.91		11.9	+3 34.49		12.5	+3 36.07	
	3.21			3.21			3.19			3.21	

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	α		δ	
Dec. 6	45m 21.94s	22	34' 11.4"	0
11	.72	21	11.4	2
16	.51	21	11.2	3
21	.30	21	10.9	5
26	21.09		10.4	

1878

l	Nov. 24			Nov. 26			Dec. 6			Dec. 18		
22	49m 1.8s	49m 29.7s	49m 57.0s	48 57.5	49 32.2	49 59.5	51 5.7	49 43.0	10.3	51 16.2	—	49 —
	4.8	32.2	59.5	3.4	34.5	1.8	9.0	45.0	12.9	20.2	—	54.98 50.0
	11.1	34.8	2.3	8.3	37.2	4.2	12.3	47.7	15.6	25.3	—	.50 54.5
	16.2	37.3	4.6	13.2	39.6	7.1	18.3	50.4	17.9	31.0	—	.92 59.9
	19.6	39.8	7.2	17.5	42.2	9.5	24.0	53.0	20.4	35.9	—	.94 4.9
		42.3	9.8		44.6	12.0		55.4	23.1			
	50 57.8	44.7	12.3	50 46.0	47.0	14.5		58.0	25.4		7.2	12.2
	1.4	47.3	14.5	50.2	49.6	17.1		0.2	28.0		12.3	17.3
	4.6	3578 49.7	645 17.3	54.6	3789 52.0	851 19.4		2.7	30.8		17.0	~~20.0~~
	8.2			59.7							22.3	22.3
	12.7	39.76	24.6	2.9	42.10	26.9		52.~~9~~8 2	37.9		27.1	27.4
		7.17	27.1		9.46	29.4		20.49	40.6			32.2
		34.71	29.5		37.00	32.0		48.~~14~~03	43.1		54.84 22.30	
			32.0			34.6			45.3		22.28 .28	40.0
		2164	34.8		2856	37.1		.61~~55~~34	47.9		49.94 .48	45.3
			37.5			39.5			50.6		17.18 .31	49.9
			39.7			42.0			53.2			54.6
			42.4			44.5			55.6			59.9
	49 10.70		3124 44.8	49 7.98		3330 47.0	51 13.86		58.1	51 25.72		
	51 4.94		50 7.213	50 54.68		50 9.520			50 20.5~~17~~47			50 22.342
			45 22.454			22.~~47~~37			21.93			21.84
			+4 44.76			4 47.~~#~~15			4 58.52			5 0.50
			+4 44.72			4 47.~~07~~11						
			44.69 (red)			47.08 (red)			+4 58.45			+5 0.43
			−4 42.34			−4 44.63			−4 56.20			−4 58.51
			− 2.46			− 2.52			− 2.26			− 2.22
			− 2.08			− 2.00			− 1.56			− 1.47
			−4 46.88			−4 49.15			−5 0.02			−5 2.20
			45m 20.33s			20.37			20.43			20.14

	Nov. 24		Nov. 26		Dec. 6	Dec. 18
	+56.51s	−57.73s	+61.54	−45.16	∓53.41	∓63.38
	1.75213	1.76140n	1.78916	1.65475n	1.72762n	1.80195
	1.47495n	1.48422	1.51198n	1.37757n	1.45044	1.52477
	50' 3'	50' 2'	50 3	50 2	50 2	50 2
E	34.9" +52	33.9" +48	39.2 +46	42.6 +33	39.0 +40	36.5 +44
F	34.9 +14	34.2 +21	39.1 +20	43.0 +37	37.2 +24	34.4 +21
G	46.2 −48	45.3 −54	50.1 −47	52.5 −46	47.4 −57	41.3 −42
H	46.7 +15	46.0 +32	50.8 +09	54.0 +23	47.9 +30	42.2 +36
	49.55 (red) .33	.47 39.60 (red)	44.65 (red) 28	47 47.55 (red)	43.20 (red) +37	38.90 (red) +59
	53 40.68	52 39.85	53 44.80	52 48.02	52 42.88	52 38.60
	− 29.85	30.49	− 32.51	23.86	28.21	33.48
	53 10.83	10.34	53 12.29	11.88	53 11.09	53 13.08
+6°5	29' 37.52"	38.01"	29 36.06	36.47	29 37.26	29 35.27

Nov. 24		Nov. 26		Dec. 6		Dec. 18	
+826		+2001		+1866		+ ~~30.27~~ 30.61 (red)	
1.40006		1.41181		1.41046		1.420~~07~~241	
+25.12"		+25.81		+25.73		+26.~~30~~45	
− .68	− .69	− .77	− .42	− ~~1.12~~ .59		− .~~95~~83	
− .44	− .32	− .41	− .31	− .27		− .26	
− .08	− .12	− .07	− .12	− .09		− .15	
+23.92"	+23.99"	+24.56	+24.96	+ ~~24.25~~ 24.78		+ ~~24.94~~ 25.21	
30' 1.44	2.00	0.62	1.43	~~1.51~~		0.~~21~~48	
30 1.72		1.02		1.51 2.04		0.~~21~~48	
34 10.9	+4' 10.48"	11.0	+4 11.24	11.4 11.4	+4 10.66	11.4	+4 11.46
	+ .41		+ .43		+ .48		+ .50
+4' 9.2"	− 39.70	4 10.0	− 39.80	9.9 9.4	− 40.20	~~11.2~~ 10.9	− 40.20
10.2	+3 31.19	11.0	+ 31.87	10.9 10.4	+3 30.94	~~12.2~~ 11.9	+3 31.76
	33' 32.9"		32.9		33.0		32.2

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Dec. 18

Ch. f.

50 3 50 2

16.4	+48	42.8	+32
16.5	+28	41.4	+32
24.4	−12	30.2	−54
25.9	+34	50.1	+27
20.40			46.50
53	20.80	52	46.12

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α Pegasi

22h 58m 41s

+14° 32′ 58″

+27 49 50

1878

α_0	41.080s	log sin δ 9.40004
corr. α	+.002 / −.014	" cos δ 9.98584
$\frac{d\alpha}{dt}$		" 15 cos δ tan i 0.09191n
δ_0	57.56″	sec δ 1.05
corr. δ	−.70	tan δ +.26
$\frac{d\delta}{dt}$		sin z +.47

log R₁ 1.37021
" R₂ 1.06954
R₁ 23.45s
R₂ 11.74
I

Oct. 15 — Oct. 16 — Nov. 3 — Nov. 24

Oct. 15			Oct. 16		Nov. 3			Nov. 24		
h 23 m 1 39.0	m 1 47.80	m 1 59.50	1 45.0	1 51.10	2 2.88	2 21.9	2 30.00	2 41.65	2 51.1	2 59.67	3 11.30
40.7	49.87	1.60	46.8	53.44	5.00	24.4	31.90	43.66	53.2	1.76	13.40
42.4	52.00	3.75	48.7	55.55	7.13	26.4	34.05	45.88	54.7	3.90	15.59
44.4	54.20	5.80	50.5	57.65	9.28	28.7	36.32	48.00	56.4	6.00	17.79
46.2	56.25	8.00	52.0	59.77	11.38	31.0	38.40	50.10	58.2	8.10	19.89
2 53.0	34.72	11.17	2 46.4	38.05	14.55	3 34.2	16.70	53.27	3 59.9	46.38	23.00
54.8	36.80	13.28	48.4	40.24	16.80	36.5	18.90	55.33	1.8	48.65	25.18
57.3	38.95	15.30	50.4	42.45	18.90	38.2	20.84	57.53	3.6	50.77	27.29
59.2	41.00	17.62	52.0	44.50	21.00	40.7	23.05	59.53	5.5	52.92	29.39
0.7	43.35	19.80	53.6	46.80	23.20	42.4	25.26	1.70	7.4	55.00	31.58
	52.02	22.88		55.50	26.40		34.13	5.10		3.89	34.70
	3.73	25.10		7.13	28.50		45.86	7.43		15.59	36.80
	15.43	27.24		18.89	30.50		57.47	9.38		27.29	39.10
	27.20	29.30		30.61	32.75		9.39	11.42		39.02	41.17
	38.96	31.50		42.41	34.90		20.95	13.62		50.74	43.35

1 42.54 7734 — 1 48.60 9454 — 2 26.48 28780 — 2 54.72 13653

2 57.00 — 2 15.468 / 58 45.06 / +3 30.41 / 30.42 — 2 50.16 — 2 18.908 / 45.055 / 3 33.85 / 33.86 — 3 38.40 — 2 57.560 / 44.90 / 4 12.66 / 12.67 — 4 3.64 — 3 27.306 / 44.662 / 4 42.64 / 42.65

ecc δ

Oct. 15	Nov. 3	Nov. 24 (a)	Nov. 24 (b)
+ 1.30			
−3 31.40	−3 33.50	−4 12.41	−4 42.35
− .34	− .33	− .32	− .29
− 3.98	− 3.98	− 3.82	− 3.58
−3 35.72	−3 37.81	−4 16.55	−4 46.22
34.42			
58m 41.05s	41.00	41.01	41.09

Oct. 15		Oct. 16		Nov. 3		Nov. 24	
+32.93s	−41.53s	+30.31	−31.25	+31.08	−40.84	+32.59	−36.33
1.51759	1.61836n	1.48159	1.49485n	1.49248	1.61109n	1.51308	1.56027n
1.60950n	1.71027	1.57350n	1.58676	1.58439n	1.70300	1.60499n	1.65218
50′ 3′	50′ 1′	50 3	50 2	50 3	50 2	50 3	50 2
31.0″ +58	59.7″ +07	27.1 +61	10.8 +26	28.1 +61	2.2 +08	31.1 +38	5.8 +14
37.7 +17	6.5 +34	33.8 +14	17.1 +32	35.5 +14	7.9 +34	38.6 +19	13.2 +34
58.2 +10	25.9 −06	54.1 −28	39.0 −32	50.5 −45	21.9 −23	51.2 −43	25.2 −09
49.2 +12	18.4 +47	45.2 +17	31.0 +48	43.7 +18	15.2 +48	46.5 +15	18.9 +46
41.60 97	82 12.80	40.60 64	74 24.90	39.30 48	67 12.05	41.15 49	85 15.50
53 44.02	52 12.62	53 40.05	52 24.48	53 39.45	52 11.80	53 41.85	52 15.78
− 40.69	51.32	− 37.45	38.62	− 38.40	50.47	− 40.27	44.89
53 3.33	3.94	53 2.60	3.10	53 1.05	2.27	53 1.58	0.67
+14° 29′ 45.02″	44.41″	45.75	45.25	47.30	46.08	46.77	47.68

Oct. 15		Oct. 16		Nov. 3		Nov. 24	
+27 48 53							
1.48250				+2000 / +641			
−263		−298				+864	
1.47987		1.47952		1.48851	1.50250	1.49114	
−30.19	″	−30.17		−31.81 / −30.80	−31.81	−30.98	
− .15	− .24	− .12	− .13	− .13	− .23	− .15	− .18
− .26	− .15	− .30	− .19	− .41	− .24	− .44	− .28
− .24	− .20	− .16	− .18	− .12	− .17	− .12	− .21
−30.84	−30.78	−30.75	−30.67	−32.47	−32.45	−31.69	−31.65
29′ 14.18	13.63	15.00	14.58	29 14.83	13.63	15.08	16.03
29 13.90		14.79		29 14.23		15.56	
33 26.2	+4′ 11.56″	26.2	+4 10.96	33 27.0	+4 11.58	26.9	+4 10.48
	− .29		− .29		− .35		− .50
+4′ 12.3″	− 28.60	11.4	− 28.60	4 12.8	− 29.40	4 11.3	− 29.80
11.6	+3 42.67	10.7	+3 42.07	12.1	+3 41.83	10.6	+3 40.68
	32′ 56.6″		56.9		56.1		56.2

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	α		δ			α		δ	
	m s		' "			m s		' "	
Oct. 7	58 45.11		33 25.5		Nov. 16	58 44.76	6	33 27.1	1
12	.08	3	25.9	4	21	.70	6	27.0	1
17	45.05	3	26.3	4	26	.64	6	26.9	1
22	45.01	4	26.6	3	Dec. 1	.58	6	26.7	2
27	44.97	4	26.8	2	6	44.52	6	26.5	2
Nov. 1	.92	5	27.0	2	11	.46	6	26.2	3
6	.87	5	27.1	1	16	.41	5	25.8	4
11	.82	5	27.1	0	21	.35	6	25.4	4
16	44.76	6	27.1	0	26	44.30	5	24.9	5

Left margin (continued from facing page): 1.30, 3.40, 5.59, 7.79, 9.89; 3.00, 5.18, 7.29, 9.39, 1.58; 4.70, 6.80, 9.10, 1.17, 3.35; 3.06, 4.62, 2.64, 2.65; .35, .29, .58, .22; 1.09

Nov. 26

2 50.4	3 1.75	3 13.60
52.2	4.00	15.70
53.7	6.10	17.90
55.7	8.20	20.00
57.8	10.40	22.10
4 2.9	48.80	25.35
4.5	50.80	27.50
6.2	53.00	29.57
8.2	55.30	31.78
10.0	57.40	33.90
	6.09	37.00
	17.86	39.25
	29.62	41.32
	41.33	43.45
	53.06	45.65
2 53.96	14796	
4 6.36		3 29592
		44.64
		4 44.95
		44.96
		−4 44.65
		— .80
		— 3.56
		−4 48.51
		41.08

Dec. 1

2 57.1	3 7.30	3 18.80
58.7	9.28	20.90
0.3	11.60	23.10
2.2	13.58	25.24
4.2	15.70	27.40
4 10.9	53.95	30.57
12.3	56.12	32.60
13.7	58.15	34.68
15.3	0.40	36.85
16.9	2.58	39.10
	11.49	42.22
	23.09	44.40
	34.76	46.45
	46.49	48.55
	58.23	50.82
3 0.50	17406	
4 13.82		3 34.812
		44.58
		4 50.23
		50.24
		−4 49.97
		— .29
		— 3.50
		−4 53.76
		41.05

Dec. 6

3 4.4	3 13.23	24.92
6.4	15.48	27.23
8.5	17.52	29.30
10.1	19.72	31.51
12.6	21.62	33.62
	0.17	36.92
	2.48	39.00
	4.48	41.00
	6.63	43.15
	8.81	45.32
	17.51	48.50
	29.32	50.70
	41.08	52.80
	52.74	54.83
	4.51	57.10
3 8.40	20502 (21)	
		3 41.086 (43)
		44.52
		+4 56.52
		+4 56.83
		−4 56.22
		— .27
		— 3.44
		−4 59.93
		41.11

Dec. 7

3 0.5	3 14.47	3 26.20
2.0	16.50	28.25
4.1	18.60	30.50
5.6	20.77	32.59
7.1	22.00	34.70
	1.45	38.00
	3.67	40.07
	5.60	42.20
	7.80	44.29
	9.89	46.35
	18.67	49.75
	30.45	51.90
	42.18	54.02
	54.01	56.10
	5.68	58.30
3 ~~4.66~~ 3.86	21099	
		3 42.198
		58 44.505
		4 57.69
		57.70
		−4 57.40
		— .30
		— 3.42
		−5 1.12
		41.08

