1876phae.proj.1688

KG
11366
v.688

17

Instrumental Constants
depending on
New Pulkowa Coördinates
1876 -

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1876phae.proj.1602.

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1876phae.proj.1692.

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1876phae.proj.1612.

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1970phae.proj..109Z.

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1876phae.proj.1692.

h'

Jan 10 – .009 ✓
12 – .012 ✓
20 – .011 ✓
27 – .024 ✓
Feb 7 – .021 ✓
16 – .005 ✓
20 – .020 ✓
22 – .011 ✓
29 – .022 ✓
Mar 6 – .027 ✓
13 – .035 ✓

Omitted

In the copied sheets

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1876 Jany 10 $h = -.010 - .023$

$n = -.04$ $c = .00$

Star	Ra	Star No. δ	tang. δ	π Rd				
	h			δ			14.946	
	0.4 +2.7	5	+ 1.90	−14.83	− .08	−.06 −	14.91 −	14.97
	0.5 2.6	10	+ 1.48	−14.82	− .06	.06	14.88	14.94
	1.9 1.2	32	+ .89	−14.98	− .04	.03	15.02]	15.05]
	2.0 1.1	33	+ .42	−14.95	− .02	−.03	14.97	15.00
1.54	2.9 +0.2	47	+ .06	−14.95	− .00	+.00	.95 −	14.95
	3.2 −0.1	52	+ 1.17	−14.94	− .05	+.00	.99	14.99
	3.4 0.3	55	+ .22	−14.96	− .01	.01	.97	14.96
	3.4 0.3	56	− .17	−15.00	+ .01	01	.99	14.98
	3.5 0.4	363	+ 1.95	−14.99	− .08	.01	15.07	15.06
	3.6 0.5	57	+ 1.09	−14.93	− .04	01	14.97	14.96
	3.7 0.6	62	+ .44	−14.96	− .02	01	.98	14.97
	4.2 1.1	70	+ .27	−15.02	− .01	02	15.03	15.01
	4.3 1.2	71	+ .31	−15.01	− .01	02	.02	15.00
	4.5 1.4	73	+ .29	−14.98	− .01	03	14.99	14.96
3.84	4.6 −1.5	371	+ 1.51	−14.92	− .06	+03	.98	14.95
	3.71						14.999	
	07						14981	14.983

1876 Jany 10

Star	Ra	Star No. δ	tang δ	π Rd
	h			°
	1.2	19	+42.58	−12.58
	15.3	203	− 3.13	−15.07
*	13.2	× 19	−42.58	−22.37

$n = -.17$

$h' = -.009$ 14.2 187 +0.36 −15.07 − .07/6 − 15.080 / .130

2.9 47	+ .06	−14.95
3.4 55	+ .22	14.96
3.4 56	− .17	15.00
4.2 70	+ .27	15.02
4.3 71	+ .31	15.01
4.5 73	+ .29	14.98
3.8	+ .16	15.00 / −14.99

$n = -.076$

0.4	+1.90	−14.83
0.5	+1.48	14.82
3.2	+1.17	14.94
3.5	+1.95	14.99
3.6	+1.09	14.93
4.6	+1.51	14.92
2.6	+1.52	−14.90
14.2	+ .36	15.07

				I	II
	1.2	+42.58	−12.58	−12.61	−12.59
			−.03	−.01	

$0 = +42.42 + 2.38$ $n = -.06$ — .060

$0 = +41.06 + 2.31$ — .06 — .060

			I	II
3.3 ~~203~~	−3.13	−15.07	−15.07	−15.06
		+.00	+.01	

$0 = -3.29 - .08$ $n = -.02$ — .020

$0 = -4.65 - .16$ — .03 — .030

			III
13.2	−42.58	−22.37	−22.38
		−.01	

$0 = -42.94 - 7.31$ $n = -.17$ — .170

1876 Jany 11 $h = -.010 - .041$ (−.053)

$n = +.06$ $c = +.10$

	Ra	Star No.	tang δ		π Rd						
									15.028		
	1.3 +2.1	20	+ 1.70	+1.98	−15.31	+ .10	+.20	−.09 −	15.01	15.10
	2.0 1.4	33	+ .42	1.09	−15.18	+ .03	.11	.06	.04	.10
	2.9 0.5	47	+ .06	1.00	−15.16	+ .00	.10	.02	.06	.08
	3.0 0.4	50	+ .85	1.31	−15.20	+ .05	.13	.02	.02	.04
2.48	3.2 0.2	52	+ 1.17	1.54	−15.23	+ .07	.15	.01	.01	.02
	3.4 +0.0	55	+ .22	1.02	−15.20	+ .01	.10	−.00	.09	.09
	3.7 −0.3	62	+ .44	1.10	−15.24	+ .03	.11	+.01	.10	.09
	3.8 0.4	63	+ .61	1.17	−15.28	+ .04	.12	.02	.12	.10
	4.1 0.7	366	− .13	1.01	−15.18	− .01	.10	.03	.09	.06
	4.2 0.8	70	+ .27	1.03	−15.19	+ .02	.10	.03	.07	.04
	4.3 0.9	71	+ .31	1.04	−15.26	+ .02	.10	.04	.14	.10
4.00	4.5 −1.1	73	+ .29	1.04	−15.15	+ .02	+.10	+.05	.03	4.98
	3.375								15.091	
									15.065	15.067

1.2	19	+42.58	−22.14
13.4	452	− 3.27	−14.45
1.5	347	+ 3.15	−15.35
15.3	203	− 3.13	−14.71
15.8	217	− 4.78	−14.08
16.3	474	− 4.02	−14.42
13.2	× 19	−42.58	− 7.90 − 2.55 − 4.25 − 14.70

2.9	+ .06	−15.16
3.4	+ .22	15.20
4.1	− .13	15.18
4.2	+ .27	15.19
4.3	+ .31	15.26
4.5	+ .29	15.15
3.9	+ .17	−15.19

$n = +.067$

1.3	+1.70	15.31
3.0	+ .85	15.20
3.2	+1.17	15.23
2.5	+1.24	15.25

1.2	+42.58	−22.14	−22.17	−22.15
		−.03	−.01	
1.5	+3.15	−15.35	−15.37	−15.36
		−.02	−.01	

$0 = +42.41 - 6.98$ $n = +.17$
$+2.98 - 0.18$ $+.06$
$+.115$

$0 = +41.34 - 6.980$ $+.17$
$+1.91 - 0.11$ $+.06$
$+.115$

1.4	−3.27	−14.45	−14.47	−14.46
		+.02	−.01	
3.3	−3.13	14.71	−14.72	−14.70
		−.01	+.01	
3.8	−4.78	14.08	−14.08	−14.07
		+.00	+.01	
4.3	−4.02	14.42	−14.42	−14.40
		+.00	+.02	
13.2	−42.58	7.90	−7.81	−7.79
		+.09	+.11	

$0 = -3.44 + 0.72$ $n = +.21$
−3.30 + 0.47 +.14
−4.95 + 1.11 +.23
−4.19 + .77 +.18
−4.275 + .738 +.187 +.186

$0 = -4.51 + .79$ $n = +.18$
−4.37 + .55 +13
−6.02 + 1.18 +20
−5.26 + .85 +.16
−4.38 + .66 +.17 +.168

* [illegible]

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Sin Z = +60 +80 | +40 +60 | +20 +40 | +0 +20 | 0 −20 | −20 −40 | −40 −60 | −60 −80

R.A.	tan δ	sin z cos z	$R_{yy}+R_{ff}$	R_{ff}	R Vj	R.A.	tan δ	sin z cos z	$R_{yy}-R_{ff}$	R_{ff}	R_{ij}
h						h					
0.4	+1.90	−.34	+2′ 2.7″ ✓	−0.4	+2′ 2.3	1.2	+42.58	−.72	+2′ 4.5″ ✓	−1.3	+2′ 3.2
0.5	+1.48	−.23	1.0 ✓	−0.3	0.7	15.3	−3.13	−.91	6.7 ✓	−1.5	5.2
1.9	+.89	+.01	3.0 ✓	+0.2	3.2	13.2	−42.58	−.75	11.9 ✓	−1.3	× 10.6
2.0	+.42	+.33	2.0 ✓	+0.7	2.7						
2.9	+.06	+.63	0.7 ✓	+1.3	2.0						
3.2	+1.17	−.12	1.9 ✓	−0.1	1.8						
3.4	+.22	+.50	1.6 ✓	+1.0	2.6						
3.4	−.17	+.79	0.2 ✓	+1.6	1.8						
3.5	+1.95	−.35	3.2 ✓	−0.5	2.7						
3.6	+1.09	−.09	2.6 ✓	+0.0	2.6						
3.7	+.44	+.82	1.8 ✓	+0.7	2.5						
4.2	+.27	+.46	2.0 ✓	+0.9	2.9						
4.3	+.31	+.42	1.3 ✓	+0.9	2.2						
4.5	+.29	+.44	1.3 ✓	+0.9	2.2						
4.6	+1.57	−.25	2.7 ✓	−0.3	2.4 2.31						

14.2 + 0.36 +.38 +2′ 0.1″ ✓ + 0.9 +2 1.0

1 1.80
1 1.060
1160 ~~580~~ +.63 +.87 +.50 +1.6 +.33 +2.0 +.01 +3.0 −.12 +1.9 −.84 +2.7 −.72 +4.5

+.79 .02 +.46 2.0 +.32 1.8 −.09 2.6 −.23 1.0 −.75 6.7
+.42 1.3 +.38 0.1 −.35 3.2
+.44 1.3 −.25 2.7

15 465
1 120
16 585 +.71 +.05 +.45 +1.5 +.34 +1.3 +.01 +3.0 −.10 +.22 −.29 +2.4 −.73 +5.6

+1.9 +1.2 +.9 +.0 −.2 −.9 −2.0
+2.4 +2.7 +2.2 +3.0 +2.0 +1.5 +3.6
+2′ 2.36″ (18) 4.8² 10.8⁴ 6.6³ 3.0 4.0² 6.0¹¹ 7.2² 42.4
2.87 +.0 −.3 +.2 −.6 +.4 +.9 −1.2

1.3	+1.70	−.30	+2′ 2.6″ ✓	−0.4	+2 2.2				1.2	+42.58	−.72	+2′ 4.5″ ✓	−1.3	+2 3.2	
2.0	+.42	+.33	2.5 ✓	+0.8	3.3				13.4	−3.27	−.90	6.0 ✓	−1.6	4.4	
2.9	+.06	+.63	3.0 ✓	+1.3	4.3				1.5	+3.15	−.50	4.2 ✓	−0.8	3.4	3.30
3.0	+.85	+.03	4.0 ✓	+0.2	4.2				15.3	−3.13	−.91	+ 6.7 ✓	−1.7	5.0	
3.2	+1.17	−.12	3.0 ✓	−0.1	2.9 3.38	none 3.37			15.8	+4.78	−.86	7.5 ✓	−1.6	5.9	
3.4	+.22	+.50	3.3 ✓	+1.0	4.3				16.3	−4.02	−.88	7.9 ✓	−1.6	6.3	
3.7	+.44	+.32	4.6 ✓	+0.7	5.3				13.2	−42.58	−.75	5.3 ✓	−1.4	× 3.9	
3.8	+.61	+.19	4.3 ✓	+0.5	4.8									3.30	
4.1	−.13	+.76	2.6 ✓	+1.6	4.2										
4.2	+.27	+.46	3.2 ✓	+0.9	4.1										
4.3	+.31	+.42	3.7 ✓	+0.9	4.6									3.90	
4.5	+.29	+.44	3.9 ✓	+0.9	4.8 ~~4.88~~ 4.58										

1 3.90 +.63 +3.0 +.50 +3.3 +.33 +2.5 +.03 +4.0 −.12 +3.0 −.30 +2.6 −.50 +4.2 −.72 +4.5
+.76 2.6 +.46 3.2 +.32 4.6 +.19 4.3 −.75 5.3

+.42 3.7
+.44 3.9

12 48.96
3 9.90
15 58.86 +.70 +2.8 +.45 +3.5 +.32 +3.5 +.11 +4.1 −.12 +3.0 −.30 +2.6 −.50 +4.2 −.73 +4.9
+ 1.9 + 1.2 + .8 + .3 − .3 − .8 − 1.3 − 2.0

+ 4.7 + 4.7 +4.3 +4.4 + 2.7 + 1.8 + 2.9 + 2.9
+2′ 3.92″ (15) 9.4² 18.8⁴ 8.6² 8.8² 2.7¹ 1.8¹ 2.7¹ 5.8¹² 58.8
~~3.92~~ −.8 −.8 −.4 −.5 +1.2 +2.1 +1.0 +1.0
4.04

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1876 Jan 12 $h = -.009 \; -.031 \; -.032$ $n = +.04$ @ $= .00$

Star	RA	δ	tang δ	m	RA
	L				
	2.0	13 33	+ 0.42	−	15.40
	2.3	1.0 37	+ .14	−	15.36
	2.5	0.8 355	+ .39	−	15.34
	2.7	0.6 43	+ 1.15	−	15.40
2.48	2.9	40 21 47	+ .06	−	15.38
	4.1	−0.8 366	− .13	−	15.41
	4.2	0.9 70	+ .27	−	15.43
	4.5	1.2 73	+ .29	−	15.41
4.35	4.6	−1.3 371	+ 1.51	−	15.44
	3.31				

+.02		−.04	15.354	
+.01		−.03	15.88	15.42
+.12		−.02	.35	.38
+.06		−.02	.32	.34
+.00		−.01	.34	.36
−.01		+.02	.38	.39
+.01		−.03	.45	.43
+.01		−.04	.42	.39
+.06		+.04	.40	.36
			.38	.34
			15.412	
			15.380	15.379

$n = +.09$

$h = -.012$	15.5	209 + .51	− 15.55	+.025
	15.6	212 + .12	− 15.96	+.031

− 15.580
− 15.543
− 15.530

I+II

23	+ 14	− 15.36		
29 47	+ .06	15.38		
4.1	− .13	15.44		
4.2	+ .27	15.43		
4.5	+ .29	15.41		
3.6	+ .143	15.40		
	$n = +.01$			
2.7	+ .145	− 15.46		
4.6	+ .151	15.44		
3.6	+ .148	15.42		
15.6	+ .32	− 15.76		

2.3	+ 2.34	− 15.48	− 15.49		
		− .01			
2.4	+ 3.13	15.60	− 15.61		
		− .01			
4.5	+ 3.92	15.49	− 15.48		
		+ .01			
0 =	+ 2.21	− .09	$n = +.04$		
	+ 3.50	− .21	+.07		
	+ 3.79	− .08	+.02		
			+.043		
0 =	+ .86	− .07	$n = +.04$		
	+ 1.65	− .19	+.11		
	+ 2.44	− .06	+.02		
			+.047		

I+II

4.8	− 4.02	− 15.40	− 15.39	
		+ .01		
0 =	− 4.15	+ .01	$n = +.00$	
				+.000
0 =	− 5.50	+ .03	$n = +.01$	
				+.010

III

14.4	− 3.13	− 15.65	− 15.66
		− .01	
14.3	− 2.34	− 15.38	− 15.39
		− .01	
0 =	− 3.45	+ .10	$n = +.03$
	− 2.66	+ .39	+.15
			+.090

1876 Jan 13 $h = -.017 \; +.015$ $n = +.05$ @ $= .00$

	2.0	+0.4 33	+ .42	− 15.81	+.02
2.05	2.1	+0.3 351	+ 1.21	− 15.78	+.06
	2.5	+0.1 355	+ .39	− 15.76	+.02
2.70	2.9	+0.5 47	+ .06	− 15.76	+.00
	2.38				

+.01		15.735	
+.00	−	15.79	15.78
−.01		.72	.72
		.73	.73
		.76	.77
		15.745	
		15.750	15.750

$n = +.06$

	14.2	187	+ .36	− 16.12	+.02
	15.5	209	+ .51	− 16.22	+.03

− 16.10
.19
− 16.095

I+II

2.0	+ .42	− 15.81		
2.5	+ .39	15.75		
2.9	+ .06	15.76		
2.5	+ .29	− 15.77		
	$n = +.02$			
2.1	+ .21	− 15.78		
148	+ .48	− 16.17		

1.2	+ 42.58	− 18.24	− 18.25	
		− .01		
2.3	+ 2.34	15.88	− 15.88	
		+ .00		
2.4	+ 3.13	16.10	− 16.10	
		.00		
0 =	+ 42.29	− 2.48	$n = +.06$	
	+ 2.05	− .11	+.05	
	+ 2.84	− .33	+.12	
			+.077	
0 =	+ 41.37	− 2.47	$n = +.06$	
	+ 1.13	− .10	+.09	
	+ 1.92	− .32	+.14	
			+.107	

I+II

21	− 4.76	− 15.89	− 15.89	
		.00		
0 =	− 5.05	− .12	$n = -.02$	
				−.020
0 =	− 5.97	− .11	$n = -.02$	
				−.020

III

13.2	− 42.58	− 13.52	− 13.54
		− .02	
0 =	− 43.06	+ 2.63	$n = +.06$
			+.060

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Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | .0 +.20 | .0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z

h					
2.0	+ 0.42	+.33	+2′ 4.2″ ✓	+ 0.8	+ 25.0
2.3	+ .14	+.57	~~2.1~~ ✓	+ 1.2	3.3
2.5	+ .39	+.36	4.2 ✓	+ 0.9	5.1
2.7	+ 1.45	−.23	2.4 ✓	− 0.3	2.1
2.9	+ .06	+.63	2.7 ✓	+ 1.3	4.0
4.1	− .13	+.76	2.4 ✓	+ 1.6	4.0
4.2	+ .27	+.46	3.4 ✓	+ 0.9	4.3
4.5	+ .29	+.44	2.2 ✓	+ 0.9	3.1
4.6	+ 1.61	−.25	3.6 ✓	− ~~0.3~~	3.3 4.01
15.5	+ .37	+.26	3.2″ ✓	+ 0.8	+ 3.8
15.6	+ .12	+.58	~~32.5~~ ✓	+ 1.2	[33.7] 3.80

1 3.80

		+.63 +2.7	+.57 +2.1	+.33 +4.2	
		+.76 2.4	+.46 3.4	+.36 4.2	
			+.44 2.2	+.26 3.2	
8	3208				
3	11.70	+.70 +2.5	+.49 +2.6	+.32 +3.9	
11	4378	+ 1.9	+ 1.3	+ .8	
		+ 4.4	+ 3.9	+ 4.7	
	+2′ 3.8″	(/3) 8.8²	11.7³	11.1³	
	3.98	− .6	− .1	− .9	

h					
2.3	+2.34	− ~~.41~~ .74	+2 ~~1′ 36″~~ 12.7 ✓	− 0.7	+ 2 2.9
2.4	+3.13	− .50	4.7 ✓	− 0.8	3.9
16.3	− 4.02	− .88	6.9 ✓	− 1.7	5.2
4.5	+ 3.92	− .55	5.8 ✓	− 0.9	4.9
14.3	− 2.34	− .~~41~~ 94	+2′ ~~3.6~~ 12.4 ✓	− 1.8	× 10.4
14.4	− 3.13	− .91	9.5 ✓	− 1.8	× 7.7

3.90

−.23	+2.4	−.50	+4.7		
−.25	3.6	−.55	5.8		
		−.41	3.6		
−.24	+3.0	−.49	~~+4.7~~ 4.7		
	− .6		− ~~1.3~~ 1.3		
	+ 2.4		+ 3.4		
	4.8²		10.2³	49.6	
	+1.4		+.4		

2.0	+.42	+.33	+2′ 4.1″ ✓	+ 0.8	+ 2 4.9
2.1	+1.21	~~+~~.14	4.0 ✓	− 0.1	3.9
2.5	+ .39	+.36	2.9 ✓	+ 0.9	3.8
2.9	+ .06	+.63	1.6 ✓	+ 1.3	2.9 3.88
1.2		+42.58	−.72	+2′ 5.4″ ✓	− 1.3 + 2 4.1
14.1		− 4.76	−.85	11.9 ✓	− 1.7 10.2
2.3		+ 2.34	−.41	4.3 ✓	− 0.7 3.6
2.4		+ 3.13	−.50	4.9 ✓	− 0.8 4.1
13.2		−42.58	−.75	8.2 ✓	− 1.4 × 6.8

3.93

14.2	+.36	+.38	+2′ 3.9″ ✓	+ 0.9	48
15.5	+ .57	+.26	5.5 ✓	+ 0.6	6.1 ~~5.8~~ 5.45

6.80

2 1090
1 680
3 1770 ~~5.70~~

		+.63 +1.6	+.33 +4.1	−.14 +4.0	−.41 +4.3 −.72 +5.4
			+.36 2.9		−.50 4.9 −.75 8.2 X
			+.38 3.9		
			+.26 6.5 X		
4	355				
3	279	+.63 +1.6	+.34 ~~+.27~~ .33	−.14 +4.0	−.45 +4.6 −.72 ~~+5.8~~ 5.4
7	634	+ 1.6	+ .9	− .3	− 1.2 − 0.9
		+ 3.2	+ ~~3.2~~ 3.6	+ 3.7	+ 3.4 + 3.5
	+2′ 3.73″	(8) 3.2	12.6	3.7	6.8² 3.5 298
	3.91	+.5	− .5	0.0	+.3 +.2

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1876 Jan 3/18 h = −.020 −.023 −.018 n = −.06

Star	Ra	δ	temp δ	T−Ra		
2 14.2	187	+ .36	−18.52	−.02	−18.54	

1876 18.540

1876 Jan 3/19 h = −.013 +.042 −.017 n = −.06

14.2	+1.4	187	+ .36	−18.83	−.02	+.06	−18.85	−18.79	
17.1	−1.5	237	+ .26	−18.72	−.01	−.06	−18.73	.79	
15.65							18.780	18.790	

1876 Jan 3/20 h = −.017 −.026 −.015 −.024 n = −.06 e = .00

2.5	1.7	355	+ .39	−18.83	−.02		−.04	18.85	18.89	2.4	38	+ 3.13	−18.68	−.18	−18.86
2.6	1.6	40	+ 1.14	−18.81	−.07		.04	.88	.92	16.3	474	− 4.02	−19.15	+.24	18.91
2.66 2.9	1.3	47	+ .06	−18.88	−.02		.03	.88	.91	4.5	369	+ 3.92	−18.83	−.23	19.06
4.1	0.1	366	− .13	−18.96	+.01		.00	.95	.95	4.7	76	+ 2.26	−18.73	−.13	18.85
4.2	0.0	70	+ .27	−18.88	−.02		.00	.90	.90	14.3 ×	36	− 2.34	−18.97	+.14	18.83
4.3	0.1	71	+ .31	−18.89	−.02		−.00	.91	.91	14.4 ×	38	− 3.13	−19.09	+.18	18.91
4.5	0.3	73	+ .29	−18.92	−.02		+.01	.94	.93						
4.6	0.4	371	+ 1.51	−18.77	−.06		.01	.86	.85						
4.9	0.7	181	+ .95	−18.85	−.06		.02	.91	.89						
5.0	0.8	88	+ .87	−18.91	−.05		.02	.96	.94						
5.1	0.9	86	+ 1.03	−18.92	−.06		.02	.98	.96						
5.1	0.9	87	− .15	−18.91	+.01		.02	.90	.88						
4.71 5.3 4.24	1.1	90	+ .54	−18.90	−.03		+.03	.93	.90						

18.8770 18.9241 18.912 18.910

n = +.01

h' = −.011

14.2	187	+ .36	−19.04	−.03				−19.02 28 40							
					I	II								I+II	
2.9	+.06	−1888	2.4	+3.13	−18.68	−18.71	−18.71			4.3	−4.02	−19.15		−19.15	
4.1	−.13	1896			−.03	−.03						.00			
4.2	+.27	1888	4.5	+3.92	1883	−18.83	18.83								
4.3	+.31	1889			+.00	+.00				0 = −4.13	−.24	n = −.06			
4.5	+.29	1892	4.7	+2.26	18.785	−18.72	18.72							−.060	
5.1	−.15	1891			+.01	.00									
4.2	+.11	18.91								0 = −5.12	−.30	n = −.06			
														−.060	
			0 =	+3.02	+.20	n = −.07						III			
2.6	+1.14	−1881		+3.81	+.08	−.02				14.4	−3.13	−19.09			
4.6	+1.51	1877		+2.15	+.19	−.09									
4.9	+.95	18.85				−.060				14.3	−2.34	−18.97			
5.0	+.87	1891													
5.1	+1.03	1892	0 =	+2.03	+.14	n = −.07									
4.4	+1.10	1885		+2.82	+.02	−.01				0 = −3.49	+.05	n = −.01			
	n = −.06			+1.16	+.13	−.11					−2.70	+.07		+.03	
14.2	+.36	−1904				−.063								+.010	

1876 Jan 4/24 h = −.016 +.018 −.017 n = +.01 e = .00

14.2	+.6	186	+ .36	−20.70	+.00		+.01	−20.70	20.69	11.9 ×	198	+ 3.65	−20.42	+.04	−20.38
14.85 15.5	−.7	209	+ .51	−20.62	+.01		−.01	.61	.62	14.3 ×	36	− 2.34	−20.37	−.02	−20.39
					III			20.655						III	
14.2	+.36	−2070	14.9	+3.65	−20.42	−20.42		20655	20.655	14.3	−2.34	−20.37		−20.38	
15.5	+.51	−2062			.00							−.01			
14.8	+.44	−2066													
			0 =	+3.21	+.24	n = −.08				0 = −2.78	+.28	n = +.10			
						−.080								+.100	

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Sin Z =	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80

R.A. tan δ sin z cos z

h
14.2 + .36 +.38 +2′ 2.6 +0.8 +2′ 3.4 3.40 3.4

+2 340

14.2 + .36 +.38 +2 2.6 +0.8 + 3.4
17.1 + .26 +.47 2.8 +1.0 3.8 3.60

+2 360

R.A. tan δ sin z cos z

2.5 + .39 +.36 +2′ 3.2 +0.8 + 4.0 — 2.4 +3.13 −.81 +2′ 6.4 − 1.9 +2 2.6
2.6 +1.14 −.11 3.5 − 0.81 3.4 — 16.3 −4.02 −.88 8.0 − 1.7 6.3
2.9 + .06 +.63 2.1 + 1.3 3.4 — 4.5 +3.92 −.55 6.9 − 1.0 5.9
4.1 − .13 +.76 2.4 + 1.6 4.0 — 4.7 +2.26 −.40 5.9 − 0.7 5.2
4.2 + .27 +.46 2.5 + 1.0 3.5 — 14.3 −2.34 −.94 6.6 − 1.9 × 4.7
4.3 + .31 +.42 3.6 + 0.9 4.5 — 14.4 −3.13 −.58 3.5 − 1.9 × 4.5
4.5 + .29 +.44 2.9 + 0.9 3.8 — 6.4
4.6 + 1.51 −.25 4.3 − 0.4 3.9 — 4.57
4.9 + .95 −.02 3.9 + 0.1 4.0
5.0 + .87 +.02 4.7 + 0.1 4.8
5.1 + 1.03 −.06 4.2 + 0.0 4.2
5.1 − .15 +.77 3.4 + 1.7 5.1
5.3 + .84 +.24 3.4 +0.6 4.0 4.05

14.2 + .36 +.38 +2′ 3.3 +0.8 4.1

1 4.10

	+.63	+2.1	+.46	+2.5	+.36	+3.2	+.02	+4.7	−.11	+3.5	−.25	+4.3	−.50	+3.5 ×
	+.76	2.4	+.42	3.6	+.24	3.4			−.02	3.9			−.55	6.9
	+.77	3.4	+.44	2.9					−.06	4.2			−.40	5.9
13 65														
3 171	+.72	+2.6	+.44	+3.0	+.30	+3.3	+.02	+4.7	−.06	+3.9	−.25	+4.3	−.48	+5.4
16 236		+1.9		+1.1		+.7		+.0		−.1		−.6		−1.2
		+4.5		+4.1		+4.0		+4.7		+3.8		+3.7		+5.2
+2′ 42.7″	15	13.5		12.3		8.0		4.7		11.4		3.7		10.4 64.0
4.15	(16)	−.2		+.2		+.3		−.4		+.5		+.6		−.9

14.2 + .36 +.38 +2′ 2.0 +0.9 + 2.9
15.5 + .57 +.26 6.5 +0.6 × 7.1 7.10

1 7.10
1 6.80
2 13.90
+2′ 6.95

R.A. tan δ sin z cos z

14.9 +3.65 −.53 +2′ 7.8 −1.0 × + 6.8
14.3 −2.34 −.94 10.5 −1.9 × 8.6

6.80

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1876 Jany 25 h = -.015 -.017 n = -.01 c = .00

Star	Ra	δ	tang δ	π Ra			
	h 15.5	+0 209	+.51	-21.01	-.01	21.02	oo -21.02
15.55	15.6	-1 212	+.12	-20.94	-00	20.94	oo 2094
						~~24~~ III	20.980

15.5 + .51 -21.01
15.6 + .12 2094
156 + .32 -20.98

14.9 + 3.65 -20.97 -.01 -20.98

0 = + 3.33 +.00 n = .00
.000

1876 Jany 25

Star	Ra	δ	tang δ	π Ra		
	h 14.9 ×	198	+3.65	-20.97	-.04	-21.01
	14.3 ×	36	-2.34	-21.15	+.02	-21.13
	14.4 ×	38	-3.13	-20.78	+.03	-20.75

20.96

III
14.3 - 2.34 - 21.15 -.02 - 21.17 0 = - 2.66 -.19
14.4 - 3.13 - 20.78 -.02 - 20.80 - 3.45 + ~~.20~~ .18
n = -.07
+.05
-.010

1876 Jany 26 h = -.013 -.031
-.032 14
n = +.02 c = .00 21.146

	Ra		δ	tang δ	π Ra				
	3.2	+0.9	52	+1.17	-21.23	+.02	-.03	-21.21	21.24
	3.4	0.7	55	+.22	-21.13	+.00	02	.18	.15
	3.4	0.7	56	-.17	-21.17	-.00	02	.17	.19
	3.5	0.6	363	+1.95	-21.13	+.04	02	.09	.11
3.42 —	3.6	+0.5	57	+1.09	-21.15	+.02	-02	.13	.15
	4.5	-0.4	73	+.29	-21.14	+.01	+01	.13	.12
	5.1	1.0	86	+1.03	-21.21	+.02	03	.19	.16
	5.1	1.0	87	-.15	-21.20	-.00	03	.20	.17
	5.3	1.2	90	+.54	-21.27	+.01	+04	.26	.22
+ ~~5.10~~ 5.00	5.5		97	-.02	-21.32	-.00	+04	.32	.28
	~~4.20~~ 4.12							~~21.220~~ 21.195	
								21.168	21168

3.4 + 22 -21.13
3.4 - .17 21.17
4.5 + .29 21.14
5.1 - .15 21.20
5.5 - .02 21.32
4.1 + .05 -21.16

n = + .~~10~~02

3.2 +1.17 -21.23
3.5 +1.95 21.13
3.6 +1.09 21.15
5.1 +1.03 21.21
3.8 +1.31 -21.18

I + II
3.1 + 4.43 -21.24 -.01 -21.25
5.4 + 3.72 -21.44 +.02 -21.42

0 = + 4.38 -.09 n = +.02
+ 3.67 -.26 +.07
+ .045

0 = + 3.12 -.07 n = +.02
+ 2.41 -.24 +.10
+ .060

1876 Jany 26

Star	Ra	δ	tang δ	π Ra		
	3.1	360	+4.43	-21.24	+09	-21.15
	15.3	203	-3.13	-21.28	-.06	.34
	5.4	92	+3.72	-21.44	+.07	.37

21.29

I + II
3.3 - 3.13 - 21.28 - .01 - 21.29

0 = - 3.1~~6~~8 - .1~~1~~3 n = -.04
-.040

0 = - 4.44 - 11 n = -.02
-.020

1876 Jany 27 h = -.008 -.042
-.041 11
n = -.02 c = .00

	Ra		δ	tang δ	π Ra				
								21.540	
	3.2	+1.6	52	+1.17	-21.58	-.02	-07	-21.60	21.67
3.30	3.4	+1.4	56	-.17	-21.48	+.00	-.06	.48	.54
	5.3	-0.5	90	+.54	-21.68	-.01	+02	.69	.67
	5.4	-0.6	93	-.01	-21.58	+.00	+03	.58	.55
	5.5	-0.7	97	-.02	-21.59	+.00	+03	.59	.56
5.50	5.8	-1.0	102	+.13	-21.67	-.00	+04	.67	.63
	4.77							21.6~~05~~ 32 21.602	21.603

n = +.07

h' = -.024

	Ra	δ	tang δ	π Ra		
	14.2	187	+.36	-21.82	+.0~~x~~2	-21.8~~x~~0
	15.5	209	+.51	-21.84	+.0~~t~~4	21.8~~5~~0
	14.85					~~21.840~~ -21.800

3.4 - .17 -21.48
5.4 - .01 21.58
5.5 - .02 21.59
5.8 + .13 21.67
5.0 - .02 -21.58
+.02
n = -0.~~1~~2

3.2 + 1.17 -21.58

14.8 + .44 -21.83

I II
3.1 + 4.43 -21.51 -.02 -21.53 -.00 -21.51

0 = + 4.45 +.05 n = -.01
-.010

0 = + 3.26 +.07 n = -.02
-.020

III
15.3 + 3.12 -22.03 +.01 -22.02

0 = + 2.68 -.19 n = + .07 +.070

1876 Jany 27

Star	Ra	δ	tang δ	π Ra		
	3.1	360	+4.43	-21.51	-.09	-21.60
	15.3	203	-3.13	-21.67	+.06	21.61
	15.1 ×	360	-4.42	-21.76	+.09	21.67
	~~15~~3 ×	203	+3.12	-22.03	-.06	22.09

21.63

I II
3.3 - 3.13 - 21.67 -.02 - 21.69 +.00 - 21.67

0 = - 3.11 - .11 n = -.04
-.040

0 = - 4.30 - .09 n = -.02
-.020

III
15.1 - 4.42 - 21.76 +.00 - 21.76

0 = - 4.86 + .07 n = + .01 +.010

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Sin Z =	+.60	+.80	+.40	+.60	+.20	+.40	+0	+.20	0	-.20	-.20	-.40	-.40	-.60	-.60	-.80		
R.A.	tan δ	sin z	cos z	$R_{\frac{1}{2}}$	$R_{\frac{1}{4}}$		$R_{\frac{1}{8}}$		$R_{\frac{1}{16}}$			R.A.	tan δ	sin z	cos z			
h												h						
15.5	+.51	+.26		+2' 2.5 ✓	+ 0.6		+2' 3.1					14.9	+3.65	-.53		+2' 5.4 ✓	- 1.0 ✓	+2' 4.0
15.6	+.12	+.58		1.6 ✓	+ 1.2		2.8	2.95				14.3	-2.34	-.44		7.3 ✓	- 1.9 ✗	5.4
												14.4	-3.13	-.91		7.2 ✓	- 1.9 ✓	5.3
2	5.90																	4.00
1	4.00 ✓																	
3	9.90																	
+2'	3.30																	
3.2	+1.17	-.12		+2' 4.4 ✓	- 0.2		+ 4.2					3.1	+4.43	-.57		+2' 5.9 ✓	- 1.1	4.8
3.4	+.22	+.50		4.1 ✓	+ 1.1		5.2					15.3	-3.13	-.91		9.0 ✓	- 1.9	7.1
3.4	-.17	+.79		2 1.4 ✓	+ 1.8		3.2					5.4	+3.72	-.54		7.7 ✓	- 1.1	6.6
3.5	+1.95	-.35		3.5 ✓	- 0.7		4.8											
3.6	+1.09	-.09		3.2 ✓	- 0.1		3.1											5.70
4.5	+.29	+.44		3.0 ✓	+ 1.0		4.0											
5.1	+1.03	-.06		4.6 ✓	- 0.6		4.6											
5.1	-.15	+.77		3.4 ✓	+ 1.7		5.1											
5.3	+.54	+.24		5.2 ✓	+ 0.6		5.8											
5.5	-.02	+.69		4.9 ✓	+ 1.5		6.4	4.64										
		+.79	X+1.4	+.50	+4.1	+.24	+5.2		-1.2	+4.4	-.35	+5.5	-.57	+5.9	~~-.77~~			
		+.77	3.4	+.44	3.0				-0.9	3.2			-.54	7.7				
		+.69	4.9						-0.6	4.6								
10	46.40																	
1	5.70	+.79	~~+3.2~~	+.47	+3.5	+.24	+5.2		-.09	+4.1	-.35	+5.5	-.55	+6.8				
11	52.10	3	+1.4		+ 1.1		+ .6			- .2		- .8		- 1.4				
			+ 6.0		+4.6		+5.8			+3.9		+4.7		+5.4				
+2'	4.93	(11)	12.0 3.2		9 2/2		58			11.7 3		47 1		108 2	542			
	4.74		-1.1		+.3		-.9			+1.0		+.2		-.5				
3.2	+1.17	-.12		+2' 4.4 ✓	- 0.2		+ 4.2					3.1	+4.43	-.57		+2' 6.0 ✓	-1.2	+ 4.8
3.4	-.17	+.79		1.8 ✓	+ 1.6		3.4					15.3	-3.13	-.91		7.0 ✓	~~-1.20~~	6.050
5.3	+.54	+.24		4.0 ✓	+ 0.4		4.4					3.1	-4.42	-.87		7.4 ✓ x	- 1.9	5.5
5.4	-.01	+.68		4.1 ✓	+ 1.5		5.6					15.3	+3.12	-.50		4.5 ✓ x	-1.0	3.5
5.5	-.02	+.69		4.5 ✓	+ 1.5		6.0											
5.8	+.13	+.57		3.7 ✓	+ 1.2		4.9	4.75										4.80
14.2	+.36	+.38		+2' 3.3 ✓	+ 0.8		4.1											
15.5	+.51	+.26		4.0 ✓	+ 0.6		4.6	4.35										3.50
2	8.70																	
1	3.50	+.79	X+1.8	+.57	+3.7	+.24	+4.0		-.12	+4.4			-.57	+6.0				
3	12.20	+.60	+4.1										-.50	4.5				
	4.07	+.69	+4.5															
6	28.50																	
1	~~4.80~~	+.64	~~+3.6~~	+.57	+3.7	+.24	+4.40		-.12	+4.4			-.53	+5.2				
7	33.30		+4.3							- .3				- 1.3				
			+1.6		+ 1.4		+ .6			+4.1				+3.9				
			+5.9		+ 5.1		+4.6											
+2'	4.77	7 (8)	118 3.2		51		46			41				78 2	334			
	4.76		-1.1		-.3		+.2			+.7				+.9				

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1876 Jan 31 $h = -.038 + .051$ $n - n = +.01$ $e = .00$

Star	h	RA	δ	tang δ	π RA
	3.2	+0.8	52	+1.17	−23.25 + .01
	3.4	0.6	56	−.17	−23.15 − .00
	3.5	0.5	363	+1.95	−23.23 + .02
	3.6	0.4	57	+1.09	−23.18 + .01
3.82	3.8	+0.2	63	+.61	−23.24 + .01
40	4.5	−0.5	73	+.29	−23.16 + .00
	5.0	1.0	83	+.87	−23.08 + .01
4.67 40	5.1	−1.1	86	+1.03	−23.16 + .01
		4.01			

3.4	−.17	−23.15
4.5	+.29	23.16
4.0	+.06	−23.16

$n = +.03$

3.2	+1.17	23.25
3.5	+1.95	23.23
3.6	+1.09	23.18
5.1	+1.03	23.16
3.8	+1.31	−23.20

1876 Jan 31 (180)

Star	h	RA	δ	tang δ	π RA
		23.250			
+.04	−23.24	23.20	15.8	217	−4.78 −23.12
.03	.15	.12			
.03	.21	.18			
.02	.17	.15			
+.01	.23	.22			
−.03	.16	.19			
.05	.07	.12			
−.06	.15	.21			
	23.173				
	.178				
	23.172	23.178	3.8	−4.78	−23.12
					+ .00

I + II −23.12

$0 = -4.84 + .04$ $n = +.01$ $+.010$

$0 = -6.09 + .08$ $n = +.01$ $+.010$

1876 Feb. 2 $h = -.016 - .020$ $n = +.09$ $e = .00$

Star	h	RA	δ	tang δ	π RA
	4.5	+0.5	73	+.29	−23.84 + .03
	4.6	0.4	371	+1.51	−23.89 + .14
	4.8	0.2	79	+.65	−23.90 + .06
	4.9	0.1	80	+1.75	−23.91 + .16
4.74	4.9	0.1	82	+.87	−23.91 + .08
	5.0	0.0	83	+.87	−23.92 + .08
	5.0	+0.0	85	−.16	−23.77 − .01
	5.1	−0.1	86	+1.03	−23.92 + .09
	5.1	0.1	87	−.15	−23.87 − .01
	5.2	0.2	88	−.12	−23.85 − .01
5.12	5.3	−0.3	90	+.54	−23.98 + .05
		4.975			

Star					
	23.802				
−.01	−23.81	23.82	4.5	36	+3.92 −24.03
−.01	.75	.76	4.7	.76	+2.26 −23.96
.00	.84	.84	17.0	2.35	−7.34 −22.55
	.78	.78			90
	.83	.83			
	.84	.84			
	.78	.78			
	.83	.83			
	.88	.88			
.00	.86	.86			
+.01	.93	.92			
	23.853				
	23.830	23.831			

	18.5	260	+.80	−24.10	+.07
	19.7	280	+.15	−24.10	+.01
	19.1				

	−24.03	
	−24.09	
	−24.060	

4.5	+.29	−23.84
5.0	−.16	23.71
5.1	−.15	23.87
5.2	−.12	23.85
5.0	−.03	−23.83

$n = +.06$

4.6	+1.51	−23.89
4.9	+1.75	23.74
5.1	+1.03	23.92
4.9	+1.43	−23.92

	I	II
4.5	+3.92 −24.03	−24.04 −24.03
	−.01	−.00
4.7	+2.26 −23.96	−23.94 −23.94
	.00	−.00

$0 = +3.95 - .21$ $n = +.05$

$+2.29 - .11$ $+.05$

$+.050$

$0 = +2.49 - .11$ $n = +.04$

$+0.83 - .02$ $+.02$

$+.030$

I + II

5.0	−7.34	−22.55	−22.55
		.00	

$0 = -7.31 + .28$ $n = +.18$ $+.130$

$0 = -8.77 + 1.37$ $n = +.16$ $+.120$

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sin β = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. h	tan δ	sin z cos z			
3.2	+1.17	−.12	+2′ 1.″6 ✓	− 0.2	+2′ 1.″4
3.4	− .17	+.79	0.9 ✓	+ 1.8	2.7
3.5	+1.95	−.35	+2 4.5 ✓	− 0.8	3.8
3.6	+1.09	−.09	+2 4.0 ✓	− 0.1	3.9
3.8	+ .61	+.19	3.4 ✓	+ 0.5	3.9
4.5	+ .29	+.44	3.5 ✓	+ 1.0	4.5
5.0	+ .87	+.02	6.4 ✓	+ 0.1	6.5
5.1	+1.03	−.06	4.0 ✓	− 0.0	4.0 4.19

R.A. h	tan δ	sin z cos z			
15.8	−4.78	−.86	+2′ 7.″7 ✓	−1.9	+2′ 5.″8

+.79 +0.9 | +.44 +3.5 | +.19 +3.4 | −.12 +1.6 ✓ | −.35 +4.5
+.02 6.4 ✓ | −.09 4.0
−.06 4.0

7 133

+.79 +0.9 | +.44 +3.5 | +.19 3.4 | −.08 4.0 | −.35 +4.5
+ 2.0 | + 1.1 | + .4 | − .2 | − .8
+ 2.9 | + 4.6 | + 3.8 | + 3.8 | + 3.7
+2′ 3.″77 (6) 29 | 46 | 38 ÷1 | 76 ÷2 | 37 226
4.19 +.9 | −.8 | .0.0 | 0.0 | +.1

R.A. h	tan δ	sin z cos z			
4.5	+ .29	+.44	+2′ 3.″2 ✓	+ 1.0	+ 4.2
4.6	+1.51	−.25	5.7 ✓	− 0.5	5.2
4.8	+ .65	+.16	3.7 ✓	+ 0.4	4.1
4.9	+1.75	−.31	6.1 ✓	− 0.6	5.5
4.9	+ .87	+.03	4.8 ✓	+ 0.1	4.9
5.0	+ .87	+.02	5.0 ✓	+ 0.1	5.1
5.0	− .16	+.78	3.0 ✓	+ 1.8	4.8
5.1	+1.03	−.06	4.4 ✓	− 0.0	4.4
5.1	− .15	+.77	0.6 ✓	+ 1.8	2.4
5.2	− .12	+.76	1.2 ✓	+ 1.8	3.0
5.3	+ .54	+.24	3.2 ✓	+ 0.6	3.8 ~~4.67~~ 4.31

R.A. h	tan δ	sin z cos z			
4.5	+3.92	−.55	2′ ~~9.0~~ ✓	−1.2	+ 7.8
4.7	+2.26	−.40	6.6 ✓	−0.8	5.8 5.80
17.0	−7.34	−.82	8.8 ✓	−1.8	7.0

R.A. h	tan δ	sin z cos z			
18.5	+ .80	+.06	7.2 ✓	+ 0.2	+ 7.4
19.7	+ .15	+.56	36 ~~22.7~~ ✓	+ 1.2	4.8

2 20 6.10

+2′ 6.10 | +.78 +3.0 | +.44 +3.2 | +.24 +3.2 | +.16 +3.7 | −.06 +4.4 | −.25 +5.7 | −.55 +9.0 ✓
+.77 0.6 | +.03 4.8 | −.31 6.1 | −.40 6.6
+.76 1.2 | +.02 5.0

11 4741
1 5.80 | +.77 +1.6 | +.44 +3.2 | +.24 +3.2 | +.07 +4.5 | −.06 +4.4 | −.28 +5.9 | −.~~47~~ 40 +~~7.8~~ 6.6
12 5321 | +1.9 | +1.0 | + .6 | + .1 | − .1 | − .6 | − 09
+3.5 | +4.2 | +3.8 | +1.6 | +4.3 | +5.3 | +~~6.7~~ 5.7
+2′ 4.″41 (12) | 105 3 | 42 1 | 38 1 | 138 3 | 43 1 | 106 2 | 57 ÷1 529
~~4.44~~ 4.43 | +.9 | +.2 | +.6 | −.2 | +.1 | −.9 | −.8 .13

1876phae.proj.1692.