Reductions

Nov. 26		Dec. 1		Dec. 6	Dec. 7
+3563	−3677	+3431	−3901	+3264	+3834
1.55182	1.56549m	1.53542	1.59118m	1.51375	1.58365
1.64373m	1.65740	1.62733m	1.68309	1.60566	1.67556m
50 3	50 2	50 3	50 2	50 3	50 3
34.4 +.53	4.0 +.11	34.5 +.53	3.0 +.09	31.8 +.57	39.9 +.44
41.4 +.24	11.5 +.34	40.2 +.21	9.1 +.35	37.5 +.17	45.9 +.33
53.6 −.32	22.9 −.20	52.2 −.41	20.7 −.25	48.8 −.49	56.4 −.04
47.7 +.13	17.8 +.47	48.1 +.13	16.9 +.47	42.9 +.19	49.2 +.12
44.00 58	72 13.45	43.35 46	66 11.85	40.30 44	48.15 85
53 44.28	52 14.05	53 43.75	52 12.42	53 40.25	53 47.85
— 44.03	45.44	— 42.40	48.20	— 40.33	— 47.38
53 0.25	52 59.49	53 1.35	0.62	52 59.92	53 0.47
39 48.10	48.86	47.00	47.73	48.43	47.88

Nov. 26		Dec. 1		Dec. 6		Dec. 7	
+2033		+2622		+1889		+2842	
1.50283		1.50872		1.51139		1.51092	
−31.83		−32.26		−31.72		−32.43	
— .18	— .19	— .16	— .21	— .14		— .20	
— .41	— .24	— .37	— .22	— .37		— .38	
— .14	— .18	— .12	— .16	— .11		— .21	
−32.56	−32.44	−32.91	−32.85	— 32.34		−33.22	
16.54	16.42	14.09	14.88	16.09		14.66	
15.98		14.48		16.09		14.66	
26.9	+4 11.24	26.7	+4 11.52	26.5	+4 10.66	26.4	+4 11.82
	— .52		— .55		— .58		— .59
+4 10.9	— 29.30	4 12.2	— 29.10	10.4	— 28.90	4 11.7	— 28.80
10.2	+3 41.42	11.5	+3 41.87	9.7	+3 41.18	11.0	+3 42.43
	57.4		56.4		57.3		57.1

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Dec. 8

h	m	s	m	s	m	s
23	3	14.9	3	15.52		27.33
		16.5		17.58		29.45
		20.2		19.86		31.58
		23.3		21.90		33.60
		17.9		24.08		35.80
				2.40		38.90
				4.53		41.13
				6.65		43.38
				8.73		45.32
				10.90		47.50
				19.71		50.67
				31.55		52.82
				43.275		54.94
				54.93		57.00
				6.64		59.23

3 18.42 21816

3 48232
58 44.49
+4 58.74
+4 58.75

−4 58.52
− .26
− 3.41
−5 2.19

m s
58 41.04

s
+ 24.51
1.38934
1.48125m

50 1

E 22.9 +59
I 27.9 +17
G 36.9 −17
H 30.6 +34
29.90 +23

53 29.68
− 30.39
52 59.19

29 49.16

+ 2087
1.57334
−32.61
− .08
− .35
− 1523
− 33.27

1574
15.97.89

33 26.4 +4 11.46
− .60
4 10.45 − 28.80
9.78 +3 42.06

32 57.0
58.0

Dec. 12

m	s	m	s		
3	10.4	3	19.95	31.62	
	12.0		22.05	33.85	
	13.6		24.16	36.06	
	16.0		26.30	38.10	
	17.9		28.37	40.20	
			6.85	43.39	
			9.00	45.43	
			11.15	47.62	
			13.20	49.78	
			15.40	51.90	
			24.17	55.10	
			26.97	57.20	
			47.62	59.43	
			59.40	1.55	
			11.12	3.72	

3 13.98 23828

3 47.656
58 44.448
5 3.21
3.22

−5 2.89
− .27
− 3.37
−5 6.53

41.13

+ 3368
1.52737
1.69281m

50 3

32.8 +56
38.9 +20
49.6 −48
44.2 +18
41.20 46

53 41.38
− 41.62
52 59.76

29 48.59

+ 1947
1.50197
−31.77
− .16
− .41
− .12
−32.46

29 16.13
29 16.13
33 26.1 +4 10.07
− .62
4 10.0 − 28.50
9.3 +3 40.95

57.1

Dec. 14

m	s	m	s		
3	13.7	3	22.00	33.60	
	15.7		24.00	35.72	
	17.3		26.20	38.08	
	18.8		28.30	40.10	
	20.5		30.46	42.10	
			8.75	45.40	
			10.75	47.60	
			13.00	49.75	
			15.30	51.80	
			17.47	54.00	
			26.19	57.00	
			37.92	59.20	
			49.71	1.25	
			1.30	3.35	
			13.05	5.70	

3 17.20 24817

3 49.634
44.428
5 5.21
5.22

−5 4.88
− .29
− 3.35
−5 8.52

41.11

+ 3243
1.51095
1.60286m

50 3

32.9 +56
39.6 +21
50.8 −44
44.9 +17
41.85 50

53 42.05
− 40.07
53 1.98

46.31

+ 2287
1.50537
−32.02
− .14
− .41
− .12
−32.69

13.68
13.68
25.9 +4 10.53
− .63
4 12.2 − 28.30
11.5 +3 41.60

55.3

Dec. 16

h	m	s			
4	15.4				
[3]	17.0				
	19.2		Sheet Plotted -		
	21.2				
	23.2				
5	11.15				
[4]	13.35				
	15.40				
	17.67				
	19.90				
—					
—					
—					
—					
18.494					

3 19.20

3 52.044
44.407
5 7.64
7.65

−5 7.41
− .26
− 3.33
−5 11.00

41.014

+ 3284
1.51640
1.60831m

50 3

32.8 +56
39.3 +20
49.7 −47
42.9 +14
41.25 48 44.25

53 41.18
− 40.58
53 0.60

47.75

+ 2581
1.50831
−32.23
− .15
− .44
− .12
−32.94

14.81
14.81
25.8 +4 10.75
− .63
4 11.0 − 28.20
10.3 +3 41.92

56.7

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Dec. 17 | Dec. 18 | Dec. 19

3	23.0	3	25.30		36.90	3	50.9	3	38.00		49.93				
	24.7		27.40		39.20		52.6		40.10	A	51.90				
	26.8		29.70		41.36		55.0	A+1	42.20		54.00				
	28.9		31.80		43.52		57.1		44.40		56.30				
	31.1		33.95		45.58		59.0		46.53		58.50				
4	29.3		12.20		48.82	4	38.1				1.73				
	31.0		14.38		50.92		40.4				3.72				
	32.5		16.40		53.10		43.0			A-1	5.73				
	34.3		18.60		55.30		45.0				7.90				
	36.0		20.90		57.40		47.1				10.00				
			29.63		0.50				42.25	53.99	13.20				
			41.31		2.53				54.13	54.13	15.45				
			53.11		4.75				5.82	54.08	17.40				
			4.80		6.95				17.48	54.03	19.53				
			16.50		9.28						21.80				
	3	26.90	26.535			3	54.92								
2.44	4	32.62		3	53.040	4	42.72			3	54.058				
4.07					44.395						41.38				
.64				+5	8.68					+5	9.68				
6.65				+5	8.69					+5	7.69				
1.41				−5	8.54					−5	9.46				
.26				−	.24					−	.23				
3.33				−	3.32					−	3.30				
2.00				−5	12.10					−5	12.99				
1.04					40.97						41.07				

	+ 2617		− 39.55				− 0.86		− 486						
	1.41780		1.59715				9.93450		1.68717						
	1.58971		1.68906				0.02641		1.77908						
	50	3	50	2			50	2	50	1			50	3	50	2
	26.2	+61	4.1	+.11			53.2	+.17	53.2	+.10			34.4	+.53	7.0	+.17
	32.4	+.15	9.8	+.34			58.9	+.28	58.4	+.32			40.2	+.21	12.1	+.34
	42.1	−.39	19.9	−.29			7.4	+.03	7.8	+.06			49.8	−.47	22.0	−.23
	36.1	+.30	13.9	+.40			2.2	+.28	3.9	+.42			44.1	+.18	18.0	+.47
	34.15	+.67		+.65	12.00		0.30	.76		.90	0.50		42.10			14.50
	53	34.20	52	11.92			53	0.42	52	0.82			53	42.12	52	14.78
	−	32.34	+	48.87			+	1.06	+	60.13						
	53	1.86		0.79			53	1.48		0.95						
		46.49		47.36	5			46.87		47.40						

	+ 2594						+ 2081								
	1.50814						1.50331								
	− 3224						− 31.86								
	− .09		− .22				.00		− 33						
	− 43		− .26				− 36		− 24						
	− 17		− .16				− 19		− 22						
	− 3293		− 32.88				− 8241		− 32.65						
	1356		1448				1446		14.75						
	1402						14.60								
	25.7	+4	11.10				25.7	+4	10.24						
		−	.63					−	.64						
	11.7	−	28.10				11.1	−	28.10						
	11.0	+3	42.37				10.4	+3	41.50						
			56.4						56.1						

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γ Piscium

23h 10m 50s
+2° 36′ 57″
+39 45 51
1878

α_0 50.410
com. $\frac{d\alpha}{dt}$ + .052 + .034
δ_0 57.″28
com. $\frac{d\delta}{dt}$ −.09

log sin δ 8.65934
" cos δ 9.99955
" 15 cos δ tan 0.10562 n
tan δ +.05
sin ζ +64

Oct. 29 | Nov. 30 | Dec. 1 | Dec. 6

	Oct. 29			Nov. 30			Dec. 1				Dec. 6		
h	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s
23	14 26.5	14 29.87	14 41.00	15 6.3	15 16.40	15 27.70	15 46	15 17.37	15 28.68		15 18.5	15 23.62	34.90
	28.7	31.78	43.15	8.0	18.45	29.68	64	19.45	30.80		20.3	25.80	37.00
	30.5	33.89	45.32	10.0	20.45	31.90	80	21.40	32.85	✓	22.5	27.80	39.20
	32.5	36.00	47.40	12.0	22.45	33.90	96	23.50	34.85		26.6	29.88	41.38
	34.4	38.00	49.50	14.0	24.48	36.03	11.1	25.70	37.00			31.72	43.32
	15 34.9	15 30	52.57	16 19.0	1.90	39.18	16 19.0	2.79	40.00			9.18	46.42
	37.0	17.40	54.50	20.4	3.82	41.20	21.0	5.80	42.20			11.10	48.52
	39.3	19.40	56.40	22.5	5.95	43.20	22.7	6.90	44.30			13.20	50.48
	41.3	21.54	58.65	24.4	8.05	45.30	24.6	9.00	46.20			15.23	52.58
	43.0	23.60	0.72	26.4	10.15	47.36	26.9	11.00	48.20			17.40	54.70
		33.91	3.90		20.45	58.30		21.48	51.40			24.76	57.73
		45.27	5.90		31.84	52.50		32.84	53.55			39.16	59.70
		56.57	8.00		43.25	54.55		44.18	55.50			50.51	2.00
		8.06	10.20		54.50	56.67		55.58	57.77			1.69	3.00
		19.45	12.29		5.97	58.60		6.94	59.70			13.24	6.00
	14 30.52	28.26		15 10.06	21.01		15 7.94	22.02			15 22.48 ~~21.99~~	25.39	
	15 39.10		14 56.652	16 22.54		15 43.202	16 22.84		15 44.204				15 50.478
			10 54.50			54.19			54.177				10 54.12
			+ 4 2.15			4 49.01			4 50.03				+ 4 56.36
			+ 4 2.10			4 48.96			4 49.98				+
			2.12			48.98			50.00				+ 4 56.33
			− 4 1.98			−4 48.91			−4 49.98				−4 56.23
			− .06			− .06			− .06				− .05
			− 4.09			− 3.78			− 3.77				− 3.71
			−4 6.13			−4 52.75			−4 53.81				−4 59.99
			10m 50.52			50.45			50.39				50.49
	+ 26.13	− 42.45		+ 33.14	− 39.34		+ 36.26	− 38.64			+ 28.50	28.00	
	1.41714	1.62788n		1.52035	1.59483n		1.55943	1.58704n			1.45484	1.44716	
	1.52276n	1.73350		1.62597n	1.70045		1.66505n	1.69266			1.56046n	1.55278n	
	45 4	45 2		45 4	45 2		45 4	45 2			45 4		
ε	5.″1 +23	37.0 +43		15.7 +44	42.4 +23		29.5 +54	44.1 +31			10.9 +34		
ζ	13.8 +18	46.2 +42		24.0 +08	51.3 +41		29.4 +03	51.2 +41			17.4 +16		
η	27.2 −.02	0.2 +06		33.8 −.07	0.3 +06		38.4 −.32	58.8 +01			25.3 −.09		
Η	23.2 +21	56.3 +21		31.6 +22	59.9 +23		35.8 +20	59.2 +22			22.7 +21		
	10.15.60	~~46.60~~ 1″12	48.60	2.475 67	103	51.35	45	95	51.45		18.10 .62		
	49 17.32	47 49.92		49 26.28	47 53.48		49 38.52	47 53.32			49 19.08		
	− 33.32	54.14		− 42.26	50.17		− 46.24	49.28			− 36.35	−35.71	
	48 44.00	44.06		48 44.02	43.65		48 46.28	42.60			48 42.73	43.37	
							5.04						
+2°	34′ 43.″5	4.″29		43.3	47.0		3.31 2.07	57.5			5.07	4.98	
+39	44 34												
	1.67980												
	+376			+1863			+2640				19.09		
	1.69356			1.69843			1.70620				+ ~~1.93~~		
	−14.38			−49.94			−50.84				1.69 ~~2.89~~		
	− .02	− .05		− .03	− .04		− .04	− .04			−49.99		
	− .43	− .28		− .44	− .29		− .45	− .29			− .02		
	− 1.15	− .28		− .14	− .26		− .11	− .24			− .43		
	−49.98″	−49.99″		−50.58	−50.53		−51.44	−51.41			− 1.60		
	33 14.37	14.30		33 13.75	14.17		11.87	14.34			− 50.88		
	33 14.34	″		33 13.96			13.10				15.02	14.38	
	37 24.18 +4	10.544		37 22.8	+4 11.13		22.8	+4 11.52			15.02		
	′ ″ −	.44		−	.74		−	.75			22.5	22.5	+4 10.66
	+4 9.8 −	26.89		4 8.8	− 25.50		4 9.1	− 25.50			7.45	8.1	− .79
	9.7	+3 43.30		8.7	+3 44.89		6.6	+3 45.27			7.84	8.0	− 25.20
		36′ 57.″6			58.9			58.4					+3 44.67
													59.1

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	α		δ		α		δ	
	m s		′ ″		m s		′ ″	
Oct. 27	10 54.52	4	37 24.1	1	Dec. 6	10 54.12	37 22.5	
Nov. 1	.48	4	24.0	1	11	.07	22.2	3
6	.43	5	23.9	1	16	54.02	21.9	3
11	.38	5	23.8	1	21	53.97	21.6	3
16	54.33	5	23.6	2	26	53.92	21.2	4
21	.28	5	23.4	2				
26	.23	5	23.1	3				
Dec. 1	.18	5	22.8	3				
6	54.12	6	22.5	3				

Dec. 19

15	31.5	15 37.68		48.90
	33.2	39.70		51.18
	35.5	41.90		53.20
	37.0	44.00		55.20
	38.2	46.10		57.28
16	40.2	23.10		0.40
	41.6	25.10		2.40
	43.7	27.38		4.52
	45.1	29.50		6.62
	47.5	30.30		8.72
				11.66
		41.88		13.76
		53.15		15.88
		4.53		17.88
		15.84		20.00
		27.08		
15	35.08			
16	43.62	2248	16	41.96
				53.99
			+5	10.51
			+5	10.48
			−5	10.44
			−	.05
			−	3.58
			−5	14.07
				50.43

+ 29.42	− 39.12
1.46864	1.59240 n
1.57426 n	1.69802
45 4	45 2

14.0	+41	47.4	+25
21.4	+11	54.3	+36
28.7	+01	0.9	+08
26.0	+22	59.7	+23
21.35	75	92	474.15

40	22.52	47	55.58
−	37.52	+	49.89
48	45.00		45.47
	3.35		2.88

+ 29.14	
1.70894	
− 5.16	
− .02	− .03
− .53	− .35
− .19	− .23
− 51.90	− 51.77
11.45	11.11
11.28	11.11
21.7	+4 10.56
	− .87
10.4	− 24.40
10.3	+3 45.29
	56.6

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λ Andromedae

$23^h\ 31^m\ 36^s$

$+45°\ 47'\ 49''$

$-3\ \ 25\ \ 1$

1878

Oct. 29

α_0 $35^s.857$

bm. α $-.085$

$\frac{d\alpha}{dt}$ $-.007$

δ_0 $48''.95$

bm. δ $+.86$

$\frac{d\delta}{dt}$ Dec. 6

log gind 9.855545

" cos δ 9.84336

" 15 cos δ sin 1 9.94943n

tan δ +1.03

sin ζ −.06

I 2.96

h m p	m p	m p				
23 34 57.2	35 —	35 20.77	35 38.8	35 58.80		14.30
59.9	—	23.85	43.5	1.00		17.28
3.2	10.50 10.50	26.70	45.9	3.90		20.30
5.7	.42 13.38	29.75	48.7	6.82		23.10
8.2	.37 16.29	32.70	51.7	9.81		26.10
						31
36 30.2	9.64	[31.85] 36.80		3.20		30.50
32.3	12.62	40.00		6.10		33.67
34.4	15.69	42.80		9.05		36.53
36.3	18.60	45.90		12.10		39.40
38.2	21.75	48.80		15.05		42.50
	10.43	53.30		3.91		46.90
	26.75	56.34		20.22		49.95
	43.86	59.30		36.52		52.88
	59.29	2.15		52.84		55.77
	15.66	5.38		9.10		58.68
35 28.4	21.499		35 45.72	18.59		36 36.578
36 34.28		35 42.998				39.22
		31 39.85				
		+4 3.15				+4 57.30
		+4 3.23				+4 57.31
		3.16				
		−4 2.03				−4 56.27
		− 1.25				− 1.06
		− 3.99				− 3.36
		−4 7.27				−5 0.69
		m s				
		31 35.73				35.83

	+4016	−5128	+5080	
	1.60379	1.70995n	1.70586	
	1.55322n	1.65938	1.65529n	
	′ ′	′ ′		
	35 4	35 2	35 4	
	″	″		
ζ	3.8 +22	41.3 +35	14.1 +11	
ξ	8.5 +19	46.0 +42	16.1 +17	
θ	23.9 −14	0.9 +08	24.1 −.14	
η	19.6 +21	57.7 +21	23.1 +21	
	1385 48	106 51.10	65 19.10	
	39 13.95	37 51.48	39 19.35	
	− 35.75	45.64	− 45.22	
	38 38.20	37.12	38 34.13	
	° ′ ″	″		
	+45 44 10.15	11.23	44 14.22	
	−3 25 32			
	0.53730			
	+1404		1943	
	0.55134		+ 1876	
			0.55726	55673
	+3.56	″	+3.60	
	− .44	− .72	− .70	
	− .42	− .29	− .43	
	− .12	− .26	− .16	
	+2.58	+2.29	+ 2.31	
	1.4 12.73	13.52	15.53	
	44 13.12		1615.53	
	48 23.6	+4 ′ ″ 10.54	27.5	+4 10.66
		+ .04	11	+ .07
	+4 ′ ″ 10.5	− 34.60	12.0	− 38.50
	18.4	+3 35.98	12.9	+3 32.23
		47 ″ 49.1	11	48.8

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	α		δ			α	δ
	m s		′ ″			m s	′ ″
Oct. 27	31 39.88	6	48 23.2	9	Dec. 6	31 39.22	48 27.5
Nov. 1	.82	7	24.1				
6	.75	8	24.9	8			
11	.67	8	25.6	7			
16	39.59		26.2	6			

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β Cephei Supplemental-

Nov. 3			Nov. 5			Nov. 6			Nov. 13		
h m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s	m s
21 30 32.1	30 36.0	31 9.0	29 50.0	30 39.4	31 12.0	30 3.3	30 —	31 14.2	31 14.7	30 51.4	31 25.3
28.2	39.0	12.0	56.2	42.0	15.3	6.8	52.7 43.6	26.3 / 16.9	20.9	54.7	27.8
34.0	41.8	15.2	0.4	45.0	18.2	14.9	53.2 47.2	26.0 / 19.8	26.6	57.6	31.3
39.3	44.9	18.2	7.2	47.8	21.2	18.5	53.0 50.0	25.8 / 22.0	31.9	0.8	34.1
45.7	47.6	21.2	13.2	51.0	23.7	24.0	53.0 53.0	25.0 / —	37.3	3.7	36.8
	50.9	23.7		54.3	27.4		52.6 55.6	—		7.0	40.2
32 5.0	53.3	26.8	32 15.3	57.4	30.7	32 27.0	53.2 59.2	—		10.0	43.0
8.3	56.7	30.0	19.3	0.5	33.5	32.6	53.4 2.5	—		12.9	46.0
13.5	4298 59.6	1888 32.7	25.3	4607 3.3	2187 36.7	37.0	52.9 5.0	—		341 16.0	3338 49.3
18.0			30.4			41.1					
24.0	47.76	42.0	35.0	51.19	45.4	46.5	53.00	47.5		3.79	58.2
	20.98	46.1		24.30	48.2		25.78	50.7		37.09	1.4
	54.39	48.3		57.52	51.5		59.56	53.6		10.38	4.5
		51.3			54.5			56.6			7.5
	63.12	54.4		7301	57.6		7834	59.5		11.26	10.4
		57.5			0.7			2.6			13.4
		0.5			3.5			5.4			16.3
		4.0			6.7			8.7			19.4
21 30 33.86		4895 6.4	30 1.40		5177 9.6	30 13.50		5360 11.4	31 26.28	9.34	22.3
32 13.76		31 21.043	32 25.06		31 24.337	32 36.84		31 26.113			31 37.087
		27 5.315			5.195			5.135			4.715
		+ 4 15.73			4 19.14			4 20.98			4 32.37
		+ 4 16.67			4 19.08			4 20.92			4 32.31
		15.64			19.05			20.89			32.28
		− 4 12.22			− 4 16.03			− 4 17.68			− 4 29.26 24.67
		− 3.34			− 3.01			− 3.17			− 3.07
		− 0.55			− 0.43			− 0.37			+ 0.65
		− 4 16.11			− 4 19.47			− 4 21.22			− 4 32.28
		27 m 4.93 s			4.87			4.89			4.81
	+ 47.18 s	− 52.72 s		+ 82.94	− 60.72		+ 72.61	− 70.73		+ 10.81	
	1.67376 m	1.72198 m		1.91876 m	1.78333 m		1.86100 m	1.84960 m		1.03883 m	
	1.31336 m	1.36158		1.55836 m	1.42293		1.80060 m	1.48920		0.67343 m	
	25 0	20 4		25 0	20 4		25 0	20 4		25 0	
	39.3 +38	58.5 +02		57.6 +13	54.7 +02		52.1 +15	50.9 +07		20.0 +42	
	40.6 +15	67.3 +06		66.9 +22	63.7 +14		62.0 +29	49.9 +19		20.6 +07	
	56.1 −27	10.2 −16		7.5 −07	3.8 +03		25 −01	59.3 −01		34.8 −21	
	53.6 +51	9.8 +20		7.7 +73	4.8 +14		2.1 +62	1.2 +03		37.0 +52	
	47.70 14	12.285		2.55 101	33.5925		57.30 105	28.5510		27.40 80	
	25 47.40	25 3.20		25 2.42	24 59.25		25 57.18	24 55.32		25 28.10	
	− 20.58	22.99		− 36.17	26.48		− 31.67	30.85		− 4.71	
	25 26.82	26.19		25 26.25	25.73		25 25.51	26.17		25 23.39	
+69 0	57 21.53	22.16		22.10	22.62		22.84	22.18		24.96	
−27 38 43											
1.47930											
+ 1.78				+ 1.89			+ 1.90			+ 7.20	
1.49708				1.49819			1.49520			1.48650	
+ 31.42				+ 31.49			+ 31.27			+ 30.65	
− .39	− .49			− 1.21	− .64		− .92	− .87		− .02	
− .09	− .56			− .12	− .60		− .11	− .59		− .06	
− .18	− .03			− .25	− .08		− .26	− .07		− .20	
+ 30.76	+ 30.34			+ 29.91	+ 30.17		+ 29.98	+ 29.74		+ 30.37	
54 15.39	52.50			52.01	52.79		52.82	52.92		55.33	
54 52.40				52.40			52.84			55.33	
2 3.4	+ 4 11.58			3.6	+ 4 12.07		3.7	+ 4 11.29		4.2	+ 4 10.41
	+ .34				+ .35			+ .34			+ .41
+ 4 11.0	− 33.50			4 11.2	− 33.70		4 11.3	− 33.83		4 8.9	− 34.30
12.3	+ 3 38.42			12.5	+ 3 38.72		12.6	+ 3 37.88		10.2	+ 3 36.52
	1 30.8				31.1			30.2			31.9

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Nov. 14

30	3.8	30	53.0	31	26.2
	8.4		56.1		29.2
	13.3		58.9		32.3
	19.0		1.9		35.3
	26.0		5.1		38.3
			8.0		41.5
			11.3		44.5
			14.3		47.4
		459	17.3	3452	50.5
			5.10		59.5
			38.36		2.5
			11.58		5.5
					8.5
		11504			11.7
					14.6
					17.8
					20.7
30	14.10			1042	23.4
				31	38.347
					4.655
				4	33.69
				4	33.63
					33.60
				−4	30.59
				−	3.13
				+	0.11
				−4	33.61
					4.74

+8425
1.92557
1.56511

25 0

56.4 +13
56.8 +22
9.0 −13
10.1 +73
2.70 95
26 3.08
− 36.74
25 26.34

56 22.01

+1956
1.49886
+ 3154
− 125
− 14
− 24
+ 2991
5792
57.92
42 +4 12.04
+ .42
+4 123 − 34.30
13.6 +3 38.16

30.1

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γ Cephei

α_0	21.081 s	
Corr. α	+ .098	+ .140
$\frac{d\alpha}{dt}$		
δ_0	4.74″	
Corr. δ	+.30	
$\frac{d\delta}{dt}$		

log sin δ	9.98864
" cos δ	9.35368
" 15 cos δ tan i	9.45975 n
tan δ	+4.315
sin z	−.57

log R₁	
" R₂	1.70170
R₁	
R₂	50.32
I	9.16
½ I	4.58

23h 34m 21s
+76° 57′ 5″
−34 33 (4) 17
1878

Oct. 29 | Nov. 10 | Nov. 12 | Nov. 13

h 23 m 38 s 26.5, 36.6, 45.2, 56.0	m 37 s —, —, —, —	m 38 s 15.4, 19.5, 23.8, 28.9	m 37 s 35.9, 49.0, 56.2, 6.8	37 46.6, 51.8, 55.6, 0.4	38 38.2, 41.2, 45.9, 50.4	37 21.5, 32.7, 41.0, 54.9	37 50.1, 54.4, 58.9, 3.4	38 39.9, 44.3, 49.1, 53.5	39 13.7, 21.2, 29.6, 35.1	38 [struck out]	38 41.7, 45.9, 50.3, 55.3
3.3	42.4 47.0	33.9	16.0	4.7	55.0	56.9	7.6	58.4	46.0	[struck out]	0.0
	43.3 52.5	38.4		9.2	59.3		12.2	2.7			4.3
39 53.7		42.3	40 11.0	13.8	4.5		17.3	7.3			8.8
1.5	43.5 57.2	47.5	16.5	18.2	8.5		21.7	7 12.0		8.7 17.9	13.4
8.1	43.3 1.6	3009 57.2	26.0	430 22.7	4960 13.0		718 26.2	5238 16.5		8.9 22.6	3 576 17.9
17.8			33.3								
22.9	43.12	6.4	40.5	4.78	26.3		7.98	30.0		6.80	32.0
	33.48	10.7		55.11	30.8		58.20 19	34.3		59.73	36.4
	24.33	15.0		44.88	35.7		48.37	39.2		50.04	40.8
		19.7			40.2		4	43.8			45.5
	10088	23.7		16477	44.8		17455	48.3		17857	49.9
		28.5			49.5			53.0			54.4
		34.0			54.1			57.7			59.2
		38.5			59.2			2.2			3.8
38 45.52		2190 42.5	37 56.78		4039 3.3	37 31.73		4353 6.8	39 29.12		4504 8.4
40 8.80		38 33.627	40 25.46		38 54.923			38 58.183			38 59.523
		34 25.97			25.26			25.12			25.06
		+ 4 7.66			4 29.66			4 33.06			4 34.46
		+ 4 7.56			4 29.56			4 32.96			4 34.36
		7.52			29.52			32.92			34.32
		−4 2.03			−4 24.83			−4 27.79			−4 29.45
		− 5.23			− 4.68			− 5.11			− 4.83
		− 4.89			− 4.18			− 4.04			− 3.98
		−4 12.15			−4 33.69			−4 36.94			−4 38.26
		m 34 s 21.48			21.23			21.24			21.26

	− 1189 s	− 9517 s	+ 5814	− 9054	+ 8645		− 2960
	1.07518 n	1.97850 n	1.76448	1.95684 n	1.93676		1.47129 n
	0.53493	1.43825	1.22423 n	1.41659	1.39651 n		0.93104
	25′ 4′	25′ 4′	30 0	25 4	30 0		25 4
E	48.2″ +13	23.7″ +54	8.5 +14	24.5 +54	9.1 +16		38.1 +35
F	49.9 +19	25.0 +07	9.3 +09	24.3 +08	10.3 +09		39.1 +06
G	3.1 +03	38.0 −30	18.6 −42	33.1 −03	24.8 −22		51.7 −54
H	3.3 +10	40.5 +15	20.9 +38	37.4 +19	28.0 +47		52.4 +02
	56.65 45	.46 30.85	13.55 19	78 28.80	16.95 50		44.90 −11
	29 56.12	29 31.80	30 14.32	29 29.82	30 18.05		29 45.32
	3.43	27.43	− 16.76	26.10	− 24.92		8.53
	29 59.55	59.23	29 57.56	55.92	29 53.13		29 53.85
+76°	52′ 48.80″	49.12″	50.79	52.43	55.22		54.50
−34	34 11						
	1.59840						
	+ 1408		+ 1326		− 102		+ 985
	1.61248		1.61166		1.59738		1.60825
	+ 40.97	″	+ 40.89		+ 39.57		+ 40.57
	− .02	− 1.08	− .40	− .98	− .89		− .11
	− .49	− .45	− .03	− .59	− .04		− .62
	− .11	− .12	− .05	− .20	− .12		+ .03
	+ 40.35	+ 39.32	+ 40.41	+ 39.12	+ 38.52		+ 39.87
	53′ 29.15″	28.44	53 31.20	31.55	33.74		34.37
	53 28.80		53 31.38		33.74		34.37
	57 40.3	+4′ 10.54″	57 43.6	+4 12.98	44.1	+4 11.12	44.3 +4 10.41
		+ .39		+ .48		+ .50	+ .51
	+ 4′ 11.5″	− 35.60	4 12.2	− 38.90	4 10.4	− 39.40	4 9.9 − 39.60
	11.8	+3 35.33	12.5	+3 34.56	10.7	+3 32.22	10.2 +3 31.32
		57′ 4.1″		5.9		6.0	5.7