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1876phae.proj.169.

1876 Feb 7 $k = -.009 - .020$ $n = -.02$

Star	Ra	δ	tang δ	π Ra		
	4.2	+1 70	+ .27	− 26.71	−.01	00 − 26.72
	4.5	−2 73	+ .29	− 26.87	−.01	00 − 26.88
	4.35					26.800
$k = -.021$	18.5	260	+ .80	− 27.09	−.02	− 27.110

1876 Feb. 8 $k = -.015 - .020$ $n = -.03$ $@ = .00$

	4.5	+1.5 73	+ .29	− 27.00	−.01		
	4.6	0.4 371	+ 1.51	− 26.86	−.05		
	4.8	0.2 79	+ .65	− 27.04	−.02		
	4.9	0.1 81	+ .95	− 26.99	−.03		
4.74	4.9	0.1 82	+ .87	− 26.99	−.03		
	5.0	0.0 83	+ .87	− 27.09	−.03		
	5.0	+0.0 85	− .16	− 27.03	+ .01		
	5.1	−0.1 86	+ 1.03	− 27.01	− .03		
	5.1	0.1 87	− .15	− 27.03	+ .01		
	5.2	−0.2 88	− .12	− 27.00	+ .01		
5.12	5.3	−0.3 90	+ .54	− 27.02	− .02	+.01	
	4.95						

													I + II
4.8	+.29	−.2760						4.5	+3.92	−26.93		−26.93	
5.0	−.16	2703									.00		
5.1	−.15	2703						4.7	+2.26	−26.85		−26.83	
5.2	−.12	2700									.00		
4.9	−.03	−27.02											
	$n = -.03$												
								0 =	+3.95	+.09		$n = -.02$	
4.6	+.157	−.2686							+2.29	+.19		−.08	
4.9	+.95	2699										−.050	
4.9	+.87	2699											
5.0	+.87	2709						0 =	+2.87	+.06		$n = -.02$	
5.1	+.103	2701							+1.21	+.16		−.13	
4.9	+1.05	−.2699										−.020	

1876 Feb. 15 $k = -.015 - .012$ $n = -.02$ $@ = .00$

	17.5	+1.1 241	+ .22	− 29.54	.00										
	19.7	+1.1 280	+ .15	− 29.55	.00										
	18.60														
															III
18.6	+.18	−.2954						15.3	+3.12	−29.48		−29.53			
											−.05				
								0 =	+2.94	+.01		$n = +.00$			
												.000			

1876 Feb. 7

Star	Ra	δ	tang δ	π Ra		
	4.5	369	+ 3.92	− 26.93		
	4.7	76	+ 2.26	− 26.835		
	17.0	235	− 7.34	− 27.02		

															I + II
								5.0	−7.34	−27.02	.00	−27.02			
								0 =	−7.31	+.00		$n = .00$			
								0 =	−8.39	+.03		$n = .00$			
								15.3 ×	203	+3.12		−29.48			

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1876phae.proj.1692.

sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | +.0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z

h
4.2 +.27 +.46 +2′ 5″.4 ✓ +1.1 +2′ 4″.5
4.5 +.29 +.44 ~~6.3~~ 4.2 ✓ +1.0 5.2 4.85

18.5 +.80 +.06 4.6 ✓ +0.2 4.8 4.80

1 4″.80
2 170
+2′ 4″.85

4.5 +.29 +.44 +2′ 3″.9 ✓ +1.0 + 4.9
4.6 +1.51 −.25 5.0 ✓ −0.6 4.4
4.8 +.65 +.16 4.8 ✓ +0.4 5.2
4.9 +.95 −.02 4.4 ✓ −0.0 4.4
4.9 +.87 +.03 5.3 ✓ +0.1 5.4
5.0 +.87 +.02 5.6 ✓ +0.1 5.7
5.0 −.16 +.78 4.4 ✓ +1.8 6.2
5.1 +1.03 −.06 5.8 ✓ −0.1 5.7
5.1 −.15 +.77 2.7 ✓ +1.8 4.5
5.2 −.12 +.76 3.3 ✓ +1.8 5.1
5.3 +.64 +.24 4.3 ✓ +0.6 4.9 5.13

R.A. tan δ sin z cos z

4.5 +3.92 −.55 +2′ 6″.5 ✓ −1.3 + 5.2
4.7 +2.26 −.40 5.9 ✓ −0.9 5.0
17.0 −7.34 −.82 6.4 ✓ −1.9 4.5
5.10

+.78 +4.4 | +.44 +3.9 | +.24 +4.3 | +.16 +4.8 | −.02 +4.4 | −.25 +5.0 | −.55 +6.5
+.77 2.7 | | | +.03 5.3 | −.06 5.8 | | −.40 5.9
+.76 3.3 | | | +.02 5.6

11 143
1 10
12 153

+.77 +3.5 | +.44 +3.9 | +.24 +4.3 | +.07 +5.2 | −.04 +5.1 | −.25 +5.0 | −.48 +6.2
+1.9 | +1.0 | +.5 | +.2 | −.1 | −.6 | −1.1
+5.4 | +4.9 | +4.8 | +5.4 | +5.0 | +4.4 | +5.1
+2′ 5″.13 (13) 162 | 49 | 48 | 162 | 100 | 44 | 102 667
5.13 −.3 | +.2 | +.3 | −.3 | +.1 | +.7 | 00

17.5 +.22 +.50 +2′ 4″.1 ✓ +1.2 + 5.3
19.7 +.15 ✓ +0.4 5.30

15.3 +3.12 −.50 +2′ 30″.0 ✓ −1.2 + 28.8

+2′ 5″.30

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1876phae.proj.1692.

1876 Feb 16 h = −.015 −.008

Star	RA	δ	tang δ	π RA	
	4.8	+4 79	+.65	−29.70	000
	4.9	+3 81	+.95	−29.62	00
	5.3	−1 90	+.524	−29.68	00
	5.4	2 93	−.111	−29.65	00
	5.5	3 97	−.02	−29.80	00
	5.5	−3 99	−.05	−29.64	00
	17.×		+.26		
	5.23				

n = −.00 = −.00

Star	RA	δ	tang δ	π RA	
	4.8			−29.70	00
	4.9			.62	
	5.3			.68	
	5.4			.65	
	5.5			.63	
	5.5			.64	00
				29.653	
				29.653	

1876 Feb. 16

RA	δ	tang δ	π RA	
5.4	92	+3.72	−29.66	
17.0×	235	+7.34	−29.84	

n = +.02

h' = −.005

17.1	237	+	.26	−	29.71

00 − 29.710

I II

5.4 −.01 −29.65
5.5 −.02 29.63
5.5 −.05 29.64
5.5 −.03 −29.64
n = +.04 +.01 +1

5.4 +3.72 −29.66 −29.66 −29.65
− .00 + .01

0 = +3.75 −.02 n = +.01 +.010

4.8 +.65 −29.70
4.9 +.95 29.62
5.3 +.54 29.68
5.0 +.71 −29.67

0 = +3.01 +.02 n = −.01 −.010

III

17.1 +.26 −29.71

17.0 +7.34 −29.84 −29.84
.00

0 = +7.08 −.13 n = +.02 +.020

1876 Feb. 17 h = −.003 +.010 .020

n = −.03 e = .00 29.772

4.6	+.07	371	+.151	−29.66	−.05	+.01	−29.71	29.70	4.5	369	+3.92	−29.61
4.8	0.5	79	+.65	−29.81	−.02	00	.83	.83	4.7	76	+2.26	−29.6×3
4.9	0.4	80	+1.75	−29.73	−.06	00	.79	.79	17.0	235	−7.34	−29.70
4.9	0.4	82	+.87	−29.77	−.03	00	.80	.80	6.7	111	+20.75	−29.92
5.0	0.3	83	+.87	−29.70	−.03	00	.73	.73				
5.0	0.3	85	−.16	−29.77	+.02	00	.77	.77				
5.1	0.2	86	+1.03	−29.74	−.03	00	.77	.77				
5.1	0.2	87	−.15	−29.79	+.00	00	.79	.79				
5.3	+0.0	90	+.524	−29.74	−.02	00	.76	.76				
5.8	−0.5	102	+.13	−29.76	−.00	+.00	.76	.76				
6.6	1.3	109	+.47	−29.71	−.04	−.01	.78	.73				
6.9	−1.6	113	+.38	−29.77	−.01	−.02	.78	.80				

4.87 — 5.80 — 5.33

29.763 29.768 29.769

I II I+II

5.0 −.16 −29.77
5.1 −.15 −29.79
5.8 +.13 −29.76
5.3 −.06 −29.77
n = −.04
4.6 +.151 −29.66
4.9 +.175 29.73
4.9 +.87 29.77
4.9 +.87 29.70
5.1 +.103 29.74
4.9 +.121 −29.72

4.5 +3.92 −29.61 −29.62 −2961
− .01 − .00
4.7 +2.26 −29.61 −29.62 −2961
− .01 .00
6.7 +20.75 −29.92 −29.910 −29.89
+ .01 + .02

5.0 −7.34 −29.70 −29.70
.00

0 = −7.28 +.07 n = +.01 +.010

0 = −8.55 +.02 n = +.00 .000

0 = +3.98 +.15 n = −.04
+2.32 +.15 −.06
+2.81 −.14 +.01
−.030

0 = +5.18 +.11 +2.71 n = −.04
+3.87 +.11 +1.05 −.10
+2.78 −.18 +19.54 +.01
−.015

1876 Feb. 19 h = −.011 −.018 n = −.23 e = .00

17.1	+.2	257	+.126	−31.25	−.06	00	−31.31		17.0×	235	+7.34	−29.57 −34.07
17.5	−.2	241	+.122	−31.20	−.05	00	.25					
18.5		260	+.80	−31.45	−.18		.63					
17.3							31.307					
							31.280					

29.57 −37.07 −34.07 29.57

III

17.1	+.26	−31.25			
17.5	+.22	31.20			
18.5	+.80	31.45			
17.3	+.24	−31.22			

17.0 +7.34 −37.07 −34.07
− .00 29.57

31.280 31.280

0 = +7.10 +1.65 n = −.02 −.020

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1876phae.proj.1692.

sin β = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z
h
4.8 + .65 +.16 +2′ 4″.2 ✓ + 0.4 +2′ 4″.6
4.9 + .95 −.02 4.7 ✓ − 0.1 4.6
5.3 + .54 +.24 4.3 ✓ + 0.6 4.9
5.4 − .01 +.68 3.2 ✓ + 1.6 4.8
5.5 − .02 +.69 3.4 ✓ + 1.7 5.1
5.5 − .05 +.71 3.2 ✓ + 1.8 5.0 4.83

R.A tan δ sin z cos z
h
5.4 + 3.72 −.54 +2′ 6″.9 ✓ − 1.3 +2′ 5″.6
17.0 + 7.34 −.64 7.7 ✓ −1.6 × 6.1 ~~5.85~~
5.60

17.1 + .26 +.47 +2′ 4″.3 ✓ + 1.2 5.5
1 5.50 5.50
1 6.10 +.68 +3.2 ~~+.54 +6.9~~ +.24 +4.3 +.16 +4.2 −.02 +4.7 −.54 +6.9 −.64 +7.7
+2′ 5″.80 +.69 3.4
+.71 3.2
6 28.98
1 5.60 +.69 +3.3 +.24 +4.3 +.16 +4.2 −.02 +4.7 −.54 +6.9 −.64 +7.7
7 34.58 +1.6 +.5 +.4 −.0 −1.2 −1.5
+4.9 +4.8 +4.6 +4.7 +5.7 +6.2
+2′ 5″.09 (8) 147 48 46 47 57 62 407
4.94 +.2 +.3 +.5 +.4 −.16 −1.1
6.10

4.6 + 1.51 −.25 +2′ 4″.1 ✓ − 0.6 + 3.5
4.8 + .65 +.16 4.2 ✓ + 0.4 4.6
4.9 + 1.75 −.31 4.4 ✓ − 0.8 3.6
4.9 + .87 +.03 4.8 ✓ + 0.1 4.9
5.0 + .87 +.02 5.4 ✓ + 0.1 5.5
5.0 − .16 +.78 3.0 ✓ + 1.9 4.9
5.1 + 1.03 −.06 4.5 ✓ − 0.2 4.3 4.58
5.1 − .15 +.77 2.7 ✓ + 2.0 4.7 ~~4.76~~ 4.61
5.3 + .54 +.24 4.6 ✓ + 0.6 5.2
5.8 + .13 +.57 3.6 ✓ + 1.4 5.0
6.6 + .47 +.29 5.1 ✓ + 0.7 5.8
6.9 + .38 +.37 4.3 ✓ + 0.9 5.2 ~~4.77~~

4.5 + 3.92 −.55 +2′ 6″.8 ✓ − 1.4 + 5.4
4.7 + 2.26 −.40 5.0 ✓ − 0.9 4.1 4.75
17.0 − 7.34 −.82 6.4 ✓ − 2.0 4.4
6.7 + 20.75 −.71 6.7 ✓ − 1.8 4.9
4.80

58 50
66 58
69 52
67 49
5.22 = zone

+.78 +3.0 +.57 +3.6 +.24 +4.6 +.16 +4.2 −.06 +4.5 −.25 +4.1 −.55 +6.8 −.71 +6.7
+.77 2.7 +.29 5.1 +.03 4.8 −.31 4.4 −.40 5.0
+.37 4.3 +.02 5.4 ~~−.40~~
12 9.24
3 2.40 +.77 +2.9 +.57 +3.6 +.30 +4.7 +.07 +4.8 −.06 +4.5 −.28 +4.2 −.48 +5.9 −.71 +6.7
15 11.64 +1.9 +1.3 +.7 +.2 −.1 −.6 −1.1 −1.7
+4.8 +4.9 +5.4 +5.0 +4.4 +3.6 +4.8 +5.0
+2′ 4″.79 (15) 96 49 161 150 44 72 96 50 719
4.78 0.0 −0.1 −.6 −.2 +.4 +1.2 00 −.2

17.1 + .26 +.47 +2′ 5″.8 ✓ + 1.2 + 7″.0
17.5 + .22 +.50 7.2 ✓ + 1.2 8.4
18.5 + .80 +.06 7.9 ✓ + 0.2 8.1 7.83

17.0 + 7.34 −.64 +2′ 8″.5 ✓ −1.6 + × 6.9 6.90

3 23.49
1 6.90
4 30.39
+2′ 7″.60

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1876phae.proj.1692.

1876 Feb. 20 h = −.019 −.037
+.089 15
−.034

Star	Ra	δ	tang δ	τ−Ra	n = −.12 e = .00			
	h			s			30.363	
	4.5 +1.7	73	+ .29	−30.34	− .03	−.06	−30.37	30.43
	5.5 0.7	97	− .02	−30.36	+ .02	03	36	.39
5.17 —	5.5 +0.7	99	− .05	−30.37	+ .01	−03	.36	.39
	6.6 −0.4	109	+ .47	−30.36	− .06	+01	.42	.41
	6.9 0.7	113	+ .38	−30.37	− .05	03	.42	.39
	7.1 0.9	396	+ .87	−30.33	− .10	03	.43	.40
6.95 —	7.2 −1.0	115	+ .41	−30.39	− .05	+04	.44	.40
	6.19						30.428	
							30.400	30.401

1876 Feb. 20

Star	Ra	δ	tang δ	τ−Ra
	h			s
	16.3	474	− 4.02	− 30.97
	17.0 ×	235	+ 7.34	− 30.45
	6.7	111	+ 20.75	− 28.77 6

n = −.01

h′ = −.020

1876	17.1	237	+ .26	−30.51	− .030	− 30.57 1
	18.5	260	+ .80	−30.56	− .10 .01	− 30.66 57
	17.8					~~30.600~~ −30.550

						I	II
4.5	+29	−30.34	6.7	+20.75	−28.77 6	−28.76	−28.78
5.5	−02	30.36			+ .01	− 01	
5.5	−05	30.37					
6.9	+38	30.37					
7.2	+41	30.39					
5.9	+20	−30.37					

4.3 −4.02 −30.97 −30.99 −31.01 (I, II)
− .02 − .04

0 = +20.55 + 1.61 n = −.08
−.080

0 = −4.22 − 62 n = −.15
−.150

0 = +19.88 + 1.55 n = −.08
−.080

0 = −4.89 − 68 n = −.14
−.140

17.8 +53 −30.54 17.0 + 7.34 − 30.45 − 30.46 (III)
− .01

0 = + 6.81 + .08 n = −.01
−.010

1876 Feb. 21 h = −.025 −.023 n = −.11
22

4.5	+.4	73	+ .29	−30.77	−03	−.01	−30.80	30.81
5.1	−.2	86	+ 1.03	−30.78	−11	00	.89	.89
5.1	−.2	87	− .15	−30.74	−02	00	.76	.76
4.90							30.817	
							30.817	30.820

4.5	+29	−30.77
5.1	−15	30.74
4.8	+07	−30.76

5.1 +1.03 −30.78

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Sin Z = +.60 +.80 +.40 +.60 +.20 +.40 0 +.20 0 −.20 −.20 −.40 −.40 −.60 −.60 −.80

R.A.	tan δ	sin z	cos z	$R_{eq}-R_{fc}$	R_{fc}	R_{eq}
h						
4.5	+ .29	+.44		+2′ 4.8″ ✓	+ 1.1	+2 5.9
5.5	− .02	+.69		5.6 ✓	+ 1.7	7.3
5.5	− .05	+.71		4.4 ✓	+ 1.8	6.2
6.6	+ .47	+.29		6.1 ✓	+ 0.7	6.8
6.9	+ .38	+.37		6.5 ✓	+ 0.9	7.4
7.1	+ .87	+.02		5.5 ✓	+ 0.1	{5.6
7.2	+ .41	+.35		7.6 ✓	+ 0.9	{8.5 6.81 6.53
17.1	+ .26	+.47		+2′ 5.8″ ✓	+ 1.2	+ 7.0
18.5	+ .80	+.06		7.4 ✓	+ 6.2	7.6

7.30

R.A.	tan δ	sin z	cos z	$R_{eq}-R_{fc}$	R_{fc}	R_{eq}
h						
16.3	− 4.02	−.88		+2′ 9.9″ ✓	− 2.3	+ 7.6
17.0	+ 7.34	−.64		10.3 ✓	− 1.6 ×	+ 8.7
6.7	+ 20.75	−.71		9.7 ✓	− 1.8	7.9 ~~8.30~~ 7.90

7.90 ~~8.70~~ 8.30

2. 1460
1 870
3 2330 7.″71

+.69	+5.6	+.44	+4.8	+.29	+6.1	+.02	+5.5
+.71	4.4			+.37	6.5		
				+.35	7.6		

−.64	+10.3						
−.71	9.7						

7 4767
1 7.90
8 55.57
+2′ 7.″11 6.95 ~~7.24~~ 6.73

+.70	+5.0	+.44	+4.8	+.34	+6.7	+.02	+5.5
	+ 1.7		+1.0		+ .8		+ .0
	+ 6.7		+5.8		+7.5		+5.5
(9)	$13\frac{1}{4}^{2}$		58′		225^{3}		55′
	+.4		+1.3		−.4		+1.6

+.67	+10.0		
	− 1.6		
	+ 8.4		
	168^{2}	640	
	− 1.3		

4.5	+ .29	+.44		+2′ 10.4″ ✓	+ 1.1	+2 11.5
5.1	+ 1.03	−.06		5.9 ✓	− .2	5.7
5.1	− .15	+.77		3.6 ✓	+ 1.9	5.5 5.60

+2′ 5.″60

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1876 Feb.22 h = -.014 -.026 (21, +.030)

Star	RA	δ	tang δ	τ RA				n = +.01 c = .00			Star
	h										31.368
	4.5 +1.2	73	+ .29	-31.40	+ .00			-.03-	31.40	31.43	
	5.1 +0.6	86	+1.03	-31.29	+ .01			02	.38	.40	
	5.1 0.6	87	- .15	-31.34	- .00			02	.34	.36	
	5.4 0.3	93	- .01	-31.42	- .00			01	.42	.43	
5.12 —	5.5 +0.2	97	- .02	-31.30	- .00			- 01	.30	.31	
	5.8 -0.1	102	+ .13	-31.41	+ .00			+ 00	.41	.41	
	6.4]	388	+1.85	-31.24	+ .02			00	.22]	[22]	
	6.5 0.8	107	+ .30	-31.39	+ .00			02	.39	.37	
	6.6 0.9	109	+ .47	-31.34	+ .00			02	.34	.32	
6.45 —	6.9 -1.2	113	+ .38	-31.47	+ .00			+ 03	.47	.44	
	5.78 / 5.71								31.366 / 31.402 / 31.383	31.386	

RA	δ	tang δ	τ RA
16.3	474	-4.02	-31.09
4.5	369	+3.92	-31.41
17.7	484	-3.12	-31.13
17.9	485	-4.32	-31.42
6.7	111	+20.75	-30.68 5

h' = -.011

RA	δ	tang δ	τ RA		
17.1	237	+ .26	-31.57	+00	- 31.57
17.5	241	+ .22	-31.53	+00	31.53
18.5	260	+ .80	-31.46	+01	31.45
17.7					- 31.517

4.5 +29 -31.40
5.1 -15 31.34
5.4 -01 31.42
5.5 -02 31.30
5.8 +13 31.41
6.5 +30 31.39
5.5 +09 -31.38
n = -.04 -.01
5.1 +103 -31.39
6.4 +185 31.24
5.8 +144 -31.32
17.7 +43 -31.52

			I	II
4.5	+3.92	-31.41 / - .02	-31.43 / - .03	-31.44
6.7	+20.75	-30.66 5 / + .02	-30.64 / + .02	-30.64

0 = +3.83 -.05 n = +.01
+20.66 +.74 -.04
-.015

0 = +2.48 -.12 n = +.05
+19.31 +.68 -.04
+.005

			I	II
4.3	-4.02	-31.09 / - .02	-31.11 / - .03	-31.12
5.7	-3.12	-31.13 / + .00	-31.13 / + .00	-31.13
5.9	-4.32	-31.42 / + .01	-31.41 / + .00	-31.42

0 = -4.11 +.27 n = +.07
-3.21 +.25 +.08
-4.41 -.03 -.01
+.047

0 = -5.46 +.20 n = +.04
-4.56 +.19 +.04
-5.76 -.10 -.02
+.020

1876 Feb.23 h = -.021 -.002 (18) n = +.01 c = .00

Star	RA	δ	tang δ	τ RA					
									31.707 / 31.655
	4.5 +0.5	73	+ .29	-31.67	+ .00			-.00-	31.67
	4.8 0.2	79	+ .65	-31.76	+ .01			00	.75
	4.9 0.1	80	+1.75	-31.72	+ .02			00	.70
4.73 —	4.9]	82	+ .87	-31.51	+ .01				.50]
	5.0 +0.0	85	- .16	-31.69	+ .00			.00	.69
	5.1 -0.1	86	+1.03	-31.73	+ .01			+00	.72
	5.1 0.1	87	- .15	-31.73	+ .00			00	.73
	5.2 0.2	88	- .12	-31.70	+ .00			00	.70
5.14 —	5.3 -0.3	90	+ .54	-31.71	+ .01			+.00	.70
	4.87 / 4.99								31.710 / 08 / 31.708

RA	δ	tang δ	τ RA		
4.7	76	+2.26	-31.68 31.70	+02	-31.68
17.0	235	-7.34	-32.09	-07	32.16]
5.4	92	+3.72	-31.89	+04	31.85

-31.74

4.5 +29 -31.67
5.0 -16 31.69
5.1 -15 31.73
5.2 -12 31.70
5.0 -04 -31.70
n = -.04
4.9 +175 -31.72
4.9 +87 31.57
5.1 +103 31.73
5.0 +122 -31.65

			I+II
4.7	+2.26	-31.68 -31.70 / - .01	-31.69
5.4	+3.72	-31.89 / + .01	-31.88

0 = +2.30 +.01 n = .00
+3.76 -.18 +.05
+.025

0 = +1.04 -.04 n = +.04
+2.50 -.23 +.09
+.065

31.708 5.0 -7.34 -32.09 / .00 I+II -32.09

0 = -7.30 -.39 n = -.05
-.050

0 = -8.56 -.44 n = -.05
-.050

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$\sin \zeta =$	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80			
R.A. tan δ	sin z cos z					R.A. tan δ	sin z cos z				
h						h					
4.5 + .29	+.44	+2′ 4.6 ✓	+ 1.1	+ 2′ 5.7 +		16.3	−4.02 −.88	+2′ 9.0 ✓	− 2.3	+ 2′ 6.7	
5.1 + 1.03	−.06	5.4 ✓	− 0.2	5.2		4.5	+ 3.92 −.55	7.3 ✓	− 1.4	5.9	
5.1 − .15	+.77	4.6 ✓	+ 1.9	6.5		17.7	−3.12 −.91	1 55.1 ✓	− 2.4	1 52.7	
5.4 − .01	+.68	5.6 ✓	+ 1.7	7.3		17.9	−4.82 −.87	2 6.3 ✓	− 2.3	2 4.0	
5.5 − .02	+.69	4.7 ✓	+ 1.7	6.4		6.7	+20.75 −.71	7.8 ✓	− 1.9	5.9	
5.8 + .13	+.57	4.9 ✓	+ 1.4	6.3							
6.4 + 1.85	−.33	5.1 ✓	− 0.8	4.3							5.90
4.5 + .30	+.44	4.4 ✓	+ 1.1	5.5							
4.6 + .47	+.29	5.8 ✓	+ 0.8	6.5							
6.9 + .38	+.37	5.9 ✓	+ 0.9	6.8 ~~6.50~~ 6.05							
17.1 + .26	+.47	+2′ 5.″2 ✓	+ 1.2	+ 6.4							
17.5 + .22	+.50	+3 14.1 ✓	+ 1.2	15.3							
18.5 + .80	+.06	7.1 ✓	+ 0.2	7.3 6.85							
3 255											
6.85	+.77 +4.6	+.44 +4.6	+.29 +5.8		−.06 +5.4	−.33 +5.1	−.55 +7.3	−.71 +7.8			
	+.68 5.6	+.57 4.9	+.37 5.9								
	+.67 4.7	+.44 4.4									
10 6050											
2 1180	+.71 +5.0	+.48 +4.6	+.33 +5.8		−.06 +5.4	−.33 +5.1	−.55 +7.3	−.71 +7.8			
12 7230	+1.7	+1.1	+.7		−.1	−.7	−1.3	−1.7			
	+6.7	+5.7	+6.5		+5.3	+14.4	+6.0	+6.1			
+2′ 6.″00	(12) 20.3	17.1	13.0		53′	46′	60′	61′	720		
6.02	−.7	+.3	−.5		+.7	+1.6	00	−.1			
4.5 + .29	+.44	+2′ 6.″4 ✓	+ 1.1	+ 6.5		4.7	+ 2.26 −.40	+2′ 6.″5 ✓	− 1.0	5.5	
4.8 + .65	+.16	3.5 ✓	+ 0.4	3.9		17.0	− 7.34 −.82	9.4 ✓	− 2.1	7.3	
4.9 + 1.75	−.31	7.0 ✓	− 0.8	6.2		5.4	+ 3.72 −.54	10.3 ✓	− 1.4	8.9	
4.9 + .85	+.03	6.7 ✓	+ 0.1	6.8							
5.0 − .16	+.78	4.3 ✓	+ 2.0	6.3							5.50
~~5.1 + 1.03~~	~~−.06~~	~~✓~~	~~− 0.2~~								
5.1 − .15	+.77	2.0 ✓	+ 2.0	4.0							
5.2 − .12	+.76	1.6 ✓	+ 1.9	3.5							
5.3 + .54	+.24	5.7 ✓	+ 0.6	6.3 5.44							
	+.78 +.43	+.44 +5.4	+.24 +5.7	+.16 +3.5	~~−.06~~	−.31 + 7.0	−.55 +7.3	−.71 +7.8			
	+.77 2.0			+.03 6.7							
	+.76 1.6 ✓										
8 352											
1 50	+.77 +3.1	+.44 +5.4	+.24 +5.7			~~+.31~~ +7.0	−.55 +7.3	−.71 +7.8			
9 402	+1.8	+1.0	+.5			−.7	−1.3	−1.7			
	+4.9	+6.4	+6.2			+6.3	+6.0	+6.1			
~~+2′ 5.″~~	(7) 9.8.2	64	62	2		63′	60′	61′	408		
+2′ 58.3	+.9	−.6	−.4			−.5	−.2	−.3			
5.45											

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1876 Feb. 29 h = -.025 +.012 u = -.08 c = .00

Star	RA	δ	tang δ	π RA			
	h			s			
	5.8 +1.0	102	+ .13	-34.80	-.01	+.01 -34.81	34.80
	5.8 1.0	103	+ 1.00	-34.85	-.08	.01 .93	.92
	6.1 0.7	384	+ 1.67	-34.82	-.13	.01 .95	.94
	6.4 0.4	388	+ 1.85	-34.80	-.15	.00 .95	.95
6.12	6.5 +0.3	107	+ .30	-34.84	-.02	.00 .86	.86
	7.1 -0.3	396	+ .87	-34.89	-.07	.00 .96	.96
	7.2 0.4	115	+ .41	-34.87	-.03	.00 .90	.90
	7.3 0.5	117	+ .53	-34.86	-.04	-.01 .90	.91
	7.3 0.5	398	+ .62	-34.77	-.05	.01 .82	.83
	[7.4]	119	+ .63	-34.63	-.05	.01 .68	.67
	7.5 0.7	120	+ .10	-34.87	-.01	.01 .88	.89
7.33	7.6 -0.8	122	+ .54	-34.81	-.04	-.01 .85	.86
	~~6.83~~ 6.798					~~34.856~~ 34.885	
						34.892	34.893
h' = -.022	17.1	237	+ .26	-35.10	-.02	-35.120	

1876 Feb. 29

Star	RA	δ	tang δ	π RA
34.900	h			s
	17.7	484	-3.12	-35.12
	17.9	485	-4.32	-35.12
	6.0	381	+2.22	-34.65
	6.1	383	+2.65	-34.73
	18.2	256	-16.83	-36.97
	6.7	111	+20.75	-33.62
	19.8	284	-53.39	-40.40

						I	II
5.8	+ .13	-34.80	6.0	+ 2.22	-34.65	-34.67	-34.65
6.5	+ .30	34.84			- .02	- .00	
7.2	+ .41	34.87	6.1	+ 2.65	-34.73	-34.75	-34.73
7.5	+ .10	34.87			- .02	.00	
6.8	+ .23	-34.84	6.7	+ 20.75	-33.62	-33.62	-33.61
		+ 2			- .00	+ .01	

n = -.02 +.02

5.8	+ .150	34.85
6.1	+ .167	34.82
6.4	+ .185	34.80
6.1	+ .151	-34.82

0 = +1.49 + 2.45 + .17 n = -.09
+2.14 + 2.8 + .09 -.04
+20.92 + 20.98 +1.22 -.06
-.063

17.1	+ .26	-35.10

0 = + 0.71 + .17 n = -.24
+ 1.14 + .09 -.08
+ 19.24 + 1.21 -.06
-.070

			I	II
5.7	-3.12	-35.12	-35.15	-35.13
		- .03	- .01	
5.9	-4.32	-35.12	-35.14	-35.12
		- .02	- .00	
6.2	-16.83	-36.97	-36.98	-36.97
		- .01	+ .00	
7.8	-53.39	-40.40	-40.38	-40.36
		+ .02	+ .04	

0 = -3.35 -.31 n = -.09
-4.55 -.30 -.07
-17.06 -2.14 -.13
-53.62 -5.54 -.10
-.098

0 = -4.63 -.31 n = -.07
-5.83 -.30 -.05
-18.34 -2.15 -.12
-54.90 -5.54 -.10
-.085

1876 Mar. 4 h = -.025 -.028 n = -.08

	RA	δ	tang δ	π RA		
1	17.5	241	+ .22	-37.54	-.02	-37.56
	18.5	260	+ .80	-37.79	-.06	.85
	20.6	294	+ .99	-37.75	-.08	37.83
	18.87					37.747

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Sin δ = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | −0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z	$R_{\frac{1}{2}} - R_{\frac{1}{4}}$	$R_{\frac{1}{4}}$	$R_{\frac{1}{2}}$
h						
5.8	+.13	+.57		+2′ 5.7 ✓	+1.4	+2′ 7.1
5.8	+1.00	−.05		6.2 ✓	−0.2	6.0
6.1	+1.67	−.29		6.1 ✓	−0.8	5.3
6.4	+1.85	−.33		6.2 ✓	−0.8	5.4
6.5	+.30	+.44		3.0 ✓	+1.1	4.1
7.1	+.87	+.02		6.0 ✓	+0.1	6.1
7.2	+.41	+.35		5.8 ✓	+0.9	6.7
7.3	+.53	+.25		5.7 ✓	+0.6	6.3
7.3	+.62	+.18		5.4 ✓	+0.4	5.8
~~7.4~~	~~+.63~~	~~+.18~~		~~5.4~~ ✓	~~+0.4~~	
7.5	+.10	+.60		4.8 ✓	+1.5	6.3
7.6	+.54	+.24		5.1 ✓	+0.6	5.7 ~~6.07~~ 5.89

R.A.	tan δ	sin z	cos z	$R_{\frac{1}{2}} - R_{\frac{1}{4}}$	$R_{\frac{1}{4}}$	$R_{\frac{1}{2}}$
h						
17.7	−3.12		−.91	+2′ 9.0 ✓	−2.3	+2 6.7
17.9	−4.32		−.87	9.6 ✓	−2.2	7.4
6.0	+2.22		−.40	6.4 ✓	−1.0	+5.4
6.1	+2.65		−.45	7.5 ✓	−1.1	6.4
18.2	−16.83		−.78	7.8 ✓	−2.0	5.8
6.7	+20.75		−.71	8.3 ✓	−1.9	6.4
19.8	−53.39		−.75	4.7 ✓	−2.0	7.7

6.34

17.1	+.26	+.47		+2′ 6.4 ✓	+1.2		7.6	7.60									
1	7.60	+.60	+4.8	+.57	5.7	+.35	+5.8	+.02	+6.0	−.05	+6.2	−.29	+6.1	−.40	+6.4	−.78	+7.8
				+.44	3.0	+.25	5.7	+.18	5.4			−.33	6.2	−.45	7.5	−.71	8.3
						+.24	5.1									−.75	9.7
11	6479																
5	3170	+.60	+4.8	+.50	+4.3	+.28	+5.5	+.10	+5.7	−.05	+6.2	−.31	+6.1	−.42	+7.0	−.75	+8.6
.16	9649		+1.4		+1.1		+.6		+.2		−.1		−.7		−.9		−1.8
			+6.2		+5.4		+6.1		+5.9		+6.1		+5.4		+6.1		+6.8
+2′	6.04	(K)	6.1		10.5²		18.3³		11.8²		6.1′		10.8²		12.2²		20.4³ 9.66
	6.03		−.2		+.6		−.1		+.1		−.1		+.6		−.1		−.8

17.5	+.22	+.50	+2′ 7.0 ✓	+1.3		8.3
18.5	+.80	+.56	6.4 ✓	+0.2		6.6
20.6	+.99	−.04	4.8 ✓	−0.1		4.7 5.65

+2′ 5.65

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1876 Mar. 5 $l = -.021 + .071 - .031$ $n = -.09$ $e = .00$

Star	RA	l	δ	tang δ	ν RA					Star	RA	l	δ	tang δ	ν RA		
										37.970							
		6.6	+0.5	109	+ .47	− 37.97	− .04		− .02	− 38.01	38.03	6.7	111	+ 20.75	− 36.72		
6.75		6.9	0.2	113	+ .38	− 37.90	− .03		− .01	37.93	7.94	19.8	284	− 53.39	− 45.41		
		7.1	+0.0	396	+ .87	− 37.88	− .08		00	.96	.96						
		7.2	−0.1	115	+ .41	− 37.87	− .04		00	.91	.91						
		7.3	0.2	117	+ .53	− 37.88	− .05		+ 01	.93	.92						
7.22		7.3	−0.2	398	+ .62	− 37.86	− .06		+ 01	.92	.91						
		7.07								37.930							
6.6	+ .47	− 37.97								37.943		37.945					
6.9	+ .38	37.90						I								I	
7.1	+ .87	37.88		6.7	+ 20.75	− 36.72		− 36.73				7.8	− 53.39	− .45 41		− 45.39	
7.2	+ .41	37.87				− .01								+ .02			
7.3	+ .53	37.88															
7.3	+ .62	37.86		0 =	+ 20.20	+ 1.16	$n = -.036$					0 =	− 53.94	− 7.50	$n = -.14$		
							$-.060$								$-.140$		
7.1	+ .55	− 37.89															

1876 Mar. 6 $l = -.028 - .020 - .02324$ $n = -.17$ $e = .00$

										38.462							
	5.8	+1.1	102	+ .13	− 38.40	− .02			− .12	− 38.42	38.44	17.7	484	− 3.12	− 38.72		
	5.8	1.1	103	+ 1.00	− 38.29	− .17			02	.46	.48	17.9	485	− 4.32	− 39.08		
	6.1	0.8	354	+ 1.67	− 38.18	− .28			02	.46	.48	6.0	381	+ 2.22	− 37.98		
	6.4	0.5	385	+ 1.85	− 38.18	− .31			01	.49	.50	6.1	383	+ 2.65	− 37.90		
6.12	6.5	+0.4	107	+ .30	− 38.43	− .05			− 01	.48	.49	18.4	259	− 3.21	− 38.87		
	7.1	−0.2	396	+ .87	− 38.30	− .15			+ 00	.54	.54	6.7	111	+ 20.75	~~− 40.07~~ 35.18		
	7.2	0.3	115	+ .41	− 38.41	− .07			+ 01	.48	.47	19.5	497	− 5.32	− 39.09		
	7.3	0.4	117	+ .53	− 38.37	− .09			01	.46	.45	19.8	284	− 53.39	− 52.80		
	7.43		119	+ .63	− 38.21	− .11			~~01~~	.32	31						
	7.5	0.6	120	+ .10	− 38.46	− .02			01	.48	.47						
	7.6	0.7	122	+ .51	− 38.40	− .09			01	.49	.48						
7.43	8.0	−1.1	405	+ 1.27	− 38.26	− .22			+ 02	.48	.46						
	6.92									38.4~~08~~							
	88									89							
										38.478	38.478						

$h' = -.027$

	17.5	241	+ .22	− 38.72	− .03			−	38.75								
	18.5	260	+ .80	− 38.67	− .14				38.81								
	18.0								− 38.780								
						I	II									I	II
5.8	+ .13	− 38.40		6.0	+ 2.22	− 37.98	− 37.99	− 38.00				5.7	− 3.12	− 38.72	− 38.74		− 38.74
6.5	+ .30	38.43				− .01	− .02							− .02	− .02		
7.5	+ .10	38.46		6.1	+ 2.65	− 37.90	− 37.91	− 37.91				5.9	− 4.32	− 39.08	− 39.10		− 39.10
6.6	+ .18	− 38.43				− .04	− .01							− .02	− .02		
				6.7	+ 20.75	− 37.96	− 35.18	− 35.18				6.4	− 3.21	− 38.87	− 38.87		− 38.88
	$n = -.15$					+ .00	.00	− 29.64						− .00	− .01		
5.8	+ .100	− 38.29										7.5	− 5.32	− 39.09	− 39.07		− 39.07
6.1	+ .167	38.18												+ .02	+ .02		
6.4	+ .185	38.18		0 =	+ 2.04	+ .44	$n = -.22$					7.8	− 53.39	− 52.80	− 52.77		− 52.77
7.1	+ .87	38.39			+ 2.47	+ .52	− .21							+ .03	+ .03		
8.0	+ .127	38.26			+ 20.57	+ 8.79	− .18										
6.7	+ 1.33	− 38.26				+ 3.24	− .16	− .197				0 =	− 3.30	− .31	$n = -.09$		
													− 4.50	− .67	− .15		
				0 =	+ 0.89	+ .26	$n = -.29$						− 3.39	− 4.54	− .13		
18.0	+ .51	− 38.70			+ 1.32	+ .35	− .27						− 5.50	− .64	− .11		
					+ 19.42	+ 8.62	− .44						− 53.57	− 14.34	− .27		
						3.07	− .15	− .210									− .152
												0 =	− .445	− .48	$n = -.11$		
													− 5.65	− .84	− .15		
													− 4.54	− .62	− .14		
													− 6.65	− .81	− .12		
													− 5472	− 14.51	− .27		
																	− .158

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1876phae.proj.1692

Sin Z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. (h)	tan δ	sin z	cos z	Rφ − Rc	Rc	Rφ	Rφ
6.6	+.47	+.29		+2′ 7.7 ✓	+ 0.7	+ 2′ 8.4	
6.9	+.38	+.37		7.2 ✓	+ 1.0	6.2	
7.1	+.87	+.02		6.6 ✓	+ 0.1	6.7	
7.2	+.41	+.35		6.9 ✓	+ 0.9	7.8	
7.3	+.53	+.25		6.7 ✓	+ 0.6	7.3	
7.3	+.62	+.18		5.6 ✓	+ 0.4	6.0	7.40

								+.29	+7.7	+.02	+6.6			−.71	+8.6		
								+.37	7.2	+.18	5.6			−.75	9.1		
								+.35	6.9								
								+.25	6.7								
6	4440																
2	1380							+.31	+7.1	+.10	+6.1			−.73	+8.8		
8	5820								+.7		+.2				−1.8		
									+7.8		+6.3				+7.0		
+2′	7.23							(8)	31.2		12.6				140	578	
	7.28								−.6		+.9				+.2		

5.8	+.13	+.57		+2′ 8.3 ✓	+ 1.5	+	4.8					17.7	− 3.12	−.91	+2′ 9.0 ✓	− 2.3	6.7
5.8	+1.00	−.05		5.6 ✓	− 0.1		5.5					17.9	− 4.32	−.87	9.3 ✓	− 2.2	7.1
6.1	+1.47	−.29		5.6 ✓	− 0.7		4.9					6.0	+ 2.22	−.40	7.0 ✓	− 1.0	+ 6.0
6.4	+1.85	−.33		7.5 ✓	− 0.8		6.7					6.1	+ 2.65	−.45	6.6 ✓	− 1.1	5.5
6.5	+.30	+.44		8.0 ✓	+ 1.1		6.1					18.4	− 3.21	−.91	7.8 ✓	− 2.3	5.5
7.1	+.87	+.02		7.4 ✓	+ 0.1		7.5					6.7	+20.75	−.71	9.0 ✓	− 1.9	7.1
7.2	+.41	+.35		7.8 ✓	+ 0.9		8.7					19.5	− 5.32	−.85	9.2 ✓	− 2.2	7.0
7.3	+.53	+.25		7.4 ✓	+ 0.6		8.0					19.8	− 53.39	−.75	9.3 ✓	− 2.0	7.3
7.3	+.62	+.18		7.1 ✓	+ 0.4		7.5										
~~7.4~~	~~+.63~~	~~+.18~~		~~✓~~	~~+ 0.4~~												6.48
7.5	+.10	+.60		7.3 ✓	+ 1.5		8.8										
7.6	+.54	+.24		6.7 ✓	+ 0.6		7.3										
8.0	+1.27	−.17		6.4 ✓	− 0.5		5.9	6.89									

17.5	+.22	+.80		5.7 ✓	+ 1.3	+	7.0										
18.5	+.80	+.06		6.3 ✓	+ 0.2		6.5										
								6.75									
2	150																
	6.75	+.60	+7.3	+.57	+3.3 ✓	+.35	+7.8	+.02	+7.4	−.05	+5.6	−.29	5.6	−.40	+7.0	−.71	+9.0
				+.44	5.0	+.25	7.4	+.18	7.1	−.17	6.4	−.33	7.5	−.45	6.6	−.75	9.3
						+.24	6.7										
12	972																
4	192	+.60	+7.3	+.50	+5.1	+.28	+7.3	+.10	+7.2	−.11	+6.0	−.31	+6.6	−.42	+6.8	−.73	+9.1
				.44	+5.0												
16	1164		+1.4		+7.0		+.6		+.2		−.2		−.7		−1.0		−1.8
			+8.7		+6.0		+7.9		+7.4		+5.8		+5.9		+5.8		+7.3
+2′	6.85	45 (8)	87′		60″		237		148		116		118		116		146 1028
	6.73		−1.8		+.9		−1.0		−.5		+1.1		+1.0		+1.1		−.4

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1876 Mar. 7 δ h = -.019 -.028 -.030 24

n = -.15 c = -.10

Star	RA	δ	tang δ sec δ	π RA					
	h			s					
	[4.2	70	+ 1.27 +1.03	-38.94	-.04	-.10	-.04	39.08]	-39.12]
	5.1 +1.6	86	+ 1.03 1.43	-38.88	-.15	.14	-.04	.17	-39.21
	5.2 1.5	88	- .12 1.00	-39.08	+.02	.10	04	.06	.20
	5.3 1.4	90	+ .54 1.14	-38.99	-.08	.11	04	.18	.22
	6.1 0.6	384	+ 1.67 1.95	-38.85	-.25	.20	02	.30	.32
	6.4 0.3	388	+ 1.85 2.10	-38.78	-.28	.21	01	.27	.28
5.77 —	6.5 +0.2	107	+ .30 1.04	-39.13	-.04	.10	-.01	.27	.28
	7.1 -0.4	396	+ .87 1.32	-39.05	-.13	.13	+.01	.31	.30
	7.2 0.5	115	+ .41 1.08	-39.10	-.06	.11	01	.27	.26
	7.3 0.6	117	+ .53 1.13	-39.08	-.08	.11	02	.27	.25
	7.3 0.6	398	+ .62 1.18	-39.04	-.09	.12	02	.25	.23
	7.4	119	+ .63 1.18	-38.90	-.09	.12	.02	.11]	(.09)
	7.5 0.8	120	+ .10 1.00	-39.15	-.02	.10	02	.27	.25
	7.6 0.9	122	+ .54 1.14	-39.11	-.08	.11	03	.30	.27
7.43 —	8.0 -1.3	405	+ 1.27 1.62	-38.88	-.19	-.16	+.04	.23	.19
	6.55							39.251	
	66							39.271	
								39.250	

[4.2	+.27	-38.94]
5.2	-.12	39.08
6.5	+.30	39.13
7.5	+.10	39.15
6.4	+.09	-39.12

n = -.18

5.1	+1.03	-38.88
6.1	+1.67	38.85
6.4	+1.85	38.78
7.1	+.87	39.05
8.0	+1.27	38.88
6.5	+1.34	-38.89

I + II

6.0 +2.22 -38.50 -.01 -38.51

6.1 +2.65 -38.50 -.01 -38.51

6.7 +20.75 -27.70 -33.24 + .00 -27.70 -33.24

0 = +2.13 + .61 n = -.29
+2.56 + .61 -.24
+20.66 +11.42 +5.87 -.28 -.270

0 = +0.88 + .38 n = -.43
+1.31 + .38 -.27
+19.41 +11.19 +5.64 -.27 -.290

39251

1876 Mar. 7

Star	RA	δ	tang δ	π RA		
h				s		
17.0	235	-7.34	-42.89			
17.9	485	-4.32	-40.08			
6.0	381	+2.22	-38.50			
6.1	383	+2.65	-38.50			
18.2	256	-16.83	-43.78			
18.4	259	-3.21	-39.92			
6.7	111	+20.75	-27.70 33.24			
19.5	497	-5.32	-40.42			
19.8	284	-53.39	-51.80			

			I	II
5.0	-7.34	-42.89 +.03 (0.85)	-42.98 -.04	-42.99
5.9	-4.32	-40.08 -.01	-40.09 -.01	-40.09
6.2	-16.83	-43.78 .00	-43.78 -.01	-43.79
6.4	-3.21	-39.92 + .00	-39.92 -.00	-39.92
7.5	-5.32	-40.42 + .03	-40.39 + .02	-40.40
7.8	-53.39	-51.80 + .03	-51.77 + .03	-51.77

0 = -7.43 -1.86 (3.50) n = -.25
-4.41 -0.97 -.22
-16.92 -4.66 -.28
-3.80 -0.80 -.24
-5.41 -1.27 -.23
-53.48 -12.65 -.24 -.243

0 = -8.68 -2.10 (4.04) n = -.24
-5.66 -1.20 -.21
-18.17 -4.90 -.27
-4.55 -1.03 -.23
-6.66 -1.51 -.23
-54.73 -12.88 -.24 -.237

1876 Mar. 13 h = -.020 -.031 -.018 20

n = -.04 c = .00

	6.6 +1.1	109	+ .47	-41.73	-.02	-.03	-41.75	41.78
	7.1 0.6	396	+ .87	-41.78	-.03	02	.81	.83
	7.5 0.2	120	+ .10	-41.85	-.00	-01	.85	.86
7.20 —	7.6 +0.1	122	+ .54	-41.82	-.02	+00	.84	.84
	8.0 -0.3	405	+ 1.27	-41.79	-.05	01	.84	.83
	8.6 0.9	125	+ .34	-41.82	-.01	03	.83	.80
8.43 —	8.7 -1.0	128	+ .12	-41.88	-.00	+03	.88	.85
	7.73						41.850	
							41.829	41.829

41.838 12

h' = -.035 18.5 260 + .80 -42.16 -.03 -42.190

18.2	256	-16.83	-42.34
6.7	111	+20.75	-40.58
19.8	284	-53.39	-43.66
8.4	440	+3.50	-41.84
20.5	504	-3.61	-42.10

			I	II
6.2	-16.83	-42.34 .04	-42.38 -.03	-42.37
7.8	-53.39	-43.66 .01	-43.67 + .00	-43.66
8.5	-3.61	-42.10 + .00	-42.10 + .02	-42.08

7.5	+.10	-41.85
8.6	+.34	41.82
8.7	+.12	41.88
8.3	+.19	-41.85

n = -.08 +.01

7.1	+.87	-41.78
8.0	+1.27	41.79
7.6	+1.07	-41.78

18.5 +.80 -42.16

I II

8.4 +3.50 -41.84 + .00 -41.84 + .02 -41.82

6.7 +20.75 -40.58 -.03 -40.62 -.02 -40.61

0 = +3.31 + .01 n = -.00
+20.56 +1.23 -.06 -.030

0 = +2.43 -.04 n = +.02
+19.68 +1.17 -.06 -.020

0 = -17.02 -.53 n = -.03
-53.58 -1.82 -.03
-3.80 -.25 -.07 -.043

0 = -17.90 -.59 n = -.03
-54.46 -1.88 -.03
-4.68 -.30 -.06 -.040

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1876phae.proj.1602.

Sin z = +.60 +.80 +.40 +.60 +.20 +.40 0 +.20 0 −.20 −.20 −.40 −.40 −.60 −.60 −.80

R.A. h	tan δ	sin z	cos z	R_y	R_x	R_{yl}	R_{xy}
4.2	+ 8.27	+.46		+2′ 7.6 ✓	+ 1.1	+	2′ 8.7
5.1	+ 1.03	−.06		10.0 ✓	−0.1		9.9
5.2	− .12	+.76		6.9 ✓	+1.9		8.8
5.3	+ .34	+.24		8.3 ✓	+0.6		8.9
6.1	+ 1.67	−.29		9.6 ✓	−0.7		8.9
6.4	+ 1.85	−.33		10.0 ✓	−0.9		9.1
6.5	+ .30	+.44		7.1 ✓	+1.1		8.2
7.1	+ .87	+.02		8.8 ✓	+0.1		8.9
7.2	+ .41	+.35		8.8 ✓	+0.9		9.7
7.3	+ .53	+.25		8.9 ✓	+0.6		9.5
7.3	+ .62	+.18		8.4 ✓	+0.4		8.8
~~7.4~~	~~+ 1.63~~	~~+.18~~		— ✓	~~+0.4~~		
7.5	+ .10	+.60		6.4 ✓	+1.5		7.9
7.6	+ .84	+.24		8.7 ✓	+0.6		9.3
8.0	+ 1.27	−.17		7.9 ✓	−0.4		7.5 ~~7.86~~ 8.86

R.A. h	tan δ	sin z	cos z	R_y	R_x	R_{yl}	R_{xy}
17.0	− 7.34	−.82		+2′ 11.1 ✓	−2.1	+ 2′	9.0
17.9	− 4.32	−.87		12.4 ✓	−2.2		10.2
6.0	+ 2.22	−.40		9.9 ✓	−1.0		8.9
6.1	+ 2.65	−.45		10.5 ✓	−1.1		9.4
18.2	− 16.83	−.78		10.6 ✓	−2.0		8.6
18.4	− 3.21	−.91		11.3 ✓	−2.3		9.0
6.7	+ 20.75	−.71		10.3 ✓	−1.9		8.4
19.5	− 5.32	−.85		10.9 ✓	−2.2		8.7
19.8	− 53.39	−.75		11.1 ✓	−2.0		9.1
							8.88

		+.76	+6.9	+.46	+7.6	+.24	+8.3	+.02	+8.8	−.06	+10.0	−.29	+9.6	−.40	+9.9	−.78	+10.6
		+.60	6.4	+.44	7.1	+.35	8.8	+.18	+8.4	−.17	7.9	−.33	10.0	−.45	10.5	−.71	10.3
						+.25	8.9									−.75	11.1
						+.24	8.7										
14	84																
5	40	+.68	+6.6	+.45	+7.3	+.27	+8.7	+.10	+8.6	−.11	8.9	−.31	+9.8	−.42	+10.2	−.75	10.7
19	124		+1.6		+1.0		+.6		+.2		−.2		−.7		−1.0		−1.8
			+8.2		+8.3		+9.3		+8.8		+8.7		+9.1		+9.2		+8.9
+2′	8.87	(19)	164²		166²		372⁴		176²		174²		182²		184²		26.7³
	8.87		+.7		+.6		−.4		4.1		+.2		−.2		−.3		0.0

1685

6.6	+.47	+.29		+2′ 6.1 ✓	+	0.8	+	6.9				18.2	−16.83	−.78		+ 2′	7.9 ✓	−2.0	+ 5.9
7.1	+.87	+.02		7.1 ✓	+	0.1		7.2				6.7	+20.75	−.71			9.0 ✓	−1.9	7.1
7.5	+.10	+.60		6.3 ✓	+	1.5		7.8				19.8	−53.39	−.75			11.4 ✓	−2.0	9.4
7.6	+.84	+.24		6.6 ✓	+	0.6		7.2				8.4	+ 3.50	−.53			9.5 ✓	−1.4	8.1
8.0	+1.27	−.17		7.4 ✓	−	0.4		7.0				20.5	− 3.61	−.89			9.9 ✓	−2.3	7.6
8.6	+.34	+.40		7.3 ✓	+	1.0		8.3											7.62
8.7	+.12	+.58		5.0 ✓	+	1.4		6.4	7.26										

18.5	+.80	+.06		~~+1.4~~ ✓	+	0.2		7.6	7.60										
1	60																		
	7.60	+.60	+6.3	+.40	+7.3	+.29	+6.1	+.02	+7.1	−.17	+7.4			−.53	+9.5	−.78	+7.9		
				+.58	5.0	+.24	6.6									−.71	9.0		
																−.75	11.4		
7	182																		
4	248	+.60	+6.3	+.49	+ 6.1	+.26	+6.3	+.02	+7.1	−.17	+7.4			−.53	+9.5	−.75	+ 9.4		
11	430		+1.4		+ 1.1		+.6		+.0		−.4				−1.2		−4.8		
			+7.7		+7.2		+6.9		+7.1		+7.0				+8.3		+8.3		
+2′	7.37	(11)	77		141²		138²		71′		70′				83′		228³	811	
	7.39		.3		+.2		+.5		+.3		+.4				−.9		−.2		

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1876 Mar. 14 $h = -.022$, $-.018$ 21 $-.024$ $\eta = -.08$ @ $= .00$

Star	Ra	δ	tang δ	π Ra				
	h			″				42.309
	4.5 +1.7	73	+ .29	− 42.27	− 02	−	− 03 −	42.29 42.32
	4.8 1.4	79	+ .65	− 42.30	− 05		03	.35 .38
	4.9 1.3	84	+ .95	− 42.23	− 08		02	.31 .33
	5.0 1.2	83	+ .87	− 42.24	− 07		02	.31 .33
	5.1 1.1	86	+ 1.03	− 42.24	− 08		02	.32 .34
	5.2 1.0	88	− .12	− 42.30	+ 01		02	.29 .31
	5.3 0.9	90	+ .54	− 42.29	− 04		02	.33 .35
5.04 —	5.5 +0.7	99	− .05	− 42.27	− 00		− 01	.27 − .28
	6.9 −0.7	113	+ .38	− 42.31	− 03		+ 01	.34 .33
	7.5 1.3	120	+ .10	− 42.31	− 01		02	.32 .30
	8.0 1.8	405	+ 1.27	− 42.25	− .10		03	.35 .32
	8.6 2.4	126	+ .34	− 42.39	− .03		04	.42 .38
7.94 —	8.7 −2.5	128	+ .12	− 42.37	− .01		+ 04	.38 .34
	6.15						42.362	42.362
h′ = −.026	18.5 +1.1	260	+ .80	− 42.60	− .06	− 03	42.329	.66 42.69 42332
	19.7 −0.1	280	+ .15	− 42.55	− .01	00		.56 .56
~~7.94~~ —	20.6 −1.0	294	+ .99	− 42.64	− .08	+ 03		.72 .69
	19.60							42.469 647 42.647 42.647

					I	II
4.5 + .29 − 42.27		5.4	+ 3.72	− 41.75	− 41.77	− 41.76
5.2 − .12 42.30				− .02	− .01	
5.5 − .05 42.27		7.7	+ 3.55	− 42.18	− 42.15	− 42.14
7.5 + .10 42.31				+ .03	+ .04	
8.7 + .12 42.37		8.4	+ 3.50	− 42.16	− 42.12	− 42.11
6.3 + .07 − 42.30 +1				+ .04	+ .05	

$n = -.06 + .01$

4.9 + .95 − 42.23	0 =	+ 3.65	+ .54	n = − .15
5.0 + .87 42.24		+ 3.48	+ .16	− .05
5.1 + 1.03 42.24		+ 3.43	+ .19	− .06
8.0 + 1.27 42.25				− .087
5.8 + 1.03 − 42.24				
	0 =	+ 2.69	+ .48	n = − .18
		+ 2.52	+ .10	− .04
19.6 + .65 − 42.60		+ 2.47	+ .13	− .05
				− .090

1876 Mar. 14

Star	Ra	δ	tang δ	π Ra		
	h.			″		
	17.0	235	− 7.34	− 44.47 + .59	− 43.88	
	5.4	92	+ 3.72	− 41.75 − .30	42.05	
	7.7	401	+ 3.55	− 42.18 − .28	42.46	
	19.8	284	− 53.39	− 45.57 + 4.27	41.30	
	8.4	310	+ 3.50	− 42.16 − .28	42.44	
	20.5	504	− 3.61	− 42.65 + .29	42.36	
					42.42	
				I		II
	5.0	− 7.34	− 44.47	− 44.50		− 44.49
			− .03	− .02		
	7.8	− 53.39	− 45.57	− 45.54		− 45.53
			+ .03	+ .04		
	8.5	− 3.61	− 42.65	− 42.60		− 42.59
			+ .05	+ .06		

0 =	− 7.41	− 2.20	n = − .32 ✓
	− 53.46	− 3.24	− .06
	− 3.68	− 0.30	− .08
			− .070
0 =	− 8.37	− 2.25	n = − .27 ✓
	− 54.42	− 3.29	− .06
	− 4.64	− .35	− .08
			− .070

1876 Mar. 15 $h = -.010$ 16 $-.041$ $-.042$ $\eta = -.05$ @ $= .00$

Star	Ra	δ	tang δ	π Ra			
							42.886
	7.2 +0.5	115	+ .41	− 42.91	− 02	− 02 −	42.93 42.95
	7.3 0.4	117	+ .53	− 42.85	− 03	02	.88 .90
	7.3 0.4	398	+ .62	− 42.88	− 03	02	.91 .93
	7.4 0.3	119	+ .63	− 42.79	− 03	01	.82 .83
7.34 —	7.5 0.2	120	+ .10	− 42.88	− 01	− 01	.89 − .90
	7.6 +0.1	122	+ .54	− 42.87	− 03	+ 00	.90 .90
	8.1 −0.4	123	+ .17	− 42.89	− 01	+ 02	.90 .88
	8.2 0.5	407	+ .95	− 42.88	− 05	+ 02	.93 .91
8.05 —	8.3 −0.6	125	+ 1.81	− 42.84	− 09	+ 02	.93 .91
	7.66						42.915 42.899

					I	II
7.2 + .31 − 42.91		7.7	+ 3.55	− 42.67	− 42.67	− 42.68
7.5 + .10 42.88				+ 00	− .01	
8.1 + .17 42.89						
7.6 + .23 − 42.89 −1						

$n = -.03 - .01$

	0 =	+ 3.32	+ .22	n = − .07
				− .070
8.2 + .95 − 42.88				
8.3 + 1.81 42.84	0 =	+ 2.17	+ .18	n = − .08
8.2 + 1.38 − 42.86				− .080

1876 Mar. 15

Star	Ra	δ	tang δ	π Ra		
	19.5	497	− 5.32	− 42.69		
	7.7	401	+ 3.55	− 42.67		
	19.8	284	− 53.39	− 45.56		
	20.2	502	− 4.45	− 43.31		
				I		II
	7.5	− 5.32	− 42.69	− 42.69		− 42.~~68~~ 70
			− .00	− .01		
	7.8	− 53.39	− 45.56	− 45.56		− 45.57
			+ .00	− .01		
42901	8.2	− 4.45	− 43.31	− 43.30		− 43.31
			+ .01	− .00		

0 =	− 5.55	+ .20	n = + .04
	− 53.62	− 2.67	− .05
	− 4.68	− .41	− .09
			− .060 ✓
0 =	− 6.70	+ .16	n = + .02
	− 54.77	− 2.71	− .05
	− 5.83	− .45	− .08
			− .050 ✓

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Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z	$R_g - R_f$		R_f		R_g	
h									
4.5	+.29	+.44		+2' 6".4 ✓		+ 1.1		+2 7.5	
4.8	+.65	+.16		7.2 ✓		+0.4		7.6	
4.9	+.95	−.02		7.6 ✓		−0.0		7.6	
~~5.0~~	~~+.87~~	~~+.02~~		— ✓		~~+0.1~~			
5.1	+1.03	−.06		7.8 ✓		−0.1		7.7	
~~5.2~~	~~+1.12~~	~~+.74~~		— ✓		~~+1.9~~			
5.3	+.54	+.24		7.3 ✓		+0.6		7.9	
5.5	−.05	+.71		8.0 ✓		+1.8		9.8	
6.9	+.38	+.37		7.9 ✓		+0.9		8.8	
7.5	+.10	+.60		5.9 ✓		+1.5		7.4	
8.0	+1.27	−.17		7.6 ✓		−0.4		7.2	
8.6	+.34	+.40		7.1 ✓		+1.0		8.1	
8.7	+.12	+.58		5.5 ✓		+1.4		6.9	7.86 ~~7.95~~
18.5	+.80	+.06		8.4 ✓		+0.2		8.6	
19.7	+.15	+.56		6.2 ✓		+1.4		7.6	~~7.80~~ 8.10
~~20.6~~	~~+.99~~	~~−.04~~		— ✓		~~−0.1~~			

R.A.	tan δ	sin z	cos z				
h							
17.0	−7.34	−.82		+2' 10".1 ✓	−2.1	+2' 8.0	
5.4	+3.72	−.84		10.1 ✓	−1.4	+ 8.7	
7.7	+3.55	−.53		8.4 ✓	−1.3	7.1	
19.8	−53.39	−.75		9.4 ✓	−1.9	7.5	
8.4	+3.80	−.53		9.2 ✓	−1.3	7.9	
20.5	−3.61	−.89		10.8 ✓	−2.2	8.6	7.80

1	8.10	~~+.76~~		+.44	+6.4	+.24	+7.3	+.16	+7.2	−.02	+7.6	−.54	+10.1	−.75	+7.4	
		+.71	+8.0	+.40	7.1	+.37	7.9	~~+.03~~		−.06	7.8	−.53	8.4			
		+.60	5.9	+.58	5.5			+.06	8.4	−.17	7.6	−.53	9.2			
				+.56	6.2											
9																
18	~~1845~~															
4	320	+.65	+.70	+.49	+6.4	+.30	+7.6	+.11	+7.8	−.08	+7.7	−.53	+9.2	−.75	+9.4	
15	1365		+1.6		+1.1		+.7		+.3		−.0		−1.2		−1.8	
2			+8.6		+7.4		+8.3		+8.1		+7.7		+8.0		+7.6	
+2'	7".90	(17)	172		296		166		162		231		240		76	1343
	~~7.91~~		−.7		+.5		−.4		−.2		+.2		+.1		+.3	
	7.84															

7.2	+.41	+.35		+2' 8".2 ✓		+0.9		+ 9.1				19.5	−5.32	−.65	+2' 10".0 ✓	−2.2	+2 7.8	
7.3	+.53	+.25		8.6 ✓		+0.7		9.3				7.7	+3.55	−.53	9.4 ✓	−1.4	+ 8.0	
7.3	+.62	+.18		7.1 ✓		+0.4		7.5				19.8	−53.39	−.75	~~10.0~~ ✓	−2.0	8.0	
~~7.4~~	~~+.63~~	~~+.18~~		— ✓		~~+0.4~~						20.2	−4.45	−.87	~~12~~ 10.5 ✓	−2.2	8.3	
7.5	+.10	+.60		7.0 ✓		+1.5		8.5										8.00
7.6	+.54	+.24		6.7 ✓		+0.6		7.3										
8.1	+.17	+.84		6.8 ✓		+1.3		8.1										
8.2	+.95	−.02		7.3 ✓		−0.0		7.3										
8.3	+1.81	−.82		7.3 ✓		−0.8		6.5	7.95									

		+.60	+7.0	+.54	+6.8	+.35	+8.2	+.18	+7.1	−.02	7.3	−.32	+7.3	−.53	+9.4	−.75	+10.0	
						+.25	8.6											
						+.24	6.7											
8	6360																	
1	800	+.60	+7.0	+.54	+6.8	+.28	+7.8	+.18	+7.1	−.02	+7.3	−.32	+7.3	−.53	+9.4	−.75	+10.0	
9	7160		+1.4		+1.3		+.6		+.4		−.0		−.8		−1.2		−1.8	
			+8.4		+8.1		+8.4		+7.5		+7.3		+6.5		+8.2		+8.2	
+2'	7".94	(10)	84		81		252		75		73		65		82		82	791
	7.96		−.5		+.2		−.5		+.4		+.6		+1.4		−.3		−.3	

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1876 Mar. 18 $k = -.021/16 - .016$ $n = -.03$ @ $= .00$

Star	RA	δ	tang δ	87 RA
	h			
	6.9	+4 113	+.38	−43.70 − .01
	7.4	2 119	+.63	−43.54 − .02
	7.5	2 120	+.10	−43.68 − .00
	7.6	3 122	+.54	−43.60 − .02
	7.33			

6.9	+.38	−43.70
7.4	+.63	43.54
7.5	+.10	43.68
7.6	+.54	43.60
7.7	+.11	−43.63
3	.314	b

6.7	+20.75	−36.24	41.78	I
		− .01		
7.7	+3.55	−43.57	−43.57	
		.00		

$0 = +20.34 + 7.38$ $n = -.09$
$+3.14 + .06$ $-.02$
$-.055$

1876 Mar. 19 $k = -.021 - .023 - .025$ $n = +.02$ @ $= -.06$ 44.036 76

5.4	+1.6	93	−	.01	+1.00	−43.97	+ .02	−.06 −.04	44.03
5.5	1.5	99	−	.05	+1.00	−43.97	− .00	.06 .03	.03
5.8	1.2	102	+	.13	1.01	−44.00	+ .00	.06 .03	.06
6.8	1.2	103	+	1.00	1.41	−44.00	+ .02	.08 .03	.06
6.1	+0.9	384	+	1.67	1.95	−44.11	+ .03	.12 −.02	.20
7.5	−0.5	120	+	.10	1.00	−44.10	+ .02	.06 +.01	.16
7.6	0.6	122	+	.54	1.14	−44.11	+ .01	.07 .01	.17
8.2	1.2	407	+	.95	1.37	−44.11	+ .02	.08 .03	.17
8.3	1.3	125	+	1.81	2.07	−43.98	+ .04	.12 .03	.06
8.6	1.6	126	+	.34	1.06	−44.09	+ .01	.06 .01	.14
8.7	−1.7	128	+	.12	1.00	−44.03	+ .00	−.06 44.137	.09
7.05							n = −.09	44.10	.132
18.5		260	+	.80	1.28	−44.26	+ .02	−.08	.42
18.50							− .01	44.420	.10

5.4	−.01	−43.97		I	II
5.5	−.05	43.97	6.0	−43.96	−43.98
5.8	+.13	44.00		− .01	− .02
7.5	+.10	44.10	6.1	−44.01	−44.02 −44.03
8.7	+.12	44.03		− .01	− .02
6.6	+.06	−44.01	7.7	−43.79	−43.77 −43.78
				+ .02	+ .01

$n = -.03 + .01$

5.8	+.100	−44.00	0 =	+2.16	+.04
6.1	+1.67	44.11		+2.59	− .01
8.2	+.95	44.11		+3.49	+.24
8.3	+1.81	43.98			
7.1	+1.386	−44.05			

$n = -.02$
$.03$
$-.07$
$-.030$

18.5	+.80	−44.36	0 =	+ .86	+ .01
				+1.29	+ .02
				+2.19	+ .27

$n = -.08$
$-.02$
$-.12$
$-.073$

			III
17.9	+4.32	−44.54	−44.55
		− .01	
18.2	+16.83	−42.32	−42.33
		− .01	

0 =	+3.52	+ .19	$n = -.05$	
	+16.03	+2.03	$= -.13$	
			$-.090$	

1876 Mar. 18

Star	RA	δ	tang δ	72 RA
	h			
	6.7	111	+20.75	−41.78
	7.7	401	+3.55	−43.57
	19.8	284	−53.39	−41.83

				I
43.671	43.671	7.8	−53.39	−41.83 −41.82
			+ .01	

$0 = -53.80 + 1.81$ $n = +.03$ $+.030$

17.9	485	−	4.32	−44.29		
6.0	381	+	2.22	−43.96		
6.1	383	+	2.65	−44.01		
18.2	256	−	16.83	−44.44		
7.7	401	+	3.55	−43.79		
20.5	504	−	3.61	−44.41		
17.9 ×	485	+	4.32	−44.54		
18.2 ×	256	+	16.83	−42.32		
					I	II
5.9	−4.32			−44.29	−44.31	−44.32
				− .02	− .03	
6.2	−16.83			−44.44	−44.46	−44.46
				− .01	− .02	
8.5	−3.61			−44.41	−44.37	−44.38
				+ .04	+ .03	

0 =	−4.38	− .30	$n = -.07$	
	−16.81	− .44	$-.03$	
	−3.67	− .36	$-.10$	
			$-.067$	

0 =	−5.68	− .27	$n = -.05$	
	−18.19	− .41	$-.02$	
	−4.97	− .33	$-.07$	
			$-.047$	

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Sin β = +.60 +.80 +.40 +.60 +.20 +.40 +0 +.20 0 −.20 −.20 −.40 −.40 −.60 −.60 −.80

R.A.	tan δ	sin z	cos z	R_{eq}	R_{fc}	R_{fc}	R_{eq}
h							
6.9 +	.38	+.37		+2′ 7.0 ✓	+0.9		+2′ 7.9
~~7.4 +~~	~~.63~~	~~+.18~~		✓	~~+0.4~~		
7.5 +	.10	+.60		5.8 ✓	+1.4		7.2
7.6 +	.54	+.24		6.9 ✓	+0.6		7.5 7.53

		+.60	+5.8	+.37	+7.0	
				+.24	6.9	
3	2259					
3	2850	+.60	+5.8	+.30	+6.9	
6	5109		+1.4		+.7	
			+7.2		+7.6	
+2′	8″50	(6)	72′		152″	
	8.51		+1.3		+0.9	

R.A.	tan δ	sin z	cos z	R_{eq}	R_{fc}	R_{fc}	R_{eq}
h							
6.7	+20.75	−.71		+2′ 12.0 ✓	−1.8		+2′ 10.2
7.7	+ 3.55	−.53		10.0 ✓	−1.3		8.7
19.8	−53.39	−.75		11.5 ✓	−1.9		9.6 9.50

~~7.8~~	~~−41.83~~						
	−.53	+10.0	−.71	+12.0			
			−.75	11.5			
	−.53	+10.0	~~−.73~~	+11.7			
		− 1.2		−1.8			
		+8.8		+9.9			
		88′		198″	510		
		−.3		−1.4			

5.4	− .01	+.68		+2′ 8.5 ✓	+1.7	+	10.2
5.5	− .05	+.71		7.8 ✓	+1.5		9.6
5.8	+ .13	+.57		7.6 ✓	+1.4		9.0
5.8	+ 1.00	−.05		8.5 ✓	−0.1		8.4
6.1	+ 1.67	−.29		9.4 ✓	−0.7		8.7
7.5	+ .10	+.60		7.8 ✓	+1.4		9.2
7.6	+ .54	+.24		7.7 ✓	+0.6		8.3
8.2	+ .95	−.02		7.3 ✓	−0.1		7.2
8.3	+ 1.81	−.32		8.4 ✓	−0.8		7.6
8.6	+ .34	+.40		8.0 ✓	+1.0		9.0
8.7	+ .12	+.58		6.6 ✓	+1.4		8.0 8.65
18.5	+ .80	+.06		8.9 ✓	+0.2		9.1 9.10

R.A.	tan δ	sin z	cos z	R_{eq}	R_{fc}	R_{fc}	R_{eq}	
h								
17.9	− 4.32	−.87		+2′ 11.0 ✓	−2.2	+	2 8.8	
6.0	+ 2.22	−.40		9.1 ✓	−1.0	+	8.1	
6.1	+ 2.65	−.45		8.9 ✓	−1.1		7.8	
18.2	− 16.83	−.78		~~9.8~~ 10.1 ✓	−2.0		7.8	
7.7	+ 3.55	−.53		9.1 ✓	−1.3		7.8	
20.5	− 3.61	−.89		11.0 ✓	−2.2		8.8	
~~17.9~~	~~+ 4.32~~	~~−.67~~			~~−1.6~~	×		
18.2	+16.83	−.78		10.~~19~~ ✓	−1.8	×	8.3	

7.88

830

1	910																
1	830																
2	1740	+.68	+8.5	+.57	+7.6	+.24	+7.7	+.06	+8.9	−.05	+8.5	−.29	+9.4	−.40	+9.1	−.78	+9.8
	8.70	+.71	7.8	+.40	8.0					−.02	7.3	−.32	8.4	−.45	8.9	−.70	10.1
		+.60	7.8	+.58	6.6									−.53	9.1		
11	9515																
4	3752	+.66	+8.0	+.52	+7.4	+.24	+7.7	+.06	+8.9	−.03	+7.9	~~−.30~~	+8.9	−.46	+9.0	−.74	+10.0
15	12667		+1.6		+1.2		+.6		+.1		−.1		−.7		−1.1		−1.8
			+9.6		+8.6		+8.3		+9.0		+7.8		+8.2		+7.9		+8.2
+2′	8″17	(17)	288		258		83′		90″		156		164		237		164	1440
	8.44		−1.1		−.1		+.2		−.5		+.7		+.3		+.6		+.3	

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1876 Mar. 21 h = -.021 +.004 +.017

Star	RA	δ	tang δ	sec δ	π-RA		n = -.01	c = -.06		Star
	h				°					45.180 45.160
	7.3 +1.0	398	+ .62	+1.18	-45.12	-.01	-.07		+.00	-45.20
	7.4	119	+ .63	1.18	-45.04	-.01	.07		00	.12
7.40	7.5 0.8	120	+ .10	1.00	-45.10	-.00	.06		00	.16
	8.1 0.2	123	+ .17	1.01	-45.10	-.00	.06		00	.16
	8.2 0.1	407	+ .95	1.37	-45.14	-.01	.08		00	.23
	8.3 +0.0	125	+ 1.81	2.07	-44.98	-.02	.12		00	.12
	8.6 -0.3	126	+ .34	1.06	-45.11	-.00	.06		00	.17
	9.1 0.8	134	+ .05	1.00	-45.13	-.00	.06		00	.19
8.58	9.2 -0.7	135	+ .76	1.26	-45.09	-.01	-.08		+00	.18
	829									45.175 45.176

7.5 +.10 -45.10
8.1 +.17 45.10
8.6 +.34 45.11
9.1 +.05 45.13
8.3 +.16 -45.11

n = -.04

8.2 +.95 -45.14
8.3 +1.81 -44.98
8.2 +1.38 -45.06

			I	II
8.4	+3.50	-44.875	-44.875	-44.875
		+ .00	+ .00	
9.0	+2.43	-45.08	-45.07	-45.06
		+ .01	+ .02	

0 = +3.34 + .26 n = -.08
+2.27 + .04 -.02
-.050

0 = +2.12 + .21 n = -.10
+1.05 + .00 -.00
-.050

1876 Mar. 21

Star	RA	δ	tang δ	π-RA
	h			°
19.5	497	-5.32	-45.55
20.2	502	-4.45	-45.50
8.4	410	+3.50	-44.875
20.5	504	-3.61	-45.44
9.0	415	+2.43	-45.08

			I	II
7.5	-5.32	-45.55	-45.57	-45.56
		- .02	- .01	
8.2	-4.45	-45.50	-45.50	-45.50
		- .00	.00	
8.5	-3.61	-45.44	-45.44	-45.43
		+ .00	+ .01	

0 = -5.48 - .46 n = -.08
-4.61 - .39 -.08
-3.77 - .33 -.09
-.083

0 = -6.70 - .50 n = -.07
-5.83 - .44 -.08
-4.99 - .37 -.087
-.073

1876 Mar. 22 h = -.022 -.035 n = -.06

h' = -.033

	RA	δ	tang δ	π-RA				
	5.40						46.570	
	5.4	93	- .01	-45.98	+00		-45.98	
	18.5 +1.2	260	+ .80	-46.53	-05	-04	46.58	46.62
19.10	19.7 0.0	277	+ .18	-46.55	-01	+00	.56	.56
	19.7 +0.0	280	+ .15	-46.55	-01	+00	.56	.56
	19.8 -0.1	283	+ .11	-46.55	-01	+00	.56	.56
20.03	20.6 -0.9	294	+ .99	-46.63	-06	+.03	.69	.66
	19.66						46.603 46.590	46.592

5.4 -.01 -45.98

18.2 × 256 +16.83 -45.42

19.7 +.15 -46.55

18.2 +16.83 -45.54 III -45.57
- .03

0 = +16.68 + .98 n = -.06
-.060

1876 Mar. 27 h = -.017 -.019 -.028 n = -.25

h' = -.039

	RA	δ	tang δ	π-RA				
	5.80							
	5.8	102	+ .13	-48.94	-03		-48.97	
	18.5 +1.0	260	+ .80	-49.16	-.20	-.03	49.36	49.39
	20.6 -1.1	294	+ .99	-49.25	-.25	+.03	.50	.47
	19.55						49.430	49.430

18.2 × 256 +16.83 -45.20

5.8 +.13 -48.94

18.2 +16.83 -45.20 III -45.23
- .03

19.6 +.90 -49.20

0 = +15.93 + 3.97 n = -.25
-.250

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Sin z = +.60 +.80 +.40 +.60 +.20 +.40 0 +.20 0 -.20 -.20 -.40 -.40 -.60 -.60 -.80

R.A.	tan δ	sin z	cos z						R.A.	tan δ	sin z	cos z			
h									h						
7.3	+.62	+.18		+2' 4".9 ✓	+0.4	+ 2 5.3			19.5	-5.32	-.85		+2' 9".3 ✓	-2.1	+ 2' 7.2
~~7.4~~	~~+.63~~	~~+.18~~		— ✓	~~+0.4~~				20.2	-4.45	-.87		8.1 ✓	-2.2	5.9
7.5	+.10	+.60		6.4 ✓	+1.4	7.8			8.4	+3.80	-.53		9.2 ✓	-1.3	7.9
8.1	+.17	+.54		7.1 ✓	+1.3	8.4			20.5	-3.61	-.89		9.6 ✓	-2.2	7.4
8.2	+.35	-.02		7.6 ✓	-0.0	7.6			9.0	+2.43	-.43		7.2 ✓	-1.0	6.2
8.3	+1.81	-.32		7.2 ✓	-0.8	6.4									7.05
8.6	+.34	+.40		6.8 ✓	+0.9	7.7									
9.1	+.05	+.64		5.8 ✓	+1.6	7.4									
9.2	+.76	+.09		6.2 ✓	+0.2	6.4	7.12								