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	α		δ	
	m s		′ ″	
Oct. 27	34 26.09		57 39.6	
Nov. 1	25.82	27	41.1	15
6	25.53	29	42.5	14
11	25.21	32	43.8	13
16	24.87	34	44.9	11
21	24.51	36	45.9	10
26	24.13	38	46.8	9
Dec. 1	23.73	40	47.5	7
6	23.32	41	48.1	6

Nov. 14

37 32.0	37 52.1	38 42.9	39 18.0
41.9	57.7	47.4	24.4
48.7	1.1	51.9	32.0
58.4	6.3	56.3	40.5
7.0	10.8	0.7	49.0
	15.2	5.6	
	20.0	10.7	
	24.0	15.6	
	967 29.5	104 19.3	

10.74
1.16
51.51

341

33.1
38.0
42.4
46.9
51.6
55.9
0.8
5.1
4636 9.8

37 49.60 | 39 32.78

39 1.137
24.99
4 36.15
4 36.05
36.01

−4 30.82
− 4.91
− 3.91
−4 39.64

21.50

Nov 30

38 59.7	
3.8	
8.0	
13.1	
17.7	
22.4	
26.8	
31.5	
1592 36.2	

39 17.689
25.79
4 53.90
4 53.80
53.76

−4 48.92
− 4.97
− 2.71
−4 56.60

21.09

Dec. 1

38 9.7	39 0.3
14.2	5.0
18.9	9.8
23.0	14.1
28.0	18.4
32.4	23.1
37.1	27.8
42.2	32.0
2579 46.4	1671 36.6

27.99
18.4657
8.88

5538 (54)

50.5
55.4
0.0
4.3
8.9
13.3
18.0
22.4
799 27.1

39 18.443 (80)
23.71
4 54.79
4 54.67
54.63

−4 49.99
− 4.76
− 2.63
−4 57.38

21.10

Dec. 6

38 15.5	38 20.0 (15.4)	39 5.8
23.4	24.6	10.7
32.7	29.0	16.1
44.3	33.5	19.3
52.9	38.7	24.0
0.9	43.0	29.2
	47.0	33.6
	51.5	38.0
		42.4

33.93
24.34
14.827
7284
7209

56.4
1.1
5.7
10.4
14.9
19.3
24.0
28.7
33.3

38 38.28

39 24.56 (28.0)
34 23.30
+5 0.98
+5 0.84

−4 56.27
− 4.45
− 2.22
−5 2.94

21.34

Nov. 14:

+7154
1.85455
1.31430 n

30 0

10.8 +20
11.4 +09
20.8 −38
23.1 +41
15.80 32
30 16.52
− 20.62
29 55.90

52 52.45

+2312
1.62152
+ 41.83
− .61
− .04
− .08
+41.10
33.55
33.55
44.5 +4 12.04
+ .52
+4 10.9 − 39.80
18.2 +3 32.76

6.3

Nov 30:

−1509
1.17869 n
0.63844

25 4

42.5 +25
44.0 +17
53.9 −43
56.4 −02
48.20 −03
29 49.20
4.35
29 53.55

54.80

+1947
1.61787
+ 41.48
− .03
− .48
+ .01
+40.98
35.78
35.78
47.4 +4 11.13
+ .66
4 11.6 − 42.70
11.9 +3 29.09

4.9

Dec. 1:

Not read.

Dec. 6:

+4680
1.66276
1.12251 n

25 4

59.8 00
58.4 +04
[9.9] 4.9 −15
9.2 +20
9
30 4.32
− 13.26
29 51.06

51.29

+1897 (1950)
1.61737 (90)
+41.49
− .25
− .51
− .02 (71)
+ 40.71
37.95 38.00
37.95 38.00
48.1 +4 10.66
+ .71
10.1 − 43.40
10.4 +3 27.97

6.0

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1878

Dec. 7 | Dec. 14 | Dec. 16 | Dec. 18

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α Ursæ Minoris

δ Jan. 14 88° 39′ 58″ | ½ I 44.s25

P. R.A.	1878.0	1h 14m	2.s602	+.700 20 3.302 = 3.s13 2.50		log cos δ	8.366958	log 15 constant	8.49174		
M.A. "	"		3.455		corr. α −0.s15 −0.s32	log tan δ	1.632925	" C. Rads	5.10352		
				3.s46 35	corr. δ +0.″05 .41	tan δ	42.95				
P. δ	1878.0	88° 39′	31.″31	−.36 = 30.95 2	o ′ ″						
M.A. "	"		30.90		46 16 43 U.L. 48 57 41 L.L.	azi z	−.72 .75				

	Jan. 1	Jan. 5	Jan. 7	Jan. 16	Jan. 17	Jan. 19
	h m s					
I	14 2.80	13 54.02	13 49.02	13 27.14	13 26.48	13 20.12
App. R.A.	13 57.20	13 53.60	13 51.57	13 43.73	13 42.83	13 40.88
I − R.A.	+ 5.60	+ 0.42	− 2.87	− 16.59	− 14.35	− 20.76
	+ .593	+ 0.75	− 2.24	− 16.26	− 14.02	− 20.43
Corr I-R.A.	+6.26	+1.08	−1.91	−15.93	−13.69	−20.10
	+5.75	+.057	−2.42	−16.48	−14.20	−20.61
					Only one observation	
					Observer unknown	
					Record in Miss Leavitt's hand	
					Miss Leavitt	
Δ T + m	+ 25.s27	+ 29.09	+ 31.73	+ 41.59		+ 45.66
m tan δ	− 30.64	− 29.64	− 27.75	− 26.24		− 23.88
Red. to 1878.0	+ 6.26	+ 9.86	+ 17.89	+ 19.73		+ 22.58
Σ	+ .86	+ 9.31	+ 15.87	+ 35.08		+ 44.36
R.A. 1878.0	14m 3.s66	3.33	4.87	2.22		4.48
Reg	+5 1′ 20.″11	+5 18.09	+5 21.23	+5 20.93		+5 20.01
Red.	+ 1.04	+ 1.01	+ 1.01	+ .98		+ .96
Red. to 1878.0	− 26.30	− 26.80	− 26.90	− 27.20		− 27.30
Σ	+4 54.85	+4 52.30	+4 55.34	+4 54.71		+4 53.67
Dec. 1878.0	39′ 30.″8	31.4	29.1	30.5		30.3
Corr. Reading	49 14.96	49 13.72	21.52	17.98	17.62	13.44
δ 88	33 35.39	35.23	26.83	30.37	30.73	34.91
= 46	16 4		15 57		16 1	
log t = z	1.77900					
B+I+y	+2022	+3007	+5097	+3980	+1439	+14.39
log Ref	1.79922	1.80907	1.82997	1.83880		1.79380
Ref	+62.98	+64.43	+67.66	+65.89		+62.14
Rvo	− .41	− .43	− .42	− .37		− .32
Rdr	− .07	− .13	− .19	− .09	− .15	− .15
Σ	+62.50	+63.87	+66.99	+65.43		+61.67
Corr. δ 88	34 35.9	34 39.1	34 33.8	34 35.8		34 36.6
App. δ + 88	39 57.2	39 57.7	39 57.8	39 58.1		39 58.2
Δ +	5 21.3	18.6	24.0	22.3		21.6
−	+5					

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	May 5								
δ	88 39 34	log R_1	2.98909			log Isosc tan i	8.47462	} May	
log cos δ	8.369123	" R_2	2.68842			" Const. Red	5.10572		
" tan δ	1.630759	" I	1.94775						
tan δ	− 42.73	R_1	$16^m\ 15^s.20$	+.80					
		R_2	$8^m\ 8^s.00$	+.10					
		I	44.33						

Jan. 22	Jan. 28 [12]	May 1	May 2	May 5	May 6	May 7
13 13.05	10 14.33	13 12 54.86	12 57.86	12 45.68	12 47.75	12 52.52
13 37.90	13 32.95	13 5.78	13 6.35	13 8.08	13 8.36	13 9.10
− 24.85	− 18.62	− 10.92	− 14.49	− 22.48	− 20.61	− 14.96
~~− 24.52~~	~~− 18.29~~			~~− 22.08~~	~~− 20.22~~	− 20.83
− 24.19	− 17.96	− 10.26	− 13.83	− 21.82	− 20.17	− 14.30
− 24.70	− 18.47	− 10.77	− 14.34	− 22.33	− 20.68	− 16.48
+ 48.57	+ 54.97	− 35.82	− 35.73	− 36.74	− 37.68	− 38.54
− 23.88	− 35.30	+ 47.~~42~~ 37	+ 47.24	+ 56.75	+ 55.68	+ 54.02
+ 25.56	+ 30.51	+ 57.68	+ 57.11	+ 55.38	+ 54.85	+ 54.36
+ 50.20	+ 50.18	+ 69.20	+ 68.62	+ 75.39	+ 72.84	+ 69.84
3.25	4.51	4.06	0.48	0.99	0.62	2.36
+5 20.95	+5 20.97	+4 10.56	+4 10.92	+4 11.65	+4 11.38	+4 12.07
+ .95	+ .93	+ .49	+ .50	+ .50	+ .50	+ .50
− 27.80	− 26.80	+ 3.70	+ 3.50	+ 2.80	+ 2.50	+ 2.30
+4 54.70	+4 55.10	+4 14.75	+4 14.92	+4 14.95	+4 14.38	+4 14.89
31.6	29.8	+91° 20 28.6	29.7	29.3	28.2	28.5
49 11.85	15.71	7 40.98	38.38	39.03	39.94	40.13
33 36.50	32.64	91 15 7.37	9.97	9.32	8.41	8.22
16 1	16 3	48 56 29				
		1.81960				
+ 559	+ 1632	+ 547	− 496	− 426	− 145	− 122
1.78460	1.79822	1.82507	1.81464	1.81534	1.81815	1.81838
+ 60.10	+ 62.42	+ 66.84	+ 65.26	+ 65.36	+ 65.79	+ 65.82
− .34	− .27	− .23	− .22	− .24	− .21	− .20
− .20	− .12	− .16	− .18	− .18	− .17	− .23
+ 60.36	+ 62.03	+ 66.45	+ 64.86	+ 64.94	+ 65.41	+ 65.39
34 36.9	34 34.7	91 16 13.8	16 14.8	16 14.3	16 13.8	16 13.0
39 58.1	39 57.7	91 20 25.8	20 25.6	20 26.4	20 26.6	20 26.8
21.2	5 23.0	+ 4 11.6	10.8	12.0	12.8	13.2

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		June 12								
	δ	88 39 27	log R_1	2.98630		log 15 cos δ tan i	8.47516n	June 3–5	8.47582n	June 5–20
			" R_2	2.68563						
	log cos δ	8.3697752	" I	1.94496		" Const. Red.	5.10626		5.10635	
	" tan δ	1.6301129	R_1	16^m 8.95						
			R_2	8 4.88						
	tan δ	42.671	I	44.05						

May 8	June 3	June 5	June 6	June 9	June 13
h m s					
13 12 ~~53.70~~ 52.22	13 ~~39.44~~ 38.92	13 40.42	13 45.86	13 53.18	14 9.57
13 9.56	13 28.20	13 29.72	13 30.48	13 32.97	13 36.88
~~+ 17.54~~	+ 10.72	+ 10.70	+ 15.38	+ 26.21	+ 32.69
~~− 12.63~~	+ 11.38	+ 11.36	+ 16.04	+ 20.87	+ 33.35
− 17.19	+ 10.87	+ 10.85	+ 15.53	+ 20.36	+ 32.84
s					
− 39.58	− 7.54	−1 10.11	−1 11.58	−1 16.32	−1 22.43
+ 55.85	+ 55.90	+ 59.74	+ 58.51	+ 56.32	+ ~~31.03~~ 30.52
+ 53.90	+ 35.26	+ 33.74	+ 32.98	+ 30.49	+ 26.58
+ 70.17	+ 83.62	+ 23.37	+ 19.91	+ 10.32	− 4.82
m s					
14 2.39	2.54	3.79	5.77	3.50	4.75
′ ″					
+4 11.76	+4 12.47	+4 12.90	+4 10.04	+4 10.28	+4 9.72
+ .50	+ .51	+ .51	+ .51	+ .52	+ .52
+ 2.10	− 2.60	− 2.80	− 2.90	− 3.30	− 3.70
+4 14.36	+4 10.38	+4 10.61	+4 7.65	+4 7.50	+4 6.54
20′ 27.″8	28.1	28.5	28.3	27.6	30.2
′ ″					
7′ 40.46	35.36	34.97	32.93	32.83	29.56
91° 15′ 7.89	12.99	13.38	15.45	15.52	18.79
48 56 30	56 35				
1.81960					
− 1.75	− 5.48	− 7.57	− 3.43	− 6.86	− 4.73
1.8188.5	1.81382	1.81203	1.81617	1.81274	1.81487
+ 65.89	+ 65.14	+ 64.87	+ 65.49	+ 64.97	+ 65.29
− .20	− .13	− .10	− .09	− .09	− .11
− .21	− .28	− .29	− .29	− .28	− .24
+ 65.48	+ 64.73	+ 64.48	+ 65.11	+ 64.60	+ 64.94
91° 16′ 13.4	17.7	17.9	20.6	20.1	23.7
91 20 27.0	20 31.8	20 31.9	20 32.0	20 32.4	20 32.8
+ 4′ 13.″6	14.0	14.0	11.4	12.3	9.1

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	δ	log cos δ	log tan δ	tan δ	log R_2	log I	R_2	½ I
Nov. 15	88 40 6.1	8.36622	1.63366	43.02	2.68916	1.94849	8m 8.84	44.41
20	10.8	580	408	.06	.68958	891	9.30	.45
Dec. 15	14.5	546	442	.09	.68992	925	9.70	.49
30	16.9	525	464	.12	.69013	946	9.93	.51

Correction to log R_2 by table Bauv. II, 148 = .00009

Hence a correction of +.10 is to applied to values of R_2 given above.

June 19	June 20	Nov. 13	Nov. 23	Nov. 24	Nov. 26
	36				
14 15.43	14 18.32	20 17.54	20 21.51	20 26.36	20 29.70
13 42.25	13 43.07 29	14 58.54	14 54.07	14 53.68	14 52.77
+33.18	+ 35.45	5 19.00	5 27.44	5 32.68	5 36.43
+32.84	+ 35.41	19.66	28.10	33.34	37.59
+33.38	+ 35.44	19.15	27.59	32.83	37.08
−1 29.95	−1 31.57	−4 29.61	−4 41.07	−4 42.45	−4 44.83
+ 59.74	+ 57.81	− 48.05	− 46.48	− 48.12	− 49.38
+ 21.21	+ 20.39	− 58.08	− 50.61	− 50.22	− 49.31
− 9.00	− 13.37	−6 12.74	−6 18.09	−6 20.79	−6 23.52
6.43	4.99	4.59	3.47	5.57	6.18
+4 10.02	+4 10.05	+4 10.41	+4 10.10	+4 10.48	+4 11.24
+ .55	+ .60	+ .65	+ .77	+ .77	+ .80
− 3.80	− 3.90	− 34.50	− 37.70	− 38.60	− 38.70
+4 6.77	+4 6.70	+3 36.56	+3 33.17	+ 33.25	+3 33.34
29.4	20 29.0	+88° 39 30.4	31.6	30.7	29.8
7 29.11	29.16	47 55.87	49.89	52.28	54.72
91 15 18.94	19.19	88 34 52.48	58.46	56.07	53.63
	56 41	46 16 14	16 20	16 18	16 15
	1.81960	1.77910			
−1432	−1729	+1197	+213	+1238	+2350
1.80528	1.80231	1.79107	1.78123	1.79148	1.80260
+6387	+6343	+61.81	+60.43	+61.87	+6347
− .10	− .12	− .36	− .31	− .36	− .34
− .15	− .22	− .11	− .16	− .22	− .23
+6362	+6309	+61.34	+59.96	+61.29	+6290
22.6	22.3	88 35 53.8	35 58.4	35 57.3	35 56.5
20 32.9	20 33.0	88 40 5.4	40 8.6	40 8.9	40 9.6
10.3	10.7	4 11.6	4 10.2	4 11.6	4 13.1

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log 15 cos δ tan i 8.47207n } Nov. 8.47153n } Dec. 8.47126n } Jan 1879
log Const. Red. 5.10260 5.10206 5.10189

Jan. 6 1879 δ = 88 40 17.8 log cos δ 8.36519

	Nov. 30	Dec. 1	Dec. 7	Dec. 8	Dec. 11	Dec. 12	Dec. 14	Dec. 16	Dec. 18	Dec. 19	Dec. 24	Dec. 25
h m s												
1 20 30.51	20 28.19	20 33.74	20 29.81	20 30.84	20 29.69	20 33.64	20 29.14	20 24.49	20 28.77	20 26.39	20 24.86
14 50.24	49.53	45.85	45.28	43.27	42.49	40.83	39.16	37.63	36.93	33.30	33.43
+5 40.27	5 38.66	5 47.89	5 44.53	5 47.57	5 47.20	5 52.81	5 49.98	5 46.86	5 51.84	5 53.09	5 58.93
+5 40.93	39.32	48.55	45.19	48.23	47.86	53.47	50.64	47.52	52.50	53.75	57.59
+5 40.42	38.81	48.04	44.68	47.72	47.35	52.96	50.13	47.01	51.99	53.24	52.08

m s												
−4 48.98	−4 50.06	−4 ~~57.44~~ 57.64	−4 58.63	−5 1.96	−5 3.07	−5 5.08	−5 7.57	−5 9.60	−5 10.52	−5 12.69	−5 12.99
− 49.56	− 47.45	− ~~49.94~~ 49.50	− 43.60	− 45.79	− 44.37	− 47.83	− 42.27	− 37.63	− 40.82	− 40.52	− 37.10
− 46.78	− 46.07	− 42.39	− 41.82	− 39.81	− 39.03	− 37.37	− 35.70	− 34.17	− 33.47	− 29.84	− 28.97
−6 25.32	−6 23.58	−6 29.53	−6 24.05	−6 27.56	−6 26.47	−6 30.28	−6 25.54	−6 21.40	−6 24.81	−6 23.05	−6 21.06
m s												
14 5.19	4.61	4.21	5.76	3.28	3.22	3.36	3.60	3.09	3.96	3.34	3.30

′ ″												
+4 11.13	+4 11.52	+4 11.82	+4 11.46	+4 10.45	+4 10.07	+4 10.53	+4 10.75	+4 10.24	+4 10.56	+4 9.70	+4 9.96
+ .84	+ .84	+ .90	+ .94	+ .94	+ .94	+ .96	+ .96	+ .98	+ .98	+ 1.00	+ 1.01
− 39.90	− 40.20	− 41.60	− 41.80	− 42.60	− 42.90	− 43.40	− 43.70	− 44.10	− 44.20	− 45.20	− 45.40
+3 32.87	+3 32.16	+3 31.12	+3 30.60	+3 28.79	+3 28.11	+3 28.09	+3 28.01	+3 27.12	+3 27.34	+3 25.50	+3 25.57
′ ″												
39′ 29.8″	29.6	30.2	31.0	31.3	30.8	30.6	30.8	30.0	31.3	30.4	30.2

′ ″												
47 53.69	54.61	53.21	52.36	46.95	48.18	48.84	49.34	~~48.25~~ ~~52.69~~	48.43	46.83	46.58
° ′ ″												
+88 34 54.76	53.74	55.14	55.99	61.40	60.17	~~59.79~~ 59.51	59.01	~~60.18~~ ~~55.66~~	59.92	35 1.52	1.77
° ′ ″												
46 16 16	16 15	16 17	16 18	16 23	16 22	16 21	16 21	16 17	16 22	16 23	16 23
1.77910												
+2313	+2832	+3047	+3339	+1067	+~~2080~~ 2160	+~~2432~~ 2432	+2946	+2206	+3148	+2625	+2277
1.80223	1.80742	1.80957	1.81249	1.78977	1.79990	1.80382	1.80856	1.80116	1.81058	1.80535	1.80187
+63.42	+64.18	+64.50	+64.94	+61.63	+63.08	+63.59	+64.35	+63.26	+64.65	+63.88	+63.37
− .31	− .31	− .30	− .30	− .29	− .33	− .33	− .36	− .35	− .35	− .38	− .41
− .21	− .22	− .21	− .22	− .22	− .20	− .22	− .20	− .16	− .20	− .16	− .15
+62.90	+63.65	+63.99	+64.42	+61.12	+62.55	+63.04	+63.79	+62.75	+64.10	+63.34	+62.81
35 57.7	35 57.4	35 59.1	36 04	36 25	36 27	36 25	36 28	36 ~~58.4~~ 28.5	4.0	4.9	4.6
40 10.8	40 11.1	40 12.5	40 12.7	40 13.5	40 13.8	40 14.3	40 14.6	40 15.0	40 15.1	40 16.1	40 16.3
′ ″												
4 13.1	4 13.7	4 13.4	4 12.3	4 11.0	4 11.1	4 11.8	4 11.8	~~14.6~~ 12.2	11.1	11.2	11.7

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Dec. 26	Dec. 30	Dec. 31	Dec. 23	1879 Jan. 5
20 22.06	18.23	16.72	29.96	20 9.13
.14 31.51	27.73	26.84	34.10	14 22.87
+5 50.55	50.50	49.88	55.86	+5 46.26
51.21				
50.70	50.65	50.03	56.01	+5 46.41
−5 13.12	−5 12.90	−5 11.70	−5 12.29	−5 10.57
− 37.55	− 37.77	− 38.29	− 44.06	− 36.83
− 28.05	− 24.27	− 23.38	− 30.64	− 19.41
−6 18.72	−6 14.94	−6 13.37	−6 26.99	−6 6.81
3.34	3.29	3.35	2.97	2.32
+4 9.80	+4 8.95	+4 10.26	+4 10.61	+4 10.13
+ 1.01	+ 1.02	+ 1.02	+ 1.00	+ 1.02
− 45.50	− 46.00	− 46.10	− 45.00	− 46.50
+3 25.31	+3 23.97	+3 25.18	+3 26.61	+3 24.65
31.7	30.6	31.9	30.4	31.8
44.81	45.11	45.39	47.91	47 44.00
3.54	3.24	2.94	0.44	35 4.35
16 26				
+ 2333	+ 2649	+ 2996	+ 2663	+ 2233
1.80243	1.80559	1.80906	1.80573	1.80143
+ 63.45	+ 63.91	+ 64.43	+ 63.93	+ 63.30
− .41	− .37	− .39	− .38	− .40
− .13	− .18	− .24	− .19	− .19
+ 62.91	+ 63.36	63.80	63.36	62.71
6.4	6.6	6.7	3.8	36 7.1
16.4	16.9	17.0	15.9	40 17.4
10.0	10.3	10.3	12.1	4 10.3

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51 H. Cephei

δ Jan. 12 87° 14' 3"

I 21.345

P. R.A. 1878.0 6h 42m 46.327 − 0.268 = 46.059 (+1.015)

log cos δ 8.683535 — log 15 cos δ 8.808832 — Jan. 12

M.A. " " 45.044 45.044

log sin α + 9.492 — log tan δ 1.31596 — " Const. Rad 5.41975

P. δ 1878.0 87° 13' 52.21 + 1.29 = 53.50

corr. δ + 0.17

tan δ + 20.70

M.A. " " 53.33 53.33

z 44 51 5 a.b. corr z −.71

50 23 18 l.b. .77

	Jan. 12	Feb. 7	Feb. 11	Feb. 13	Feb. 14	Feb. 18
h m s						
6	42 58.17	43 28.71	43 32.80	43 31.51	43 35.17	43 34.77
	43 21.72	43 18.75	43 17.80	43 17.40	43 17.78	43 16.03
	−23.55	+ 9.96	+ 15.00	+ 14.11	+ 17.99	+ 18.74
	−24.72	+ 8.79	+ 13.83	+ 12.94	+ 16.82	+ 17.57
	−24.35	+ 9.16	+ 14.20	+ 13.31	+ 17.19	+ 17.94
	−24.57	+ 8.94	+ 13.98	+ 13.09	+ 16.97	+ 17.72
	s	s	s	s	s	s
	+ 38.33	+ 5.68 12	+ 2.48	+ 1.92	+ 1.54	+ 0.26
	− 13.02	− 13.86	− 15.91	− 15.23	− 18.02	− 17.20
	− 36.68	− 33.71	− 32.76	− 32.36	− 32.14	− 30.99
	− 11.37	− 42.45	− 46.19	− 45.67	− 48.62	− 47.93
	m s 42 46.80	46.26	46.61	45.84	46.55	46.84
	' "	' "	' "	' "	' "	' "
	+5 20.56	+4 6.64	+4 7.37	+4 7.62	+4 7.75	+4 7.44
	+ .98	+ .84	+ .81	+ .78	+ .78	+ .74
	− 9.60	− 17.30	− 18.10	− 18.60	− 18.90	− 19.90
	+5 11.94	+3 54.18	+3 50.08	+3 49.80	+3 49.63	+3 48.28
+87°	13 53.2	54.4	53.1	54.1	52.7	53.2
	' "					
	15 5.96	13 42.84	13 46.06	13 43.26	46.05	44.76
87°	7 42.39	9 5.51	9 2.29	9 5.09	2.30	3.59
44°	50 13	50 27	50 7			50 25
	1.75740					
	+ 16.52	+ 15.27	+ 30.83	+ 20.11	+ 31.54	+ 35.59
	1.773.92	1.77267	1.78823	1.77751	1.78894	1.79269
	+ 59.42	+ 59.25	+ 61.41	+ 59.91	+ 61.51	+ 62.09
	44					
	− .24	− .41	− .52	− .58	− .59	− .65
	− .10	− .18	− .17 22	− .15	− .15	− .11
	+ 58.88	+ 58.66	+ 60.72 67	+ 59.18	+ 60.77	+ 61.33
87°	8 41.3	10 4.2	3.0	14.3 11.9	3.2	4.9
87	14 2.9	14 10.6	14 11.4	14 12.2	14 12.4	14 13.2
	' "					
+	5 21.6	4 6.4	4 8.4	4 7.6	4 9.1	4 8.3
	5 21.8	4 6.6	8.6	7.8	9.3	8.5

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δ	Feb. 17 87ᵈ 14ʰ 13ᵐ	½I 21ˢ.408	Mar. 13 87 14 17	½I 21ˢ.417	Sept. 10 87 13 39	½I 21ˢ.34	log 15cos δ tan α	8.78851	Feb. Mar.
log a cos δ	8.68310	R 3ᵐ 55ˢ.66	8.68292	R 3ᵐ 55ˢ.76	8.68458	R 3ᵐ 54ˢ.86	" Const Reduct	5.41923	
" tan δ	1.31640		1.31657		1.31491				
tan δ	+20.720		+20.729		+20.650				

Feb. 19	Feb. 24	Feb. 26	Feb. 27	Feb. 28	Mar. 4
43 31.72	43 33.23	43 33.36	43 33.02	43 34.00	43 33.43
43 15.67	43 27.48	43 13.41	43 13.11	43 12.81	43 11.27
+ 15.65	43 14.02	+ 19.95	+ 19.91	+ 21.19	+ 22.16
+ 14.48	+19.21 +13.47	+ 18.79	+ 18.74	+ 20.88	+ 20.99
+ 15.85	+ 78.30	+19.15	+19.11	+20.39	+21.36
+14.63	+18.41	+18.93	+18.89	+20.17	+21.14
	+18.19				
− 0.03	− 1.76	− 2.61	− 2.95	− 3.38	− 5.12
− 14.61	− 16.22	− 15.13	− 15.75	− 16.37	− 16.58
− 30.63	− 28.98	− 28.37	− 28.07	− 27.77	− 26.23
− 45.27	− 46.96	− 46.11	− 46.77	− 47.52	− 47.93
46.05	46.27	47.25	46.25	46.148	45.50
+4 7.88	+4 7.33	+4 7.34	+4 8.06	+4 8.30	+4 8.00
+ .73	+ .69	+ .67	+ .65	+ .65	+ .61
− 20.10	− 21.60	− 21.30	− 21.50	− 21.70	− 22.50
+3 48.51	+3 47.02	+3 46.71	+3 47.21	+3 47.25	+3 46.11
53.3	53.0	53.4	53.5	53.8	52.6
44.77	40.69	40.12	39.87	39.58	40.44
3.58	7.66	8.23	8.48	8.77	7.91
				50 30	1.75740
+3483	+1398	+1507	+1076	+950	+1514
1.79223	1.77138	1.77247	1.76746	1.76690	1.77254
+61.98	+59.07	+59.22	+58.54	+58.47	+59.23
− .65	− .59	− .51	− .57	− .53	− .50
− .13	− .17	− .20	− .14	− .15	− .14
+61.20	+58.31	+58.51	+57.83	57.79	+58.59
4.8	6.0	6.7	6.3	6.6	6.5
14 13.4	14 14.3	14 14.6	14.8	14 13.0	14 15.8
4 8.6	4 8.3	4 7.9	4 8.5	4 8.4	4 9.3
8.8	8.5	8.7	8.37	8.6	9.35

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	Mar. 5	Mar. 16	Mar. 19	Mar. 20	Mar. 21	Aug. 20
	m s					
	43 31.06	43 35.37	43 34.95	43 37.82	43 36.82	43 44.95
	43 10.82	43 6.60	43 5.24	43 4.79	43 4.35	42 55.04
	+20.24	+28.77	+29.71	+32.53	+32.47	+ 49.91
	+19.07 19.44	+27.60 27.97	+28.54 28.91	+31.36 31.73	+31.30 31.67	49.11
	+18.27	+26.80	+27.74	+30.56	+30.50	
	+19.22	+27.75	+28.69	+31.51	+31.45	+ 48.89
	- 5.26	- 9.96	- 12.04	- 12.69	- 13.15	-1 19.56
	- 13.74	- 17.69	- 15.96	- 19.29	- 18.09	+ 29.28
	- 25.78	- 21.56	- 23.20	- 19.75	- 19.31	- 10.00
	- 44.78	- 49.21	- 48.26	- 51.73	- 50.55	-1 0.28
	m s					
	42 46.28	46.16	46.75	45.59	46.27	44.67
	′ ″					
	+4 8.02	+4 9.13	+4 10.25	+4 11.13	+4 11.11	+4 10.22
	+ .60	+ .52	+ .51	+ .51	+ .50	+ .79
	- 22.60	- 23.70	- 24.00	- 24.00	- 24.00	- 10.30
	+3 46.02	+3 45.95	+3 46.76	+3 47.64	+3 47.61	+4 0.71
	13′ 52.″7	53.0	53.2	52.9	53.2	+92 46 6.9
	″					
	13′ 41.08	40.09	39.34	41.64	42.40	41 48.31
	9 7.27	8.26	9.01	6.71	5.95	92 41 0.04
		44 50 30				50 22 22
	1.75740	1576			1.75740	1.84150
	+2175	+ 1426	+572	+1502	+2276	- 1902
	1.77915	1.77316	1.76312	1.77242	1.78016	1.82248
	+60.14	+59.31	+57.96	+59.21	+60.28	+6645
	- .49	- .48	- .48	- .49	- .49	- .07
	- .19	- .12	- .13	- .16	- .12	- .20
	+59.46	+58.71	+57.35	+58.56	+59.67	+6618
87°	10′ 7.″	7.0	6.4	5.3	5.6	92 42 6.2
87	14 15.9	14 17.0	14 17.3	14 17.3	14 17.3	92 46 17.0
	+4 9.″2	4 10.0	4 10.9	4 12.0	4 11.7	4 10.8
	4 4.4	10.2	11.1	12.2	11.9	4 10.6