		+.60	+6.4	+.54	+7.1		+.18	+4.9	-.02	+7.6	-.32	+7.2	-.53	+9.2	
		+.64	5.8	+.40	6.8		+.09	6.2					-.43	7.2	
8	96														
2	10	+.62	+6.1	+.47	+7.0		+.13	+5.5	-.02	+7.6	-.32	+7.2	-.48	+8.2	
10	106		+1.5		+1.1			+.3		-.0		-.8		-1.1	
			+7.6		+8.1			+5.8		+7.6		+6.4		+7.1	
	+2' 7".12	(10)	152^2		162^2			116^2		$76'$		$64'$		142^2	712
	7.11		-.5		-1.0			+1.3		-.5		+.7		-.0	

5.4	-.01	+.68		+2' 6".6 ✓	+1.6	+ 2 8.2	8.20		18.2	+16.83	-.70		+2' 10".4 ✓	-1.7	+ 2 8.7 ~~8.70~~
18.5	+.80	+.06		7.4 ✓	+0.1	7.5									
19.7	+.18	+.53		6.3 ✓	+1.3	7.6									
19.7	+.15	+.56		6.2 ✓	+1.3	7.5									
19.8	+.11	+.59		5.8 ✓	+1.4	7.2									
20.6	+.99	-.04		7.6 ✓	-0.1	7.5	7.46								8.70

~~1~~ ~~20~~	5 230														
~~+ 70~~	1 170														
	6 400														
~~2 90~~	~~845~~	+.68	+6.6	+.53	+6.3		+.06	+7.4	-.04	+7.6			-.70	+10.4	
	467			+.56	6.2										
				+.69	5.8										
5	220														
1	8.20	+.68	+6.6	+.56	+6.1		+.06	+7.4	-.04	+7.6			-.70	+10.4	
			+1.6		+1.3			+.1		-.1				-1.7	
			+8.2		+7.4			+7.5		+7.5				+8.7	
	+2' 7".73	(7)	$82'$		222^3			$75'$		$75'$				57	541
	~~746~~		-.5		+.3			+.2		+.2				-1.0	
	~~8.20~~														
	8.20														

5.8	+.13	+.57		2' 7".5 ✓	+1.4	+ 2 8.9	8.90		~~18.2~~	~~+16.83~~	~~-.70~~		✓	-1.7	
18.5	+.80	+.06		4.9 ✓	+0.1	5.0									
20.6	+.99	-.04		6.5 ✓	-0.1	6.4	5.70								
	5".70														
	~~8.90~~														
2	140														
+ 2	~~570~~														
	8.90														

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1876 Mar. 29 $h = +.0121 - .231$

Star	Ra	δ	tang δ sec δ	π	Ra	n = −.18 e = −.10				Star	Ra	δ	tang δ	π	Ra		
	h				°						h				°		
	8.9	+0.7	138	+ 1.10	+1.49	−49.76	− .20	−.15	−.02	50.11	9.0	415	+ 2.43		−49.48	−.56	50.04
	9.3	0.3	138	+ .41	1.01	−50.02	+ .03	.10	−.01	.09	9.3	137	+ 7.01		−47.45	−.08	.14
	9.4	0.2	140	+ 1.29	1.63	−49.75	− .23	.16	−.01	.14	9.5	420	+ 2.72		−49.32		.95
	9.6		141	+ .19	1.02	−50.26	− .03	.10	00	.39	18.2 ×	256	+ 16.83		−46.21		.25
9.30	9.6	+0.0	142	+ .45	1.10	−49.92	− .08	.11	00	.11	18.4 ×	259	+ 3.21		−49.36		.10
	9.7	0.1	143	+ 1.70	1.98	−49.52	− .31	.20	00	.03							
	9.7	0.1	144	+ .50	1.12	−49.88	− .04	.11	00	.08							
	9.8	0.2	422	+ .89	1.33	−49.74	− .16	.13	+.01	.03							
	9.9	0.3	423	+ .15	1.01	−49.96	− .03	.10	+.01	.09							
9.82	10.0	0.4	146	+ .22	1.02	−49.88	− .04	.10	+ .01	.02							
	9.59							n = −.24		50.050							
h' = −.013	18.5	+ .8	260	+ .80	1.28	−49.98	− .19	−.13	−.01	50.078							
	19.7	− .4	277	+ .18	1.02	−50.07	− .04	−.10	+.01								
	19.7	− .4	280	+ .15	1.01	−50.20	− .04	−.10	+.01								
	19.30																

									I + II	50.260	50.283								
9.3	−.14	−5002		9.0	+ 2.43	−49.48			−49.48										
9.6	+.19	5026																	
9.9	+.15	4996		9.3	+ 7.01	−47.45			−47.45	−.08									
10.0	+.22	49.88				−49.53													
9.7	+.10	−5005		9.5	+ 2.72	−49.32			−49.32										
9.7	n = −.29	5008																	
	.08	49.95		0 =	+ 2.33	+ .55	n = −.24												
8.9	+.10	−49.76			+ 6.91	+ 2.56	.08	−.32											
9.4	+.129	49.75			+ 2.62	+ .71		−.27											
9.7	+.170	4952						−.255											
9.8	+.89	49.74		0 =	+ 1.19	+ .21	n = −.18												
9.4	+.124	−49.69			+ 5.77	+ 2.24	.08	−.32											
					+ 1.48	+ .37		−.23											
								III −.215											
19.3	+.38	−5008		18.2	+ 16.83	−46.21			−46.21										
				18.4	+ 3.21	−49.36			−49.36										
				0 =	+ 16.45	+ 3.87	n = −.24												
					+ 2.83	+ .72		−.23											
								−.245											

1876 Mar. 30 $h = -.031 - .017$ $n = -.10$ $e = -.10$

	8.0	+1.3	405	+ 1.27	1.62	−49.03	−.97	−50.00	−.13	−.02	−.16	50.29	50.31	19.8	284	− 53.39	53.39	− 95.42	+ 32.03	− 62.39			
	8.2	1.1	407	+ .95	1.38	−49.36	−.83	−50.19	.10	.02	−.14	.43	.45	20.2	502	− 4.45	4.56	− 53.92	+ 2.74	− 51.18			
	8.6	0.7	126	+ .34	1.06	−49.63	−.64	−50.27	.03	−.01	−.11	.41	.42	8.4	410	+ 3.50	3.64	− 47.60	− 2.18	− 49.78			
8.48	9.1	+0.2	134	+ .85	1.00	−49.73	−.60	−50.33	.01	+.00	−.10	.44	.44	20.5	504	− 3.61	2.56	− 52.88	+ .54	− 51.34			
	9.4	−0.1	140	+ 1.29	1.63	−49.17	−.98	−50.15	.13	.00	−.16	.44	.44	9.0	415	+ 2.43	2.62	− 48.31	− .57	− 49.88			
	9.6	0.3	141	+ .19	1.02	−49.68	−.61	−50.29	.02	.01	−.10	.41	.40	9.3	137	+ 7.01	7.07	− 44.44	− 4.24	− 48.68	−.08		
	9.6	0.3	142	+ .45	1.10	−49.60	−.66	−50.26	.04	.01	−.11	.41	.40	21.5	308	− 2.75	2.92	− 52.81	+ 1.75	− 51.06			
	9.7	0.4	144	+ .50	1.12	−49.58	−.67	−50.25	.05	.01	−.11	.41	.40	9.5	420	+ 2.72	2.90	− 48.29	− 1.74	− 50.03			
	9.8	0.5	422	+ .89	1.34	−49.44	−.80	−50.24	.09	.01	−.13	.46	.45	21.7	516	− 2.86	3.03	− 53.65	+ 1.82	− 51.83			
	9.9	0.6	423	+ .15	1.01	−49.65	−.61	−50.26	.02	.01	−.10	.38	.37	9.8	421	+ 3.37	3.52	− 47.67	− 2.11	− 49.78			
9.71	10.0	−0.7	146	+ .22	1.02	−49.65	−.61	−50.26	.02	+.01	−.10	.38	.37						I	II			
	9.26									50.405		50.413		50.405	7.8	−53.39							
h' = −.024	19.7	+ .0	280	+ .15	1.01	−49.84	−.61	−50.45	.02	.00	−.10	.57					− .04	− .02					
19.75	19.8	− .1	283	+ .11	1.01	−49.82	−.61	−50.43	.01	.00	−.10	.54			8.2	− 4.45	− 53.92	− 53.95	− 53.93				
	19.75											50.555		50.555			− .03	− .01					
	sec δ																						
									I	II					8.5	− 3.41	− 52.88	− 52.90	− 52.89				
9.1	+.05	102	49.73	−.60	8.4	+ 3.50	− 47.60	− 47.63	− 47.61								− .02	− .01					
9.6	+.19	102	49.68	−.61			− .03	− .01							9.5	− 2.75	− 52.81	− 52.81	− 52.79				
9.9	+.15	101	49.65	−.61	9.0	+ 2.43	− 48.31	− 48.32	− 48.31								− .03	+ .02					
10.0	+.22	102	49.65	−.61			− .01	+ .00							9.7	− 2.86	− 53.65	− 53.65	− 53.63				
9.6	+.22	15	49.68		9.3	+ 7.01	− 44.44	− 44.45	− 44.43								+ .00	+ .02					
		101					− .01	+ .01															
					9.5	+ 2.72	− 48.29	− 48.29	− 48.27														
8.0	+.12	102	49.03	−.97			− .00	+ .02															
8.2	+.95	138	49.36	−.83	9.8	+ 3.37	− 47.67	− 47.67	− 47.65														
9.4	+.29	163	49.17	−.98			+ .00	+ .02															
9.8	+.89	134	49.44	−.80																			
8.8	+.10		49.25																				
	1.49																						

See next page for the equations for n.

19.8 +.13 −49.83

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sin z = | +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. h	tan δ	sin z cos z						R.A.	tan δ sin z cos z				
8.9	+ 1.10	−.09	+2′	8″.3	− 0.2	+2′ 8″.1		~~9.0~~	~~+ 2.48 −.43~~	~~+2′~~	~~″ − 1.0~~	~~+2′ ″~~	
9.3	− .14	+.77		5.1	+ 1.9	7.0		9.3	+ 7.01 −.64		9.4 − 1.5	+2 7.9	
9.4	+ 1.29	−.17		7.1	− 0.4	6.7		9.5	+ 2.72 −.46		9.1 − 1.1	8.0	
9.6	+ .19	+.53		5.7	+ 1.3	6.7		~~18.2~~	~~+ 16.83~~		×		
9.6	+ .45	+.31		7.1	+ 0.7	7.8		18.4	+ 3.21 −.50		9.1 − 1.2	× 7.9	~~7.93~~
9.7	+ 1.70	−.30		8.0	− 0.7	7.3						7.95	
9.7	+ .50	+.27		6.0	+ 0.6	6.6							
9.8	+ .89	+.01		8.4	+ 0.0	8.4							
9.9	+ .15	+.55		5.5	+ 1.3	6.8						7.90	
10.0	+ .22	+.50		0.2	+ 1.1	1.3	7.27						
18.5	+ .80	+.06		4.4	+ 0.1	4.5							
19.7	+ .18	+.53		4.8	+ 1.2	6.0							
19.7	+ .15	+.56		4.0	+ 1.3	5.3	5.27						

3	1581																		
1	795	+.77	+5.1	+.53	+5.7	+.31	+7.1	+.01	+8.4	−.09	+8.3	−.30	+8.0	~~−.45~~		−.64	+9.4		
4	2376			+.55	5.5	+.27	6.0	+.06	4.4	−.17	7.1			−.46	+9.1				
	5″.94			+.50	0.2									−.50	9.1				
				+.53	4.8														
				+.56	4.0														
9	243																		
2	190																		
11	433	+.77	+5.1	+.54	5.0	+.29	+6.5	+.01	+8.4	−.13	+7.8	−.30	+8.0	−.48	+9.1	−.64	+9.4		
			+1.9		+1.3		+.7		+ .0		−.3		−.7		−1.1		−1.5		
	2′ 7″.23	14	+7.0		+6.3		+7.2		+8.4		+7.5		+7.3		+8.0		+7.9	1012	
	~~6″.93~~	(18)	7.0		252		144		84		150		73		160		79	~~972~~	
	7.39		+.2		+.9		0.0		−1.2		−.3		−.1		−.8		−.7		

R.A.	tan δ	sin z cos z						R.A.	tan δ sin z cos z				
8.0	+1.27	−.17	+2′	7″.1	− 0.3	+2 6.8		19.8	− 53.39 −.75	+2′	10″.8	− 1.9	+2 8.9
8.2	+ .95	−.02		6.6	0.0	6.6		20.2	− 4.45 −.87		12.5	− 2.1	10.4
8.6	+ .34	+.40		6.8	+ 0.9	7.7		8.4	+ 3.50 −.53		9.7	− 1.3	8.4
9.1	+ .05	+.64		6.9	+ 1.5	8.4		20.5	− 3.61 −.89		10.4	− 2.1	8.3
9.4	+1.29	−.17		6.0	− 0.3	5.7		9.0	+ 2.43 −.43		9.3	− 1.1	8.2
9.6	+ .19	+.53		6.1	+ 1.2	7.3		9.3	+ 7.01 −.64		9.6	− 1.6	8.0
9.6	+ .45	+.31		7.0	+ 0.6	7.6		21.5	− 2.75 −.92		10.3	− 2.2	8.1
9.7	+ .50	+.27		7.5	+ 0.6	8.1		9.5	+ 2.72 −.46		9.3	− 1.1	8.2
9.8	+ .89	+.01		6.8	+ 0.0	6.8		21.7	− 2.86 −.92		11.9	− 2.2	9.7
9.9	+ .15	+.55		4.7	+ 1.2	5.9		9.8	+ 3.37 −.52		8.8	− 1.3	7.5
10.0	+ .22	+.50		12.2	+ 1.1	13.3	7.09						8.20
19.7	+ .15	+.56		5.8	+ 1.2	7.0							
19.8	+ .11	+.59		6.0	+ 1.3	7.3	7.15						

2	30																		
	7″.15	+.64	+6.9	+.40	+6.8	+.31	7.0	+.01	+6.8	−.17	+7.1			−.53	+9.7	−.75	+10.8		
				+.53	6.1	+.27	7.5			−.02	6.6			−.43	9.3	−.64	9.6		
				+.55	4.7					−.17	6.0			−.46	9.3				
10	7090			+.50	12.2									−.52	8.8				
6	4920																		
16	12010	+.64	+6.9	+.49	+5.9	+.29	+7.2	+.01	+6.8	−.12	+6.8			−.48	+9.3	−.69	+10.2		
			+1.5		+1.1		+.7		+ .0		− .3				−1.1		−1.7		
			+8.4		+7.0		+7.9		+6.8		+6.5				+8.2		+8.5		
	+2′ 7″.58	16 (~~17~~)	84		210		158		68		195				328		170	1213	
	7.51		−.8		+.6		−.3		+.8		+1.1				−.6		−.9		

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1876 Apr. 2 $h = -.026$ −.03̸7̸6 28 −.037

Star	Ra		δ	tang δ	T−Ra	$n = -.22$ ⊕ = .00				
	h				φ				51.829	
	5.84	2.9	102	+ .13	−51.72	− .03	50	−.10	−51.75	51.85
	6.5	2.2	107	+ .30	−51.72	− .07		08	.79	.87
	6.6	2.1	109	+ .47	−51.74	− .10		08	.84	.92
	7.5	1.2	120	+ .10	−51.85	− .02		04	.87	.91
	7.6	1.1	122	+ .54	−51.71	− .12		04	.83	.87
	8.0	0.7	405	+ 1.27	−51.54	− .28		03	.82	.85
7.17	——8.2	0.5	407	+ .95	−51.69	− .21		02	.90 **	.92
	8.6	0.1	126	+ .34	−51.83	− .07		00	.90	.90
	8.7	+0.0	128	+ .12	−51.81	− .03		−00	.89	.89
	8.8	−0.1	130	+ 1.13	−51.65	− .25		+00	.90	.90
	8.9	0.2	133	+ 1.10	−51.65	− .24		+01	.89	.88
	9.1	0.4	134	+ .05	−51.85	− .01		01	.86	.85
	9.2	0.5	135	+ .76	−51.73	− .17		02	.90	.88
	9.3	0.6	138	− .14	−51.90	+ .03		02	.87	.85
	9.4	0.7	140	+ 1.29	−51.63	− .28		03	.91	.88
	9.6	0.9	141	+ 1.9	−51.90	− .04		03	.94	.91
	9.6	0.9	142	+ .45	−51.85	− .10		03	.95	.92
	9.7	1.0	143	+ 1.70	−51.56	− .37		04	.93+04	.85
	9.7	1.0	144	+ .50	−51.78	− .11		04	.89	.85
	9.8	1.1	422	+ .86	−51.77	− .20		04	.97	.93
	9.9	1.2	423	+ .15	−51.91	− .03		04	.94	.90
9.35 —	10.0	−1.3	146	+ 1.27	−51.86	− .05		+05	.91	.86
	8.66								51.910 51.907	

1876 Apr. 2

Star	Ra	δ	tang δ	T−Ra
	h			φ
	18.2	256	−16.83	−55.23
	18.4	259	−3.21	−52.33
	6.7	111	+20.75	−46.78⁰
	7.7	401	+3.55	−51.09 13
	19.8	284	−53.39	−62.14
	8.4	410	+3.50	−51.09
	20.5	504	−3.61	−52.88
	21.7	516	−2.86	−52.39
	9.8	421	+3.37	−50.99

							I	II		
5.8	+.13	−51.72	6.7	+20.75	−46.78 0	−46.78 5	−46.77 6	51.886	51.884	
6.5	+.30	51.72			− .05	− .06				
7.5	+.10	51.85	7.7	+3.55	−51.09 13	−51.14 5	−51.12 6			
8.7	+.12	51.86			− .02	− .03				
9.1	+.05	51.85	8.4	+3.50	−51.09	−51.09	−51.10			
9.3	−.14	51.90			− .00	− .01				
9.6	+.19	51.90	9.8	+3.37	−50.99	−50.95	−50.96			
9.9	+.15	51.91			+ .04	+ .03				
10.0	+.22	51.86								
8.5	+.12	−51.84								

	I	II		
6.2	−16.83	−55.23	−55.29	−55.30
		− .06	− .07	
6.4	−3.21	−52.33	−52.39	−52.40
		− .06	− .07	
7.8	−53.39	−62.14	−62.16	−62.17
		− .02	− .03	
8.5	−3.61	−52.88	−52.88	−52.89
		− .00	− .01	
9.7	−2.86	−52.39	−52.36	−52.36
		+ .03	+ .03	

$n = -.19$ −.01

8.0	+1.27	−51.54
8.2	+.95	51.69
8.8	+1.13	51.65
8.9	+1.10	51.65
9.4	+1.29	51.63
9.7	+1.70	51.56
8.8	+1.24	−51.62

$0 = +20.63 + 5.08$ $n = -.25$
$+3.43 + .73$ 69 $-.21$ 0
$+3.38 + .75$ $-.22$
$+3.25 + .89$ $-.27$
$-.247$ 35

$0 = +19.51 + 4.85$ $n = -.25$
$+2.31 + .50$ 46 $-.21$ 0
$+2.26 + .52$ $-.23$
$+2.13 + .66$ $-.31$
$-.248$

$0 = -16.95 - 3.45$ $n = -.20$
$-3.33 - .55$ $-.17$
$-53.51 - 10.32$ $-.19$
$-3.73 - 1.04$ $-.28$
$-2.98 - .52$ $-.17$
$-.202$

$0 = -18.07 - 3.68$ $n = -.20$
$-4.45 - .78$ $-.18$
$-54.63 - 10.55$ $-.19$
$-4.85 - 1.27$ $-.26$
$-4.10 - .74$ $-.18$
$-.202$

$n_5 = -.45$

1876 Mar 30

$0 = +3.35 + 2.05$ $n = -.61$ n_1 −61
$+2.28 + 1.36$ $-.60$ −60
$+6.86 + 5.23$ $-.76$ −76
$+2.57 + 1.37$ $-.54$ −54
$+3.22 + 2.01$ $-.62$ −62
−.63

See End of this book for final values for Mar 30

$0 = -53.54 -$ $n = -$ ✓ n_3
$-4.60 - 4.27$ $-.93$ −93
$-3.76 - 3.22$ $-.86$ −86
$-2.90 - 3.13$ -1.08 −108
$-3.01 - 3.97$ -1.32 −132
−1.05

$0 = +2.40 + 1.64$ $n = -.68$ −68
$+1.33 + .94$ $-.71$ −71
$+5.91 + 4.82$ $-.82$ −82
$+1.62 + .98$ $-.60$ −60
$+2.27 + 1.60$ $-.70$ −70
−.70

$0 = -54.49 -$ $n = -$ ✓ n_4
$-5.55 - 4.68$ $-.84$ −84
$-4.71 - 3.64$ $-.77$ −77
$-3.85 - 3.54$ $-.92$ −92
$-3.96 - 4.38$ -1.11 −111
−.91

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1876phae.proj:1692.

$\sin \zeta$ = +.60 +.80 +.40 +.60 +.20 +.40 0 +.20 0 −.20 −.20 −.40 −.40 −.60 −.60 −.80

h	R.A.	tan δ	sin z	cos z														
5.8	+.13	+.57			+2′ 8.0 ✓	+1.3		+2′ 9.3										
6.5	+.30	+.44			8.0 ✓	+1.0		9.0										
6.6	+.47	+.29			9.5 ✓	+0.6		10.1										
7.5	+.10	+.60			8.6 ✓	+1.3		9.9										
7.6	+.54	+.24			8.2 ✓	+0.5		8.7										
8.0	+1.27	−.17			8.2 ✓	−0.4		7.8										
8.2	+.95	−.02			8.3 ✓	−0.0		8.3										
8.6	+.34	+.40			8.3 ✓	+0.9		9.2										
8.7	+.12	+.58			6.9 ✓	+1.3		7.2										
8.8	+1.13	−.11			6.8 ✓	−0.2		6.6										
8.9	+1.10	−.09			7.5 ✓	−0.2		7.3										
9.1	+.05	+.64			7.2 ✓	+1.5		8.7										
9.2	+.76	+.69			8.3 ✓	+0.2		8.5										
9.3	−.14	+.77			5.5 ✓	+1.8		7.3										
9.4	+1.29	−.17			7.2 ✓	−0.4		6.8										
9.6	+.19	+.53			6.8 ✓	+1.2		8.0										
9.6	+.45	+.31			9.5 ✓	+0.7		10.2										
9.7	+1.70	−.30			8.4 ✓	−0.6		7.8										
9.7	+.50	+.27			7.6 ✓	+0.6		8.2										
9.8	+.89	+.01			7.3 ✓	+0.0		7.3										
9.9	+.15	+.55			6.7 ✓	+1.2		7.9										
10.0	+.22	+.50			7.4 ✓	+1.1		8.5	8.30									
18.2		−16.83	−.78		+2′ 8.0 ✓	−1.9		+2′ 6.1										
18.4		− 3.21	−.91		+ 12.3 ✓	−2.2		10.1										
6.7		+ 20.75	−.71		10.9 ✓	−1.8		9.1										
7.7		+ 3.55	−.53		10.3 ✓	−1.3		9.0										
~~19.8~~		~~−53.39~~	~~−.75~~		— ✓	~~−1.9~~												
8.4		+ 3.50	−.53		10.0 ✓	−1.3		8.7										
20.5		− 3.61	−.89		11.3 ✓	−2.1		9.2										
21.7		− 2.86	−.92		10.7 ✓	−2.2		8.5										
9.8		+ 3.37	−.52		11.1 ✓	−1.3		9.8										
									8.54									

		+.60	+8.6	+.57	+8.0	+.29	+9.5	+.09	+8.3	−.17	+8.2	−.30	+8.4	−.53	+10.3	−.78	+8.0 ✓	
		+.64	7.2	+.44	8.0	+.24	8.2	+.01	+7.3	−.02	8.3			−.53	10.0	−.71	10.9	
		+.77	5.5 ✓	+.40	8.3	+.31	9.5			−.11	6.8			−.52	11.1			
				+.58	8.9	+.27	7.6			−.09	7.5							
				+.53	6.8					−.17	7.2							
				+.55	6.7													
				+.50	7.4													
22	660															−.71	10.9	
5	270	+.672	79	+.51	+7.3	+.28	+8.6	+.05	+7.8	−.11	+7.6	−.30	+8.4	−.53	+10.5	~~−.788~~	~~+9.5~~	
27	930		+ 1.68		+ 1.2		+ .7		+ .1		− .3		− .7		− 1.2		−1.87	
			+9.4		+8.6		+9.3		+7.9		+7.3		+7.7		+9.3		+9.72	
	+2′ 8.50	(25)	188.92		595.7		372.4		158.2		365.5		77		279.3		91.81	2125.6
	8.34		− .9		0.0		− .8		+ .6		+ 1.2		+ .8		− .8		− .67	

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1876 Apr. 6 h = -.023 +.007
+.011 24

Star	Ra	δ	tang δ	τ-Ra	n = -.09 c = .00			54.380	
	h			s					
	8.2 +1.2	407	+ .95	-54.32	- .09		+.01	-54.41	54.40
	8.7 0.7	128	+ .12	-54.34	- .01		00	.35	.35
	8.9 0.5	133	+1.10	-54.29	- .10		00	.39	39
	9.1 0.3	134	+ .05	-54.40	- .00		00	.40	40
	9.3 0.1	138	- .14	-54.44	+ .01		00	.43	.43
8.93 —	9.4 +0.0	140	+1.29	-54.18	- .12		00	.30 —	.30
	9.6 -0.2	141	+ .19	-54.35	- .11		00	.46	.46
	9.7 0.3	143	+1.70	-54.18	- .15	+.04	00	.33 +.04	29
	9.7 0.3	144	+ .50	-54.28	- ~~.13~~ .04		00	.32	.32
	9.8 0.4	422	+ .89	-54.29	- .08		00	37	.37
	9.9 0.5	423	+ .15	-54.39	- .01		00	40	.40
	10.0 0.6	146	+ .22	-54.40	- .02		00	.42	.42
9.83 —	10.1 -0.7	147	+ .95	-54.27	- .09		+.00	36	36
	9.42							~~54.380~~	
								54.374	
								54.377	54.376

Star	Ra	δ	tang δ	τ-Ra
	h			
	20.2	502	-4.45	-54.14
	8.4	410	+3.50	-53.85 7
	21.7	516	-2.86	-54.70
	22.1	521	-3.03	-54.75

I+II

8.2 -4.45 -54.14 -54.17
9.7 -2.86 -54.[illegible] + .01 -54.69
10.1 -3.03 -54.75 + .02 -54.73

8.7 +.12 -54.34
9.1 +.05 54.40
9.3 -.14 54.44
9.6 +.19 54.35
9.9 +.15 54.39
10.0 +.22 54.40
9.4 +.10 -54.39
n = -.13
8.2 +.95 -54.32
8.9 +1.10 54.29
9.4 +1.29 54.18
9.7 +1.70 54.18
10.1 +.95 54.27
9.3 +1.20 -54.25

8.4 +3.50 -53.85 7 I+II -53.87 5
- .02

0 = +3.40 + .52 4 n = -.15 6
-.160

0 = +2.30 + .38 40 n = -.18 7
-.170

0 = -4.55 + .22 n = +.05
-2.96 - .30 -.10
-3.13 - .34 -.11
-.053

0 = -5.65 + .08 n = +.01
-4.06 - .44 -.11
-4.23 - .48 -.11
-.070

1876 Apr. 9 h = -.023 -.043
-.046

n = -.12 c = .00

	Ra	δ	tang δ	τ-Ra			55.983 / ~~55.837~~	
	8.1 +1.2	123	+ .17	-55.92	- .02	-.05	-55.94	55.99
	8.3 1.0	125	+1.81	-55.71	- .22	04	.93	5.97
	8.7 0.6	128	+ .12	-56.00	- .01	03	56.01	6.04
	8.8 0.5	130	+1.13	-55.80	- .14	02	55.94	5.96
	8.9 0.4	133	+1.10	-55.87	- .13	02	56.00	6.02
	9.1 0.2	134	+ .05	-55.96	- .01	01	55.97	5.98
	9.2 0.1	135	+ .76	-55.91	- .09	+00	56.00	6.00
8.80 —	9.3 0.0	139	+2.01	-55.84	- .24	00	.08	6.08
	9.3 +0.0	138	- .14	-56.08	+ .02	00	.06	6.06
	9.4 -0.1	140	+1.29	-55.86	- .15	+00	.01	6.01
	9.6 0.3	141	+ .19	-56.00	- .02	01	.02	6.01
	9.6 0.3	142	+ .45	-55.94	- .05	01	55.99	5.98
	9.7 0.4	143	+1.70	-55.82	- .20	02	56.02 +.04	5.96
	9.7 0.4	144	+ .50	-55.94	- .06	02	.00	5.98
	9.8 0.5	422	+ .89	-55.92	- .11	02	.03	6.01
	9.9 0.4	423	+ .15	-56.01	- .02	02	.03	6.01
9.67 —	10.0 -0.7	146	+ .22	-56.03	- .03	+03 (56.020)	.06	6.03
h' = -.023	19.7 +0	280	+ .15	-56.29	- .02	00 (56.003)	.31	6.31 56.005
	19.8 19.75	283	+ .11	-56.29	- .01	00	.30	6.30
	9.26						56.244	
							.30 50	56.305

	Ra	δ	tang δ	τ-Ra		
	20.2	502	-4.45	-56.32 +.54		-55.78
	9.0	415	+2.43	-55.66 -.17		55.83
	9.3	137	+7.01	-55.10 -.08 .84		56.02
	21.5	368	-2.75	-56.27 +.33		55.94
	9.5	420	+2.72	-55.77 -.32		56.09
	21.7	516	-2.86	-56.36 +.34		56.02
	9.8	421	+3.37	-55.46 -.40		55.86
						-55.92

I+II
8.2 -4.45 -56.32 -56.34
- .02
9.5 -2.75 -56.27 -56.26
+ .01
9.7 -2.86 -56.36 -56.35
+ .01

8.1 +.17 -55.92
8.7 +.12 -56.00
9.1 +.05 -55.96
9.3 -.14 -56.08
9.6 +.19 -56.00
9.9 +.15 -56.01
10.0 +.22 -56.03
9.2 +.11 -56.00
n = -.13
8.3 +1.81 -55.71
8.8 +1.13 -55.80
8.9 +1.10 55.87
9.3 +2.01 55.84
9.4 +1.29 55.86
9.7 +1.70 55.82
9.1 +1.51 -55.82

19.8 +.13 -56.29

			I	II
9.0	+2.43	-55.66	-55.66	-55.66
		- .00	- .00	
9.3	+7.01	-55.10 8	-55.10	-55.10
		+ .00	+ .00	
9.5	+2.72	-55.77	-55.76	-55.76
		+ .01	+ .01	
9.8	+3.37	-55.46	-55.45	-55.44
		+ .01	+ .02	

0 = +2.32 + .34 n = -.15
+6.90 + .90 -.08 -.14 3 .12
+2.61 + .24 -.09
+3.26 + .58 5 -.17
-.157 8 -.132

0 = + .92 + .16 n = -.17
+5.50 + .72 -.08 -.13 2
+1.10 21 + .06 -.05
+1.75 56 + .38 -.20
-.138 5

0 = -4.56 - .34 n = -.07
-2.86 - .26 -.09
-2.97 - .35 -.12
-.093

0 = -5.96 - .52 n = -.09
-4.26 - .44 -.10
-4.37 - .53 -.12
-.103

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1876phae.proj.1692.

sin β = +.60 +.80 +.40 +.60 +.20 +.40 0 +.20 0 −.20 −.20 −.40 −.40 −.60 −.60 −.80

R.A.	tan δ	sin z	cos z
h			
8.2	+.95	−.02	
8.7	+.12	+.58	
8.9	+1.10	−.09	
9.1	+.05	+.64	
9.3	−.14	+.77	
9.4	+1.29	−.17	
9.6	+.19	+.53	
9.7	+1.70	−.30	
9.7	+.50	+.27	
9.8	+.89	+.01	
9.9	+.15	+.55	
10.0	+.22	+.50	
10.1	+.95	−.02	

+2′ 6.″8 −0.0 +2 6.8
6.5 +1.2 7.7
6.8 −0.2 6.6
7.5 +1.4 8.9
6.1 +1.8 7.9
7.6 −0.4 7.2
6.6 +1.2 7.8
8.5 −0.6 7.9
7.4 +0.6 8.0
7.6 +0.0 7.6
7.1 +1.3 8.4
7.6 +1.1 8.7
8.2 −0.0 8.2 7.82

R.A.	tan δ	sin z	cos z
h			
20.2	− 4.45	−.87	
8.4	+ 3.50	−.53	
21.7	− 2.86	−.92	
22.1	− 3.03	−.91	

+2′ 10.″6 −2.0 +2′ 8.″6
9.7 −1.2 +2 8.5
10.0 −2.1 7.9
9.9 −2.1 7.8
8.50

		+.64	+.77	+7.5	6.1	+.58	+.53	+.55	+.50	+6.5	6.6	7.1	7.6	+.27	+7.4
		+.01	+7.6	−.02	−.09	−.17	−.02	+6.8	6.8	7.6	8.2	−.30	+8.5	−.53	+9.7
13	10166														
1	8.50	+.70		+6.8		+.54		+7.0		+.27	+7.4				
14	11016	+.01		+7.6		−.08		+7.3		−.30	+8.5			−.53	+9.7
				+1.7				−.2			−.7				−1.2
				+8.5				+7.1			+7.8				+8.5
+2′	7.86	(141)		170²				328⁴			80¹				76¹
	7.86			−.6				−.3			−.1				+.3
								284⁴			78¹				85¹
								+.8			+.1				+.6

1101

8.1	+.17	+.54				+2′	9.″3	+1.1		+2	10.4				
8.3	+1.81	−.32					9.3	−0.7			8.6				
8.7	+.12	+.58					7.5	+1.2			8.7				
8.8	+1.13	−.11					9.2	−0.2			9.4				
8.9	+1.10	−.09					8.9	−0.2			8.7				
9.1	+.05	+.64					8.1	+1.4			9.5				
9.2	+.76	+.09					7.7	+0.2			7.9				
9.3	+2.01	−.36					9.4	−0.8			8.6				
9.3	−.14	+.77					6.4	+1.8			8.2				
9.4	+1.29	−.17					8.0	−0.4			7.6				
9.6	+.19	+.53					6.5	+1.1			7.6				
9.6	+.45	+.31					7.9	−0.7			8.6				
9.7	+1.70	−.30					9.7	−0.6			9.1				
9.7	+.50	+.27					9.1	−0.6			9.7				
9.8	+.89	+.01					9.0	−0.0			9.0				
9.9	+.15	+.55					7.9	+1.2			9.1				
10.0	+.22	+.50					8.6	+1.1			9.7	8.85			
19.7	+.15	+.56					6.1	+1.2			7.3				
19.8	+.11	+.59					6.2	+1.3			7.5	7.40			

R.A.	tan δ	sin z	cos z
h			
20.2	− 4.45	−.87	
9.0	+ 2.43	−.43	
9.3	+ 7.01	−.64	
21.5	− 2.75	−.92	
9.5	+ 2.72	−.46	
21.7	− 2.86	−.92	
9.8	+ 3.37	−.52	

+2′ 12.″9 −2.0 +2 10.9
10.4 −0.9 9.5
10.3 −1.5 8.8
12.6 −2.1 10.5
9.7 −1.0 8.7
12.2 −2.1 10.1
11.2 −1.1 10.1
9.28

		+.64	+.77	+8.1	6.4	+.54	+.58	+.53	+.55	+.50	+.56	+.59	+9.3	7.5	6.5	7.9	8.6	6.1	6.2
		+.31	+.27	+7.9	9.1	+.09	+.01	+7.7	9.0	−.11	−.09	−.17	+9.2	8.9	8.0	−.32	−.36	−.30	9.7
		−.43	−.46	−.52	+10.4	9.7	11.2	−.64	+10.3										
2	80																		
	7.40																		
17	15045																		
4	37 12	+.70		+7.2		+.55		+7.4		+.29	+8.5		+.05	+8.3		−.12	+8.7		−.33
21	18757			+1.7				+1.3			+.7			+.1			−.3		
				+8.9				+8.7			+9.2			+8.4			+8.4		
+2′	8.″78	(23)		178²				609⁷			184²			168²			252³		
	8.93			−.1				+.1			−.4			+.4			+.4		

R.A.	tan δ	sin z	cos z
h			
20.2	− 4.45	−.87	
9.0	+ 2.43	−.43	
9.3	+ 7.01	−.64	
21.5	− 2.75	−.92	
9.5	+ 2.72	−.46	
21.7	− 2.86	−.92	
9.8	+ 3.37	−.52	

		+.64	+.77	+8.1	6.4	+.54	+.58	+.53	+.55	+.50	+.56	+.59	+9.3	7.5	6.5	7.9	8.6	6.1	6.2
		+.31	+.27	+7.9	9.1	+.09	+.01	+7.7	9.0	−.11	−.09	−.17	+9.2	8.9	8.0	−.32	−.36	−.30	9.7
		−.43	−.46	−.52	+10.4	9.7	11.2	−.64	+10.3										
2	80																		
	7.40																		
17	15045																		
4	37 12	+.70		+7.2		+.55		+7.4		+.29	+8.5		+.05	+8.3		−.12	+8.7		−.33
21	18757			+1.7				+1.3			+.7			+.1			−.3		
				+8.9				+8.7			+9.2			+8.4			+8.4		
+2′	8.″78	(23)		178²				609⁷			184²			168²			252³		
	8.93			−.1				+.1			−.4			+.4			+.4		

R.A.	tan δ	sin z	cos z
h			
20.2	− 4.45	−.87	
9.0	+ 2.43	−.43	
9.3	+ 7.01	−.64	
21.5	− 2.75	−.92	
9.5	+ 2.72	−.46	
21.7	− 2.86	−.92	
9.8	+ 3.37	−.52	

		+.64	+.77	+8.1	6.4	+.54	+.58	+.53	+.55	+.50	+.56	+.59	+9.3	7.5	6.5	7.9	8.6	6.1	6.2
		+.31	+.27	+7.9	9.1	+.09	+.01	+7.7	9.0	−.11	−.09	−.17	+9.2	8.9	8.0	−.32	−.36	−.30	9.7
		−.43	−.46	−.52	+10.4	9.7	11.2	−.64	+10.3										
2	80																		
	7.40																		
17	15045																		
4	37 12	+.70		+7.2		+.55		+7.4		+.29	+8.5		+.05	+8.3		−.12	+8.7		−.33
21	18757			+1.7				+1.3			+.7			+.1			−.3		
				+8.9				+8.7			+9.2			+8.4			+8.4		
+2′	8.″78	(23)		178²				609⁷			184²			168²			252³		
	8.93			−.1				+.1			−.4			+.4			+.4		

R.A.	tan δ	sin z	cos z
h			
20.2	− 4.45	−.87	
9.0	+ 2.43	−.43	
9.3	+ 7.01	−.64	
21.5	− 2.75	−.92	
9.5	+ 2.72	−.46	
21.7	− 2.86	−.92	
9.8	+ 3.37	−.52	

		+.64	+.77	+8.1	6.4	+.54	+.58	+.53	+.55	+.50	+.56	+.59	+9.3	7.5	6.5	7.9	8.6	6.1	6.2
		+.31	+.27	+7.9	9.1	+.09	+.01	+7.7	9.0	−.11	−.09	−.17	+9.2	8.9	8.0	−.32	−.36	−.30	9.7
		−.43	−.46	−.52	+10.4	9.7	11.2	−.64	+10.3										
2	80																		
	7.40																		
17	15045																		
4	37 12	+.70		+7.2		+.55		+7.4		+.29	+8.5		+.05	+8.3		−.12	+8.7		−.33
21	18757			+1.7				+1.3			+.7			+.1			−.3		
				+8.9				+8.7			+9.2			+8.4			+8.4		
+2′	8.″78	(23)		178²				609⁷			184²			168²			252³		
	8.93			−.1				+.1			−.4			+.4			+.4		

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1876 Apr. 10 h = -.021 ~~22~~ -.017 -.017

Star	RA	δ	tang δ	π Ra	n = -.22 ⊖ = .00		
	h			s			
	7.6 +1.7	122	+ .54	-56.47	- .12	-.03 -	56.59 56.62
	8.8 0.5	130	+ 1.13	-56.39	- 25	01	.64 .65
	8.9 0.4	133	+ 1.10	-56.41	- 24	-01	65 .66
8.60 —	9.1 0.2	134	+ .05	-56.56	- .01	+00	.57 .57
	9.2 +0.1	135	+ .76	-56.42	- .17	00	59 .59
	9.6 -0.3	142	+ .45	-56.53	- .10	01	63 .62
	9.7 0.4	144	+ .50	-56.47	- .11	01	.58 .57
	10.0 0.7	146	+ .22	-56.59	- 05	01	64 .63
	10.1 0.8	147	+ .95	-56.49	- .21	01	70 .69
9.80 —	10.2 -0.9	149	+ .90	-56.46	- .20	+.01	66 .65
	9.32				n = -.13	56.625	56.647 33 56625
h' = -.022	18.5 + .8	260	+ .80	-56.76	- .10	- 02	~~76~~86 56.46 .88
	19.7 - .4	277	+ .18	-56.88	- ~~.04~~ .02	+ 01	~~92~~90 .91 .89
19.30 —	19.7 - .4	280	+ .15	-56.89	- ~~.03~~ .02	+ 01	~~92~~91 .91 90
	19.30						~~56.927~~ -56.890 ~~56.927~~ -56.890

56.613

Star	RA	δ	tang δ	π Ra
	h			s
	9.0	415	+ 2.43	- 56.06
	9.8	421	+ 3.37	- 55.92
	22.1	521	- 3.03	- 57.46
	10.4	150	+ 4.12	- 55.90
	6.7×	111	- 20.75	- 59.57×6

7.6 + .54 - 56.47
9.1 + .05 56.56
9.6 + .45 56.53
9.7 + .50 56.47
10.0 + .22 56.59
9.2 + .35 - 56.52
n = -.12 -.01

8.8 + 1.13 - 56.39
8.9 + 1.10 56.41
10.1 + .95 56.49
10.2 + .90 56.46
9.5 + 1.02 - 56.44

19.3 + .38 - 56.84

			I	II
9.0	+ 2.43	- 56.06	- 56.06	- 56.07
		- .50	- .01	
9.8	+ 3.37	- 55.92	- 55.91	- 55.91
		+ .01	+ .01	
10.4	+ 4.12	- 55.90	- 55.87	- 55.88
		+ .03	+ .02	