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δ	Aug. 27 87 13 42	log R_1		δ	Sept. 16 87 13 39	log R_1			log (cos δ tan i	8.79039	} Aug. Sept
log cos δ	8.68445	" R_2	2.37093	log cos δ	8.68458	" R_2	2.37080		" Const. Red.	5.42074	
" tan δ	1.31504	" I	1.63026	" tan δ	1.31491	" I	1.63013				
tan δ	20.656	R_1	~~3 54.~~	tan δ	20.650	R_1					
		R_2	3 54.93			R_2	3 54.86				
		½ I	21.34			½ I	21.34				

Aug. 26	Aug. 27	Aug. 29	Sept. 2	Sept. 10	Sept. 12
44 3.59	44 7.16	44 11.73	44 23.37	44 49.54	44 55.79
42 57.91	42 58.36	42 59.22	43 1.03	43 5.22	43 6.13
1 5.68	1 8.80	1 12.51	+82.34	1 44.32	1 49.66
1 4.88	1 8.00	1 11.71	+81.54	1 43.52	1 48.86
4.66	7.78	11.49	81.22	43.30	~~48.64~~
−1 34.445	−1 37.11	−1 42.27	−1 51.17	−2 12.15	−2 17.12
+ 29.13	+ 28.82	+ 30.93	+ 29.95	+ 29.22	+ 28.29
− 12.87	− 13.32	− 14.18	− 15.99	− 20.18	− 21.09
−1 18.19	−1 21.61	−1 25.52	−1 37.21	−2 3.11	−2 9.92
45.40	45.55	46.21	46.16	46.13	45.87
+4 10.93	+4 11.13	+4 10.47	+4 10.70	+4 10.82	+4 9.49
+ .77	+ .76	+ .75	+ .73	+ .68	+ .65
− 11.40	− 11.60	−3 11.90	− 12.70	− 13.80	− 14.60
+4 0.30	+4 0.29	+4 59.32	+3 58.73	+3 57.70	+3 56.14
46 7.4	7.4	5.5	6.7	6.1	7.5
49.15	48.71	50.25	41 46.77 82	47.81	44.00
40 59.20	59.64	58.30	41 1.58 55	0.54	4.35
		22 20	50 22 23		22 26
			1.84150		
− 799	− 1045	− 777	− 1690	− 749	− 1297
1.83371	1.83145	1.83373	1.82460	1.83401	1.82853
+ 68.19	+ 67.77	+ 68.19	+ 66.77	+ 68.24	+ 67.38
− .06	− .07	− .09	− .16 .09	− .14	− .13
− .21	− .22	− .24	− .22	− .25	− .22
+67.92	+67.48	+67.86	+ 66.39 46	+67.85	+67.03
7.1	7.1	6.2	42 7.99 8.0	8.4	11.4
46 18.2	46 18.3	46 18.6	46 19.4	46 20.5	46 20.8 7
			4 11.4		
4 11.0	4 11.2	4 12.4	11.4	4 12.1	4 9.3
10.8	11.0	12.2	11.2	11.9	9.1

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	Sept. 14	Sept. 15	Sept. 16	Sept. 17	Sept. 18	Sept. 19
h	m s					
18	45 1.97	45 5.69	45 9.60	45 13.58	45 16.29	45 17.93
	43 7.05	43 7.53	43 8.05	43 8.60	9.17	9.75
	+114.92	+118.16	+121.55	+124.98	2 7.12	2 8.18
	+114.12	+117.36	+120.75	+124.18	2 6.32	2 7.38
	113.90	117.14	120.53	123.96	6.10	7.16
	m s					
	−2 22.54	−2 25.40	−2 27.93	−2 30.34	−2 32.80	−2 35.16
	+ 28.81	+ 28.39	+ 27.46	+ 26.54	+ 26.74	+ 28.35
	− 22.01	− 22.49	− 23.01	− 23.56	− 24.13	− 24.71
	−2 15.74	−2 19.50	−2 23.48	−2 27.36	−2 30.19	−2 31.52
	m s					
	42 46.23	46.19	46.12	46.22	46.10	46.41
	′ ″					
	+4 9.90	+4 10.45	+4 9.84	+4 10.82	+4 10.93	+4 10.13
	+ .65	+ .63	+ .62	+ .62	+ .60	+ .59
	− 14.40	− 14.50	− 14.60	− 14.80	− 14.90	− 15.00
	+3 56.15	+3 56.58	+3 55.86	+3 56.64	+3 56.63	+3 55.72
	46′ 6.″3	5.2	6.1	6.8	6.8	6.1
	′ ″					
	41 45.83 87	41 48.52 56	41 47.58 63	41 46.20 24	4492	45.94
92°	41 2.52 48	40 59.83 79	41 0.77 72	41 2.15 11	3.58	2.41
50	22 24	22 21	22 22	22 23	22 26	
	1.8418	1.8415	1.8415	1.8415	1.841150	
	− 085	− 012	+ 026	− 060	−1494	− 666
	1.8330	1.8403	1.8441	1.8355	1.826656	1.834484
	+68.″08	+69.23	+69.84	+68.47	+67.07	+68.37
	− .16	− .16	− .16	− .16	− .14	− .16
	− .22	− .21	− .24	− .22	− .23	− .22
	+67.70	+68.86	+69.44	+68.09	+66.70	+67.99
92°	42 10.22	42 8.685	42 10.27	42 10.28	10,13	10.4
	46 21.2	46 21.32	46 21.4	46 21.5	46 21.6	46 21.7
	4 10.9	4 12.76	4 11.3	4 11.3	4 11.5	4 11.3
	4 10.4	12.5	10.9	11.1	11.3	11.1

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1878phae..proj.149..

Sept. 23

45 30.41
11.98
2 18.43
2 17.63
17.41

-2 44.53
+ 26.74
- 26.94
-2 44.73
45.68

+4 10.07
+ .66
- 15.20
+3 55.42
46 7.1

4703
1.32

+854
1.850 04
+7080

— 28
— .21
+7036
11.7
46 22.0
4 18.2
15.0

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δ Ursæ Minoris

P. R.A. 1878.0 18h 11m 41.040s | −.052 (crossed: −0.043, 88) | = 40.988 (crossed: 40.997, 52) | corr. α −0.052s (crossed: 0.043, 88)

N.A. " " 41.040 | 41.040 | corr. δ +0.30" (crossed: 0.74)

P. δ " 86° 36' 30.17" | +0.86 (crossed: 0.70) = 31.03 (crossed: 30.87)

N.A " " 30.73 | 30.73

z 44° 13' 42" U.L. sin z

51 0 41 L.C.

	Jan. 26		Feb. 11	
δ	86° 36' 13"	½ I 17.385s	86 36. 9	
log cos δ	8.77264		8.77278	R 3m 11.69s
log tan δ	1.22660n			
tan δ	−16.850			
	−.70			
	.78			

	Jan. 12	Jan. 24	Jan. 30	Feb. 2	Feb. 3	Feb. 4
h 6	m 10 24.32s	10 13.41	10 5.77	10 1.08	10 3.00	10 0.06
	11 14.27	11 15.54	11 16.49	11 17.24	11 17.27	11 17.53
	−49.95	−62.13	−70.72	−75.96	−74.27	−77.47
	−49.91 (crossed)	−62.09 (crossed)	−70.68 (crossed)	−75.92 (crossed)	−74.23 (crossed)	−77.43 (crossed)
	−49.96	−62.04	−70.63	−75.87	−74.18	−77.38
	−49.90 (red)	−62.08 (red)	−70.67 (red)	−75.91 (red)	−74.22 (red)	−77.42 (red)
	+38.32s	+50.31	+57.65	+61.74	+63.14	+64.36
	+10.60	+11.51	+12.96	+13.03	+10.97	+12.40
	+26.77	+25.50	+24.55	+24.00	+23.77	+23.51
	+75.69	+87.32	+95.16	+98.77	+97.88	+100.27
	11m 40.01s	40.73	40.93	39.85	40.88	40.83
	+5' 20.56"	+5 22.21	+5 22.56	+5 21.71	+5 21.71	+5 21.49
	+ 1.08	+ 1.03	+ .99	+ .98	+ .96	+ .96
	− 13.20	− 17.40	− 18.60	− 19.50	− 19.80	− 20.10
	+5 8.44	+5 6.14	+5 4.95	+5 3.19	+5 2.87	+5 2.35
93	23' 29.1"	27.6	28.2	28.3	28.9	28.2
	5' 41.18"	43.36	43.44	41.18	38.61	37.82
93°	17 7.17	4.99	4.91	7.17	9.74	10.53
50	59 38		59 36			
	1.85110					
	+1641	+3406	+4437	+4216	+3280	+2756
	1.86751	1.88516	1.89547	1.89326	1.88390	1.87866
	+73.71	+76.76	+78.61	+78.21	+76.54	+75.62
	− .06	− .06	− .07	− .07	− .08	− .08
	− .13	− .18	− .17	− .17	− .17	− .17
	+73.52	+76.52	+78.37	+77.97	+76.29	+75.37
°	18 20.7	21.5	23.3	25.1	26.0	25.9
93	23 42.5 (crossed: 42.6)	23 46.4	23 47.9 (crossed: 48.0)	23 48.8	23 49.2	23 49.5
	+5' 21.8"	5 24.9	5 24.6	5 23.7	5 23.1	5 23.5
	5 21.5	24.6	24.3	23.4	22.8	23.2

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	Mar. 1		Mar. 21			
δ	86° 36' 6"	½I 17ˢ.410	86 36 4		log Sco-Stars	8.89742
	8.77289	R 3ᵐ 11ˢ.64	8.77296	R 3ᵐ 11ˢ.62	" Comet-Rad	5.50860
	1.22635n					
	−16.840					

Jan–Feb. 6

Feb. 5	Feb. 6	Feb. 7	Feb. 11	Feb. 14	Feb. 16
9 59.46	11 1.26	11 2.32	11 3.81	11 4.19	11 7.42
11 17.79	11 18.06	11 18.33	11 19.30	11 20.11	11 20.54
−78.33	− 16.80	− 16.01	− 15.49	− 15.82	− 13.12
~~−78.29~~	~~−16.76~~	~~−15.97~~	~~−15.45~~	~~−15.78~~	~~−13.08~~
−78.24	−16.71	−15.92	−15.40	−15.73	−13.03
−78.28	−16.75	−15.96	−15.44	−15.77	−13.07
+ 65.37	+ 5.34	+ 5.14	+ 2.52	+ 1.57	+ 1.02
+ 11.93	+ 11.17	+ 11.27	+ 12.94	+ 14.66	+ 12.18
+ 23.25	+ 22.98	+ 22.71	+ 21.74	+ 21.03	+ 20.50
+ 100.55	+ 39.49	+ 39.12	+ 37.26	+ 37.26	+ 33.69
40.01	40.75	41.44	41.01	41.45	41.11
+5 21.56	+5 20.86	+4 6.64	+4 7.37	+4 7.75	+4 7.05
+ .95	+ .94	+ .93	+ .89	+ .86	+ .85
− 20.40	− 20.60	− 20.90	− 21.70	− 22.40	− 22.80
+5 2.11	+5 1.20	+3 46.67	+3 ~~44.78~~ 46.56	+3 46.21	+3 45.10
26.8	30.2	30.8	29.8	29.0	28.7
5 38.89	33.70	4 17.00	20.56	20.87	18.62
9.46	14.65	18 31.35	27.79	27.48	29.73
59 40	59 45	~~59 53~~		59 49	
	1.85110	1.85120	1.85110		
+ 2651	+ 2170	+ 1454	+ 3014	+ 3048	+ 2174
1.87761	1.87280	1.86564	1.88124	1.88158	1.87284
+ 75.44	+ 74.61	+ 73.39	+ 76.08	+ 76.13	+ 74.62
− .05	− .07	− .19	− .56	− .64	− .62
− .17	− .14	− .11	− .14	− .14	− .14
+ 75.22	+ 74.40	+ 73.29	+ 75.38	+ 75.35	+ 73.86
24.7	18 29.0	19 44.1	43.2	42.8	43.6
23 49.7	23 ~~49.9~~ 59.0	23 50.2	23 51.0	23 51.7	23 52.2
5 25.0	5 20.9	4 6.1	4 7.8	4 8.9	4 8.5
24.7	20.6	4 5.8	7.5	8.6	8.2

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log 15 cos(α−i) 8.878390n
" Const Red 5.150885
} Feb. 7 – Mar.

	Feb. 18	Feb. 19	Feb. 24	Feb. 26	Feb. 27	Feb. 28
	h m s					
6	11 7.48	11 10.58	11 12.41	11 14.88	11 14.78	11 15.82
	11 21.15	11 21.48	11 23.02	11 23.59	11 23.89	11 24.19
	− 13.67	− 10.95	− 10.61	− 8.71	− 9.11	− 8.67
	~~− 13.63~~	~~− 10.91~~	~~− 10.57~~	~~− 8.67~~	~~− 9.07~~	~~− 8.63~~
	− 13.58	− 10.86	− 10.52	− 8.62	− 9.02	− 8.58
	− 13.62	− 10.90	− 10.56	− 8.66	− 9.06	− 8.62
	s					
	+ 0.28	+ 0.02	− 1.72	− 2.60	− 2.94	− 3.36
	+ 13.98	+ 11.88	+ 13.18	+ 12.29	+ 12.80	+ 13.30
	+ 19.89	+ 19.56	+ 18.02	+ 17.45	+ 17.15	+ 16.85
	+ 34.15	+ 31.46	+ 29.48	+ ~~28.18~~ 27.14	+ 27.01	+ 26.79
	m s					
	11 41.63	41.99	41.89	42.02	41.79	42.31
	′ ″					
	+4 7.44	+4 7.88	+4 7.33	+4 7.34	+4 8.06	+4 8.30
	+ .81	+ .80	+ .76	+ .73	+ .72	+ .71
	− 23.30	− 23.50	− 24.20	− 24.50	− 24.60	− 24.80
	+3 44.95	+3 45.18	+3 43.89	+3 43.57	+3 44.18	+3 44.21
+93°	23′ 29.4″	29.8	28.8	30.2	30.0	30.0
	4′ 20.10″	19.76	15.91	14.19	14.36	14.40
98°	18 28.25	28.59	32.44	33.86	33.99	33.95
50	59 50		59 54			59 56
	1.85120					
	+34.70	+34.25	+13.29	+14.66	+9.35	+8.81
	1.88590	1.88545	1.86449	1.86586	1.86055	1.86001
	+76.90	+76.82	+73.20	+73.43	+72.53	+72.45
	− .66	− .66	− .61	− .57	− .57	− .53
	− .12	− .13	− .13	− .12	− .12	− .12
	+76.12	+76.03	+72.46	+72.74	+71.84	+71.80
93°	19 44.4	44.6	44.9	46.6	45.8	45.8
93	23 52.6	23 52.8	23 53.~~65~~	23 53.8	23 ~~54.0~~ 53.9	23 54.1
	+4′ 8.2″	4 8.2	4 8.6	4 7.2	4 8.1	4 8.3
	4 7.9	7.9	8.3	6.9	7.8	8.0