0 = + 2.08 + .46 n = - .22
+ 3.02 + .61 - .20
+ 3.77 + .65 - .17
- .197

0 = + 1.41 + .37 n = - .26
+ 2.35 + .53 - .23
+ 3.10 + .56 - .18
- ~~.223~~ .225

			I	II
10.1	- 3.03	- 57.46	- 57.44	- 57.45
		+ .02	+ .01	

0 = - 3.38 - .92 n = - .27 - .270

0 = - 4.05 - 1.01 n = - .25 - .250

III
18.7 - 20.75 - 59.57 6 - 59.58
- .01

0 = - 21.13 - 2.74 n = - .134 - .130

1876 apr 11 h = - .022 +.008
-.036

n = -.31 ⊖ = .00

	RA	δ	tang δ	π Ra			
	7.5 +1.5	120	+ .10	- 57.12	- 03	+.01 -	57.15 57.14
	7.6 1.4	122	+ .54	- 57.06	- .17	01	.23 .22
	8.8 0.2	130	+ 1.13	- 56.90	- 35	00	25 .25
8.20 —	8.9 +0.1	133	+ 1.10	- 56.95	- 34	00	29 .29
	9.3 -0.3	138	- .14	- 57.23	+ 04	00	.19 .19
	9.6 0.6	142	+ .45	- 57.06	- .14	+ 00	.20 .20
	10.0 1.0	146	+ .22	- 57.11	- 07	- 01	.18 .19
9.78 —	10.2 -1.2	149	+ .90	- 57.02	- 28	- .01	.30 .31
	8.99					(57.224)	57.218 57.224
h' = -.017	19.7 00	277	+ .18	- 57.38	- .06	00	.44 .44
	19.7 00	280	+ .15	- 57.38	- .05	00	.43 .43
	19.70						57.435 57.435

57.230

RA	δ	tang δ	π Ra		
9.0	415	+ 2.43	- 56.52	- .78	- 57.30
9.3	137	+ 7.01	- 55.04 -.08	- 2.24	57.36
21.5	368	- 2.75	- 58.21	+ .88	57.33
9.5	420	+ 2.72	- 56.39	- .87	57.26
9.8	421	+ 3.37	- 56.17	- 1.08	- 57.25

7.5 + .10 - 57.12
7.6 + .54 57.06
9.3 - .14 57.23
9.6 + .45 57.06
10.0 + .22 57.11
8.8 + .23 - 57.12
n = - .20 -.01

8.8 + 1.13 - 56.90
8.9 + 1.10 56.95
10.2 + .90 57.02
9.3 + 1.04 - 56.96

19.7 + .16 - 57.38

			I	II
9.0	+ 2.43	- 56.52	- 56.52	- 56.53
		+ .00	- .01	
9.3	+ 7.01	- ~~55.04~~ 55.12	- 55.03	- 55.04
		+ .01	+ .00	
9.5	+ 2.72	- 56.39	- 56.37	- 56.39
		+ .02	+ .00	
9.8	+ 3.37	- 56.17	- 56.15	- 56.16
		+ .02	+ .01	

0 = + 2.20 + .60 n = - .27
+ 6.78 + 2.01 -.08 - .30
+ 2.49 + .75 - .30
+ 3.14 + .97 - .31
- .298 5

0 = + 1.39 + .43 n = - .31
+ 5.97 + 1.92 -.08 - .321
+ 1.68 + .57 - .34
+ 2.33 + .80 - .34
- ~~.327~~
- .325

			I	II
9.5	- 2.75	- 58.21	- 58.19	- 58.21
		+ .02	+ .00	

0 = - 2.98 - 1.07 n = - .36 - .360

0 = - 3.79 - 1.25 n = - .33 - .330

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Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z																
h																			
7.6	+.54	+.24		+2′	9.7	+ 0.5		+2′ 10.2											
8.8	+1.13	−.11			9.4	− 0.2		9.2											
8.9	+1.10	−.09			9.6	− 0.2		9.4											
9.1	+.05	+.64			8.3	+ 1.4		9.7											
9.2	+.76	+.09			9.3	+ 0.2		9.5											
9.6	+.45	+.31			9.3	+ 0.7		10.0											
9.7	+.50	+.27			9.6	+ 0.6		10.2											
10.0	+.22	+.50			8.9	+ 1.0		9.9											
10.1	+.95	−.02			9.8	− 0.0		9.8											
10.2	+.90	+.01			9.8	+ 0.0		9.8	9.77										
18.5	+.80	+.06			8.7	+ 0.1		8.8											
19.7	+.18	+.53			7.3	+ 1.1		8.4											
19.7	+.15	+.56			7.4	+ 1.2		8.6	8.60										
3	180																		
1	80																		
4	260	+.64	+8.3	+.50	+8.9	+.24	+9.7	+.09	+9.3	−.11	+9.4		−.43	+11.1	−.77	+10.6			
	8.65					+.31	9.3	+.01	9.8	−.09	9.6		−.52	10.6					
						+.27	9.6			−.02	9.8		−.56	10.7					
10	70																		
3	9	+.64	+8.3	+.50	+8.9	+.27	+9.5	+.05	+9.5	−.07	+9.6		−.50	+10.8	−.77	+10.6			
13	79		+1.5		+1.1		+.6		+.1		−.2			−1.1		−1.9			
			+9.8		+10.0		+10.1		+9.6		+9.4			+9.7		+8.7			
+2′	9.66	(14)	9.8		10.0		30.3³		19.2²		28.2³			29.1³		8.7	1353		
	9.76		−.1		−.3		−.4		+.1		+.3			0.0		+1.0			

R.A.	tan δ	sin z	cos z																
h																			
9.0	+2.43	−.43		+2′	11.1	− 0.9		+2 10.2											
9.8	+3.37	−.52			10.6	− 1.1		9.5											
22.1	−3.03	−.91			12.3	− 2.1		7.0											
10.4	+4.12	−.56			10.7	− 1.2		9.5											
6.7	−20.75	−.77			10.6	− 1.8		× 8.8											
								9.73											
								8.80											

7.5	+.10	+.60		+2′	10.1	+ 1.3		+2 11.4											
7.6	+.54	+.24			10.0	+ 0.5		10.5											
8.8	+1.13	−.11			9.1	− 0.2		8.9											
8.9	+1.10	−.09			8.9	− 0.2		8.7											
9.3	−.14	+.77			8.7	+ 1.8		10.5											
9.6	+.45	+.31			9.6	+ 0.7		10.3											
10.0	+.22	+.50			10.3	+ 1.0		11.3											
10.2	+.90	+.01			10.7	+ 0.0		10.7	10.29										
19.7	+.18	+.53			9.6	+ 1.1		10.7											
19.7	+.15	+.56			9.6	+ 1.2		10.8	10.75										
2	150																		
	10.75																		
		+.60	+10.1	+.50	+10.3	+.24	+10.0	+.01	+10.7	−.11	+9.1		−.43	+10.8	−.64	+10.3			
		+.77	8.7			+.31	9.6			−.09	8.9		−.46	13.5					
													−.52	11.7					
8	232																		
4	60	+.68	+9.4	+.50	+10.3	+.28	+9.8	+.01	+10.7	−.10	+9.0		−.47	+12.0	−.64	+10.3			
12	292		+1.6		+1.1		+.6		+.0		−.2			−1.1		−1.5			
			+11.0		+11.4		+10.4		+10.7		+8.8			+10.9		+8.8			
+2′	10.33	(12)	220²		114		208²		107		176²			327³		88	1240		
	10.24		−.7		−1.1		−.1		−.4		+1.5			−.6		+1.5			

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n = −.30 −.30

1876 Apr 17 h = −.024 −.067 −.057

Star	Ra	δ	tang δ	π Ra
	h			°
	19.7 +0.9	277	+ .18	− 60.47 −.05
	19.7 0.9	280	+ .15	− 60.53 −.25
19.73 —	19.8 0.8	283	+ .11	− 60.57 −.03
	20.7 +0.0	294	+ .99	− 60.39 −.30
2.180 —	23.0 −2.4	329	+ .26	− 60.64 −.08
	20.56			

Star	Ra	δ	tang δ	π Ra
				60.567
−.06	60.52			60.58
.06	.58			.64
−.05	.60			.65
+.00	.69			.69
+.16	.72			.56
60.622	60.705			60.624

1876 Apr. 20 h = −.026 −.022 −.025 n = −.30

8.8	+.7	130	+ 1.13	− 62.33 −.34
9.2	+.3	135	+ .76	− 62.42 −.23
9.8	−.3	422	+ .89	− 62.42 −.27
9.9	4	423	+ .15	− 62.52 −.04
10.0	−.5	146	+ .22	− 62.53 −.07
9.54				

−.02	62.67	62.69
−.01	.65	.66
+.01	.69	.68
+.01	.56	.55
+.01	.60	.59
	62.634	62.634

1876 May 1 h = −.032 −.001 −.016 25

n = −.31 @ −.00

	9.6	+1.3	141	+ .19	− 69.31	− .06
	9.7	1.2	143	+ 1.70	− 68.86	− .53
	10.0	0.9	146	+ .22	− 69.35	− .07
	10.2	0.7	149	+ .90	− 69.12	− .28
	10.4		428	+ 1.58	− 68.40	− .49
10.02 —	10.6	0.3	431	+ .61	− 69.19	− .19
	10.9	+0.0	154	+ 1.91	− 68.82	− .59
	11.[illegible]		156	+ .39	− 69.93	− .12
	11.5	−0.6	438	+ .00	− 69.37	− .00
	12.0	1.1	167	+ .17	− 69.35	− .05
	12.1	1.2	169	+ 1.58	− 68.93	− .49
11.74 —	12.2	−1.3	170	+ .00	− 69.37	− .00
	10.93 −.88					
h' −.025	20.6		294	+ .99	− 69.27	− .31
	20.60					

+.00	69.37	
.00	.39	
.00	.42	
.00	.40	
	.89	Cx
.00	.38	
.00	.41	
	70.05	
.00	69.37	
.00	.40	
.00	.42	
+.00	.37	
	69.393	69.520 69.394
	.58	
	69.580	

21.4	516	− 2.86		− 70.09				
9.8	421	+ 3.37		− 68.21				
22.1	521	− 3.03		− 70.31				
10.4	150	+ 4.12		− 68.08				
22.5	525	− 3.27		− 70.35				
12.1	168	+ 4.83		− 67.97				
					I	II		
9.7		− 2.86	− 70.09	− 70.13	− 70.12			
			− .04	− .03				
10.1		− 3.03	− 70.31	− 70.34	− 70.33			
			− .03	− .02				
10.5		− 3.27	− 70.35	− 70.36				
			− .02	− .01				
0 =		− 2.98	− .78	n = −.26				
		− 3.15	− .99	−.31				
		− 3.39	− 1.02	−.30				
				−.290				
0 =		− 4.39	− 1.29	n = −.29				
		− 4.56	− 1.50	−.33				
		− 4.80	− 1.53	−.32				
				−.313				

9.6	+.19	− 69.31							
10.0	+.22	69.35							
11.5	+.60	69.37							
12.0	+.17	69.35							
12.2	+.09	69.37							
11.1	+.12	− 69.35							
	n = −.37	+.01							
9.7	+.70	− 68.86							
10.2	+.90	69.12							
10.4	+.58	68.40							
10.9	+.91	68.82							
12.1	+.58	68.93							
11.7	+.53	− 69.43							
10.3	1.58	68.82							

					I	II			
9.8	+3.37	− 68.21	− 68.25	− 68.24					
		− .04	− .03						
10.4	+4.12	− 68.08	− 68.10	− 68.09					
		− .02	− .01						
12.1	+4.83	− 67.97	− 67.94	− 67.93					
		+ .03	+ .04						
0 =	+3.25	+ 1.10	n = −.34						
	+4.00	+ 1.25	−.31						
	+4.71	+ 1.91	−.30						
			−.317						
0 =	+1.84	+ .59	n = −.32						
	+2.59	+ .74	−.29						
	+3.30	+ .90	−.27						

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Sin z² +.60 +.80 +.40 +.60 +.20 +.40 +0 +.20 0 −.20 −.20 −.40 −.40 −.60 −.60 −.80

R.A.	tan δ	sin z cos z						R.A.	tan δ	sin z cos z				
h														
19.7	+ .18	+.53	+2′ 10.9	+ 1.1		+2′ 12.0								
19.7	+ .15	+.56	14.8	+ 1.2		16.0								
19.8	+ .11	+.59	11.7	+ 1.3		13.0								
20.6	+ .99	−.04	13.0	− .1		12.9								
23.0	+ .26	+.47	12.6	+ 1.0		13.6	13.50							
+2′ 13.50														
8.8	+ 1.13	−.11	+2′ 14.8	− 0.2		+2 14.6								
9.2	+ .76	+.09	14.3	+ 0.2		14.5								
9.8	+ .89	+.01	14.8	+ 0.0		14.8								
9.9	+ .15	+.55	13.2	+ 1.2		14.4								
10.0	+ .22	+.50	14.4	+ 1.0		15.4	14.74							
+2′ 14.74														
9.6	+ .19	+.53	+2′ 15.5	+ 1.1		+2 16.6		21.7	− 2.86	−.92	+2′	19.6	− 2.1	+2 17.5
9.7	+ 1.70	−.30	17.0	+ 0.6		16.4		9.8	+ 3.37	−.52		17.8	− 1.1	+ 16.7
10.0	+ .22	+.50	15.1	+ 1.0		16.1		22.1	− 3.03	−.91		20.0	− 2.1	17.9
10.2	+ .90	+.01	15.8	+ 0.0		15.8		10.4	+ 4.12	−.86		17.3	− 1.2	16.1
10.4	+ 1.58	−.26	15.6	− 0.5		15.1		~~22.5~~	~~− 3.27~~	~~−.90~~				
10.6	+ .61	+.19	15.6	+ 0.4		16.0		12.1	+ 4.83	−.59		17.4	− 1.3	16.1
10.9	+ 1.91	−.34	16.8	− 0.7		16.1								16.20
11.1	+ .39	+.36	15.4	+ 0.7		16.1								
11.5	00	+.68	15.0	+ 1.5		16.5								
12.0	+ .17	+.54	15.0	+ 1.1		16.1								
12.1	+ 1.58	−.26	15.5	− 0.5		15.0								
12.2	00	+.67	14.9	+ 1.5		16.4	16.02							
20.6	+ .99	−.04	14.3	− 0.1		14.2	14.20							
14.20														

		+.68	+15.0	+.53	+15.5	+.36	15.4	+.01	+15.8	~~+.01~~	−.30	+17.0	−.52	+17.8	
		+.67	14.9	+.50	15.1			+.19	15.6		−.26	15.6	−.56	17.3	
				+.54	15.0						−.34	16.8	−.59	17.4	
											−.26	15.5			
12	24														
3	90	+.68	+15.0	+.52	+15.2	+.36	+15.4	+.10	+15.7		−.29	+16.2	−.56	+17.5	
15	114		+ 1.6		+ 1.2		+ .8		+ .2			− .6		− 1.3	
			+16.6		+16.4		+16.2		+15.9			+15.6		+16.2	
+2′	16.09	(5)	$33\,2^{2}$		$49\,2^{3}$		162^{1}		318^{2}			624^{4}		486^{3}	2414
	16.08		−.5		−.3		−.1		+.2			+.5		−.1	

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1876 May 3 h = −.030 (31) −.008

Star	Ra	δ	tang δ	π−Ra	n = −31		
	0.0 +1.7	1	+ .54	−71.63	−.17	−.01	−71.80 71.81
	20.6 − 1.7	294	+ .99	−71.52	−.31	+.01	.83 .82
	22.30						−71.815 71.815

223 +.76 −71.58

1.2 +42.35 −84.42 ~~+1.91~~ + .09 III ~~+2.00~~ −84.33

0 = +41.59 ~~+2.00~~ +12.75 n = ~~−.05~~ −.31 −.310

1876 May 3

Star	Ra	δ	tang δ	π−Ra
	1.2×	19	+42.35	−84.42 (+16.36)

1876 May 16 h = −.009 −.021 −.025 n = −.46 c = .00

10.6 +1.2	431	+ .61	−80.49	−.28	−.03−	80.77 (80.912, 38)	80.80
10.8	152	+ .70	−80.39	−.32	−.02	.71	.73
10.9 0.9	153	+1.54	−80.39	−.71	−.02	81.10	1.12
10.9 0.9	154	+1.91	−80.13	−.88	.02	81.01	1.03
11.0 0.8	155	+1.01	−80.49	−.46	.02	80.95	0.97
11.1 0.7	156	+ .39	−80.71	−.18	.01	.89	0.90
11.5 0.3	438	− .00	−80.89	+.00	−.01	.89	0.90
11.6 0.2	163	+1.13	−80.42	−.52	+.00	.94	0.94
11.16 — 11.7 0.1	164	+ .27	−80.83	−.12	00	.95	0.95
11.7 0.1	165	+ .04	−80.87	−.02	00	.89	0.89
11.8 +0.0	166	+1.40	−80.29	−.64	00	.93	0.93
12.0 −0.2	167	+0.17	−80.87	−.08	00	.95	0.95
12.1 0.3	169	+1.58	−80.25	−.73	.01	.98	0.97
12.2 0.4	170	+ .00	−80.94	−.00	.01	.94	0.93
12.6 0.8	172	− .01	−80.99	+.00	.02	.99	0.97
12.8 1.0	173	+1.52	−80.28	−.70	.02	.98	0.96
12.9 1.1	176	+ .21	−80.89	−.10	.02	80.99	0.97
12.36 — 13.1 −1.3	177	+ .54	−80.77	−.25	+.03−	81.02	0.99
11.749					80.951	80.963	80.951
h' = +.013 22.0 + .5	311	− .02	−81.44	+.01	+.01	.43	80.42
23.0 − .5	329	+ .26	−81.40	−.12	−.01	.52	.53
22.50						80.475	80.475

~~1.2×~~		~~+42.35~~	~~+57.99~~
11.4	162	+2.75	−79.56
23.6	334	−4.31	−82.47
12.1	168	+4.83	−78.72
12.5	171	+2.82	−79.56
1.0	345	−5.15	−83.21
1.2	19	−42.35	−14.26

11.6	−4.31	−82.47	−82.47	−82.47
		− .00	+ .00	
13.0	−5.15	−83.21	−83.20	−83.20
		+ .01	+ .01	
13.2	−42.35	−101.73	−101.72	−101.71
		+ .01	+ .02	

0 = −4.41 −1.57 n = −.36
−5.25 −2.30 −.44
−42.45 −20.82 −.49
−.430

0 = −5.75 −2.15 n = −.37
−6.59 −2.88 −.44
−43.79 −21.39 −.49
−.433

						I	II
11.5	−.00	−80.89	11.4	+2.75	−79.56	−79.57	−79.56
11.7	+.27	80.83			−.01	− .00	
11.7	+.04	80.87	12.1	+4.83	−78.72	−78.72	−78.72
12.0	+.17	80.87			.00	+ .00	
12.2	+.00	80.94	12.5	+2.82	−79.56	−79.56	−79.55
12.6	−.01	80.99			00	+ .01	
12.9	+.21	80.89					
12.1	+.10	−80.90					

n = −.43

0 = +2.65 +1.33 n = −.50
+4.73 +2.18 −.456
+2.72 +1.34 −.49
−.483

10.9	+1.54	−80.39
10.9	+1.91	80.13
11.0	+1.01	80.49
11.6	+1.13	80.42
11.8	+1.40	80.29
12.1	+1.58	80.25
12.8	+1.52	80.28
11.6	+1.44	−80.32

0 = +1.31 +.76 n = −.58
+3.39 +1.60 −.47
+1.38 +.77 −.56
−.470

22.5 +.12 −81.42 ~~1.2 +42.35~~

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Sin Z = +.60 +.80 | +.40 +.60 | +.20 +.40 | +0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z						R.A.	tan δ	sin z	cos z				
h									h							
0.0	+.34	+.24		+2′16″.4 ✓	+0.5	+2′16″.9			1.2	+42.35	−.72		+2′15″.2 ✓	−1.7	+2′13″.5	13.50
20.6	+.99	−.04		14.7 ✓	−0.1	14.6	15.75									

2 3150
1 1350
3 4500
+2 15.00

10.6	+.61	+.19		+2′19″.4 ✓	+0.4	+2 19.8										
10.8	+.70	+.13		21.0 ✓	0.2	21.2			11.4	+2.75	−.46	+2′	22″.0 ✓	−0.9	+2 21.1	
10.9	+1.54	−.26		20.7 ✓	0.5	20.2			23.6	− 4.31	−.87		23.0 ✓	−2.0	21.0	
10.9	+1.91	−.34		21.0 ✓	0.7	20.3			12.1	+ 4.83	−.59		23.4 ✓	−1.2	22.2	
11.0	+1.01	−.015		18.3 ✓	0.1	18.2			12.5	+ 2.82	−.47		21.7 ✓	−0.9	20.8	
11.1	+.39	+.36		19.4 ✓	0.7	20.1			1.0	− 5.15	−.85		23.8 ✓	−1.9	21.9	
11.5	00	+.68		18.6 ✓	+1.5	20.1			1.2	− 42.35	−.75		22.9 ✓	−1.7	21.2	
11.6	+1.13	−.11		21.1 ✓	−0.2	20.9										
11.7	+.27	+.46		19.0 ✓	0.9	19.9										21.32
11.7	+.04	+.64		19.8 ✓	+1.4	21.2										
11.8	+1.40	−.21		19.9 ✓	0.4	19.5										
12.0	+.17	+.54		20.3 ✓	1.1	21.4										
12.1	+1.58	−.26		20.2 ✓	0.5	19.7										
12.2	00	+.69		19.3 ✓	1.5	20.8										
12.6	−.01	+.68		19.8 ✓	1.5	21.3										
12.8	+1.52	−.25		19.2 ✓	0.5	18.7										
12.9	+.21	+.51		20.6 ✓	1.1	21.7										
13.1	+.54	+.24		21.2 ✓	0.5	21.7	20.37									
22.0	−.02	+.69		20.2 ✓	1.5	21.7										
23.0	+.26	+.47		19.8 ✓	1.0	20.8	21.25									

2 50″
21.25

		+.68	+18.6	+.46	+19.0	+.36	+19.4	+.19	+19.4	−.05	+18.3	−.25	+20.7	−.46	+22.0	−.75	+22.9	
		+.64	19.8	+.54	20.3	+.24	21.2	+.13	21.0	−.11	21.1	−.34	21.0	−.59	23.4			
		+.67	19.3	+.51	20.6							−.21	19.9	−.47	21.7			
		+.68	19.8									−.26	20.2					
												−.25	19.2					
18	666																	
4	528	+.67	+19.4	+.50	+20.0	+.30	+20.3	+.16	+20.2	−.08	+19.7	−.26	+20.2	−.51	+22.4	−.75	+22.9	
22	1194		+ 1.5		+ 1.0		+ .6		+ .3		− .2		− .5		− 1.1		− 1.7	
			+20.9		+21.0		+20.9		+20.5		+19.5		+19.7		+21.3		+21.2	
	+2′20″.55	(22)	836		630		418		410		390		985		636		212	45 20
	20.54		−.3		−.4		−.3		+.1		+.6 1.1		+.4 0.8		−0.8		−0.7	

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1876 May 17 h = -.009 +.018

Star	Ra	δ	tang δ sec δ T Ra		n=-.43 c=-.06		
	h						38.147
	11.5+0.4	438	- .00 +1.00 +38.30	+ 00	38.4006	+.01	+38.24 38.25
	11.6 0.3	163	+ 1.13 1.51 +38.68	- 49	.1309	+.01	.10 .11
11.60	11.7 0.2	164	+ .27 1.03 +38.28	- .12	.1506	00	.10 .10
	11.7 0.2	165	+ .04 1.00 +38.24	- .02	.2206		.16 .16
	11.8+0.1	166	+ 1.40 1.72 +38.87	- .60	.1810		.17 .17
	12.1-0.2	169	+ 1.58 1.87 +38.96	- .68	.1912	00	.16 .16
12.05	12.6-0.7	172	- .01 1.00 +38.26	+ .00	.2606	-.01	.20 .19
	11.86				38.21	38.161	38.172 38.163

I + II

11.5 -.50 +38.30
11.7 +.27 38.28
11.7 +.04 38.24
12.6 -.01 38.26
11.9 +.08 +38.27

n = -.44

11.6 +1.13 +38.68
11.8 +1.40 38.87
12.1 +1.58 38.96
11.8 +1.37 +38.84

11.4 +2.75 +39.50 +39.50
-.00
12.0 +4.55 +40.33 +40.33
+.00
12.1 +4.83 +40.45 +40.45
+.00
12.5 +2.82 +39.62 +39.63
+.01

0 = +2.67 +1.23 n = -.46
+4.47 +2.06 -.46
+4.75 +2.18 -.46
+2.74 +1.36 -.50
-.470

0 = +1.38 +.66 n = -.48
+3.18 +1.49 -.47
+3.46 +2.01 -.46
+1.45 +.79 -.54
-.488

1876 May 17

Star	Ra	δ	tang δ	n Ra
	h			s
	11.4	162	+2.75	+39.50
	23.6	334	-4.31	+36.03
	12.0	440	+4.55	+40.33
	12.1	168	+4.83	+40.45
	12.5	171	+2.82	+39.62

I + II

11.6 -4.31 +36.03 +36.03
+.00

0 = -4.39 -2.24 n = -.51
-.510

0 = -5.68 -2.81 n = -.49
-.490

1876 May 21 h = -.013 -.005 (11)

	Ra	δ			n=-.52 c=-.08		
							37.345 (286)
	10.8	152	+ .70 +1.22 +38.03	-.36	-.10		+37.57
	10.9+0.4	153	+ 1.54 1.83 +38.19	-.80	.15	00	.24
	10.9 0.4	154	+ 1.91 2.16 +38.40	-.99	.17		.24
	11.0 0.3	434	+ .14 1.00 +37.52	-.07	.08		.37
	11.0 0.3	155	+ 1.01 1.41 +37.92	-.53	.11		.50 28
10.98	11.4+0.2	156	+ .39 1.08 +37.59	-.20	.09		.30
	11.5-0.2	438	+ .00 1.00 +37.42	-.00	.08		.42 34
	11.6-0.3	163	+ 1.13 1.51 +38.02	-.59	.12		.31
	11.7 0.4	164	+ .27 1.03 +37.56	-.14	.08		.34
	11.7 0.4	165	+ .04 1.00 +37.51	-.02	.08		.41
11.66	11.8-0.5	166	+ 1.40 1.72 +38.21	-.72	-.14	00	.35
	11.32					37.318	37.350 37.318
h' = -.008	22.0 +.10	311	- .02 1.00 +37.36	+.00	.08	-.01	.29 37.28
	23.0 .00	329	+ .26 1.03 +37.51	-.14	.08		.29 .29
	0.0 -.10	1	+ .54 1.14 +37.63	-.28	-.09	+.01	.26 .27
	23.00						37.280 37.280

I + II

11.0 +.14 +37.52
11.1 +.39 37.59
11.5 +.00 37.42
11.7 +.27 37.56
11.7 +.04 37.51
11.4 +.17 +37.52

n = -.51

10.9 +1.54 +38.19
10.9 +1.91 38.40
11.0 +1.01 37.92
11.6 +1.13 38.02
11.8 +1.40 38.21
11.2 +1.40 +38.15

23.0 +.26 +37.50

11.4 +2.75 +38.98 +38.98
00
12.0 +4.65 +40.08 +40.09
+.01
12.1 +4.83 +40.23 +40.24
+.01

0 = +2.58 +1.46 n = -.57
+4.38 +2.57 -.59
+4.66 +2.72 -.58
-.580

0 = +1.35 +.83 n = -.61
+3.15 +1.94 -.62
+3.43 +2.09 -.61
-.615

	Ra	δ	tang δ	n Ra
	11.4	162	+2.75	+38.98
	23.6	334	-4.31	+34.95
	12.0	440	+4.55	+40.08
	12.1	168	+4.83	+40.23
	1.2	19	-42.35	+11.04 ✓

I + II

11.6 -4.31 +34.95 +34.95
.00
13.2 -42.35 +11.04 +11.06
+.02

0 = -4.48 -2.57 n = -.57
-42.52 26.46 -.62
-.595

0 = -5.71 -3.20 n = -.56
-43.75 -27.09 -.62
-.590

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Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z														
h																	
11.5	.00	+.68		+2′ 17.8	+1.5		+2′ 19.3			11.4	+2.75	−.46		+2′	20.5	−0.9	+2 19.6
11.6	+1.13	−.11		19.9	−0.2		19.7			23.6	−4.31	−.87			23.8	−2.0	21.8
11.7	+.27	+.46		17.2	+0.9		18.1			12.0	+4.55	−.58			22.6	−1.1	21.5
11.7	+.04	+.64		18.2	+1.4		19.6			12.1	+4.83	−.59			23.1	−1.1	22.0
11.8	+1.40	−.21		19.1	−0.4		18.7			12.5	+2.82	−.47			22.6	−0.9	21.7
12.1	+1.58	−.26		20.9	−0.5		20.4										
12.6	−.01	+.48		20.7	+1.0		21.7	19.65									2093
																	21,20

		+.68	+17.8	+.46	+17.2			−.11	+19.9	−.21	+19.1	−.46	+20.5					
		+.64	18.2							−.26	20.9	−.58	22.6					
		+.68	20.7									−.59	23.1					
												−.47	22.6					
7	13748																	
3	6279	+.67	+18.9	+.46	+17.2			−.11	+19.9	−.23	+20.0	−.42	+22.2					
10	20027		+1.5		+1.0				−.2		−.5		−1.0					
			+20.4		+18.2				+19.7		+19.5		+21.2					
	+2′ 20.26	(11)	612		182				197		390		848	2229				
	20.23		−.1		+2.1				+.6		+.8		−.9					
	21																	

	10.8 + .70	+.13		2′ 20.2	+0.3		+2 20.5				11.4	+2.75	−.46		+2′	23.9	−0.9	+2 23.9
	10.9 +1.54	−.25		20.0	−0.5		19.5				23.6	−4.31	−.87			26.1	−2.0	24.1
	10.9 +1.91	−.34		21.4	−0.7		20.7				12.0	+4.55	−.58			24.1	−1.1	23.0
	11.0 + .14	+.57		19.0	+1.2		20.2				12.1	+4.83	−.59			25.0	−1.1	23.9
	11.0 +1.01	−.05		21.0	−0.1		20.9				1.2	−42.35	−.75			24.6	−1.5	23.1
	11.1 + .39	+.36		21.5	+0.7		22.2											
	11.5 .00	+.68		22.6	+1.5		24.1											23.48
	11.6 +1.13	−.11		22.4	−0.2		22.2											
	11.7 + .27	+.46		21.4	+0.9		22.3											
	11.7 + .04	+.64		22.1	+1.3		23.4											
	11.8 +1.40	−.21		21.6	−0.4		21.2	21.56										
	22.0 − .02	+.69		24.1	+1.5		25.6											
	23.0 + .26	+.47		21.6	+1.0		22.6											
	0.0 + .34	+.24		23.9	+0.5		24.4	24.30										
3	60																	
	24.20																	

		+.68	+22.6	+.57	+19.0	+.36	+21.5	+.13	+20.2	−.05	+21.0	−.25	+20.0	−.46	+23.9	−.75	+24.6		
		+.64	22.1	+.46	21.4					−.11	22.4	−.34	21.4	−.58	24.1				
												−.21	21.6	−.59	25.0				
11	1716																		
4	1392	+.66	+22.3	+.51	+20.2	+.36	+21.5	+.13	+20.2	−.08	+21.7	−.27	+21.0	−.54	+24.3	−.75	+24.6		
15	3108		+1.4		+1.1		+.7		+.3		−.2		−.5		−1.1		−1.7		
			+23.7		+21.3		+22.2		+20.5		+21.5		+20.5		+23.2		+22.9		
	+2′ 21.98	(15)	4/4		426		222		205		430		615		696		229	3297	
	22.07		−1.7		+.7		−.2		+1.5		+.5		+1.5		−1.2		−.5		

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Q+C

1876 May 23   h = -.003 -.023 = .023 -.003

Star	RA	δ	tang δ sec δ	π RA						
	h			s	n = -.47	c = -.08		36.7		
	11.0 + 1.2	155	+ 1.01 + 1.41	+ 37.28	- .47	- .11	-.03 +	36.70	36.67	
	11.1 1.1	156	+ .39 1.08	+ 36.98	- .18	.09	.03	.71	.67	
	11.5 0.7	438	- .00 1.00	+ 36.80	- .00	.08	.02	.72	.70	
	11.6 0.6	163	+ 1.13 1.51	+ 37.35	- .53	.12	.01	.70	.69	
	11.7 0.5	164	+ .27 1.03	+ 36.93	- .13	.08	.01	.72	.71	
	11.7 0.5	165	+ .04 1.00	+ 36.92	- .02	.08	.01	.82	.81	
	11.8 0.4	166	+ 1.40 1.72	+ 37.47	- .66	.14	- .01	.67	.66	
11.49 —	12.0	167	+ .17 1.01	+ 37.04	- .08	.08	+ .00	.88	.88	
	12.1 + 0.1	169	+ 1.58 1.87	+ 37.59	- .74	.15	+ .00	.70	.70	
	13.1 - 0.9	177	+ .54 1.14	+ 37.04	- .25	.09	.02	.70	.72	
	13.5 1.3	179	+ .00 1.00	+ 36.75	- .00	.08	.03	.67	.70	
	13.7 1.5	181	+ 1.19 1.55	+ 37.31	- .56	.12	.03	.63	.66	
13.24 —	13.8 - 1.6	182	+ .34 1.06	+ 36.94	- .16	.08	+ .04	.70	.74	
	12.2 + 2						36.703	36.700 680		36.703
h' = -.003	22.0 + .5	311	- .02 1.00	+ 36.78	+ .01	.08	.00	.71	.71	
	23.0 - .5	329	+ .26 1.03	+ 36.84	- .12	- .08	.00	.64	.64	
	22.50							36.675		

1876 May 23

Star	RA	δ	tang δ	π RA
	h			s
	11.4	162	+ 2.75	+ 38.28
	23.6	334	- 4.31	+ 34.48
	12.1	168	+ 4.83	+ 39.46
	12.5	171	+ 2.82	+ 38.40
	1.2	19	- 42.35	+ 12.38
	13.4	452	+ 3.28	+ 38.30
	13.6	455	+ 3.06	+ 38.33

			I	II
11.4	+ 2.75	+ 38.28 - .01	+ 38.27 + .00	+ 38.28
12.1	+ 4.83	+ 39.46 + .00	+ 39.46 + .00	+ 39.46
12.5	+ 2.82	+ 38.40 + .00	+ 38.40 + .00	+ 38.40
13.4	+ 3.28	+ 38.30 + .01	+ 38.31 + .01	+ 38.31
13.6	+ 3.06	+ 38.33 + .01	+ 38.34 + .01	+ 38.34

			I + II
11.6	- 4.31	+ 34.48 .00	+ 34.48
13.2	- 42.35	+ 12.38 + .01	+ 12.39

0 = - 4.43 - 2.44   n = - .55
- 42.47 - 24.53   - .58   - .565

0 = - 5.57 - 2.92   n = - .52
- 43.61 - 25.01   - .58   - .550

11.5 - .00	+ 36.80
11.7 + .27	36.93
11.7 + .04	36.92
12.0 + .17	37.04
13.5 + .00	36.75
~~11.7 + .13 + 36.92~~	
12.1 n = -.42	+ 36.85
11.0 + 1.01	+ 37.28
11.6 + 1.13	37.35
11.8 + 1.40	37.47
12.1 + 1.58	37.59
13.7 + 1.19	37.31
12.0 + 1.26	+ 37.40
22.5 + .12	+ 36.81

I
0 = + 2.63 + 1.35   n = - .51
+ 4.71 + 2.54   - .54
+ 2.70 + 1.48   - .55
+ 3.16 + 1.39   - .44
+ 2.94 + 1.42   - .48
- .504

II
0 = + 1.49 + .88   n = - .54
+ 3.57 + 2.06   - .58
+ 1.56 + 1.00   - .64
+ 2.02 + .91   - .45
+ 1.80 + .94   - .52
- .517

1876 May 24   h = -.003 +.007 -.018   n = -.47 c = -.08

Star	RA	δ	tang δ sec δ	π RA						
								36.602		
	10.8	152	+ .70 + 1.22	+ 37.21	- .33	- .10	+ .00	36.78	36.78	
	10.9 + 0.7	153	+ 1.54 1.83	+ 37.45	- .72	.15	.00	.58	36.58	
	10.9 0.7	154	+ 1.91 2.16	+ 37.64	- .90	.17	.00	.57	.57	
	11.0 0.6	434	+ .14 1.01	+ 36.78	- .07	.08	.00	.63	.63	
	11.0 0.6	155	+ 1.01 1.42	+ 37.18	- .47	.11	.00	.60	.60	
10.98 —	11.1 0.5	156	+ .39 1.08	+ 36.90	- .18	.09	.00	.63	.63	
	11.5 0.1	438	- .00 1.00	+ 36.74	+ .00	.08	.00	.66	.66	
	11.6 + 0.0	163	+ 1.13 1.51	+ 37.24	- .53	.12	.00	.59	.59	
	11.7 - 0.1	164	+ .27 1.03	+ 36.83	- .13	.08	.00	.62	.62	
	11.8 - 0.2	166	+ 1.40 1.72	+ 37.41	- .66	.14	+ .00	.61	.61	
	13.1 - 1.5	177	+ .54 1.14	+ 36.92	- .25	.09	- .01	.58	.57	
12.20 —	13.5 - 1.9	179	+ .00 1.00	+ 36.68	- .00	.08	- .01	.60	.59	
	11.58					n = -.59	36.606	36.610		36.605
h' = -.001	0.0	1	+ .54 1.14	+ 36.93	- .32	- .09		.59	.59	
	0.00							36.590 620		

Star	RA	δ	tang δ	π RA
	1.2 ×	19	+ 42.35	+ 61.59
	23.6	334	- 4.31	+ 34.50
	12.0	440	+ 4.55	+ 39.04
	12.1	168	+ 4.83	+ 39.07
	12.5	171	+ 2.82	+ 38.13
	1.2	19	- 42.35	+ 10.42
	13.4	452	+ 3.28	+ 38.64

			I	II
11.6	- 4.31	+ 34.50 .00	+ 34.50 + .00	+ 34.50
13.2	- 42.35	+ 10.42 .00	+ 10.42 + .01	+ 10.43

0 = - 4.47 - 2.29   n = - .51
- 42.51 - 26.37   - .62   - .565

0 = - 5.71 - 2.38   n = - .50
- 43.75 - 26.95   - .62   - .560

11.0 + .14	+ 36.78
11.1 + .39	36.90
11.5 - .00	36.74
11.7 + .27	36.83
13.5 + .00	36.68
11.8 + .16	+ 36.79
n = - .48	
10.9 + 1.54	+ 37.45
10.9 + 1.91	+ 37.64
11.0 + 1.01	37.18
11.6 + 1.13	37.24
11.8 + 1.40	37.41
11.2 + 1.40	+ 37.38
0.0 + .54	+ 36.93

			I	II
12.0	+ 4.55	+ 39.04 + .00	+ 39.04	+ 39.04
12.1	+ 4.83	+ 39.07 + .00	+ 39.07	+ 39.07
12.5	+ 2.82	+ 38.13 + .00	+ 38.13	+ 38.13
13.4	+ 3.28	+ 38.64 + .00	+ 38.64 + .01	+ 38.65

I
0 = + 4.39 + 2.25   n = - .51
+ 4.67 + 2.28   - .49
+ 2.66 + 1.34   - .50
+ 3.12 + 1.85   - .59
- .522

II
0 = + 3.15 + 1.66   n = - .53
+ 3.43 + 1.69   - .49
+ 1.42 + .75   - .53
+ 1.88 + 1.27   - .68
- .558

III
1.2 + 42.35 + 61.59 + 61.59
0 = + 41.81 + 24.66   n = - .59 - .590

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sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z cos z																
h																		
11.0	+ 1.01	−.05		+2′	22.″6 ✓	−0.1	+2	22.5				11.4	+ 2.75	−.46		+2′	25.″6 ✓	−0.8	+ 2′ 24.″8
11.1	+ .39	+.36			24.4 ✓	+0.7		25.1				23.6	− 4.31	−.87			27.5 ✓	−1.8	25.7
11.5	.00	+.68			21.4 ✓	+1.4		22.8				12.1	+ 4.83	−.59			26.3 ✓	−1.1	25.2
11.6	+ 1.13	−.11			23.9 ✓	−0.2		23.7				12.5	+ 2.82	−.47			24.4 ✓	−0.9	23.5
11.7	+ .27	+.46			22.0 ✓	+0.9		22.9				1.2	− 42.35	−.75			26.1 ✓	−1.5	24.6
11.7	+ .04	+.64			21.2 ✓	+1.3		22.5				13.4	+ 3.28	−.51			25.0 ✓	−0.9	24.1
11.8	+ 1.40	−.21			23.0 ✓	−0.4		22.6				13.6	+ 3.06	−.49			24.5 ✓	−0.9	23.6
12.0	+ .17	+.54			20.7 ✓	+1.1		21.8											
12.1	+ 1.58	−.26			24.3 ✓	−0.5		23.8											24.60
13.1	+ .84	+.24			22.7 ✓	+0.5		23.2											
13.5	.00	+.67			20.8 ✓	+1.4		22.2											
13.7	+ 1.19	−.13			21.1 ✓	−0.2		21.2											
13.8	+ .34	+.40			21.6 ✓	+0.8		22.4	22.82										
22.0	− .02	+.69			20.2 ✓	+1.4		21.6											
23.0	+ .26	+.47			22.4 ✓	+1.0		23.4	22.50										
		+.68	+21.4	+.46	+22.0	+.36	+24.4			−.05	+22.6	−.21	+23.0	−.46	+25.6	−.75	+26.1		
	22.50	+.64	21.2	+.54	20.7	+.24	22.7			−.11	23.9	−.26	24.3	−.59	26.3				
		+.67	20.8	+.40	21.6					−.13	21.4			−.47	24.4				
														−.57	25.0				
														−.49	24.5				
13	3666																		
6	2760	+.66	+21.1	+.47	+21.4	+.30	+23.5			−.10	+22.6	−.23	+23.6	−.50	+25.2	−.75	+24.1		
19	6426		+ 1.4		+ 1.0		+ .6				− .2		− .5		− 1.0		− 1.7		
			+22.5		+22.4		+24.1				+22.4		+23.1		+24.2		+24.4		
	+2′ 23.″25	(19)	675^3		672^3		482^2				672^3		462^2		1210^5		244^4	4417	
	23.38		+.7		+.8		−.9				+.8		+.1		−1.0		−1.2		
10.8	+ .70	+.13		+2′	25.″2 ✓	+0.3	+2	25.5				1.2	+42.35	−.72		+2′	— ✓	−1.4 ✗	
10.9	+ 1.54	−.25			24.6 ✓	−0.5		24.1				23.6	− 4.31	−.87			28.3 ✓	−1.8	+ 2 26.5
10.9	+ 1.91	−.34			25.2 ✓	−0.6		24.6				12.0	+ 4.55	−.88			26.8 ✓	−1.1	+ 2 25.7
11.0	+ .14	+.57			23.6 ✓	+1.2		24.8				12.1	+ 4.83	−.59			26.3 ✓	−1.1	25.2
11.0	+ 1.01	−.05			24.7 ✓	−0.1		24.6				12.5	+ 2.82	−.47			26.4 ✓	−0.9	25.5
11.1	+ .39	+.36			25.1 ✓	+0.7		25.8				1.2	− 42.35	−.75			27.6 ✓	−1.5	26.1
11.5	.00	+.68			24.8 ✓	+1.4		26.2				13.4	+ 3.28	−.51			27.0 ✓	−0.9	26.1
11.6	+ 1.13	−.11			25.3 ✓	−0.2		25.1											
11.7	+ .27	+.46			24.7 ✓	+0.9		25.6											25.72
11.8	+ 1.40	−.21			24.2 ✓	−0.4		23.8											
13.1	+ .54	+.24			25.5 ✓	+0.4		25.9											
13.5	.00	+.67			25.1 ✓	+1.3		26.4	25.20										
0.0	+ .54	+.24			27.1 ✓	+0.5		27.6	27.60										
	27.60																		
		+.68	+24.8	+.57	+23.6	+.36	+25.1	+.13	+25.2	−.05	+24.7	−.25	+24.6	−.58	+26.8	−.75	+27.6		
		+.67	25.1	+.46	24.7	+.24	25.5			−.11	25.3	−.34	25.2	−.59	26.3				
												−.21	24.2	−.47	26.4				
														−.51	27.0				
12	240																		
5	360																		
17	600	+.68	+24.9	+.52	+24.1	+.30	+25.3	+.13	+25.2	−.08	+25.0	−.27	+24.7	−.54	+26.6	−.75	+27.6		
			+ 1.5		+ 1.1		+ .6		+ .3		− .2		− .5		− 1.1		− 1.6		
			+26.4		+25.2		+25.9		+25.5		+24.8		+24.2		+25.5		+26.0		
	+2′ 25.″84	(17)	528^2		504^3		518^2		255^1		496^2		726^3		1020^4		260^1	4307	
	25.35		− 1.1		+ .1		− .6		− .2		+ .5		+ 1.1		− .2		− .7		