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Mon. 4	Mar. 5	Mar. 6	Mar. 16	Mar. 19	Mar. 24
11 16.67	11 19.94	11 21.12	11 25.59	11 30.94	11 31.05
11 25.58	11 25.96	11 26.33	11 29.71	11 30.85	11 31.60
− 8.91	− 6.02	− 5.21	− 4.12	+ 0.09	− 0.55
~~− 8.87~~	~~− 5.98~~	~~− 5.17~~	~~− 4.08~~	~~+ 0.13~~	~~− 0.51~~
− 8.82	− 5.93	− 5.12	− 4.03	+ 0.18	− 0.46
− 8.86	− 5.97	− 5.16	− 4.07	+ 0.14	− 0.44 50
− 5.09	− 5.25	− 5.47	− 9.93	− 12.01	− 13.13
+ 13.47	+ 11.16	+ 11.25	+ 14.38	+ 12.97	+ 14.70
+ 15.46	+ 15.08	+ 14.71	+ 11.33	+ 10.19	+ 9.44
+ 23.84	+ 20.99	+ 20.49	+ 15.78	+ 11.15	+ 11.01
40.51	40.93	41.61	41.37	42.09	42.06
+4 8.00	+4 8.02	+4 8.10	+4 9.13	+4 10.25	+4 11.11
+ .67	+ .66	+ .65	+ .57	+ .56	+ .55
− 28.40	− 25.50	− 25.60	− 26.30	− 26.40	− 26.40
+3 43.27	+3 43.18	+3 43.15	+3 43.40	+3 44.41	+3 ~~44.16~~ 45.26
23 29.1	30.1	30.2	28.6	29.8	30.1
15.19	15.28	13.94	16.02	14.16	17.64
33.16	33.07	34.41	32.33	34.19	30.71
		59 56			59 52
+ 1402	+ 2097	+ 1422	+ 1516	+ 523	+ 2236
1.86522	1.87217	1.86542	1.86636	1.85643	1.87356
+ 7332	+ 7450	+ 7335	+ 7351	+ 7185	+ 7474
− .53	− .53	− .56	− .51	− .51	− .56
− .11	− .13	− .17	− .16	− .18	− .09
+ 7268	+ 7384	+ 7262	+ 7284	+ 7116	+ 7489
45.8	46.9	47.0	45.2	45.4	44.8
23 54.8 ~~.7~~	23 54.9 ~~.8~~	23 ~~55.0~~ 54.9	23 55.6	23 55.7	23 55.6 ~~.7~~
4 8.9	4 7.9	4 7.9	4 10.4	4 10.3	4 10.9
8.6	7.6	7.6	10.1	10.3	10.6

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	July 25						Aug. 20							
δ	88° 36′ 35″	log R_1				δ	86° 36′ 41″	log R_1						
		" R_2	2.28352					R_1 R_2	2.28373					
log cos δ	8.77186	" I	1.54285			log cos δ	8.77165	" I	1.54306					
" tan δ	1.22738	R_1 / R_2	3m 12.10s			" tan δ	1.22759	R_1 / R_2	3 12.19					
tan δ	+16.88	½ I	17.45			tan δ	16.89	½ I	17.46					

	July 23	July 24	July 28	Aug. 12	Aug. 13	Aug. 14	Aug. 18	Aug. 20	Aug. 22	Aug. 25	Aug. 27	Aug. 29
h	m s											
18	12 26.08	12 27.94	12 35.80	13 4.26	13 6.69	13 9.16	13 14.74	13 18.93	13 25.60	13 30.37	13 33.61	13 40.69
	11 45.07	11 44.81	11 43.60	11 38.98	11 38.64	38.32	37.05	36.33	35.54	34.30	33.54	32.80
	+41.01	+43.13	+52.20	+1 25.28	+1 28.05	1 30.84	1 37.69	1 42.60	1 50.06	1 56.07	2 0.07	2 7.89
	+41.10	+43.22	+52.29	1 25.37	+1 28.14	30.93	37.78	42.69	50.15	56.16	0.16	7.98
	+41.06	+43.18	+52.25	25.33	28.10	30.89	37.74	42.65	50.11	56.12	0.12	7.94
	s											
	−14.96	−17.08	−25.46	−59.20	−1 1.76	−1 4.21	−1 14.16	−1 19.47	−1 24.37	−1 31.63	−1 37.03	−1 42.21
	−25.47	−25.71	−26.84	−26.18	−26.18	−26.04	−23.65	−23.93	−25.59	−24.91	−23.56	−25.28
	−4.03	−3.77	−2.56	+2.06	+2.40	+2.72	+3.99	+4.71	+5.50	+6.74	+7.50	+8.24
	−44.46	−46.56	−54.86	−1 33.32	−1 25.54	−1 27.53	−1 33.82	−1 38.69	−1 44.46	−1 49.80	−1 53.09	−1 59.25
	m s											
	11 41.62	41.38	40.94	40.94	41.15	41.63	40.92	40.24	41.14	40.57	40.52	41.44
	′ ″											
	+4 12.21	+4 12.39	+4 12.46	+4 10.90	+4 11.16	+4 11.29	+4 10.92	+4 10.22	+4 10.03	+4 10.49	+4 11.13	+4 10.47
	+ .71	+ .71	+ .72	+ .72	+ .72	+ .72	+ .71	+ .71	+ .71	+ .70	+ .70	+ .69
	− 3.80	− 4.10	− 5.40	− 8.70	− 8.80	− 9.00	− 9.80	− 10.80	− 10.60	− 11.10	− 11.30	− 11.50
	+4 9.12	+4 9.00	+4 8.08	+4 2.92	+4 3.08	+4 3.01	+4 2.83	+4 0.63	+4 0.14	+4 0.09	+4 0.53	+3 59.66
86	′ ″ 36 30.8	30.6	30.7	30.0	31.8	31.7	30.2	30.9	30.7	30.8	30.3	30.4
	′ ″											
	51 21.01	20.62	20.70	15.22	13.50	13.70	13.81	11.37	13.11	12.50	12.73	12.31
86°	′ ″ 31 27.34	27.73	28.35	33.13	34.85	34.65	34.54	36.98	35.24	36.35	35.62	36.04
44	12 53		12 50			12 56		12 59				12 58
	1.74790											
	−986	−1359	−1143	−1412	−1429	−1310	−1464	−1966	−266	−1033	−1139	−829
	1.73804	1.73431	1.73647	1.73378	1.73361	1.73480	1.73326	1.72824	1.74524	1.73757	1.73651	1.73961
	+54.1	+54.24	+54.51	+54.17	+54.15	+54.30	+54.11	+53.99	+55.62	+54.45	+54.51	+54.90
	−.08	−.08	−.07	−.04	−.04	−.03	−.04	−.04	−.03	−.06	−.06	−.04
	−.23	−.24	−.23	−.19	−.25	−.18	−.19	−.15	−.21	−.22	−.24	−.23
	+54.40	+53.92	+54.21	+53.94	+53.86	+54.09	+53.88	+53.80	+55.38	+54.37	+54.21	+54.63
86°	′ ″ 22 21.7	21.6	22.6	27.1	28.7	28.7	28.4	30.3	30.6	30.4	29.8	30.7
86	36 34.5	36 34.8	36 35.8	36 39.1	36 39.5	36 39.7	36 40.5	36 41.0	36 41.3	36 41.8	36 42.0	36 42.2
	′ ″											
	+4 12.8	4 13.2	4 13.2	4 12.3	4 10.8	4 11.0	4 12.1	4 10.7	4 10.7	4 11.1	4 12.2	4 11.6
	4 8.6	13.5	13.5	12.6	11.1	11.3	12.4	11.0	11.0	11.4	12.5	11.8
	13.1											

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log 15 Stellarium 8.87793n July 8.87772n Aug. 8.87761n Sept.

" Comet. Mond 5.50782 5.50761 5.50750

δ Sept. 15 86 36 44

log cos δ 8.77154

" tang δ 1.22770

tang δ 16.9788

log R, 2.28384

" Δ 1.64317

R, Δ

R₂ 3 12.24

½ Σ 17.46

Sept. 1	Sept. 6	Sept. 7	Sept. 8	Sept. 10	Sept. 12	Sept. 14	Sept. 15	Sept. 16	Sept. 17	Sept. 18
13 44.54	13 55.41	13 58.55	13 58.93	14 4.06	14 7.08	14 12.40 14.44	14 16.44	14 15.74	14 17.09	14 19.28
11 31.68	29.51	29.07	28.64	27.84	27.08	11 26.29	11 25.88	11 25.45	11 25.01	11 24.56
2 12.86	2 25.90	2 29.48	2 30.29	2 36.22	2 40.00	+166.11	+168.56	+170.29	+172.08	2 54.72
12.95	25.99	29.57	30.38	36.31	40.09	+166.20	+168.65	+170.38	+172.17	54.81
12.91	25.95	29.53	30.34	36.27	40.05	+166.16	+168.61	+170.34	+172.13	54.77
−1 48.61	−2 1.77	−2 4.49	−2 7.09	−2 12.09	−2 17.05	−2 22.46	−2 25.32	−2 27.89	−2 30.27	−2 32.76
− 24.87	− 24.15	− 25.00	− 23.31	− 23.90	− 23.14	− 23.56	− 23.72	− 22.46	− 21.70	− 21.87
+ 9.36	+ 11.53	+ 11.97	+ 12.40	+ 13.20	+ 13.96	+ 14.75	+ 15.16	+ 15.59	+ 16.03	+ 16.48
−2 3.57	−2 14.39	−2 17.52	−2 18.00	−2 22.79	−2 26.23	−2 31.27	−2 33.38	−2 34.76	−2 35.94	−2 38.15
40.97	41.02	41.03	40.93	41.27	40.85	41.13	41.06	40.98	41.15	41.13
+4 10.81	+4 9.68	+4 10.85	+4 9.72	+4 10.82	+4 9.49	+4 9.90	+4 10.45	+4 9.84	+4 10.82	+4 10.93
+ .67	+ .64	+ .64	+ .63	+ .62	+ .60	+ .59	+ .57	+ .56	+ .56	+ .55
− 12.00	− 12.70	− 12.80	− 12.80	− 12.90	− 13.40	− 13.30	− 13.40	− 13.40	− 13.52	− 13.60
+3 59.48	+3 57.62	+3 58.69	+3 57.55	+3 58.54	+3 56.99	+3 57.19	+3 57.62	+3 57.00	+3 57.88	+3 57.88
36 32.0	30.4	30.7	30.1	30.7	30.9	30.8	30.6	30.4	31.3	30.9
9.01	10.02	12.51	11.75	10.79	8.33	51 9.16 .14	51 11.03 .60	51 10.82 .81	51 9.72 .71	8.99
39.34	38.83	35.84	36.60	37.56	40.02	31 39.19 21	31 37.72 75	31 37.53 54	31 38.68 64	39.36
13 1		13 6	12 58			4ⁱ 13 0	12 59	12 59	13 0	
1.74790						1.7479				1.74790
−1483	−894	+4449	+202	−761	−1341	− 0982	− 024	+ 020	− 067	−1572
1.72807	1.73896	1.75239	1.74992	1.74029	1.73449	1.73847	1.74555	1.74999	1.74112	1.73218
+5316	+5182	+5654	+5622	+5499	+5426	+54.79	+55.65	+56.22	+55.11	+53.77
− .07	− .09	− .10	− .12	− .13	− .13	− .13	− .14	− .14	− .12	− .14
− .23	− .24	− .25	− .22	− .22	− .23	− .23	− .23	− .24	− .23	− .23
+5316	+5149	+5619	+5588	+5464	+5390	+54463	+55.3128	+55874	+54.786	+53.60
32.5	32.8	32.0	32.5	32.2	33.9	32 33.65	32 33.08	32 33.42	32 33.43	33.0
36 42.7	36 43.4	36 43.5	36 43.5	36 43.6	36 43.8	36 44.0	36 44.1	36 44.1	36 44.2	36 44.3
						4 10.44	4 11.1	4 10.7	4 10.8	4 11.3
4 10.2	4 10.6	4 11.5	4 11.3	4 11.4	4 9.9	10.5	11.2	10.8	10.9	
10.5	10.9	11.8	11.3	11.7	10.2	10.7	11.4	11.0	11.1	11.6

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λ Ursæ Minoris

									δ	Feb. 20 88° 56′ 4″	½I 55.49					
P.	R.A. 1878.0	19h 46m	15.380	−1.800	13.580	−0.860			log cos δ	8.26943		log 15 cos δ tan i	8.37493n	Feb.		
	" "			−2.16	13.22	corr. a − 1.22			" tan δ	1.73050n		" corr. Rad	5.00607			
M.A.	" "		14.440		14.440	corr. δ + 0.58			tan δ	−53.765						
P.	δ "	88° 56′	19.″31	−.″57 =	18.74	z =	46° 33′ 31″	U.C.	sin z	−.73						
M.A.	" "		18.16	=	18.16		48 40 53	L.C.		.75						
		Feb. 13		Feb. 18		Feb. 19		Feb. 24		Feb. 26		Feb. 27				
		h m s		ch. f.		44 0.10		43 59.50 57.79		44 8.91		44 6.52 53.02				
		7 43 55.48				44 41.80		44 45.29		44 46.52		43 47.13				
		44 38.81				−41.70		−47.50	45.79	−37.61		−40.61				
		−43.33				−40.53		−46.28		−36.44		−39.44				
		−42.11				−40.48		−46.28	44.57	−36.39		−39.39				
		−42.47				−40.84		−44.93		−36.75		−39.78				
		s														
		+ 1.86				− 0.11		− 1.83		− 2.63		− 2.98				
		+ 39.54				+ 37.91		+ 42.09		+ 39.24		+ 40.84				
		+ 95.63				+ 92.64		+ 89.15		+ 87.92		+ 87.31				
		+2 17.03				+2 10.44		+2 9.41		+2 4.53		+2 Y5.17				
		m s														
		46 12.51				10.54		8.91		13.44		11.69				
		′ ″														
		+4 7.62				+4 7.88		+4 7.33		+4 7.34		+4 8.06				
		+ .82				+ .77		+ .73		+ .70		+ .69				
		− 12.20				− 14.10		− 15.30		− 15.70		− 15.90				
		+3 56.24				+3 54.55		+3 52.76		+3 52.34		+3 52.85				
91		3′ 40.″6				40.0		40.7		41.2		41.6				
		2H′ 12.″11				13.10		7.44		6.49		6.07				
90°		58 36.24				35.25		40.91		41.86		40.28				
48		39 58						40 3								
		1.81540														
		+ 2285				+ 3608		+ 1547		+ 1596		+ 1158				
		1.83825				1.85148		1.83087		1.83136		1.82698				
		+ 68.92				+ 71.04		+ 67.74		+ 67.82		+ 67.14				
		− .63				− .71		− .66		− .62		− .62				
		− .14				− .15		− .13		− .15		− .13				
		+ 68.15				+ 70.18		+ 66.95		+ 67.05		+ 66.39				
90°		54 44.4				45.4		47.9		48.9		48.2				
91		3 54.0				3 55.9		3 57.1		3 57.5		3 57.8				
		′ ″														
		+4 9.6				4 10.5		4 9.2		4 8.6		4 9.0				
		4 9.0				9.9		8.6		8.0		8.4				

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	δ	Mar. 9	½I	δ	Mar. 22	½I	δ	Apr. 3			Feb. 13	tan δ		
		88° 56′ 0″	55.44		88° 55′ 58″	55.41		88 55 57			17–20	53.78		
											20–22	.77		
	log cos δ	8.26988			8.27011			8.27022			22–26	.76		
Feb.									R. m s 20.18.51		26–28	.75		
	" tan δ	1.73074			1.72982				+1.54		Mar 0–3	.74		
											3–6	.73		
	tan δ	−53.708			−53.681						6–11	.72		
											11–15	.71		
											15–19	.70		
											19–26	.69		
											26–Mar 3	.68		
												.67		
	Feb. 28			Mar. 5			Mar. 6			Mar. 16	Mar 9			Mar. 20
	44 4.58			44 20.93			44 18.56			44 20.36	44 32.88			44 26.90
	44 47.77			44 51.92			44 52.90			44 61.69	44 64.85			44 65.98
	− 43.19			− 30.99			− 34.34			− 41.33	− 31.97			− 39.08
	− 42.02			− 29.82			− 33.17			− 40.16	− 30.80			− 37.91
	− 41.97			− 29.77			− 33.12			− 40.11	− 30.75			− 37.86
	− 42.33			− 30.13			− 33.48			− 40.47	− 31.11			− 38.22
	− 3.44			− 5.29			− 5.54			− 10.03	− 12.10			− 12.75
	+ 42.46			+ 35.62			+ 35.88			+ 45.86	+ 41.34			+ 49.99
	+ 86.67			+ 82.52			+ 81.54			+ 72.75	+ 69.59			+ 68.46
	+2 5.69			+1 52.85			+1 51.88			+1 48.58	+1 38.83			+1 45.70
	10.27			13.78			10.44			8.94	11.81			12.60
	+4 8.30			+4 8.02			+4 8.10			+4 9.13	+4 10.25			+4 11.13
	+ .68			+ .63			+ .62			+ .55	+ .54			+ .54
	− 16.20			− 17.50			− 17.70			− 19.40	− 19.90			− 20.00
	+3 52.78			+3 51.15			+3 51.02			+3 50.28	+3 50.89			+3 51.67
	41.2			40.2			40.8			40.2	41.1			40.5
	6.29			7.62			5.38			5.78	3.87			6.70
	42.06			40.73			42.97			42.57	44.48			41.65
											40 6			40 3
														1.81540
	+ 1099			+ 2341			+ 1434			+ 1700	+ 676			+ 1620
	1.82639			1.83881			1.82974			1.83540	1.82216			1.83160
	+ 67.05			+ 68.99			+ 67.57			+ 67.98	+ 66.40			+ 67.86
	− .57			− .57			− .56			− .53	− .52			− .53
	− .13			− .14			− .15			− .13	− .17			− .15
	+ 66.35			+ 68.28			+ 66.86			+ 67.32	+ 65.71			+ 67.18
	48.4			49.0			49.8			49.9	50.2			48.8
	3 58.3			3 59.3			3 59.5			4 1.2	4 1.8			4 1.8
	4 9.6			4 10.3			4 9.7			4 11.3	4 11.5			4 13.0
	9.0			9.7			9.1			10.7	10.9			12.4

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log 15cos8 tan i 8.37538 n } Mar. 6, 16
" Const. Part 5.00652

8.37561 n } Mar. 19–26
5.00675

8.37572 n } Mar. 30 Apr. 3
5.00686

	Mar. 21	Mar. 26	Mar. 30	Mar. 31	Apr. 3	Aug. 20
L	m s					
7	44 29.70	44 40.01	44 45.68	44 47.39	44 47.37	48 43.97
	44 67.10	44 72.10	44 76.18	44 77.35	45 21.02	45 69.18
	− 37.40	− 32.09	− 30.50	− 32.96	− 33.65	+2 34.79
	~~− 36.23~~	~~− 30.92~~	~~− 29.33~~	~~− 31.79~~	~~− 32.48~~	36.01
	−36.18	−30.87	−29.28	−31.74	−32.43	
	−36.54	−31.23	−29.64	−32.10	−32.79	−35.65
	s	s	s	s	s	s
	− 13.19	− 15.98	− 17.52	− 18.00	− 19.77	−1 19.74
	+ 46.86	+ 48.56	+ 47.86	+ 50.27	+ 57.19	− 76.70
	+ 67.34	+ 62.34	+ 68.26	+ 67.09	+ 53.42	+ 5.26
	+1 41.01	+1 34.96	+1 28.60	+1 29.36	+1 30.84	−2 31.18
	m s					
	46 10.71	14.97	14.28	13.75	18.21	12.79
	′ ″	′ ″	′ ″	′ ″	′ ″	′ ″
	+4 11.11	+4 10.90	+4 10.65	+4 10.78	+4 10.23	+4 10.22
	+ .53	+ .52	+ .51	+ .51	+ .50	+ .74
	− 20.10	− 20.50	− 21.00	− 21.10	− 21.30	− 11.80
	+3 51.54	+3 50.92	+3 50.16	+3 50.19	+3 49.43	+3 59.16
	3′ 41.″2	41.2	40.5	40.2	3′ 42.″9	88° 56′ 17.″8
	24′ 7.″02	4.71	4.18	4.64	0.53	31′ 27.″70
90°	58 41.33	43.64	44.17	43.71	47.82	88 51 20.65
48	40 3		40 6		40 9	46 32 42
	1.81540				1.81540	1.78320
	+ 2362	+ 1265	+ 969	+ 1010	+ 666	− 1765
	1.83902	1.82805	1.82509	1.82550	1.82206	1.76555
	+ 69.03	+ 67.31	+ 66.85	+ 66.91	+ 66.38	+ 58.28
	− .53	− .52	− .52	− .52	− .62	− .04
	− .15	− .16	− .16	− .15	− .04	− .29
	+ 68.35	+ 66.63	+ 66.17	+ 66.24	+ 65.72	+ 57.95
90	59 44.7	50.3	50.3	50.0	53.5	88 52 18.6
91	4 ~~2.6~~ 1.4	4 2.4	4 2.8	4 2.9	4 3.1	88 56 36.0
	+′ 12.″2	4 12.0	4 12.5	4 12.9	4 9.6	4 11.4
	4 11.6	11.4	11.9	12.3	9.0	12.0

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	δ	log cos δ	log tan δ	tan δ	log R_2	log I	R_2	½I			δ	Sept. 9
Aug. 20	88° 56′ 30.0	8.26648	1.93345	54.13	2.78890	2.64823	10 15.03	55.87				88 56 35.3
30	32.7	617	376	.17	921	854	15.47	.91				
Sept. 9	35.3	587	406	.21	951	884	15.90	.95			log cos δ	8.26587
19	37.5	562	431	.24	976	909	16.26	55.98				406
29	39.1	544	449	.26	2.78994	927	16.52	56.00			n tan δ	1.73 ~~299~~
Oct. 9	40.3	530	463	.28	2.79008	941	16.72	.02				208
19	41.2	520	473	.29	018	951	16.86	.04			tan δ	54.~~8774~~
29	41.5	516	477	.30	022	955	16.92	.04				
Nov. 8	41.0	522	471	.29	016	949	16.83	.04			R_2	20 35′77 + 1.66

By table Chauv. II, 148 log R_2 must be corrected by .00015 ∴ R_2 must be corrected by + .21

Aug. 22	Aug. 25	Aug. 26	Aug. 29	Aug. 31	Sept. 9	Sept. 21	Sept. 23	Sept. 25	Sept. 28
48 53.19	48 56.59	48 51.87	49 2.16	49 5.06	49 ~~10.89~~ [0.63] 48.74	49 35.51	49 25.28	49 33.44	49 32.95
45 67.36	64.30	2 63.29	60.50	58.74	45 48.74	45 33.52	32.22	45 29.75	26.21
2 45.83	2 52.29	3 48.58	3 1.66	3 6.32	+ 203.64	4 1.99	3 53.06	4 3.69	4 6.74
47.05	53.51	49.80	2.88	7.54	+ 202.73	3.21	54.28	+4 4.91	7.96
~~46.89~~	53.15	49.44	2.52	7.18	203.04	2.85	5892	4.55	7.60
					202.68				

−1 24.74	−1 31.95	−1 34.56	−1 42.38	−1 46.35	−2 9.90	−2 42.42	−2 44.71	−2 48.30	−2 55.30
− 82.02	− 79.87	− 76.35	− 81.09	− 80.71	− 73.35	− 80.~~14~~27	− 70.25	− 78.50	− 76.45
+ 7.08	+ 10.14	+ 11.15	+ 13.94	+ 15.70	+ 25.63	+ 40.92	+ 42.22	+ 44.69	+ 48.23
−2 39.68	−2 41.68	−2 39.76	+2 49.53	−2 51.36	−2 57.62	−3 21.77	−3 12.74	−3 22.11	−3 23.52
		12	2						
13.51	14.91	~~14~~.11	1~~4~~.63	13.70	13.01	13.74	1254	11.33	9.43

+4 10.03	+4 10.49	+4 10.93	+4 ~~10.47~~	+4 10.96	+4 10.15	+4 10.64	+4 10.07	+4 10.70	+4 11.04
+ .74	+ .74	+ .74	+ .72	+ .71	+ .64	+ .53	+ .53	+ .51	+ .49
− 12.80	− 13.30	− 13.50	− 14.30	− 14.80	− 17.10	− 19.80	− 20.00	− 20.30	− 20.80
+3 58.27	+3 ~~58~~.93	+3 5~~8~~.17	+3 56.89	+3 56.87	+3 53.69	+3 51.37	+3 50.60	+3 50.91	+3 50.73
56 17.6	19.5	19.7	19.4	17.9	20.4	18.2	17.6	17.4	17.5

29.39	26.20 ~~2022~~	26.49	25.34	26.54	21.86	22.53	23.12	.54	23.30
	22.15 ~~2813~~							31 21.79	
18.96		21.86	23.01	21.81	26.49	25.82	25.23	51 26.~~58~~	25.05
								81	
32 41	32 50		32 45			32 48	46	32 48	
								1.7832	1.78320
− 33	− 744	− 600	− 664	− 922	− 240	+ 410	+ 1021	− ~~024~~ 452	+ 950
1.78287	1.77576	1.77720	1.77656	1.77398	1.78080	1.78730	1.79341	1.~~77868~~	1.79270
+ 6.06	+ 5.97	+ 3.87	+ 5.78	+ 5.43	+ 6.37	+ 6.28	+ 6.14	+ 6.07	+ 6.04
− .04	− .03	− .04	− .06	− .08	− .06	− .12	− .15	− .15	− .14
− .28	− ~~.16~~.18	− .20	− .20	− .16	− .14	− .21	− .21	− .20	− .16
+ 6.34	+ 5.9~~7~~6	+ 5.63	+ 5.52	+ 5.19	+ 6.17	+ 6.95	+ 6.78	+ 5.92	+ 6.74
19.3	~~24.6~~21.6	21.5	22.5	21.0	26.7	26.8	27.0	52 26.5	26.8
56 30.7	56 31.5	56 31.7	56 32.5	56 33.0	56 35.3	56 38.0	56 38.2	56 ~~35.7~~ 38.5	56 39.0
								4 8.6	
4 11.4	4 ~~3.9~~ 9.9	4 10.2	4 10.0	4 12.0	4 8.6	4 11.2	4 11.2	4 12.0	4 12.2
12.0	~~4.6~~ 10.5	10.8	10.6	12.6	9.2	11.8	11.8	12.6	12.8

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	log 15 Scobtauri	log Comet Rmdr
Aug. 20	8.37255 n	5.00312
30	224 n	281
Sept. 9	194 n	251
19	169 n	226
29	151 n	208
Oct. 9	137 n	194
19	127 n	184
29	123 n	180
Nov. 8	129 n	186

	Sept. 30	Oct. 2	Oct. 3	Oct. 8	Oct. 14	Oct. 16	Oct. 21	Oct. 22	Nov. 2	Nov. 3	Nov. 4	Nov. 5
h m s												
19	49 36.36	49 31.73	49 37.87	49 30.99	49 37.07	49 36.69	49 41.98	49 47.70	49 46.66	49 52.10	49 48.02	49 48.46
	45 23.68	20.92	19.48	12.58	5.03	2.14	44 54.80	53.46	38.29	36.91	35.60	34.35
	+ 4 12.68	10.81	18.39	18.41	32.04	34.55	47.18	4 54.24	5 8.37	15.19	12.42	14.11
	+4 13.90	12.03	19.61	19.63	33.26	35.77	48.40	4 55.46	5 9.59	16.41	13.64	15.33
	13.54	11.67	19.25	19.27	32.90	35.41	48.04	55.10	9.23	16.05	13.28	14.97
	m s											
	−2 59.51	−3 2.73	−3 4.84	−3 15.53	−3 28.74	−3 33.08	−3 44.27	−3 46.45	−4 10.00	−4 12.01	−4 13.99	−4 15.91
	− 73.14	− 71.58	− 77.28	− 63.51	− 69.97	− 68.89	− 63.36	− 69.87	− 60.65	− 65.87	− 62.34	− 59.35
	+ 50.76	+ 53.52	+ 54.96	+ 61.86	+ 69.41	+ 72.30	+ 79.64	+ 80.98	+ 96.15	+ 97.53	+ 98.84	+ 100.09
	−3 21.89	−3 20.79	−3 27.16	−3 17.18	−3 29.30	−3 29.67	−3 27.99	−3 35.34	−3 34.50	−3 40.35	−3 37.49	−3 35.17
	m s											
	46 14.47	10.94	10.71	13.81	7.77	7.02	13.99	12.36	12.16	11.75	10.63	13.29
	′ ″											
	+4 10.58	+4 10.88	+4 11.04	+4 10.80	+4 11.68	+4 10.96	+4 11.35	+4 10.52	+4 10.80	+4 11.58	+4 11.30	+4 12.07
	+ .47	+ .47	+ .46	+ .45	+ .45	+ .45	+ .46	+ .47	+ .54	+ .55	+ .55	+ .56
	− 21.10	− 21.50	− 21.60	− 22.00	− 22.70	− 22.90	− 23.00	− 23.00	− 23.20	− 23.10	− 23.00	− 23.00
	+3 49.95	+3 49.85	+3 49.90	+3 49.25	+3 49.43	+3 48.51	+3 48.81	+3 47.99	+3 48.14	+3 49.03	+3 48.85	+3 49.63
	′ ″											
	56 17.8	19.9	17.6	19.3	19.6	19.6	19.8	17.6	19.9	19.0	19.3	18.9
	′ ″											
	31 20.93	17.09	19.76	18.39	19.09	16.67	16.94	19.62	31 17.28	31 20.99	20.87	21.86
+88°	51 27.45	31.26	28.59	29.96	29.26	31.68	31.41	28.73	51 31.07	27.36	27.48	26.49
46	32 49			32 52		32 53			32 53	32 49	32 49	32 48
	1.78230								1.78330			
	+ 32	− 1256	− 908	− 232	+ 379	− 746	− 577	+ 358	+ 267	+ 1570	+ 1753	+ 1715
	1.78362	1.77074	1.77422	1.78088	1.78709	1.77584	1.77753	1.78688	1.78597	1.79900	1.80883	1.80045
	+ 60.76	+ 58.98	+ 59.46	+ 60.39	+ 61.25	+ 59.68	+ 59.91	+ 61.22	+ 61.59	+ 62.95	+ 63.22	+ 63.16
	− 12	− .09	− .12	− .10	− .07	− .07	− .11	− .13	− .10	− .11	− .11	− .14
	− .24	− .19	− .20	− .26	− .22	− .23	− .25	− .25	− .23	− .17	− .18	− .22
	+ 60.40	+ 58.70	+ 59.14	+ 60.03	+ 60.96	+ 59.38	+ 59.55	+ 60.84	+ 60.76	+ 62.67	+ 62.93	+ 62.80
	52 27.8	30.0	27.7	30.0	30.2	31.8	31.0	29.6	52 31.8	52 30.0	52 30.4	52 29.8
	56 39.3	56 39.7	56 39.8	56 40.2	56 40.9	56 41.1	56 41.2	56 41.2	56 41.4	56 41.3	56 41.2	56 41.2
	′ ″											
	+4 11.5	4 9.7	4 12.1	4 10.2	4 10.7	4 10.0	4 10.2	4 11.6	4 9.6	4 11.3	4 10.8	4 11.9
	+4 12.1	10.3	12.7	10.8	11.3	10.6	10.8	12.2	10.2	11.9	11.4	12.5

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