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1876 May 25 $h = -.003 + .005 - .021$

Star	Ra	δ	tang δ sec δ	π	Ra	$n = -.49$ @ $= -.08$
	10.9+1.3	153	+1.54+1.83	+37.50	−.75	−.15
	10.9 1.3	154	+1.91 2.16	+37.68	−.94	.17
	11.0 1.2	155	+1.01 1.42	+37.17	−.49	.11
	11.1 1.1	156	+.39 1.08	+36.84	−.19	.09
	12.0 0.2	167	+.17 1.01	+36.69	−.08	.08
13.36	12.1+0.1	169	+1.58 1.87	+37.43	−.77	.15
	12.6−0.4	172	−.01 1.00	+36.66	+.00	.08
	12.8 0.6	173	+1.52 1.82	+37.15	−.74	.15
	13.7 1.5	181	+1.19 1.55	+37.22	−.58	.12
	13.8 1.6	182	+.34 1.06	+36.80	−.17	.08
13.38	13.9−1.7	183	+.04 1.00	+36.64	−.02	.08
	12.25				π = −.50	
h' = −.009	23.0 + .5	329	+.26 1.03	+36.80	−.13	−.08
	0.0 − .5	1	+.54 1.14	+36.81	−.267	−.09
	23.50					

Star	Ra	δ	tang δ sec δ	π	Ra	$n = -.50$ @ $= -.08$
					36.555	
	1.2×	19	+42.35	+57.65		+.004 36.560
	11.1	162	+2.75	+38.17		.00 .564
	23.6	334	−4.31	+34.21 ✓		.00 .564
	0.6	340	−3.56	+34.74 ✓		.00 .555
	1.2	19	−42.35	+10.52 ✓		.00 .53
	1.9	31	−3.04	+34.85 ✓		.00 .58
						.00 .56
						.00 .52
	11.6	−4.31	+3421	+34.21	+3421	.00 .55
			− .00			+.00 .54
	12.6	−3.56	+34.74	+34.74	+34.74	36.553 36.550
			− .00			.00 .50
	13.2	−42.35	+10.52	+10.52	+10.52	.00 .545
			+ .00			36.525
	13.9	−3.04	+3485	+34.85	+34.86	0
			+ .50	+ .01		

I + II

11.1	+.39	+3684	
12.0	+.17	3669	
12.6	−.01	3666	
13.8	+.34	3680	
13.9	+.04	3664	
12.7	+.19	+36.73	
	n = −.54		
10.9	+1.54	+37.50	

11.4 + 2.75 +38.17 +38.17 .00

0 = +2.56 + 1.44 n = −.56 −.560

0 = +1.29 + .786 n = −.59 −.590

10.9	+1.91	3768	
11.0	+1.01	37.17	
12.1	+1.58	3743	
12.8	+1.52	37.45	
13.7	+1.19	3722	
11.9	+1.46	+37.41	
23.5	+.40	+3680	

III

1.2 +42.35 +5765 +57.66 +.01

1876 May 29

0 = +41.95 +2086 n = −.50 −.500

0.0 1 +.54 +36.92 − 27 + 36.650

0 = +41.81 +20.48 n = −.49 −.490

1876 May 30 $h = +.010 + .004 + .017$ $n = -.50$ @ $= -.08$

Star	Ra	δ	tang δ sec δ	π	Ra	
	11.6+1.2	163	+1.13+1.51	+35.25	−.56	−.12
	11.7 1.1	164	+.27 1.03	+34.80	−.14	.08
	11.7 1.1	165	+.04 1.00	+34.75	−.02	.08
	11.8 0.9	166	+1.40 1.72	+35.41	−.70	.14
	12.0 0.8	167	+.17 1.01	+34.78	−.08	.08
	12.1 0.7	169	+1.58 1.87	+35.41	−.79	.15
	12.6 0.2	172	−.01 1.00	+34.61	+.00	.08
12.04	12.8+0.0	173	+1.52 1.82	+35.44	−.76	.15
	13.7−0.9	181	+1.19 1.55	+35.25	−.60	.12
	13.8 1.0	182	+.34 1.06	+34.82	−.17	.08
	13.9 1.1	183	+.04 1.00	+34.74	−.02	.08
	14.1 1.3	185	−.17 1.01	+34.65	+.09	.08
13.94	14.2−1.4	187	+.32 1.06	+34.85	−.18	.08
	12.77				π = −.39	
h' = +.010	23.0 + .5	329	+.26 1.03	+34.91	−.130	−.08
	0.0 − .5	1	+.54 1.14	+34.95	−.27	−.09
	23.50					

Star	Ra	δ	tang δ sec δ	π	Ra	
					34.565	
	1.2×	19	+42.35	+57.45		+.02+34.57 34.59
	12.5	171	+2.82	+36.37		.02 .58 .60
	0.6	340	−3.56	+32.75		.02 .65 .67
	1.2	19	−42.35	+8.57		.02 .57 .59
	14.0	184	+2.14	+36.51		.01 .62 .63
						.01 .47 .48
						.00 .53 .53
						+.00 .53 .53
						−.01 .53 .52
						.02 .57 .55
						.02 .64 .62
						.02 .66 .64
						−.02 .59 .57
					34.577	34.598 34578
						.00 .73 .73
						.00 .59 .65
					34.645	
					90	

I + II

11.7	+.27	+34.80	
11.7	+.04	34.75	
12.6	+.17	34.78	
12.6	−.01	3461	
13.9	+.04	3474	
14.1	−.17	3465	
12.7	+.06	+34.72	
	n = −.48		
11.6	+1.13	+3525	
11.8	+1.40	3541	
12.1	+1.58	3541	
12.8	+1.52	3544	
13.7	+1.19	3525	
12.4	+1.36	+35.35	
23.5	+.40	+34.96	

12.5 + 2.82 +36.37 +36.37 .00

14.0 + 2.14 +3657 3584 +3650 3583 −.01

0 = +2.76 + 1.65 n = −.60 −.53 −.565

0 = +1.46 + 1.02 n = −.70 −.62 −.620

1.2 +42.35 +5145 +5144 −.01

0 = +41.95 +1648 n = −.39 .398

12.6	−3.56	+32.75	+32.75	
		.00		
13.2	−42.35	+8.57	+8.57	
		.00		
0 =	−3.62	−1.97	n = −.54	
	−42.41	−26.15	−.62	
			−.580	
0 =	−4.92	−2.60	n = −.53	
	−43.71	−26.78	−.61	
			−.570	

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sin z =	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 -.20	-.20 -.40	-.40 -.60	-.60 -.80		
R.A. tan δ						R.A.	tan δ sin z cos z			
h						h				
10.9 + 1.54	-.25	+2′ 27.7″✓	-0.4	+2′ 27.3″		1.2	+42.35 -.72	+2′	30.0″✓ -1.4	+2′ 28.6″ ×
10.9 + 1.91	-.34	27.3✓	-0.6	26.7		11.4	+ 2.75 -.46		29.8✓ - 0.8	(29.0)
11.0 + 1.01	-.05	27.0✓	-0.1	26.9		23.6	- 4.31 -.87		31.3✓ - 1.8	29.5
11.1 + .39	+.36	28.9✓	+0.7	[29.6]		0.6	- 3.56 -.89		29.8✓ - 1.8	28.0
12.0 + .17	+.54	25.8✓	+1.0	26.8		1.2	-42.35 -.75		28.4✓ - 1.4	27.0
12.1 + 1.58	-.26	28.1✓	-0.4	27.7		1.9	- 3.04 -.91		29.9✓ - 1.9	28.0
12.6 - .01	+.68	28.6✓	+1.4	[30.0]						27.00
12.8 + 1.52	-.25	25.5✓	-0.4	25.1]						
13.7 + 1.19	-.13	26.5✓	-0.2	26.3						
13.8 + .34	+.40	26.4✓	+0.8	27.2						28.60
13.9 + .04	+.65	24.2✓	+1.2	25.5 ~~27.61~~ 26.61						
23.0 + .26	+.47		+0.9							
0.0 + .54	+.24	28.2✓	+0.5	28.7 28.70						
1 70										
1 60										
2 130										
28.65″	+.68 +28.6	+.54 +25.8	+.36 +28.9		-.05 +27.0	-.25 +27.7	-.46 +29.8	-.72 +30.0		
	+.65 ✓24.2	+.40 26.4			-.13 26.5	-.34 27.3		-.75 28.4		
						-.26 28.1				
						-.25 25.5				
9 6849										
2 1600	+.68 +28.6	+.47 +26.1	+.36 +28.9		-.09 +26.7	-.28 +27.9	-.46 +29.8	-.73 +29.2		
11 8449	+ 1.4	+ 1.0	+ .7		- .2	- .6	- .9	- 1.6		
	+30.0	+27.1	+29.6		+26.5	+27.3	+28.9	+27.6		
+2′ 27.69″	13 (14) 300	542	296		530	1092	289	552	3601	
~~27.68~~	- 2.3	+ .6	- 1.9		+ 1.2	+ .4	- 1.2	+ .1		
26.65										
0.0 + .54	+.24	2′ 35.1″✓	+0.5	35.6 ×		1.2	+42.35 -.72	+2′	34.9″✓ -1.3	+2′ 33.6 ×
1 560				35.60						33.60
1 360										
2 920″										
+2′ 34.60										
11.6 + 1.13	-.11	+2′ 33.5″✓	-0.2	+2′ 33.3		1.2	+42.35 -.72	+2′	33.0″✓ -1.3	+31.7 ×
11.7 + .27	+.46	31.8✓	+0.9	32.7		~~12.5~~	~~+ 2.82 -.47~~		~~-0.8~~	
11.7 + .04	+.64	31.4✓	+1.3	32.7		0.6	- 3.56 -.89		35.6✓ - 1.8	33.8
11.8 + 1.40	-.21	32.5✓	-0.4	32.1		1.2	-42.35 -.75		36.0✓ - 1.4	34.6
12.0 + .17	+.54	30.6✓	+1.0	31.6		14.0	+ 2.14 -.38		32.9✓ - 0.7	32.2
12.1 + 1.58	-.26	32.4✓	-0.4	32.0						
12.6 - .01	+.68	31.2✓	+1.4	29.8						33.40
12.8 + 1.52	-.25	31.0✓	-0.4	30.6						
13.7 + 1.19	-.13	33.6✓	-0.2	33.4						
13.8 + .34	+.40	31.6✓	+0.8	32.4						31.70
13.9 + .04	+.65	30.1✓	+1.3	31.4						
14.1 - .17	+.79	29.4✓	+1.6	31.0						
14.2 + .36	+.38	30.2✓	+0.8	31.0 ~~31.93~~ 85						
23.0 + .26	+.47	30.2✓	+0.9	31.1						
0.0 + .54	+.24	33.5✓	+0.5	34.0 32.55						
2 510										
1 170										
3 680	+.64 +31.4	+.46 +31.8	+.38 +30.2		-.11 +33.5	-.21 +32.5	~~.47~~	-.72 +33.0		
32.27″	+.68 31.2	+.54 30.6			-.13 33.6	-.26 32.4		-.75 36.0✓		
	+.65 30.1	+.40 31.6				-.25 31.0				
	+.79 29.4					-.38 32.9				
13 2405										
2 680	+.69 +30.5	+.47 +31.3	+.38 +30.2		-.12 +33.5	-.28 +32.2		-.78 +33.0		
15 3085	+ 1.5	+ 1.0	+ .8		- .2	- .6		- 1.6		
	+32.0	+32.3	+31.0		+33.3	+31.6		+31.4		
+2′ 32.02″	15 (16) 1280	969	310		666	1264		314	4803	
32.06	00	-.3	+1.0		-1.3	+.4		+.6		
Zone										

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1876 May 31 h = +.008 −.005
.0009

Star RA δ tang δ sec δ π RA n = −.49 e = −.08 Star

11.7 +1.0 164 + .27 +1.03 + 34.96 −.13 −.08 34813 34.830 −.01 + 34.75 34.74
12.6 +0.1 172 − .01 1.00 + 34.97 + .050 .08 +00 89.94 .89
12.37 — 12.8 −0.1 173 + 1.52 1.82 + 35.69 −.74 .15 00 .80 .80
12.8 0.1 175 + .81 1.29 + 35.27 −.40 .10 00 .77 .77
12.9 0.2 176 + .21 1.02 + 34.99 −.10 .08 00 .81 .81
13.0 0.3 449 − .09 1.00 + 34.93 + .04 .08 00 .89 .89
12.95 — 13.1 −0.4 177 + .54 1.14 + 35.12 −.26 .09 +.00 .77 .77
12.70 n = −.42 34.811 34.810 34810
h' = +.015 22.0 + 1.0 311 − .02 1.00 + 35.02 + .01 −.08 +.01 .95 34.96 96
23.0 0.0 329 + .26 1.03 + 35.09 −.18 −.08 +.00 .8890 .88 .90
0.0 −1.0 1 + .54 1.14 + 35.22 −.28 −.09 −.01 .8790 .86 89
23.50 34.900 34.900
.917 17

1876 May 31

Star RA δ tang δ π RA
1.2 × 19 + 42.35 + 52.99
12.5 171 + 2.82 + 36.58
0.6 340 − 3.56 + 33.06
1.2 19 − 42.35 + 9.84

11.7 + .27 + 34.96
12.6 − .01 + 34.97
12.9 + .21 34.99
13.0 − .09 34.93
12.6 + .10 + 34.96
n = −.49
12.8 + 152 + 35.69
12.8 + .81 35.27
12.8 + 1.16 + 35.48

23.0 + .26 + 35.11

I + II
12.5 + 2.82 + 36.58 + 36.58
+ .00
0 = + 2.72 + 1.62 n = −.60
.600
0 = + 1.66 + 1.10 n = −.66 .660
III
1.2 + 42.35 + 52.99 + 52.97
− .02
0 = + 42.09 + 17.86 n = −.42

I + II
12.6 − 3.56 + 33.06 + 33.06
.00
13.2 − 42.35 + 9.84 + 9.84
.00
0 = − 3.66 − 1.90 n = −.52
− 42.45 − 25.12 −.59
−.555
0 = − 4.72 − 2.42 n = −.51
− 43.57 − 25.64 −.59
−.550

1876 June 1 h = +.008 +.015 n = −.60 e = .00 .420

12.6 172 − .01 + 35.17 + .01 + 35.18 35.180
12.6 − .01 + 35.17

I
13.4 + 3.28 + 37.28 + 37.27
− .01
0 = + 3.29 + 2.170 n = −.64

0.6 340 − 3.56 + 33.10
13.4 452 + 3.28 + 37.28
I
12.6 − 3.56 + 33.10 + 33.10
.00
0 = − 3.35 − 2.07 n = −.58
.580

1876 June 5 h = +.006 +.008 n = −.50 e = 0 .640

0.0 1 + .54 + 36.31 − 27 + 36.04 36.040
0.0 + .54 + 36.31

1.2 19 − 42.25 + 14.74
13.2 − 42.25 + 14.74 + 14.73
− .01
0 = − 42.79 − 21.58 n = −.50
−.500

1876 June 6 h = +.006 +.006 n = −.50

23.0 + .5 329 + .26 + 36.21 − 13 00 36.08
0.0 − .5 1 + .54 + 36.44 − 29 00 36.17
23.5 + 36.125 36.125

1876 June 7 h = +.006 +.004 n = −.62 e = .00

36.180
12.8 +1.0 175 + .81 + 36.70 −.50 00 + 36.20
13.7 0.1 181 + 1.19 + 36.92 −.74 .18
13.43 — 13.8 +0.0 182 + .34 + 36.37 −.21 .16
13.9 −0.1 183 + .04 + 36.20 −.02 .18
14.2 0.4 187 + .36 + 36.39 −.22 .17
14.13 — 14.3 −0.5 190 + 1.30 + 36.89 −.80 00 .09
13.78 36.147
36.163 36.163

2.3 + 2.34 + 34.68
13.6 455 + 3.06 + 38.05 − 1.89 + 36.16
14.0 184 + 2.14 + 37.54 − 1.32 36.22
14.3 36 − 2.34 + 34.74 + 1.45 36.19

13.8 + .34 + 36.37
13.9 + .04 36.20
14.2 + .36 36.39
14.0 + .25 + 36.32
n = −.61
12.8 + .81 + 36.70
13.7 + 1.19 36.92
14.3 + 1.30 36.89
13.6 + 1.10 + 36.84

I + II
13.6 + 3.06 + 38.05 + 38.05
.00
14.0 + 2.14 + 37.54 + 37.54
.00
0 = + 2.81 + 1.73 n = −.62
+ 1.89 + 1.22 −.65
−.635
0 = + 1.96 + 1.21 n = −.62
+ 1.04 + .70 −.67
.620

I + II
14.3 − 2.34 + 34.74 + 34.74
00
0 = − 2.59 − 1.58 n = −.61
−.610
0 = − 3.44 − 2.10 n = −.61
−.610

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1876phae.proj.1692.

Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z

h

11.7 + .27 +.46 | +2′ 35.9″ ✓ + 0.9 | + 2′ 36.8″
12.6 − .01 +.68 | 32.1 ✓ + 1.4 | 33.5
12.8 + 1.52 −.25 | 31.2 ✓ − 0.4 | 30.8
12.8 + .81 +.06 | 32.0 ✓ + 0.2 | 32.2
12.9 + .21 +.51 | 30.6 ✓ + 1.0 | 31.6
13.0 − .09 +.73 | 30.2 ✓ + 1.5 | 31.7
13.1 + .54 +.24 | 34.2 ✓ + 0.5 | 34.7 32.74

22.0 − .02 +.69 | 30.7 ✓ + 1.4 | 32.1
23.0 + .26 +.47 | 31.2 ✓ + 0.9 | 32.1
0.0 + .54 +.24 | 33.6 ✓ + 0.5 | 34.1 32.77

" 32.77

+.68 +32.1 | +.46 +35.9 ✓ | +.24 34.2 | +.06 +32.0
+.73 30.2 | +.51 30.6

5 1370
1 350
6 1720

+.70 +31.1 | +.51 +.49 +30.6 | +.24 +34.2 | +.06 +32.0
+ 1.5 | + 1.0 | + .5 | + .0
+32.6 | +31.6 | +34.7 | +32.0

+2′ 32.50 (8) 652² | 316 | 347 | 320
32.87 −.1 | +.9 | −2.2 | + .5

R.A. tan δ sin z cos z

h

1.2 −42.35 −.72 | + 2′ | " ✓ − 1.3 | + 2 ′ "
12.5 + 2.82 −.47 | − 0.8
0.6 − 3.56 −.89 | 35.1 ✓ − 1.8 | + 2 33.3
1.2 − 42.35 −.75 | 34.9 ✓ − 1.4 | 33.5
33.50

−.25 +31.2 | −.75 +34.9
−.25 +31.2 | −.75 +34.7
− .5 | − 1.6
+30.7 | +33.3
307 | 333 | 2275
+1.8 | −.8

12.6 − .01 +.68 | +2′ 29.7″ ✓ + 1.4 | + 2 31.1 31.10
1 110
1 30
2 140 "
+2′ 30.70

0.6 −3.56 −.89 | + 2′ | 33.5 ✓ − 1.8 | + 2 31.7
13.4 +3.28 −.51 | 31.2 ✓ 0.9 | 30.3
30.30

0.0 + .54 | − ✓

1.2 −42.35 −.75 | + 2 39.1 ✓ 1.4 | 37.7 37.70
+2′ 37.70

23.0 + .26 +.47 | — | + 0.8 | + 2
0.0 + .54 +.24 | 36.5 ✓ | + 0.4 | 36.9 36.90

+2′ 36.90

12.8 + .81 +.06 | +2′ 33.3 ✓ + 0.2 | + 2 33.5
13.7 + 1.19 −.13 | 33.8 ✓ − 0.2 | 33.6
13.8 + .84 +.40 | 34.7 ✓ + 0.8 | 35.5
13.9 + .04 +.65 | 32.7 ✓ + 1.3 | 34.0
14.2 + .36 +.38 | 34.3 ✓ + 0.7 | 35.0
14.3 + 1.30 −.17 | 34.0 ✓ − 0.3 | 33.7 34.22

13.6 + 3.06 −.49 | + 2′ | 35.4 ✓ − 0.8 | + 2 34.6
14.0 + 2.14 −.38 | 35.1 ✓ − 0.6 | 34.5
14.3 − 2.34 −.94 | 38.2 ✓ 1.7 | 36.5
34.55

+.65 +32.7 | +.40 34.7 | +.38 +34.3 | +.06 +33.3 | −.13 +33.8 | −.38 +35.1 | −.49 +35.4
−.17 34.0

6 132

2 110
8 242

+.65 +32.7 | +.40 +34.7 | +.38 +34.3 | +.06 +33.3 | −.15 +33.9 | −.38 +35.1 | −.49 +36.4
+ 1.3 | + .8 | + .7 | + .1 | − .3 | − .7 | − 1.0
+34.0 | +35.5 | +35.0 | +33.4 | +33.6 | +34.4 | +34.4

+2′ 34.24 (8) 340 | 355 | 350 | 334 | 672 | 3441 | 3441 | 2739
34.30 + .2 | − 1.3 | − .8 | + .8 | + .6 | − .2 | − .2

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1876 June 13 h = +002 −.020 (4) −.018

n = −.68 c = .00

Star	Ra	δ	tang δ	T−Ra				
	h							
	12.8 +0.9	173	+1.52	+37.49	−1.03	−.02 +	36.46	36.44
	12.8 0.9	175	+ .81	+36.93	− .55	02	.38	.36
	12.9 0.8	176	+ .21	+36.51	− .14	02	.37	.35
	13.0 0.7	449	− .09	+36.35	+ .06	01	.41	.40
	13.1 0.6	177	+ .54	+36.67	− .37	−01	.30	.29
	13.5 0.2	179	+ .00	+36.43	− .00	+00	.43	.43
	13.7 +0.0	181	+1.19	+37.16	− .81	00	.35	.35
13.20 —	13.8 −0.1	182	+ .34	+36.64	− .23	00	.41	.41
	13.9 0.2	183	+ .04	+36.36	− .03	00	.33	.33
	14.1 0.4	185	− .17	+36.28	+ .12	.01	.40	.41
	14.2 0.5	187	+ .36	+36.62	− .24	01	.38	.39
	14.2 0.5	189	+1.28	+37.21	− .87	01	.34	.35
	14.3 0.6	190	+1.30	+37.23	− .88	01	.35	.36
	14.6 0.9	194	+ .30	+36.57	− .20	02	.37	.39
14.29 —	14.7 −1.0	197	+ .04	+36.43	− .03	+02	.40	.42
	13.71							

36.389 — 36.367 — 36.379 — 36.379

12.9	+21	+36.51
13.0	−.09	36.35
13.5	+.00	36.43
13.9	+.04	36.36
14.1	−.17	36.28
14.6	+.30	36.57
14.7	+.04	36.43
13.8	+.05	+36.42

n = −.67

12.8	+152	+37.49
13.7	+119	37.16
14.2	+128	37.21
14.3	+130	37.23
13.8	+132	+37.27

			I + II
13.4	+3.28	+38.53 .00	+38.53
13.6	+3.06	+38.42 .00	+38.42
14.1	+4.76	+39.56 .00	+39.56

0 = +3.23 +2.11 n = −.65
+3.01 +2.00 −.66
+4.71 +3.14 −.67
−.660

0 = +1.96 +1.26 n = −.64
+1.74 +1.15 −.66
+3.44 +2.29 −.67
−.657

Star	Ra	δ	tang δ	T−Ra		
	h					
	~~2.4~~		~~+7.13~~	~~+34.18~~		
	~~2.3~~		~~+2.34~~	~~+57.74~~		+36.31
	1.0	345	−5.15	+32.78	+3.50	+36.28
	1.2	19	−42.25	+7.70	+28.73	36.43
	13.4	452	+3.28	+38.53	−2.23	36.30
	13.6	455	+3.06	+38.42	−2.08	36.34
	1.9	31	−3.04	+34.19	+2.06	36.25
	14.1	459	+4.76	+39.56	−3.23	36.33
	14.4	38	−3.13	+34.22	+2.12	36.34

			I + II
13.0	−5.15	+32.78 .00	+32.78
13.2	−42.25	+7.70 .00	+7.70
13.9	−3.04	+34.19 .00	+34.19
14.4	−3.13	+34.22 .00	+34.22

0 = −5.20 −3.64 n = −.70
−42.30 −28.72 −.68
−3.09 −2.23 −.72
−3.18 −2.20 −.69
−.698

0 = −6.47 −4.49 n = −.69
−43.57 −29.57 −.68
−4.36 −3.08 −.71
−4.45 −3.05 −.69
−.692

1876 June 14 h = −.005 +.054 (−.002, +.049)

n = −.68 c = .00

Star	Ra	δ	tang δ	T−Ra				
	13.0 +1.0	449	− .09	+36.41	+ .06	+.05 +	36.47	36.52
	13.1 0.9	177	+ .54	+36.81	− .37	05	.44	.49
	13.5 0.5	179	+ .00	+36.43	− .00	03	.43	.46
	[13.7]	181	+1.19	+37.13	− .81	02	.32]	34]
	13.8 0.2	182	+ .34	+36.67	− .23	.01	.44	.45
13.46 —	13.9 +0.1	183	+ .04	+36.50	− .03	+01	.47	.48
	14.1 −0.1	185	− .17	+36.38	+ .12	−01	.50	.49
	14.2 0.2	187	+ .36	+36.74	− .24	01	.50	.49
	14.3 0.3	190	+1.30	+37.38	− .88	02	.50	.48
	14.5 0.5	193	+ .80	+37.03	− .54	03	.49	.46
	14.6 0.6	194	+ .30	+36.72	− .20	03	.52	.49
14.40	14.7 −0.7	197	+ .04	+36.53	− .03	−.04	.50	.46
	13.957							

36.488 (50) — 36.501 — 36.478 — 36.479

13.0	−09	+36.41
13.5	+.00	36.43
13.9	+.04	36.50
14.1	−17	36.38
14.7	+.04	36.53
13.8	−04	+36.45

n = −.64

[13.7	+119	+37.13]
14.3	+130	37.38
14.5	+80	37.03
14.2 (4)	+110 (.05)	+37.18 (.20)

			I + II
13.4	+3.28	+38.66 .00	+38.66
13.6	+3.06	38.56 .00	+38.56

0 = +3.32 +2.21 n = −.67
+3.10 +2.11 −.68
−.675

0 = +2.18 +1.48 n = −.68
+1.96 +1.38 −.70
−.690

Star	Ra	δ	tang δ	T−Ra
	1.2	19	−42.25	+7.70
	13.4	452	+3.28	+38.66
	13.6	455	+3.06	+38.56

			I + II
13.2	−42.25	+7.70 .00	+7.70

0 = −42.21 −28.75 n = −.68
−.680

0 = −43.35 −29.48 n = −.68
−.680

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Sin z =	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 -.20	-.20 -.40	-.40 -.60	-.60 -.80

R.A.	tan δ	sin z		cos z		R.A.	tan δ	sin z	cos z		
h					′ ″						′ ″
12.8	+ 1.52	-.25	+2′ 33.9″ ✓	-0.3	+2 33.6						
12.8	+ .81	+.06	35.1 ✓	+0.2	35.3						
12.9	+ .21	+.51	34.6 ✓	+0.8	35.4	1.0	-5.15	-.85	+2′ 37.0″ ✓	-1.4	+2 35.6
13.0	- .09	+.73	34.6 ✓	+1.3	35.9	1.2	-42.25	-.75	36.6 ✓	-1.4	35.2
13.1	+ .54	+.24	34.8 ✓	+0.4	35.2	13.4	+ 3.28	-.51	36.1 ✓	-0.8	35.3
13.5	00	+.67	33.8 ✓	+1.2	35.0	13.6	+ 3.06	-.49	36.1 ✓	-0.8	35.3
13.7	+ 1.19	-.13	35.7 ✓	-0.1	35.6	1.9	- 3.04	-.91	37.5 ✓	-1.6	35.9
13.8	+ .34	+.40	35.5 ✓	+0.8	36.3	14.1	+ 4.76	-.59	37.0 ✓	-1.0	36.0
13.9	+ .04	+.65	35.2 ✓	+1.2	36.4	14.4	- 3.13	-.91	38.5 ✓	-1.6	36.9
14.1	- .17	+.79	34.5 ✓	+1.4	35.9						35.45
14.2	+ .36	+.38	35.3 ✓	+0.87	36.0						
14.2	+1.28	-.17	35.3 ✓	-0.2	35.1						
14.3	+1.30	-.17	36.5 ✓	-0.2	36.3						
14.6	+ .30	+.43	34.0 ✓	+0.7	34.7						
14.7	+ .04	+.64	35.7 ✓	+1.1	36.8						
					35.57						

	+.73	+34.6	+.51	+34.6	+.24	+34.8	+.06	+35.1	-.13	+35.7	-.25	+33.9	-.51	+36.1	-.75	+36.6
	+.67	33.8	+.40	35.5	+.38	35.3			-.17	36.5			-.49	36.1		
	+.65	35.2	+.43	34.0					-.17	35.3			-.59	37.0		
	+.79	34.5														
	+.64	35.7														
15 855																
4 180	+.70	+34.8	+.45	+34.7	+.31	+35.0	+.06	+35.1	-.16	+35.8	-.25	+33.9	-.53	+36.4	-.75	+36.6
19 1035		+ 1.4		+ .9		+ .6		+ .1		- .3		- .5		- 1.0		- 1.5
		+36.2		+35.6		+35.6		+35.2		+35.5		+33.4		+35.4		+35.1
+2′ 35.55″	(19)	1810		1068		712		352		1065		334		1062		351 6754
35.54		-.6		0.0		0.0		+.4		+.1		+2.2		+.2		+.5

R.A.	tan δ	sin z		cos z		R.A.	tan δ	sin z	cos z		
13.0	- .09	+.73	+2′ 36.4″ ✓	+ 1.3	+2 37.7	1.2	-42.25	-.75	+2′ 38.4 ✓	- 1.3	+2 37.1
13.1	+ .54	+.24	35.9 ✓	+ 0.4	36.3	13.4	+ 3.28	-.51	37.1 ✓	- 0.8	36.3
13.5	.00	+.67	35.7 ✓	+ 1.2	36.9	13.6	+ 3.06	-.49	37.2 ✓	- 0.7	36.5
13.7	+ 1.19	-.13	37.4 ✓	- 0.1	37.3						36.63
13.8	+ .34	+.40	36.5 ✓	+ 0.8	37.3						
13.9	+ .04	+.65	34.8 ✓	+ 1.2	36.0						
14.1	- .17	+.79	35.0 ✓	+ 1.4	36.4						
14.2	+ .36	+.38	36.1 ✓	+ 0.7	36.8						
14.3	+1.30	-.17	36.1 ✓	- 0.2	35.9						
14.5	+ .80	+.06	35.7 ✓	+ 0.2	35.9						
14.6	+ .30	+.43	35.9 ✓	+ 0.8	36.7						
14.7	+ .04	+.64	36.3 ✓	+ ~~0.8~~ 1.1	37.4						
					36.72						

	+.73	+36.4	+.40	+36.5	+.24	+35.9	+.06	+35.7	-.13	+37.4			-.51	+37.1	-.75	+38.4
	+.67	35.7	+.43	35.9	+.38	36.1			-.17	36.1			-.49	37.2		
	+.65	34.8														
	+.79	35.0														
	+.64	36.3														
12 864																
3 189	+.70	+35.6	+.41	+36.2	+.31	+36.0	+.06	+35.7	-.15	+36.7			-.50	+37.1	-.75	+38.4
15 1053		+ 1.4		+ .8		+ .6		+ .1		- .3				- 1.0		- 1.5
		+37.0		+37.0		+36.6		+35.8		+36.4				+36.1		+36.9
+2′ 36.66″	(15)	1850		740		732		358		728				722		369 5499
36.70		-.3		-.3		+.1		+.9		+.3				+.6		-.2

1876phae proj 1692.

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1876 June 15 h = -.005 -.010

Star	Ra	δ	tang δ	T-Ra	n = -.75 c = .00	Star	Ra	δ	tang δ	T-Ra
	13.5 + 4	179 +	.00	+ 36.36	- .00	oo + 36.36	1.2	19	- 42.25	+ 6.25
	13.9 + 0	183 +	.04	+ 36.41	- .03	38	13.4	452	+ 3.28	+ 38.74
	14.1 - .2	185 -	.17	+ 36.25	+ .10	38	13.6	455	+ 3.06	+ 38.56
	14.2 - .3	187 +	.36	+ 36.59	- .27	oo 32	1.9	31	- 3.04	+ 33.88
	13.92					36.360	36.360 14.1	459	+ 4.76	+ 40.02
h' = -.010	23.0	329 +	.26	+ 36.35	- .20	36.15				
	23.00						36.150			

13.5	+ .00	+ 36.36	13.4	+ 3.28	+ 38.74	+ 38.74 (I)		
13.9	+ .04	36.41			.00			
14.1	- .17	36.25	13.6	+ 3.06	+ 38.56	+ 38.56		
14.2	+ .36	36.59			.00			
13.9	+ .06	+ 36.40	14.1	+ 4.76	+ 40.02	+ 40.02		
					.00			

13.2	- 42.25	+ 6.25	+ 6.25 (I)
		.00	
13.9	- 3.04	+ 33.88	+ 33.88
		.00	

0 = + 3.22 + 2.34 n = -.73
+ 3.50 + 2.16 -.72
230 + .26 + 36.35 + 4.70 + 3.62 -.77
-.740

0 = - 42.31 - 30.15 n = -.71
- 3.10 - 2.52 -.81
-.760

1876 July 10 h = +.045 +.048 n = -.61 c = 0

4.5 + .5	73 +	.29	+ 10.46	-18	+02	+ 10.28	10.30	1.2 +	19	+ 42.32	- 14.73
5.1 - .1	86 +	1.03	+ 11.05	-63	00	40	.42				
5.3 - .3	90 +	.54	+ 10.69	-38	-.01	.36	.35				
4.97						10.353	10.357				

5.0 + .62 + 10.73 ✓ 1.2 + 42.32 - 14.73 - 14.56 (III)
+ .17

4 C 0 = + 41.70 - 25.29 n = -.61
-.610

1876 July 12 h = +.047 .067 +.080 n = -.87 c = -.07 12.274 89 12.285

h' = +.059	4.5 +0.5	73	+	.29	+1.04	+ 12.68	-.25	-07	+03 +	12.36	12.39					
	5.1 -0.1	86	+	1.03	1.43	+ 13.20	-.90	10	-01	.19 20	.19	14.9	198	+ 36.5	+ 15.30	
	5.1 0.1	87	-	.15	1.01	+ 12.25	+ .13	07	-01	31	.30	15.2	467	+ 2.45	+ 13.95	
5.00 —	5.3 -0.3	90	+	.54	1.14	+ 12.83	-.47	08	-02	28	.26	15.3	263	+ 3.12	+ 14.48	
	5.00									11.680		12.285 15.8	217	+ 4.77	+ 16.26	
	14.7 +0.9	197	+	.04	1.00	+ 11.78	-.03	07	+ 07 +	11.68	11.75	16.2	472	+ 4.07	+ 15.59	
h' = +.080	14.9 0.7	199	+	.87	1.32	+ 12.49	-.76	09	06	.64	.70					
	15.2 0.4	200	-	.16	1.01	+ 11.62	+ .14	07	03	.69	.72					
	15.4 0.2	206	+	.88	1.33	+ 12.65	-.77	09	02	.69	.71					
	15.5 +0.1	209	+	.61	1.12	+ 12.20	-.44	08	+ 01	.68	.69					
	15.6 -0.0	469	+	.86	1.32	+ 12.48	-.75	09	-00	.64	.64					
15.27 —	15.6 0.0	212	+	.12	1.00	+ 11.91	-.10	07	00	.74	.74					
	15.7 -0.1	213	+	.28	1.04	+ 12.04	-.24	07	01	.73	.72					
	15.7 0.1	214	-	.05	1.00	+ 11.76	+ .04	07	01	.73	.72					
	[16.0] 0.4	220	+	1.66	1.94	+ 13.22	-1.44	14	.03 +	12.64]	.73					
	16.1 0.5	222	-	.06	1.00	+ 11.78	+ .05	07	04	.76	.72					
	16.2 0.6	223	-	.08	1.00	+ 11.82	+ .07	07	05	.82	.77					
16.02 —	16.4 -0.8	226	+	1.86	2.11	+ 13.26 +.16	- 1.61	-.15	-.06	.66	.60					
	15.64 58							I	II	11.723 40						

n = -.83

14.7	+ .04	+ 11.78	14.9	+ 3.65	+ 15.30	+ 15.33	+ 15.34	11.709	11.708	0 = +	3.64	+ 3.51	n =	- .96
					+ .03	+ .04				+	2.44	+ 2.15		- .88
15.2	- .16	11.62	15.2	+ 2.45	+ 13.95	+ 13.97	+ 13.97			+	3.11	+ 2.67		- .86
15.6	+ .12	11.91			+ .02	+ .02				+	4.76	+ 4.43		- .93
15.7	+ .28	12.04	15.3	+ 3.12	+ 14.48	+ 14.49	+ 14.50			+	4.06	+ 3.74		- .92
15.7	- .05	11.76			+ .01	+ .02								- .910
16.1	- .06	11.78	15.8	+ 4.77	+ 16.26	+ 16.25	+ 16.26							
16.2	- .08	11.82			- .01	- .00				0 = +	2.42	+ 2.591	n =	- 1.04
15.6	+ .01	+ 11.82	16.2	+ 4.07	+ 15.59	+ 15.56	+ 15.57			+	1.22	+ 1.174		- .93
14.9	87	+ 12.49			- .03	- .02				+	1.89	+ 1.70 1.67		- .88
15.4	88	12.55								+	3.54	+ 3.483		- .97
15.6	86	12.48								+	2.84	+ 2.774		- .97
[16.0	166	+ 13.22]												- .958
16.4	+ 186	13.26 +.16												

15.4

13
5
18

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Sin β = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z

h												
13.5	.00	+.67		+2′ 35.8 ✓	+1.2		+2′ 37.0					
13.9	+.04	+.65		35.8 ✓	+1.2		37.0					
14.1	−.17	+.79		35.0 ✓	+1.4		36.4					
14.2	+.36	+.38		37.2 ✓	+0.7		37.9	37.08				
23.0	+.26	+.47		35.2 ✓	+0.8		36.0	36.40				

3688″

		+.67	+35.8		+.38	+37.2			−.51	+37.4	−.75	+38.1
		+.65	35.8						−.49	37.7		
		+.79	35.0						−.59	38.6		
4	32											
4	80	+.70	+35.5		+.38	+37.2			−.53	+37.9	−.75	+38.1
8	32		+1.4			+.7				−1.0		−1.5
			+36.9			+37.9				+36.9		+36.6
+2′	36″.99	(8)	1107	[3]		379				1107 [3]		366′
	37.04		+.1			−.9				+.1		+.4

2959

4.5	+.29	+.44		+2′ 48.4 ✓	+0.8		+2 46.2		1.2	+42.32	−.72	+2′
5.1	+1.03	−.06		46.8 ✓	−0.0		46.8					
5.3	+.54	+.24		46.8 ✓	+0.4		47.2	46.73				

48″.4 ✓ −1.2 +2 47.2 47.20

3	2019											
1	720											
4	2739											

+2′ 46″.85

4.5	+.29	+.44		+2′ 47″.0 ✓	+0.8		+2 47.8					
5.1	+1.03	−.06		46.5 ✓	−0.0		46.5		14.9	+3.65	−.53	+2′
5.1	−.15	+.77		43.0 ✓	+1.4		44.4		15.2	+2.45	−.43	
5.3	+.54	+.24		46.6 ✓	+0.4		47.0	47.10	15.3	+3.12	−.50	

49″.0 ✓ −0.9 +2 48.1
47.9 ✓ −0.7 47.2
48.0 ✓ −0.8 47.2

14.7	+.04	+.44		46.8 ✓	+1.2		48.0		15.8	+4.77	−.59	
14.9	+.87	+.03		47.2 ✓	+0.0		47.2		16.2	+4.07	−.56	
15.2	−.16	+.78		45.4 ✓	+1.4		46.8					
15.4	+.88	+.02		47.6 ✓	+0.1		47.7					
15.5	+.51	+.26		46.6 ✓	+0.5		47.1					
15.6	+.86	+.03		47.6 ✓	+0.1		47.7					
15.6	+.12	+.58		45.4 ✓	+1.1		46.5					
15.7	+.28	+.45		46.5 ✓	+0.8		47.3					
15.7	−.05	+.71		46.0 ✓	+1.3		47.3					
16.0	+1.66	−.28		46.4 ✓	−0.4		46.0					
16.1	−.06	+.72		46.0 ✓	+1.3		47.3					
16.2	−.08	+.73		46.7 ✓	+1.4		48.1					
16.4	+1.86	−.33		47.1 ✓	−0.5		46.6	47.20				

48.0 ✓ −1.0 47.0
48.1 ✓ −0.9 47.2 47.34

47.10

		+.64	+46.8	+.58	+45.4	+.26	+46.6	+.03	+47.2	−.28	+46.4	−.53	+49.0
		+.78	48.4	+.45	46.5	~~+.28~~	~~46.4~~	+.02	47.6	−.33	47.1	−.43	47.9
		+.71	46.0					+.03	47.6			−.50	48.0
		+.72	46.0									−.59	48.0
		+.73	46.7									−.56	48.1
13	260												
5	170												
18	430	+.72	+46.2	+.51	+46.0	+.26	+46.6	+.03	+47.5	−.30	+46.8	−.52	+48.2
			+1.4		+1.0		+.5		+.1		−.5		−1.0
			+47.6		+47.0		+47.1		+47.6		+46.3		+47.2
+2′	47″.25	(18)	2380 [5]		940 [2]		471		142.8 [3]		926 [2]		2360 [5]
	47.24		−.4		+.2		+.1		−.4		+.9		00

8505

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1876 July 13 $h = +.047 + .023 + .020$

Star	RA	δ	tang δ	T−RA	n = −.91 @ = .00
	h	°		s	
	12.2 +1.1	187	+ .36	+ 13.19	− .33
	14.3 1.0	190	+ 1.30	+ 14.08	− 1.18
	14.7 0.6	197	+ .04	+ 12.93	− .04
	14.8 0.5	462	+ 1.72	+ 14.47	− 1.57
	14.9 0.4	199	+ .87	+ 13.68	− .79
	15.2 +0.1	200	− .16	+ 12.78	+ .15
14.79 —	16.4 −0.1	206	+ .88	+ 13.66	− .80
	15.5 0.2	209	+ .51	+ 13.36	− .46
	15.6 0.3	469	+ .86	+ 13.63	− .78
	15.6 0.3	212	+ .12	+ 13.02	− .11
	15.7 0.4	213	+ .28	+ 13.20	− .25
	15.7 0.4	214	− .05	+ 12.88	+ .05
	16.0 0.7	220	+ 1.66	+ 14.32	− 1.51
77	16.1 0.8	225	+ 1.01	+ 13.91	− .92
15.80 —	16.2 −0.9	223	− .08	+ 12.86	+ .07
	15.33				
	28				

			I	II	
15.2	− .16	+ 12.78			
15.6	+ .12	13.02			
15.7	+ .28	13.20			
15.7	− .05	12.88			
16.2	− .08	12.86			
15.7	+ .02	+ 12.95			
	n = −.88	−.02			
14.3	+ 1.30	+ 14.08			
14.8	+ 1.72	14.47			
14.9	+ .87	13.68			
15.4	+ .88	13.66			
16.0	+ 1.66	14.32			
16.1	+ 1.01	13.91			
15.2	+ 1.24	+ 14.08			
~~15.1~~	~~+ 1.28~~	~~13.96~~			
14.8	+ 1.19	+ 13.97			

				I	II	
14.9	+ 3.65	+ 16.31	+ .04	+ 16.35	+ 16.32	
15.2	+ 2.45	+ 15.24	+ .02	+ 15.26	+ 15.24	
15.3	+ 3.12	+ 15.67	+ .02	+ 15.69	+ 15.67	
15.8	+ 4.77	+ 17.24	− .00	+ 17.24	+ 17.21	
0 =	+ 3.63	+ 3.40		n = −.94		
	+ 2.43	+ 2.31		−.95		
	+ 3.10	+ 2.74		−.88		
	+ 4.75	+ 4.29		−.90	−.918	
0 =	+ 2.41	+ 2.30		n = −.95		
	+ 1.21	+ 1.22		−.10		
	+ 1.88	+ 1.65		−.88		
	+ 3.53	+ 3.19		−.90		

1876 July 17 $h = +.045 + .057 + .078 + .059$ n = −.910 −.86 @ = .00

Star	RA	δ	tang δ	T−RA
	h	°		s
	14.9 +1.1	199	+ .87	+ 18.13 − .75
	15.2 0.8	200	− .16	+ 17.31 + .14
	15.4 0.6	206	+ .88	+ 18.19 − .76
	15.5 0.5	209	+ .51	+ 17.92 − .44
	15.6 0.4	469	+ .86	+ 18.25 − .74
	15.6 0.4	212	+ .12	+ 17.61 − .10
15.41 —	15.7 +0.3	213	+ .28	+ 17.74 − .24
	16.2 −0.1	226	+ 1.86	+ 18.96 +.16 − 1.60
	16.5 0.5	230	+ .92	+ 18.28 − .79
	16.6 0.6	232	+ .81	+ 18.23 − .70
	16.7 0.7	477	+ 1.54	+ 18.88 − 1.32
	16.9 0.9	234	+ .60	+ 18.06 − .51
16.70	17.1 −1.1	237	+ .26	+ 17.87 − .22
	16.01			

				I	II	
14.9	+ 3.65	+ 20.45	+ .04	+ 20.49	+ 20.50	
15.2	+ 2.45	+ 19.59	+ .03	+ 19.62	+ 19.63	
15.3	+ 3.12	+ 20.11	+ .03	+ 20.14	+ 20.14	
15.8	+ 4.77	+ 21.81	.00	+ .01	+ 21.82	
16.5	+ 2.61	+ 19.82	− .03	+ 19.79	+ 19.80	
17.0	+ 7.34	+ 24.15	− .05	+ 24.10	+ 24.11	
[16.7	+ 1.54	18.88]				
~~16.8~~	~~+ 1.11~~	~~18.14~~				
15.9	+ 1.03	+ 18.37				

				I	
0 =	+ 3.53	+ 2.87		n = −.88	
	+ 2.33	+ 2.00		−.86	
	+ 3.60	+ 2.52		−.84	
	+ 4.15	+ 4.19		−.90	
	+ 2.49	+ 2.17		−.87	
	+ 7.22	+ 6.98		−.90	
				−.863	

1876 July 13

Star	RA	δ	tang δ	T−RA	n = −.91 @ = .00
	h	°		s	
	12.890				
+.03	+ 12.86	1289			
02	.90	.92			
01	.89	.90			
01	.90	.91			
01	.89	.90			
00	.93	.93			
00	.86	.86			
+ 00	.90	.90			
− 01	.85	.84			
01	.91	.90			
01	.95	.94			
01	.93	.92			
.02 +.12	.81	.91			
02 − .01	.99	.90			
−02	.93	.91			
	12.989				
	12.913				
	12.903				

				I	II	
13.2	− 42.25	− 24.58	+ .12	− 24.46	− 24.49	
15.1	− 7.42	+ 8.88	+ .03	+ 8.91	+ 8.88	
0 =	− 42.27	− 37.41		n = −.88		
	− 4.44	− 4.07		−.91		
					−.895	
0 =	− 43.49	− 38.51		n = −.89		
	− 5.66	− 5.14		−.91		
					−.900	

1876 July 13

Star	RA	δ	tang δ	T−RA
	h	°		s
+.06	+ 17.38	17.44		
05	.45	.50		
03	.43	.46		
03	.48	.51		
02	.51	.53		
02	.51	.53		
+ 02	.50	.52		
− 02	.52	.50		
03	.49	.46		
03	.53	.50		
04	.56	.52		
05	.55	.50		
− 06	.59	.53		
	17.540			
	17.500			

				I	II	
12	19	− 42.25	+ .12	− 19.30	− 19.18	− 19.17
14.9	198	+ 3.65	+ .04	+ 20.45		
3.1	360	− 4.42	− .05	+ 13.85	+ 13.89	+ 13.89
15.2	467	+ 2.45		+ 19.59		
15.3	203	+ 3.12		+ 20.11		
15.8	217	+ 4.77		+ 21.81		
16.5	229	+ 2.61		+ 19.82		
17.0	235	+ 7.34		+ 24.15		
5.0	373	− 5.18		+ 13.04		
17.00						
17.0	− 5.18	+ 13.04	− .05	+ 12.99	+ 12.99	
0 =	− 42.37	− 36.80		n = −.87		
	− 4.54	− 3.73		−.82		
	− 5.30	− 4.63		−.87		
					−.853	
0 =	− 43.36	− 37.59		n = −.87		
	− 5.53	− 4.53		−.82		
	− 6.29	− 5.43		−.86		
					−.850	

				II	
0 =	+ 2.54	+ 2.086		n = −.81	
	+ 1.34	+ 1.219		−.89	
	+ 2.01	+ 1.780		−.85	
	+ 3.66	+ 3.038		−.92	
	+ 1.50	+ 1.386		−.91	
	+ 6.23	+ 5.687		−.91	
				−.882	

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sin z =	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80

R.A.	tan δ	sin z cos z					R.A.	tan δ				
h							h					
14.2	+.36	+.38	+2′ 47.0	+0.7	+2′ 47.7		1.2	−42.25 −.75	+2′	48.8	−1.3	+2′ 47.5
14.3	+1.30	−.17	47.7	−0.2	47.5		14.9	+ 3.65 −.53		48.4	−0.9	47.5
14.7	+.04	+.64	47.7	+1.2	48.9		3.1	− 4.42 −.87		36.7	−~~0.8~~	
14.8	+1.72	−.30	49.2	−0.4	48.8		15.2	+ 2.45 −.43		51.1	−0.7	50.4
14.9	+.87	+.03	47.5	+0.1	47.6		15.3	+ 3.12 −.50		48.4	−0.8	47.6
15.2	−.16	+.78	46.3	+1.4	47.7		15.8	+ 4.77 −.89		49.9	−1.0	48.9
15.4	+.88	+.02	47.2	+0.0	47.2							
15.5	+.51	+.26	47.3	+0.5	47.8							48.38
15.6	+.86	+.03	~~47.2~~ 47.2	+0.1	47.3							
15.6	+.12	+.58	46.8	+1.1	47.9							
15.7	+.28	+.45	47.6	+0.8	48.4							
15.7	−.05	+.71	47.8	+1.3	49.1							
16.0	+1.66	−.28	48.1	−0.4	47.7							
16.1	+1.01	−.15	48.5	−0.0	48.5							
16.2	−.08	+.73	46.3	+1.4	47.7	47.99						

		+.64	+47.7	+.58	+46.8	+.38	+47.0	+.03	+47.5	−.17	+47.7	−.30	+49.2	−.53	+48.4	−.75	+48.8
		+.78	46.3	+.45	47.6	+.26	47.3	+.02	47.2	−.05	48.5	−.28	48.3	−.43	51.1		
		+.71	47.8			~~−.28~~	~~48.1~~	+.03	47.2					−.50	48.4		
		+.73	46.3											−.59	49.9		
15	11985																
5	4190	+.72	+47.0	+.51	+47.2	+.32	+47.1	+.03	+47.3	−.11	+48.1	−.29	+48.6	−.51	~~+49.5~~ 48.5	−.75	+48.8
20	16175		+ 1.4		+ 1.0		+ .6		+ .0		− .2		− .5		−1.0		− 1.4
			+48.4		+48.2		+47.7		+47.3		+47.9		+48.1		+48.5		+47.4
	+2′ 48.″04	(20)	1936		964		954		1419		958		962		1940		474 9607
	48.08		−.4		−.2		+.3		+.7		+.1		−.1		−.5		+.6

14.9	+.87	+.03	+2′ 49.″8	+0.1	+2 49.9							1.2	~~−42.25 −.75~~	+2′	″	−1.4	~~+2~~
15.2	−.16	+.78	48.6	+1.5	50.1							14.9	+ 3.65 −.53		50.6	−1.0	+2 49.6
15.4	+.88	+.02	49.7	+0.1	49.8							3.1	− 4.42 −.87		51.0	−1.7	49.3
15.5	+.51	+.26	49.4	+0.5	49.9							15.2	+ 2.45 −.43		50.9	−0.8	50.1
15.6	+.86	+.03	49.4	+0.1	49.5							15.3	+ 3.12 −.50		50.4	−0.9	49.5
15.6	+.12	+.58	48.7	+1.1	49.8							15.8	+ 4.77 −.89		51.2	−1.1	50.1
15.7	+.28	+.45	50.0	+0.9	50.9							16.5	+ 2.61 −.45		51.0	−0.8	50.2
16.4	+1.86	−.33	50.2	−0.6	49.6							17.0	+ 7.34 −.64		50.8	−1.2	49.6
16.5	+.92	−.01	49.4	−0.0	49.4							5.0	− 5.18 −.85		50.5	−1.6	48.9
16.6	+.81	+.06	49.8	+0.1	49.9												49.85
16.7	+1.54	−.25	48.8	−0.5	48.3												
16.9	+.60	+.20	49.6	+0.4	50.0												
17.1	+.26	+.47	48.8	+0.9	49.7	~~49.68~~ 49.75											

		+.78	+48.6	+.58	+48.7	+.26	49.4	+.03	+49.8	−.01	+49.4	−.33	+50.2	−.53	+50.6	~~−.75~~	
				+.45	50.0	+.20	49.6	+.02	49.7			−.25	48.8	−.43	50.9	−.64	+50.8
				+.47	48.8			+.03	49.4					−.50	50.4		
								+.06	49.8					−.59	51.2		
														−.45	51.0		
13	975																
6	510	+.78	+48.6	+.50	+49.2	+.23	+49.5	+.03	+49.7	−.01	+49.4	−.29	+49.5	−.50	+50.8	−.64	+50.8
19	1485		+ 1.5		+ 1.0		+ .4		+ .1		− .0		− .5		− 1.0		− 1.2
			+50.1		+50.2		+49.9		+49.8		+49.4		+49.0		+49.8		+49.6
	+2′ 49.77	(19)	50.1		150.6		998		1992		494		980		2490		496 9457
	49.98		−.3		−.4		−.1		00		+.4		+.8		00		+.2

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1876 July 18 $h = +.043 + .047$ $n = -.90$ $C = 0$

Star	Ra	δ	tang δ	π Ra					1876 July 18 Star	Ra	δ	tang δ	π Ra
	h												
5.1	+ 2	86	+ 1.03	+ 19.98	−.93	+ .01	+ 19.05		19.06				
5.1	+ 2	87	− .15	+ 19.07	+ .10	+ .01	.17		.18				
5.3	0	90	+ .54	+ 19.63	− .49	.00	.14		.14				
5.8	− 5	102	+ .13	+ 19.28	− .12	− .02	.16		.14				
	5.32						+ 19.130		19.130				

1876 July 19 $h = +.048 + .086$ $n = -.88$ $C = -.07$

$h' = +.049$

	5.1	+ .2	86	+ 1.03	+ 1.143	+ 21.10	− .91	− .10	+ .01	+ 20.09	20.10					
	5.1	+ .2	87	− .15	1.01	+ 20.14	+ .13	.07	+ .01	.08	.09	1.2	19	− 42.25	− 19.88	
	5.3	.0	90	+ .54	1.144	+ 20.72	− .48	.08	.00	.16	.16	14.9	198	+ 3.65	+ 22.90	
	5.8	− .5	102	+ .13	1.01	+ 20.35	− .11	.07	− .02	.17	.15	15.3	203	+ 3.12	+ 22.48	
	5.32									19.549		15.8	217	+ 4.77	+ 21.44	
	14.9	+1.0	199	+ .87	1.32	+ 20.35	− .77	.06	+ .09	19.58	19.58	16.2	472	+ 4.07	+ 23.56	
	15.2	0.7	200	− .16	1.01	+ 19.49	+ .14	.07	.06	.56	.62	16.5	229	+ 2.61	+ 21.97	
	15.4	0.5	206	+ .88	1.33	+ 20.16	− .77	.06	.04	.60	.64	14.0	2.35	+ 7.34	+ 26.57	
	15.5	0.4	209	+ .57	1.12	+ 20.05	− .15	.08	.03	.52	.55					
	15.6	0.3	469	+ .86	1.32	+ 20.37	− .76	.09	.03	.52	.55					
	15.6	0.3	212	+ .12	1.00	+ 19.75	− .11	.07	.03	.57	.60					
15.41	15.7	+0.2	214	− .05	1.00	+ 19.61	+ .01	.07	+ .02	.58	.60					
	16.0	−0.1	220	+ 1.66	1.94	+ 21.16	− 1.46	.14	− .01	.86	.67					
	16.1	−0.2	225	+ 1.01	1.42	+ 20.67	− .59	.10	− .02	.67	.59					
	16.1	0.2	222	− .06	1.00	+ 19.66	+ .05	.07	.02	.64	.62					
	16.2	0.3	223	− .08	1.00	+ 19.74	+ .07	.07	.03	.74	.71					
	16.4	0.5	226	+ 1.86	2.11	+ 21.17	+ 1.64	.15	.04	.54	.50					
	16.4	0.5	228	+ .40	1.08	+ 20.03	− .35	.08	.04	.60	.56					
16.33	17.1	−1.2	237	+ .26	1.03	+ 19.97	− .23	−.07	− .10	.67	.57					
	15.8									19.633						

				I	II								I	II
15.2	− .16	+ 19.49	14.9	+ 3.65	+ 22.90	+ 22.95	+ 22.94			19.597	13.2	− 42.25	− 19.88	− 19.76
15.6	+ .12	19.75			+ .05	+ .04							+ .13	+ .12
15.7	− .05	19.61	15.3	+ 3.12	+ 22.48	+ 22.51	+ 22.51							
16.1	− .06	19.66			+ .03	+ .03								
16.2	− .08	19.74	15.8	+ 4.77	+ 24.44	+ 24.45	+ 24.44				0 =	− 42.29	− 39.50	n = − .93
17.1	+ .26	19.97			+ .01	− .00								− .930
16.2	+ .01	+ 19.76	16.2	+ 4.07	+ 23.56	+ 23.55	+ 23.54							
					− .01	− .02					0 =	− 43.44	− 40.46	n = − .93
14.9	+ .87	+ 20.35	16.5	+ 2.61	+ 21.97	+ 21.95	+ 21.93							− .930
15.4	+ .88	20.46			− .02	− .04								
15.6	+ .86	20.32	17.0	+ 7.34	+ 26.57	+ 26.52	+ 26.51							
16.0	+ 1.66	21.16			− .05	− .06								
16.1	+ .101	20.67												
16.4	+ 1.86	21.17 +16												
~~15.7~~	~~+ .19~~	~~+ 20.78~~												
15.4	+ 1.10	+ 20.64	15.6 + 1.12 + 20.63											
5.3	+ .39	+ 19.49												

	I			II		
0 =	+ 3.65	+ 3.20	n = − .89	0 =	+ 2.46	+ 2.242 n = − .90
	+ 3.08	+ 2.76	− .90		+ 1.93	+ 1.81 79 − .93
	+ 4.73	+ 4.70	− .99		+ 3.58	+ 3.742 − 1.04
	+ 4.03	+ 3.80	− .94		+ 2.88	+ 2.842 − .98
	+ 2.59	+ 2.20	− .86		+ 1.42	+ 1.231 − .85
	+ 7.30	+ 6.77	− .93		+ 6.15	+ 5.84 79 − .94
			− .918			− .940

12 + 42.32 − 20.34

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Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z cos z					R.A.	tan δ				
h												
5.1	+ 1.03	−.06	+2′ 49.7″ ✓	− 0.1	+ 2′ 49.6″							
5.1	− .15	+.77	48.3 ✓	+ 1.5	49.8							
5.3	+ .54	+.24	49.4 ✓	+ 0.4	49.8							
5.8	+ .13	+.57	49.8 ✓	+ 1.1	50.9 ~~49.15~~							
					5002							
+2′	5002″											
5.1	+ 1.03	−.06	+2′ 48.9 ✓	− 0.1	+ 2′ 48.8							
5.1	− .15	+.77	47.1 ✓	+ 1.5	48.6		1.2	− 42.25	−.75	+2′	52.3 ✓	− 1.4 +2′ 50.9
5.3	+ .54	+.24	49.4 ✓	+ 0.4	49.8		14.9	+ 3.65	−.53		51.0 ✓	− 1.0 50.0
5.8	+ .13	+.57	48.3 ✓	+ 1.1	49.4 49.15		15.3	+ 3.12	−.50		50.3 ✓	− 1.0 49.3
							15.8	+ 4.77	−.59		52.9 ✓	− 1.1 51.8
14.9	+ .87	+.03	49.2 ✓	+ 0.1	49.3		16.2	+ 4.07	−.56		51.2 ✓	− 1.1 50.1
15.2	− .16	+.78	47.9 ✓	+ 1.5	49.4		16.5	+ 2.61	−.45		51.7 ✓	− 0.9 50.8
15.4	+ .88	+.02	50.2 ✓	+ 0.1	50.3		17.0	+ 7.34	−.64		51.0 ✓	− 1.2 49.8
15.5	+ .37	+.26	48.5 ✓	+ 0.5	49.0							
15.6	+ .86	+.03	49.7 ✓	+ 0.1	49.8							50.39
15.6	+ .12	+.88	48.6 ✓	+ 1.1	49.7							
15.7	− .05	+.71	48.6 ✓	+ 1.3	49.9							
16.0	+ 1.66	−.28	49.8 ✓	− 0.5	49.3							
16.1	+ 1.01	−.05	50.3 ✓	− 0.1	50.2							
16.1	− .06	+.72	48.7 ✓	+ 1.3	50.0							
16.2	− .08	+.73	47.3 ✓	+ 1.4	48.7							
16.4	+ 1.86	−.33	50.1 ✓	− 0.6	49.5							
16.4	+ .40	+.38	49.6 ✓	+ 0.6	50.2							
17.1	+ .26	+.47	49.3 ✓	+ 0.9	502 49.68							

49.″15

		+.78	+47.9	+.58	+48.6	+.26	+48.5	+.03	+49.2	−.05	+50.3	−.28	+49.8	−.53	+51.0	−.75	+52.3
		+.71	48.6	+.47	49.3	+.35	49.6	+.02	50.2			−.33	50.1	−.50	50.3	−.64	51.0
		+.72	48.7					+.03	49.7					−.59	52.9		
		+.73	47.3											−.56	51.2		
														−.45	51.7		
14	13552																
7	7273	+.73	+48.1	+.52	+49.0	+.31	+49.1	+.03	+49.7	−.05	+50.3	−.30	+50.0	−.53	+51.4	−.69	+51.6
21	20825		+ 1.4		+ 1.0		+ .6		+ .1		− .1		− .5		−1.0		−1.3
			+49.5		+50.0		+49.7		+49.8		+50.2		+49.5		+50.4		+50.3
	+2′ 49.″93	(21)	1980		1000		994		1494		502		990		2520		1006 /0486
	49.92		+.4		−.1		+.2		+.1		−.3		+.4		−.5		−.4

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1876 July 22 $h = +.046 + .032$ $n = -.89$ $\Theta = 00$

Star	Ra	δ	tang δ	π Ra
	16.0 +.16	220	+1.66	+24.39 − 1.48
	16.1 +0.5	221	+1.01	+24.06 − .90
	16.1 0.5	222	− .06	+23.20 + .05
	16.2 0.4	223	− .08	+23.14 + .07
	16.4]	226	+1.86	+24.46 +.16 − 1.65
16.28 —	16.4 0.2	228	+ .40	+23.65 − .36
	16.5 +0.1	230	+ .92	+23.98 − .82
	16.8 −0.2	233	+ .17	+23.42 − .15
	16.9 0.3	234	+ .60	+23.71 − .53
	17.1 0.5	237	+ .26	+23.51 − .23
16.96 —	17.5 −0.9	241	+ .22	+23.48 − .20
	~~16.55~~			
	16.62			

						I	II	
16.1	−.06	+23.20		16.2	+4.07	+26.77	+26.79	+26.77
16.2	−.08	23.14				+ .02	+ .00	
16.8	+.17	23.42		16.5	+2.61	+25.48	+25.49	+25.47
17.1	+.26	23.51				+ .01	− .01	
17.5	+.22	23.48		17.0	+7.34	+29.87	+29.86	+29.83
16.7	+.10	+23.35				− .01	− .04	

$n = -.72 - .02$

[16.0	+1.66	+24.39]	0 =	+3.97	+3.44	$n = -.87$
[16.1	+1.01	24.06]		+2.51	+2.14	−.85
16.4	+1.86	24.41 +.16		+7.24	+6.51	−.90
16.5	+.92	23.98				−.873
~~16.2~~	~~+1.07~~	~~+24.28~~				
~~16.3~~	~~+1.86~~	~~+24.72~~	0 =	+2.91	+2.55	$n = -.93$
16.5	+1.39	+24.30		+1.25	+1.25	−.97]
				+5.98	+5.61	−.93
						−.943
						−.930

1876 July 24 $h = +.033 + .025$ $+.042$ $n = -.85$ $\Theta = 00$

$h = +.031$

2.9	+.14	47	+ .06	+25.88	− .05
5.8	−1.5	102	+ .13	+26.00	− .11
4.35					
15.6	+0.7	469	+ .86	+26.10	− .78
15.6	0.7	212	+ .12	+25.49	− .10
15.7	0.6	213	+ .25	+25.64	− .24
[16.0	0.3	220	+1.66	+26.70	− 1.41
16.1	0.2	221	+1.01	+26.41	− .86
16.1	0.2	222	− .06	+25.41	+ .05
15.88 — 16.2	+0.1	223	− .08	+25.39	+ .07
16.4	−0.1	226	+1.86	+26.89 +.16	− 1.58
16.4	0.1	228	+ .40	+25.77	− .34
16.5	0.2	230	+ .92	+26.26	− .78
16.6	0.3	232	+ .81	+26.11	− .69
[16.7	0.4	477	+1.54	+26.59	− 1.31
16.8	0.5	233	+ .17	+25.66	− .14
16.9	0.6	234	+ .60	+25.96	− .57
16.67 — 17.1	−0.8	237	+ .26	+25.69	− .22
16.31					

						I + II	
15.6	+.12	+25.49]		15.2	+2.45	+27.51	+27.55
15.7	+.28	25.64				+ .04	
16.1	−.06	25.41		15.8	+4.77	+29.57	+29.59
16.2	−.08	25.39				+ .02	
16.8	+.17	25.66		16.2	+4.07	+28.91	+28.91
17.1	+.26	25.69				+ .00	
16.3	+.11	+25.55		16.5	+2.61	+27.50	+27.49
						− .01	
15.6	+.86	+26.10		17.0	+7.34	+32.19	+32.16
[16.0	+1.66	26.70]				− .03	
[16.1	+1.01	26.41]					
16.4	+1.86	26.89 +.16				I	
16.5	+.92	26.26	0 =	+2.34	+1.99	$n = -.85$	
16.6	+.81	26.11		+4.66	+4.03	−.87	
[16.7	+1.54	26.59]		+3.96	+3.35	−.85	
~~16.3~~	~~+1.24~~	~~+26.46~~		+2.50	+1.93	−.77	
16.3	+1.11	+26.38		+7.23	+6.60	−.91	
						−.850	
4.4	+.10	+25.94					

1876 July 22

Star	Ra	δ	tang δ	π Ra
	16.2	472	+4.07	+26.77
	16.5	229	+2.61	+25.48
	17.0	235	+7.34	+29.87

						I II
23.210	~~23.132 +.176~~					
+.02 +.12	22.97]	23.05	16.2	472	+4.07	+26.77 +26.79
+.02 −.07	23.16	.11	16.5	229	+2.61	+25.48 +25.49
+.02	.25	.27	17.0	235	+7.34	+29.87 +29.86
+.01	.21	.22				
+.01	22.97]	22.98]				
+.01	23.29	− .30				
+.00	.16	.16				
−.01	.27	.26				
−.01	.18	.17				
−.02	.28	.26				
−.03	.28	.25				
23.234						
23.204		23.205				

								I	II
25.860		25.855							
+.04 +25.83	25.87	15.2	467	+2.45	+27.51	−2.11	+25.40		
−.05 .89	.84	15.8	217	+4.77	+29.57	−4.10	25.47		
25.426 ~~25.177~~	~~.438~~	~~25.855~~ 16.2	472	+4.07	+28.91	−3.50	25.41		
+.03 .37	25.40	16.5	229	+2.61	+27.50	−2.24	25.26		
.03 ~~.39~~	.42	17.0	235	+7.34	+32.10	−6.31	25.88		
.03 ~~.40~~	.43	5.0	373	−5.18	+20.89	+4.45	25.34		
.01 +.12 .29]	.42	5.4	92	−3.72	+22.45	−3.20	25.45		
.01 −.07 .55	.49								
.01 .46	.47								
.00 .46	.46							I	II
.00 .47	.47	17.0	−5.18	+20.89	+20.86	+20.86			
+.00 .43	.43			−.03	−.03				
−.01 .48	.47	17.4	−3.72	+22.45	+22.40	+22.41			
.01 .42	.41			−.05	−.04				
.02 +.13 .28]	.39								
.02 .52	.50								
.03 .44	.41	0 =	−5.29	−4.70	$n = -.89$				
−.03 .47	.44		−3.83	−3.16	−.83				
25.439					−.860				
61									
25.44	25.441	0 =	−6.42	−5.58	$n = -.87$				
			−4.96	−4.03	−.81				
					−.840				

								II	
0 =	+1.21	+1.11	$n = -.90$						
	+3.53	+3.15	−.89						
	+2.83	+2.47	−.87						
	+1.37	+1.05	−.75						
	+6.10	+5.72	−.93						
			−.868						

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$\sin q =$	+.60	+.80	+.40	+.60	+.20	+.40	0	+.20	0	−.20	−.20	−.40	−.40	−.60	−.60	−.80

R.A.	tan δ	sin z	cos z															
h																		
16.0	+1.66	−.28		+2′ 50.″6 ✓	− 0.5		+ 2′ 50.″1											
16.1	+1.01	−.05		50.5 ✓	− 0.1		50.4											
16.1	−.06	+.72		48.7 ✓	+ 1.3		50.0											
16.2	−.08	+.73		48.1 ✓	+ 1.4		49.5											
16.4	+1.86	−.33		51.2 ✓	− 0.6		50.6											
16.4	+.40	+.35		49.8 ✓	+ 0.7		50.5											
16.5	+.92	−.01		50.6 ✓	− 0.0		50.6											
16.8	+.17	+.54		49.3 ✓	+ 1.0		50.3											
16.9	+.60	+.20		49.3 ✓	+ 0.4		49.7											
17.1	+.26	+.47		50.0 ✓	+ 0.9		50.9											
17.5	+.22	+.50		50.0 ✓	+ 1.0		51.0	50.33										

R.A.	tan δ	sin z	cos z															
h																		
16.2	+4.07	−.56		+2′	52.″2 ✓	− 1.0	+ 2′ 51.″2											
16.5	+2.61	−.45			51.9 ✓	− 0.8	51.1											
17.0	+7.34	−.64			52.4 ✓	− 1.2	51.2	51.17										

		+.72	+48.7	+.54	+49.3	−.28				−.05	+50.5	−.28	+50.6	−.56	+52.2	−.64	+52.4	
		+.73	48.1	+.47	50.0	+.35	49.8			−.01	50.6	−.33	51.2	−.45	51.9			
				+.50	50.0	+.20	49.3											
11	36.3																	
3	351	+.73	+48.4	+.50	+49.8	+.28	+49.5			−.03	+50.6	−.30	+50.9	−.50	+52.0	−.64	+52.4	
14	714		+ 1.4		+ 1.0		+ .5				− .1		− .5		− 1.0		− 1.2	
			+49.8		+50.8		+50.0				+50.5		+50.4		+51.0		+51.2	
+2′	50.″50	(111)	996		1524		1002				1010		1008		1020		512	7070
	50.51		+ .7		− .3		+ .5				00		+ .1		− .5		− .7	

				2.52.9 ✓														
2.9	+.06	+.63		+4′ 14.0	+ 1.2	+ 2′ 54.″1												
8.8	+.13	+.57		52.5 ✓	+ 1.1	53.6	53.85											
15.6	+.86	+.03		54.0 ✓	+ 0.1	54.1												
15.6	+.12	+.58		52.5 ✓	+ 1.1	53.6												
15.7	+.28	+.45		53.8 ✓	+ 0.9	54.7												
16.0	+1.66	−.28		54.1 ✓	− 0.5	53.6												
16.1	+1.01	−.05		53.7 ✓	− 0.1	53.6												
16.1	−.06	+.72		52.7 ✓	+ 1.3	54.0												
16.2	−.08	+.73		52.7 ✓	+ 1.4	54.1												
16.4	+1.86	−.33		54.0 ✓	− 0.6	53.4												
16.4	+.40	+.35		54.1 ✓	+ 0.7	54.8												
16.5	+.92	−.01		53.4 ✓	− 0.0	53.4												
16.6	+.81	+.076		54.2 ✓	+ 0.1	54.3												
16.7	+1.54	−.25		53.2 ✓	− 0.5	52.7												
16.8	+.17	+.54		53.1 ✓	+ 1.0	54.1												
16.9	+.60	+.20		52.9 ✓	+ 0.4	53.3												
17.1	+.26	+.47		53.3 ✓	+ 0.9	54.2	53.86											

15.2	+2.45	−.43		+2′	54.″6 ✓	− 0.8	+ 2′ 53.″8											
15.8	+4.77	−.59			54.6 ✓	− 1.1	53.5											
16.2	+4.07	−.56			55.0 ✓	− 1.0	54.0											
16.5	+2.61	−.45			55.7 ✓	− 0.8	54.9											
17.0	+7.34	−.64			55.3 ✓	− 0.8	54.5											
5.0	− 5.18	−.85			56.1 ✓	− 1.6	54.5											
5.4	− 3.72	−.89			56.3 ✓	− 1.7	54.7											
								54.14										

	53.85																	
		+.72	+52.7	+.58	+52.5	+.35	+54.1	+.03	+54.0	−.05	+53.7	−.28	+54.1	−.43	+54.6	−.64	+55.3	
		+.73	52.7	+.45	53.8	+.20	52.9	+.06	54.2	−.01	53.4	−.33	54.0	−.59	54.6			
				+.54	53.1							−.25	53.2	−.56	55.0			
				+.47	53.3									−.45	55.7			
15	5790																	
5	2070	+.72	+52.7	+.51	+53.2	+.27	53.5	+.04	+54.1	−.03	+53.5	−.29	+53.8	−.51	+55.0	−.64	+55.3	
20	7860		+ 1.4		+ 1.0		+ .5		+ .1		− .1		− .5		− 1.0		− 1.2	
			+54.1		+54.2		+54.0		+54.2		+53.4		+53.3		+54.0		+54.1	
+2′	53.″91	(20)	1082		2168		1080		1084		1068		1599		2160		541	10782
	53.93		−.2		−.3		−.1		−.3		+.5		+.6		−.1		−.2	

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1876 July 25 h = +.025 (28) +.034

Star RA δ tang δ sec δ π RA n = -.79 c = .00

h' = +.026 5.8 (5.80) 102 + .13 +26.83 -.10 +26.73 26.73

16.4 +0.4 228 + .40 +26.57 -.32 +.01 .25 26.26
16.5 0.3 230 + .92 +26.99 -.73 +.01 .26 .27
16.6 +0.2 232 + .81 +26.84 -.64 +.01 .20 .21
17.5 -0.7 241 + .22 +26.39 -.17 -.02 .22 .20
16.25 .75 26.232

16.4 +.40 +26.57
17.5 +.22 26.39
17.0 +.31 +26.48 -1
n = -.80 -.02

16.5 +.92 +26.99
16.6 +.81 26.84
16.6 +.86 +26.92

5.8 +.13 +26.83

16.2 +4.07 +29.25 I +29.27 II +29.26
+ .02 + .01
16.5 +2.61 +28.38 +28.39 +28.38
+ .01 .00

0 = +3.76 +2.79 n = -.74
+2.30 +1.91 -.83
-.785

0 = +3.21 +2.34 n = -.78 (3)
+1.05 +1.46 -.83
-.780

1876 July 25

Star RA δ tang δ π RA
26.730 16.2 472 +4.07 +29.25
16.5 229 +2.61 +28.38
4.5 369 -3.92 +23.07
26.235

16.5 -3.92 +23.07 I +23.08 II +23.07
+ .01 + .00

0 = -4.23 -3.40 n = -.80
-.800

0 = -4.78 -3.85 n = -.81
-.810

1876 July 26 +.025 -.016 (-.016) n = -.76 c = -.06

h_y' = +.029

5.1 +.1	86	+ 1.03	1.43	+27.99	-.78	-.09	00	+27.12	+27.12	
5.1 +.1	87	- .15	1.01	+27.20	+.11	.06		.25	.25	
5.3 -.1	90	+ .54	1.14	+27.66	-.41	.07	00	.18	.18	
5.17								26.865 (78)		
14.2 +2.2	187	+ .36	1.06	+28.18	-.27	.06	-.04	26.85	26.81	
14.9 1.5	199	+ .87	1.32	+27.57	-.66	.08	-.02	.83	.81	
16.0 0.4	220	+ 1.66	1.94	+28.18	-.78	.12	-.01 +.12	.80	.91	
16.1 0.3	221	+ 1.01	1.42	+27.85	-.77	.09	+.00 -.07	.99	.92	
16.1 0.3	222	- .06	1.00	+26.86	+.05	.06	00	.85	.85	
15.55 (0) — 16.2 0.2	223	- .08	1.00	+26.87	+.06	.06	00	.87	.87	
16.4 +0.0	228	+ .40	1.08	+27.18	-.30	.06	00	.82	.82	
16.5 -0.1	230	+ .92	1.35	+27.57	-.70	.08	00	.79	.79	
16.6 0.2	232	+ .81	1.29	+27.46	-.62	.08	00	.76	.76	
[16.7] 0.3	477	+ 1.54	1.83	+28.00	-1.17	.11	00 +.13	.72	.85	
16.8 0.4	233	+ .17	1.01	+27.13	-.13	.06	.01	.94	.95	
16.9 0.5	234	+ .60	1.17	+27.31	-.46	.07	01	.78	.79	
17.1 0.7	237	+ .26	1.03	+27.19	-.20	.06	01	.93	.94	
17.5 1.1	240	+ 1.30	1.64	+28.03	-.99	.10	02	.94	.96	
16.91 — 17.5 -1.1	241	+ .22	1.02	+27.12	-.17	-.06	+02	.89	.91	
16.50 (37)								26.841 / 26.856		

27.183 27.183

1.2	19	-42.25	-8.68	+34.64	+25.96	
16.2	472	+4.07	+30.24	-3.34	+26.90	
16.5	229	+2.61	+29.08	-2.14	+26.94	
4.5	369	-3.92	+23.83	+3.21	+27.04	
17.0	235	+7.34	+33.26	-6.02	+27.24	
5.0	373	-5.18	+22.69	+4.25	+26.94	
5.4	92	-3.72	+24.00	+3.05	+27.05	
					+26.97	

16.1 -.06 +26.86
16.2 -.08 26.87
16.8 +.17 27.13
17.1 +.26 27.19
17.5 +.22 27.12
16.7 +.10 +27.03 -1
n = -.74 -.01

14.9 +.87 +27.57
[16.0 +1.66 28.18]
[16.1 +1.01 27.85]
16.5 +.92 27.57
16.6 +.81 27.46
[16.7 +1.54 28.00]
17.5 +1.30 28.03
~~16.3 +1.16 +27.81~~
~~16.1 +0.98 +27.70~~
16.4 +0.98 +27.66
5.2 +.47 +27.62

16.2 +4.07 +30.24 I +30.25 II +30.24 26.863 26.863
+ .01 + .00
16.5 +2.61 +29.08 +29.08 +29.08
+ .00 - .00
17.0 +7.34 +33.26 +33.25 +33.24
- .01 - .02

0 = +3.97 +3.22 n = -.81
+2.51 +2.05 -.82
+7.24 +6.22 -.86
-.830

0 = +2.91 +2.43 n = -.84
+1.45 +1.27 -.88]
+6.18 +5.43 -.88
-.860

13.2 -42.25 -8.68 I -8.59 II -8.58
+ .09 + .10
16.5 -3.92 +23.83 +23.83 +23.83
+ .00 - .00
17.0 -5.18 +22.69 +22.68 +22.67
- .01 - .02
17.4 -3.72 +24.00 +23.98 +23.97
- .02 - .03

0 = -42.35 -35.62 n = -.84
-4.02 -3.20 -.80
-5.28 -4.35 -.82
-3.82 -3.05 -.80
-.815

0 = -43.41 -36.39 n = -.84
-5.08 -3.98 -.78
-6.34 -5.14 -.81
-4.88 -3.84 -.79
-.805

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$\sin Q =$ +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z

h
5.8 +.13 +.57 | +3' 8.5 ✓ | +1.1 | +3 9.6 9.60

16.4 +.40 +.35 | 10.2 ✓ | +0.6 | 10.8
16.5 +.92 −.01 | 8.5 ✓ | −0.0 | 8.5
16.6 +.81 +.06 | 8.3 ✓ | +0.1 | 8.4
17.5 +.22 +.50 | 8.4 ✓ | +1.0 | 9.4 9.28

9.60

+.50 +8.4 | +.35 +10.2 | +.06 +8.3 | −.01 +8.5

4 112
2 140
+.50 +8.4 | +.35 +10.2 | +.06 +8.3 | −.01 +8.5

6 252
+1.0 | +.6 | +.1 | −.0
+9.4 | +10.8 | +8.4 | +8.5
+3' 9.38 (6) 9.4 | 10.8 | 8.4 | 8.5
9.42 0.0 | −1.4 | +1.0 | +.9

R.A. tan δ sin z cos z

h
16.2 +4.07 −.56 | +3' | 10.6 ✓ −1.0 | +3 9.6
16.5 +2.61 −.45 | | 10.6 ✓ −0.8 | 9.8 ~~9.70~~
4.5 −3.92 −.88 | | 11.7 ✓ −1.7 | 10.0
9.70

−.56 +10.6
−.45 10.6
−.50 +10.6

−1.0
+9.6
19² 563
−.42

5.1 +1.03 −.06 | 3' | −.01 | +3

5.1 −.15 +.77 | 6.1 ✓ | +1.5 | 7.6
5.3 +.34 +.24 | 7.3 ✓ | +0.4 | 7.7 7.65

14.2 +.36 +.38 | 8.1 ✓ | +0.7 | 8.8
14.9 +.87 +.03 | 8.4 ✓ | +0.1 | 8.5

16.0 +1.66 −.24 | 8.9 ✓ | −0.5 | 8.4
16.1 +1.01 −.05 | 9.3 ✓ | −0.1 | 9.2
16.1 −.06 +.72 | 7.9 ✓ | +1.4 | 9.3
16.2 −.08 +.73 | 6.0 ✓ | +1.4 | 7.4
16.4 +.40 +.35 | 7.4 ✓ | +0.7 | 8.1

16.5 +.92 −.01 | 7.5 ✓ | −0.0 | 7.5
16.6 +.81 +.06 | 9.3 ✓ | +0.1 | 9.4
16.7 +1.54 −.25 | 8.0 ✓ | −0.5 | 7.5
16.8 +.17 +.54 | 6.1 ✓ | +1.0 | 7.1
16.9 +.60 +.20 | 8.0 ✓ | +0.4 | 8.4

17.1 +.26 +.47 | 7.2 ✓ | +0.9 | 8.1
17.5 +1.30 −.17 | 8.6 ✓ | −0.3 | 8.3
17.5 +.22 +.50 | 7.3 ✓ | +1.0 | 8.3 8.29

7.65

R.A. tan δ sin z cos z

h
1.2 −42.28 −.75 | +3' | 10.1 ✓ −1.4 | +3 8.7

16.2 +4.07 −.56 | | 9.9 ✓ −1.0 | 8.9
16.5 +2.61 −.45 | | 9.8 ✓ −0.8 | 9.0
4.5 −3.92 −.88 | | 10.9 ✓ ~~−1.7~~ | ~~9.9~~ 9.2
17.0 +7.34 −.64 | | 10.4 ✓ −1.2 | 9.4
5.0 −5.18 −.85 | | 12.4 ✓ −1.6 | 10.8
5.4 −3.72 −.89 | | 11.8 ✓ −1.7 | 10.1
9.38

+.72 +7.9 | +.54 +6.1 | +.38 +8.1 | +.03 +8.4 | −.05 +9.3 | −.28 +8.9 | −.56 +9.9 | −.75 +10.1
+.73 6.0 | +.47 7.2 | +.35 7.4 | +.06 9.3 | −.01 7.5 | −.25 8.0 | −.45 9.8 | −.64 10.6
+.50 7.3 | +.20 8.0 | −.17 8.6

14 11606
5 4690 +.73 +7.0 | +.50 +6.9 | +.31 +7.8 | +.05 +8.9 | −.08 +8.5 | −.26 +8.5 | −.50 +9.8 | −.70 +10.3
19 16296 +1.4 | +1.0 | +.6 | +.1 | −.1 | −.5 | −1.0 | −1.3
+8.4 | +7.9 | +8.4 | +9.0 | +8.4 | +8.0 | +8.8 | +9.0
+3' 8.45 (19) 168² | 237³ | 252³ | 180² | 252³ | 160² | 176² | 180² 1605
8.58 0.0 | +.5 | 0.0 | −.6 | 0.0 | +.4 | −.4 | −.6

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1876 July 31 h = +.037 +.032 n = -.80
(.031)

Star	Ra	δ	tang δ	sec δ	π Ra				
	h				°				
	4.5	+.7	73	+ .29	+ 4.57	-23	+.02	+4.34	4.36
	5.3	-.1	90	+ .54	+ 4.73	-43	00	.30	30
	5.8	-.6	102	+ .13	+ 4.49	-10	-.02	.39	.37
	5.20								

4.343 4.343

1876 July 31

Star	Ra	δ	tang δ	π Ra

n = -.82 c = -.10
-.78 e = -.06

1876 aug 1. h = +.039 -.013
-.026

h' = +.035

	Ra											
	4.00									5.155 / 4.722		5.155
	2.9	+ 1.1	47	+ .06	+1.00	+ 5.25	- .05	-.10	+04	+5.10	5.14	
	5.1	- 1.1	86	+ 1.03	1.43	+ 6.19	- .84	.14	-04	.21	.17	
	15.6	+0.7	212	+ .12	1.00	+ 4.88	- .10	.10	4.722	4.68	4.67	
	15.7	0.6	213	+ .28	1.04	+ 5.01	- .23	.10	-01 / 01	.68	.67	
	15.7	0.6	214	- .05	1.00	+ 4.79	+ .04	.10	-01	.73	.72	
	16.1	0.2	221	+ 1.01	1.42	+ 5.81	- .83	.14	+ 00	.84	.84	
	16.1	+0.2	222	- .06	1.00	+ 4.77	+ .05	.10	00	.72	.72	
15.93 —	16.4	-0.1	228	+ .40	1.08	+ 5.12	- .33	.11	00	.68	.68	
	16.6	0.3	232	+ .81	1.29	+ 5.46	- .66	.13	00	.67	.67	
	[16.7]	0.4	477	+ 1.54	1.83	+ 5.96	- 1.26	.18	+01 +13	.52]	.66	
	17.1	0.8	237	+ .26	1.03	+ 5.00	- .21	.10	+ 01	.69	.70	
17.07 —	17.5	-1.2	241	+ .22	1.02	+ 5.04	- .18	-.10	+ .02	.76	.78	
	16.45 / 31									~~4.66~~ / 4.707 / 4.710		4.711

15.8	217	+ 4.77	+ 9.12
4.5	369	- 3.92	+ 1.22
17.0	235	+ 7.34	+ 11.50
5.0	373	- 5.18	- 0.17

15.6	+ .12	+ 4.88
15.7	+ .28	5.01
15.7	- .05	4.79
16.1	- .06	4.77
17.1	+ .26	5.00
17.5	+ .22	5.04
16.3	+ .13	+ 4.91 (+1)

n = -.84 +.01

[16.1	+ 1.01	+ 5.81]
16.6	+ .81	5.46
[16.7	+ 1.54	5.96]
~~16.5~~	~~+ 1.12~~	~~+ 5.74~~
~~16.4~~	~~+ 0.91~~	~~+ 5.64~~
4.0	+ .54	+ 5.72

			I	II
15.8	+ 4.77	+ 9.12	+ 9.14	+ 9.15
		+ .02	+ .03	
17.0	+ 7.34	+ 11.50	+ 11.47	+ 11.48
		- .03	- .02	

0 = + 4.64 + 4.23 n = -.91
+ 7.27 + 6.56 -.91
-.910

0 = + 3.65 + 3.41 n = -.93
+ 6.22 + 5.74 -.92
-.925

			I	II
16.5	- 3.92	+ 1.22	+ 1.21	+ 1.22
		- .01	.00	
17.0	- 5.18	- 0.17	- 0.20	- 0.19
		- .03	- .02	

0 = - 4.05 - ~~3.87~~ 3.70 n = -.91
- 5.31 - 5.10 -.96
-.935

0 = - 5.04 - 4.52 n = -.90
- 6.30 - 5.93 -.94
-.920

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Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z

4h
4.5 +.29 +.44 + 3′ 4.7 + 0.8 + 3′ 10.5
5.3 +.54 +.24 10.7 + 0.4 11.1
5.8 +.13 +.57 9.9 + 1.1 11.0 10.87

+3′ 10.87

R.A. tan δ sin z cos z

15.8 +4.77 −.59 + 3′ 11.7 − 1.2 + 3 10.5
4.5 −3.92 −.88 14.1 − 1.8 12.3
17.0 +7.34 −.64 11.7 − 1.2 10.5
5.0 −5.18 −.85 13.9 − 1.7 12.2

10.50

2.9 +.06 +.63 +3′ 10.1 + 1.2 + 3 11.3 11.30
5.1 +1.03 −.06 6.0 − 0.1 5.9
15.6 +.12 +.58 10.7 + 1.1 11.1
15.7 +.28 +.45 10.0 + 0.9 10.9
15.7 −.05 +.71 10.2 + 1.4 11.6
16.1 +1.01 −.05 11.0 − 0.1 10.9
16.1 −.06 +.72 10.9 + 1.4 12.3
16.4 +.40 +.35 11.2 + 0.7 11.9
16.6 +.81 +.06 11.1 + 0.1 11.2
16.7 +1.54 −.25 10.6 − 0.5 10.1
17.1 +.26 +.47 9.8 + 0.9 10.7
17.5 +.22 +.50 9.1 + 1.0 10.1 11.08

11.30

+.63 +10.1 | +.58 +10.0 | +.35 +11.2 | +.06 +11.1 | −.06 +6.0 | −.25 +10.6 | −.59 +11.7 | −.64 +11.7
+.71 10.2 | +.45 10.0 | | | −.05 11.0 | | | |
+.72 10.9 | +.47 9.8 | | | | | | |
+.50 9.1 | | | | | | | |

10 1080
2 180
12 1180

+.69 +10.4 | +.50 +9.7 | +.35 +11.2 | +.06 +11.1 | −.05 11.0 | −.25 +10.6 | −.59 +11.7 | −.64 +11.7
+1.3 | +1.0 | +.6 | +.1 | −.1 | −.4 | −1.2 | −1.2

+3′ 11.00 (13/14) | +11.7 | +10.7 | +11.8 | +11.2 | +10.9 | +10.2 | +10.5 | +10.5
10.98 | 351/3 | 428/4 | 118 | 112 | 109 | 102 | 105 | 105 | 1430
| −.7 | +.3 | −.8 | −.2 | +.1 | +.8 | +.5 | +.5

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1876phae.proj.1692.

1876 Aug. 2 h = +.042 −.035
40
−.040

Star	Ra	δ	tang δ		π Ra		n = −.84	c = −.10			
h' = +.042	4.5	+.7 73	+ .29	+1.04	+ 6.39	−.24	−.10	+.03	+ 6.05	6.08
	5.1	+.1 86	+ 1.03	1.43	+ 7.04	−.87	.14	00	.03	.03
	5.3	−.1 90	+ .54	1.14	+ 6.64	−.46	.11	00	.08	.08
	5.8	−.6 102	+ .13	1.01	+ 6.34	−.11	.10	−03	.13	.10
	5.18								5.600 ~~5.560~~	
	16.5 +0.5	230	+ .92	1.35	+ 6.50	−.77	.14	−02	5.59	5.57
	16.6 0.4	232	+ .81	1.29	+ 6.50	−.68	.13	01	.69	.68
	[16.7] 0.3	477	+ 1.54	1.83	+ 6.91	−1.29	.18	.01	+.13 .44]	.56
16.63 —	16.8 0.2	233	+ .17	1.01	+ 5.76	−.14	.10	−01	.52 —	.57
	16.9 +0.1	234	+ .60	1.17	+ 6.17	−.50	.12	+00	.55	.55
	17.1 −0.1	237	+ .26	1.03	+ 5.93	−.22	.10	00	.61	.61
	17.5 0.5	240	+ 1.30	1.64	+ 6.84	−1.10	.16	.02	.58	.60
17.25 —	17.5 −0.5	241	+ .22	1.02	+ 6.03	−.18	−.10	+02	.75	.77
	16.989								~~5.618~~ 5.622	
									5.608	

					I	II
[16.8	+ .17	+ 5.76] ✓	17.0	+ 7.34 + 12.89	+ 12.90	+ 12.88
17.1	+ .26	5.93		+ .01	− .01	
17.5	+ .22	6.03				
17.3	+ .24	+ 5.98 2				
n = −~~.79~~.82 −.02			0 =	+ 7.10 + 6.90 2	n = −.97	−.970
16.5	+ .92	+ 6.50				
16.6	+ .81	6.50				
[16.7	+ 1.54]	6.91 □	0 =	+ 6.20 33 + 6.19 27	n = −~~1.00~~ .99	−~~1.000~~ .99
17.5	+ 1.30	6.84				
16.9	+ 1.01	+ 6.61				
5.2	+ .50	+ 6.60				

1876 Aug. 2

Star Ra	δ	tang δ	π Ra
6.072 4.5	369	− 3.92	+ 2.17
17.0	235	+ 7.34	+ 12.89
5.0	373	− 5.18	+ 0.75

5.606

			I	II
16.5	− 3.92	+ 2.17	+ 2.20	+ 2.18
		+ .03	+ .01	
17.0	− 5.18	+ 0.75	+ 0.76	+ 0.74
		+ .01	− .01	

0 = − 4.16 − 3.78 n = −.91
− 5.42 − 5.24 −.97
−.940

0 = − ~~5.06~~ 4.93 − ~~4.51~~ 4.43 n = −~~.87~~ .90
− ~~6.32~~ 6.19 ~~5.95~~ 5.87 −~~.94~~ .95
−~~.915~~
−.925

1876 Aug. 3 h = +.043 +.015 n = −.88 c = .00
−.036

Star	Ra	δ	tang δ	π Ra				
h' = +.041	4.5	+.7 73	+ .29	+ 7.40	−.26	+.03	+ 7.14	7.17
	5.1	+.1 86	+ 1.03	+ 8.~~40~~04	−.91	00	.13	.13
	5.3	−.1 90	+ .54	+ 7.64	−.48	00	.16	.16
	5.8	−.6 102	+ .13	+ 7.32	−.11	−02	.21	.19
	5.18						6.670 ~~6.638~~	
	16.7 +0.9	477	+ 1.54	+ 7.90	−1.36	+01 +.13	6.54]	6.68
	16.8 +0.8	233	+ .17	+ 6.84	−.15	+01	.69	.70
	16.9 0.7	234	+ .60	+ 7.20	−.53	01	.67	.68
16.93 —	17.1 +0.5	237	+ .26	+ 6.88	−.23	+01	.65	.66
	18.0 −0.4	254	+ .17	+ 6.87	−.15	−01	.72	.71
	18.3 0.7	258	+ .40	+ 6.98	−.35	01	.63	.62
18.27 —	18.5 −0.9	260	+ .80	+ 7.42	−.70	−01	.72	.71
	~~17.47~~ 17.60						6.690	
							6.679	

					I	II
16.8	+ .17	+ 6.84	17.0	+ 7.34 + 13.27	+ 13.28	+ 13.30
17.1	+ .26	6.88		+ .01	+ .03	
18.0	+ .17	6.87	18.2	+ 16.88 + 21.55	+ 21.51	+ 21.52
17.3	+ .20	+ 6.86 +1		− .04	− .03	
n = −.83 +.02			18.4	+ 3.21 + 9.53	+ 9.48	+ 9.49
				− .05	− .04	

0 = + 7.14 + 6.42 n = −.90
+ 16.68 + 14.65 −.88
+ 3.01 + 2.62 −.87
−.883

5.2 + .50 + 7.60

+ 6.17 + 5.54 n = −.90
+ 15.71 + 13.86 −.89 8
+ 2.04 + 1.83 −.90
−.893

7.162

Ra	δ	tang δ	π Ra		
4.5	369	− 3.92	+ 3.07	+ 3.45	+ 6.52
17.0	235	+ 7.34	+ 13.27	− 6.46	6.81
5.4	92	− 3.72	+ 3.57	+ 3.27	6.84
18.2	256	+ 16.88	+ 21.55	− 14.85	6.70
18.4	259	+ 3.21	+ 9.53	− 2.82	6.71
6.7	111	− 20.68	− 11.18 7	+ 18.20	+ 7.03

+6.69

6.680

			I	II
16.5	− 3.92	+ 3.07	+ 3.10	+ 3.12
		+ .03	+ .05	
17.4	− 3.72	+ 3.57	+ 3.57	+ 3.58
		+ .00	+ .01	
18.7	− 20.68	− 11.18 7	− 11.24	− 11.23
		− .06	− .05	

0 = − 4.12 − 3.74 6 n = −.91
− 3.92 − 3.59 −.84
− 20.88 − 18.10 −.87
−.873

0 = − 5.09 − 4.54 n = −.89
− 4.89 − 4.08 −.83
− 21.85 − 18.89 −.86
−.860

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Sin z = +.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80

R.A.	tan δ	sin z cos z					R.A.	tan δ	sin z cos z				
h			′ ″		′ ″		h				″		
4.5	+.29	+.44	3 9.1 ✓	+ 0.8	+3 9.9		4.5	− 3.92	−.88	+3′	15.0 ✓	− ~~7~~.8	+3 ~~1~~.13.2
5.1	+1.03	−.06	10.6 ✓	− 0.1	10.5		17.0	+ 7.34	−.64		13.2 ✓	− 1.2	12.0
5.3	+ .54	+.24	10.9 ✓	+ 0.4	11.3		6.0	− 5.18	−.85		13.9 ✓	− 1.7	12.2
5.8	+ .13	+.57	9.5 ✓	+ 1.1	10.6	10.58							12.00
16.5	+ .92	−.01	11.1 ✓	− 0.0	11.1								
16.6	+ .81	+.06	11.5 ✓	+ 0.1	11.6								
16.7	+ 1.54	−.25	11.6 ✓	− 0.5	11.1								
16.8	+ .17	+.54	10.0 ✓	+ 1.0	11.0								
16.9	+ .60	+.20	11.5 ✓	+ 0.4	11.9								
17.1	+ .26	+.47	9.6 ✓	+ 0.9	10.5								
17.5	+ 1.30	−.17	10.2 ✓	− 0.3	9.9								
17.5	+ .22	+.50	9.6 ✓	+ 1.0	10.6	10.96							

10.58″

		+.40 +.60		+.20 +.40		0 +.20		0 −.20		−.20 −.40		−.40 −.60	−.60 −.80		
		+.54	+10.0	+.20	+11.5	+.06	+11.5	−.01	+11.1	−.25	+11.6		−.64	+13.2	
		+.47	9.6					−.17	10.2						
		+.50	9.6												
8	768														
1	200	+.50	+9.7	+.20	+11.5	+.06	+11.5	−.09	+10.6	−.25	+11.6		−.64	+13.2	
9	968		+1.0		+ .4		+ .1		− .1		− .5			− 1.3	
			+10.7		+11.9		+11.6		+10.5		+11.1			+11.9	
+3′	11.07″	(9)	321′ 3		119′		116′		210′ 2		111′			119′	996
	11.08		+.4		−.8		−.5		+.6		00			−.8	

R.A.	tan δ	sin z cos z					R.A.	tan δ	sin z cos z				
			′ ″								″	1.8	
4.5	+ .29	+.44	3 10.2 ✓	+ 0.9	+3 11.1		4.5	− 3.92	−.88	+3′	12.7 ✓	− ~~1.3~~	+3 10.9
5.1	+ 1.03	−.06	10.7 ✓	− 0.1	10.6		17.0	+ 7.34	−.64		12.9 ✓	− 1.3	~~+3~~ 11.6
5.3	+ .54	+.24	10.8 ✓	+ 0.5	~~10~~.3		5.4	− 3.72	−.89		14.0 ✓	− 1.8	12.2
5.8	+ .13	+.57	11.8 ✓	+ 1.1	12.9	11.48	18.2	+ 16.88	−.70		14.4 ✓	− 1.4	13.~~4~~0
							18.4	+ 3.21	−.50		11.0 ✓	− 1.0	10.0
16.7	+ 1.54	−.25	10.9 ✓	− 0.5	10.4		6.7	+ 20.68	−.77		15.0 ✓	− 1.5	13.5
16.8	+ .17	+.54	11.1 ✓	+ 1.1	12.2								12.02
16.9	+ .60	+.20	11.4 ✓	+ 0.4	11.8								
17.1	+ .26	+.47	10.6 ✓	+ 0.9	11.5								
18.0	+ .17	+.54	10.5 ✓	+ 1.1	11.6								
18.3	+ .40	+.35	14.1 ✓	+ 0.7	[14.8]								
18.5	+ .80	+.06	12.0 ✓	+ 0.1	12.1	11.60							

11.48″

		+.40 +.60		+.20 +.40		0 +.20		−.20 −.40		−.40 −.60		−.60 −.80		
		+.54	+11.1	+.20	+11.4	+.06	+12.0	−.25	+10.9	−.50	+11.0	−.64	+12.9	
		+.47	10.6	+.35	14.1							−.70	14.4	
		+.54	10.5									−.77	15.0	
6	960	+.‘												
4	808	+.52	+10.7	+.27	+12.7	+.06	+12.0	−.25	+10.9	−.50	+11.0	−.70	+14.1	
10	1768		+ 1.0		+ .5		+ .1		− .5		− 1.0		− 1.4	
			+ 11.7		+13.2		+12.1		+10.4		+10.0		+12.7	
+3′	12.01″	(11)	351′ 3		264′ 2		121′		104′		100′		381′ 3	1321
	11.77		+.3		−1.2		−.~~8~~1		+1.6		+2.0		−.7	

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1876phae.proj.1692.

1876phae.proj.1692.

1876 Aug 5 $h = +.044 \; -.021 \; +.050$

Star	Ra	δ	tang δ	π Ra		n = −.91 e = .00
	h					
	16.8 +0.7	233	+ .17	+ 8.90	− .15	
	17.1 0.4	237	+ .26	+ 8.96	− .24	
17.13 —	17.5 0.0	240	+ 1.30	+ 9.95	− 1.18	
	17.5 +0.0	241	+ .22	+ 8.94	− .20	
	17.6 −0.1	244	+ 1.04	+ 9.63	− .95	
	17.7 0.2	247	+ .05	+ 8.79	− .05	
17.93 —	18.0 −0.5	254	+ .17	+ 8.91	− .15	
	17.46					

				I	II
16.8	+ 17	+ 8.90			
17.1	+ 26	8.96			
17.5	+ 22	8.94			
17.7	+ 05	8.79			
18.0	+ 17	8.91			
17.4	+ 17	+ 8.90			
	n = −.89	+.01			
17.5	+ 1.30	+ 9.95			
17.6	+ 104	9.63			
17.6	+ 1.17	+ 9.79			

				I	II
	17.0	+ 7.34	+ 15.38	+ 15.40	+ 15.41
			+ .02	+ .03	
	17.5	+ 2.50	+ 10.86	+ 10.86	+ 10.86
			− .00	+ .00	
	17.6	+ 2.58	+ 11.05	+ 11.04	+ 11.05
			− .01	+ .00	
	18.2	+ 16.88	+ 24.21	+ 24.17	+ 24.18
			− .04	− .03	
			I		
0 =		+ 7.17	+ 6.50	n = −.91	
		+ 2.33	+ 1.96	−.89	
		+ 2.41	+ 2.14	−.89	
		+ 16.31	+ 15.27	−.91	
				−.888	
				.900	

1876 Aug 6 $h = +.048 \; +.050$ $n = -1.05$ e = .00

h = +.050	5.1	+ .1	86	+ 1.03	+ 12.66	− 1.08	∞	+ 11.58
	5.3	− .1	90	+ .54	+ 12.13	− .57	∞	.56
	5.20							9.777
	17.1	+0.8	237	+ .26	+ 10.05	− .27	+ .04	9.78
	17.5	0.4	240	+ 1.30	+ 11.16	− 1.06	.02	9.80
	17.5	0.4	241	+ .22	+ 9.98	− .23	.02	.75
17.37 —	17.6		244	+ 1.04	+ 10.76	− 1.09	+ .01	.67
	17.9	0.0	252	+ 1.26	+ 11.12	− 1.32	+ .00	.88
	18.5	−0.6	260	+ .80	+ 10.67	− .84	− .03	.83
18.37 —	18.7	0.8	264	+ .65	+ 10.53	− .68	− .04	.85
	17.83							9.827
								9.862

				I	II
17.1	+ 26	+ 10.05			
17.5	+ 22	9.98			
17.3	+ 24	+ 10.02			
	n = −1.06	+.04			
17.5	+ 1.30	+ 11.16			
Σ 17.6	+ 104	10.76			
17.9	+ 1.26	11.12			
18.5	+ .80	10.67			
17.9	+ .40	+ 10.93			
18.0	+ 1.12	+ 10.98			
5.2	+ .78	+ 12.40			

				I	II
	17.0	+ 7.34	+ 17.73	+ 17.74	+ 17.78
			+ .01	+ .04	
	17.5	+ 2.50	+ 12.30	+ 12.19	+ 12.22
			− .01	+ .02	
	18.2	+ 16.88	+ 27.58	+ 27.54	+ 27.57
			− .04	− .01	
	18.4	+ 3.21	+ 13.21	+ 13.16	+ 13.19
				− .05	− .02
0 =		+ 7.10	+ 7.72	n = −.109	
		+ 2.26	+ 2.17	−.98	
		+ 16.64	+ 17.52	−.105	
		+ 2.97	+ 3.14	−.106	
				−1.098	
				52	
0 =		+ 6.24	+ 6.85	n = −.110	
		+ 1.40	+ 1.29	−.99	
		+ 15.78	+ 16.64	−.106	
		+ 2.11	+ 2.26	−.107	
				−1.038	
				58	

1876 Aug. 7 $h = +.049 \; +.048$ $n = -1.05$

	5.1	86	+ 1.03	+ 12.62	− 1.08	+ 11.54
	5.3	90	+ .54	+ 12.10	− .57	11.53
	5.20					+ 11.535

1876 Aug. 5

Star	Ra	δ	tang δ	π Ra		
	h					
8.747	4.5	369	− 3.92	+ 5.16	+ 3.57	+ 8.73
8.75 8.74	17.0	235	+ 7.34	+ 15.38	− 6.66	8.70
.01 .71	5.1	92	− 3.72	+ 5.23	+ 3.39	8.62
.00 .77 .77	17.5	482	+ 2.50	+ 10.86	+ 2.07	8.70
.00 .74 .74	17.6	483	+ 2.58	+ 11.05	− 2.35	8.70
.00 .68 .68	18.2	256	+ 16.88	+ 24.21	− 15.36	+ 8.85
.00 .74 .74				I	II	
+ .01 .76 .77	16.5	− 3.92	+ 5.16	+ 5.20	+ 5.21	
8.730			+ .04	+ .05		
8.737						
8.736	17.4	− 3.72	+ 5.23	+ 5.23	+ 5.24	
			+ .00	+ .01		
	0 =	− 4.09	− 3.69 70	n = −.90		
		− 3.89	− 3.63 7	−.94		
				−.920		
	0 =	− 5.09	− 4.58	n = −.90		
		− 4.89	− 4.55	−.93		
				−.915		

				I	II
0 =		+ 6.17	+ 5.62	n = −.91	
		+ 1.33	+ 1.07	−.89	
		+ 1.41	+ 1.26	−.89	
		+ 15.71	+ 14.39	−.92	
				−.880	
				.902	

11.570	17.0	235	+ 7.34	+ 17.73	− 7.71	+ 10.02
11.570	5.0	373	− 5.18	+ 4.39	+ 5.44	9.83
	5.4	92	− 3.72	+ 5.89	+ 3.91	9.80
9.82	17.5	482	+ 2.50	+ 12.20	− 2.62	9.69
.82	18.2	256	+ 16.88	+ 27.58	− 17.72	9.86
.77	18.4	259	+ 3.21	+ 13.21	− 3.38	9.83
.68	6.7	111	− 20.68	− 12.03	+ 21.71	9.68
.80						
.80						
.81						
9.827						
9.862						

				I	II
9.803	17.0	− 5.18	+ 4.39	+ 4.40	+ 4.43
			+ .01	+ .04	
	17.4	− 3.72	+ 5.89	+ 5.89	+ 5.91
			− .06	+ .02	
	18.7	− 20.68	− 12.03	− 12.10	− 12.08
			− .06	− .04	
	0 =	− 5.42	− 5.68 2	n = −.104	
		− 3.96	− 4.13 3	−.104	
		− 20.92	− 22.12	−.106	
				−1.038	
	0 =	− 6.28	− 6.50	n = −.103	
		− 4.82	− 5.02	−.104	
		− 21.78	− 23.01	−.106	
				−1.043	

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1876phaeoproj.1602.

Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | +0 +.20 | 0 -.20 | -.20 -.40 | -.40 -.60 | -.60 -.80

R.A.	tan δ	sin z	cos z				R.A.	tan δ	sin z	cos z			
h							h						
16.8	+.17	+.54		+3′ 12.″4 ✓ +1.1	+3′ 13.″5		4.5	-3.92	-.88	+3′	14.″3 ✓ -1.7	+3′ 12.″6	
17.1	+.26	+.47		13.1 ✓ +0.9	14.0		17.0	+7.34	-.64		14.0 ✓ -1.2	12.8	
17.5	+1.30	-.17		12.2 ✓ -0.3	11.9		5.4	-3.72	-.89		16.6 ✓ -1.8	14.8	
17.5	+.22	+.50		12.9 ✓ +1.0	13.9		17.5	+2.50	-.44		14.1 ✓ -0.8	13.3	
17.6	+1.04	-.06		13.1 ✓ -0.1	13.0		17.6	+2.58	-.44		13.8 ✓ -0.8	13.0	
17.7	+.05	+.64		11.7 ✓ +1.3	13.0		18.2	+16.88	-.70		14.2 ✓ -1.3	12.9	
18.0	+.17	+.54		12.3 ✓ +1.1	13.4 13.24							13.00	

		+.64	+11.7	+.54	+12.4	-.17	+12.2	-.44	+14.1	-.64	+14.0		
				+.47	13.1	-.06	13.1	-.44	13.8	-.70	14.2		
				+.50	12.9								
				+.54	12.3								
7	168												
4	00	+.64	+11.7	+.51	+12.4	-.11	+12.6	-.44	+13.9	-.67	+14.1		
11	168		+1.3		+1.0		-.2		-.9		-1.3		
			+13.0		+13.7		+12.4		+13.0		+12.8		
	+3′ 13.″11	(11)	130′		548 (12)		248²		260²		256²	1442	
	13.15		+.1		-.6		+.7		+.1		+.3		

5.1	+1.03			+3′ ″ ✓		+3′ ′ ″		17.0	+7.34	-.64	+3′	44.″2 ✓ -1.2	+3 43.0
5.3	+.54	+.24		22.2 ✓ +0.5		22.7		6.0	-5.18	-.85		44.7 ✓ -1.7	43.0
								5.4	-3.72	-.89		46.6 ✓ -1.8	44.8
17.1	+.26	+.47		42.9 ✓ +1.0		43.9		17.5	+2.50	-.44		44.9 ✓ -0.8	44.1
17.5	+1.30	-.17		43.3 ✓ -0.3		43.0		18.2	+16.88	-.70		44.9 ✓ -1.3	43.6
17.5	+.22	+.50		44.3 ✓ +1.0		45.3		18.4	+3.21	-.50		43.1 ✓ -1.0	42.1
17.6	+1.04	-.06		43.7 ✓ -0.1		43.6		6.7	-20.68	-.77		45.3 ✓ -1.5	43.8
17.9	+1.26	-.16		42.9 ✓ -0.3		42.6							
18.5	+.80	+.06		44.1 ✓ +0.1		44.2							43.32
18.7	+.65	+.16		43.8 ✓ +0.3		44.1 ~~43.96~~							
						43.81							

				+.47	+42.9	+.06	+44.1	-.17	+43.3	-.44	+44.9	-.64	+44.2
				+.50	44.3	+.16	43.8	-.06	43.7	-.50	43.1	-.70	44.9
								-.16	42.9			-.77	45.3
7	567												
5	160			+.48	+43.6	+.11	+43.9	-.13	+43.3	-.47	+44.0	-.70	+44.8
12	727				+ 1.0		+ .2		- .2		- .9		- 1.4
					+44.6		+44.1		+43.1		+43.1		+43.4
	+3′ 43.″59			(12)	892²		882²		1293³		862²		1302³ 5231
	43.61				-1.0		-.5		+.5		+.5		+.2

5.1	+1.03			+3′ ″ ✓		+3							
5.3	+.54	+.24		43.5 ✓ +0.5		44.0 44.00							

+3′ 44.″00

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1876phae.proj.1692.

1876 Aug 8 h = +050 +.069 (7.065)

Star	RA	δ	tang δ	π Ra	n = −1.08 c = .00			Star			RA	δ	tang δ	π Ra	
h! = +.051	5.1 +.3	86	+1.03	+13.87	− 1.11	+.02	+12.76	+12.78		12.803 h	17.0	235	+7.34	+20.03 − 7.93	+12.10
	5.3 +.1	90	+.54	+13.40	− .58	+.00	.82	.82			(18.2)	256	+16.88	+30.44	
	5.8 −.4	102	+.13	+12.97	− .14	−.02	.83	.81			5.4	92	− 3.72	+ 8.22 + 4.02	12.24
	5.40						12.158				17.5	482	+2.50	+14.73 +11 270	12.14
	17.1 +0.8	237	+.26	+12.45	− .28	+.06	17	12.23			18.2	256	+16.88	+30.29 − 18.23	12.06
	17.5 0.4	240	+1.30	+13.56	− 1.40	03	.16	.19			18.4	259	+3.21	+15.71 − 3.57	12.14
	17.5 0.4	241	+.22	+12.41	− .24	03	.17	.20			6.7	111	−20.68	− 10.80 (10.79) + 22.33	11.54
17.42 —	17.6 +0.3	244	+1.04	+13.25	− 1.12	+.02	.13	.15							
	18.3 −0.4	258	+.40	+12.65	− .43	−.03	.22	.19							
	18.5 0.6	260	+.80	+13.04	− .86	04	.18	.14							
18.50 —	18.7 −0.8	264	+.65	+13.00	− .70	−.06	.30	.24							
	17.89						12.233								
							12.190			12.191					

						I	II					I	II
17.1	+.26	+12.45	17.0	+ 7.34	+20.03	+20.05	+20.07	17.4	− 3.72	+ 8.22	+ 8.22	+ 8.24
17.5	+.22	12.41			+ .02	+ .04				− .00	+ .02	
17.3	+.24	+12.43	17.5	+ 2.50	+ 14.73 (+14.84)	+ 14.72	+ 14.75	18.7	− 20.68	− 10.80 (10.79)	− 10.87	− 10.84
n = −1.05 +.04 +3					− .01	+ .02				− .07	− .04	
			18.2	+ 16.88	+ 30.29	+ 30.25	+ 30.28					
17.5	+1.30	+13.56			− .04	− .01						
17.6	+1.04	13.25										
18.5	+.80	13.04						0 =	− 3.96	− 4.21	n = − 1.06	
17.9	+1.05	+13.28							− 20.92	− 23.30	− 1.11	
											− 1.085	

0 = + 7.10 + 7.62 n = − 1.07
+ 2.26 + 2.29 +11 − 1.06 (1.046)
+ 16.64 + 17.82 − 1.07
− 1.050 (67)

5.4 + .57 + 13.41

0 = − 4.77 − 5.04 n = − 1.06
− 21.73 − 24.12 − 1.11
− 1.085

0 = + 6.29 + 6.79 n = − 1.08
+ 1.45 + 1.47 +11 − 1.09 (1.089)
+ 15.83 + 17.00 − 1.07
− 1.050 (80)

1876 Aug. 9 h = +047 +.021 (+.03548) n = −1.05 c = .00

Star	RA	δ	tang δ	π Ra						Star	RA	δ	tang δ	π Ra
h! = +.039	5.1 +.3	86	+1.03	+14.95	− 1.08	+.01	+13.87	13.88	13.907	17.0	235	+7.34	+21.01
	5.3 +.1	90	+.54	+14.47	− .57	.00	.90	.90		17.5	482	+2.50	+15.95 +11
	5.8 −.4	102	+.13	+14.10	− .14	−.02	.96	.94		18.2	256	+16.88	+33.50
	5.40						13.442			6.7	111	−20.68	− 9.03 (2)
	17.1 +0.8	237	+.26	+13.65	− .27	+.02	.38	13.40					
	17.5 0.4	241	+.22	+13.67	− .23	.01	.44	.45					
	17.6 0.3	244	+1.04	+14.47	− 1.09	+.01	.38	.39					
17.50 —	17.8 +0.1	249	+.76	+14.37	− .80	+.00	.57	.57					
	18.0 −0.1	254	+.17	+13.65	− .18	.00	.47	.47					
	18.3 0.4	258	+.40	+13.85	− .42	−.01	.43	.42					
	18.5 0.6	260	+.80	+14.29	− .84	−.01	.45	.44					
18.37 —	18.7 −0.8	264	+.65	+14.17	− .68	−.02	.49	.47					
	17.94						13.460						
							13.451		13.450				

						I	II				I	II
17.1	+.26	+13.65	17.0	+ 7.34	+21.01	+ 21.03	+21.06	18.7	− 20.68	− 9.03 (2)	− 9.09	− 9.06
17.5	+.22	13.67			+ .02	+ .05				− .06	− .03	
18.0	+.17	13.65	17.5	+ 2.50	+ 15.95 (+16.06)	+ 15.95	+ 15.97					
17.5	+.22	+13.66 +2			+ .00	+ .02						
n = −1.03 +.03			18.2	+ 16.88	+ 33.50	+ 33.47	+ 33.49	0 =	− 20.90	− 22.75	n = − 1.09	
					− .03	− .01					− 1.090	
17.6	+1.04	+14.47										
18.5	+.80	14.29						0 =	− 21.60	− 23.44	n = − 1.09	
18.0	+.92	+14.38									− 1.090	

0 = + 7.12 + 7.37 n = − 1.04
+ 2.28 + 2.29 +11 − 1.02 (5)
+ 16.66 + 19.81 − 1.19
− 1.020 (45)

5.4 + .57 + 14.51

0 = + 6.42 + 6.68 n = − 1.04
+ 1.58 + 1.59 +11 − 1.07 (9)
+ 15.96 + 19.11 − 1.20
− 1.025 (65)

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1876phae.proj.1602.

sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z

h

5.1 + 1.03
5.3 + .84 +.24
5.8 + .13 +.57

+3' " ✓
43.6✓ +0.5
42.2✓ +1.2

+3' " | 44.1 | 43.4 43.75

17.1 + .26 +.47
17.5 + 1.30 −.17
17.8 + .22 +.50
17.6 + 1.04 −.06
18.3 + .40 +.35
18.5 + .80 +.06
18.7 + .65 +.16

44.0✓ +1.0
43.7✓ −0.3
44.3✓ +1.0
44.7✓ −0.1
44.3✓ +0.7
44.3✓ +0.1
43.7✓ +0.3

45.0 | 43.4 | 45.3 | 44.6 | 45.0 | 44.4 | 44.0 44.53

43.75"

+.47 +44.0 | +.35 +44.3 | +.06 +44.3 | −.17 +43.7
+.50 44.3 | | +.16 43.7 | −.06 44.7

7 371
5 240
12 611

+.48 +44.1 | +.35 +44.3 | +.11 +44.0 | −.11 +44.2
+1.0 | +.7 | +.2 | −.2
+45.1 | +45.0 | +44.2 | +44.0

+3' 24.47" | (/2) 902 | 450 | 884 | 884
44.571 | −.86 | −.35 | +.63 | +.85

h

17.0 + 7.34 −.64 | +3' | 44.5✓ −1.2 +3' 43.3
18.2 ~~+16.88 −.78~~ | | ✓ −1.5
5.4 − 3.72 −.89 | | 48.3✓ −1.8 | 46.5
17.5 + 2.50 −.44 | | 45.7✓ −0.8 | 44.9
18.2 +16.88 −.70 | | 46.6✓ −1.3 | 45.3
18.4 + 3.21 −.50 | | 44.4✓ −1.0 | 43.4
6.7 − 20.68 −.77 | | 47.0✓ −1.5 | 45.5

44.48

−.44 +45.7 | −.64 +44.5
−.50 44.4 | −.70 46.6
−.77 47.0

−.47 +45.0 | −.70 +46.0
−.9 | −1.4
+44.1 | +44.6

882 | 1338 5336
+.14 | +.21

5.1 +1.03 −.06
5.3 + .84 +.24
5.8 + .13 +.57

+3' 44.7✓ −0.1
44.7✓ +0.5
44.0✓ +1.2

+3 44.6 | 45.2 | 45.2 45.80

17.1 + .26 +.47
17.5 + .22 +.50

44.8✓ +1.0
45.3✓ +1.0

45.8 | 46.3

17.6 +1.04 −.06
17.8 + .76 +.09
18.0 + .17 +.54
18.3 + .40 +.35
18.5 + .80 +.06
18.7 + .65 +.16

45.7✓ −0.1
45.2✓ +0.2
45.0✓ +1.1
45.7✓ +0.7
46.5✓ +0.1
46.0✓ +0.3

45.6 | 45.4 | 46.1 | 46.4 | 46.6 | 46.3 46.06

45.80"

+.47 +44.8 | +.35 +45.7 | +.09 +45.2 | −.06 +45.7
+.50 45.3 | | +.06 46.5
+.84 45.0 | | +.16 46.0

8 48
4 340
12 388

+.50 +45.0 | +.35 +45.7 | +.10 +45.9 | −.06 +45.7
+1.0 | +.7 | +.2 | −.1
+46.0 | +46.4 | +46.1 | +45.6

+3' 46.29" | (/2) 1380 | 464 | 1383 | 456
46.32 | +.3 | −.1 | +.2 | +.7

17.0 + 7.34 −.64 | +3' | 46.9✓ −1.2+3 45.7
17.5 + 2.50 −.44 | | 47.4✓ −0.9 | 46.5
18.2 +16.88 −.70 | | 48.3✓ −1.3 | 47.0
6.7 − 20.68 −.77 | | 49.7✓ −1.5 | 48.2 46.85

−.44 +47.4 | −.64 +46.9
~~−.70 48.3~~ | −.70 48.3
| −.77 49.7

−.44 +47.4 | −.70 ~~+46.3~~ 48.3
−.9 | −1.4
+46.5 | +46.9

465 | 1407 5555
−.2 | −.6

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1876 Aug. 10 $h = +.047$ $+.035$ $+.040$

Star	Ra (h)	δ	tang δ	π Ra	n = −1.05 e = .00
$h' = +.050$	4.5 +.3	73	+.29	+15.37 − .30	+.01
	5.1 −.3	86	+1.03	+16.13 − .48	−.01
	4.80				
	17.1 +0.8	237	+.26	+14.79 − .27	+.03
	17.5 0.4	241	+.22	+14.76 − .23	.01
	17.6 0.3	244	+1.04	+15.55 − .09	.01
17.50 —	17.8 +0.1	249	+.76	+15.39 − .80	+.00
	18.3 −0.4	258	+.40	+15.00 − .42	−.01
	18.5 0.6	260	+.80	+15.36 − .84	.02
18.50	18.7 −0.8	264	+.66	+15.26 − .68	−.03
	17.93				

				I	II
17.1	+.26	+14.79			
17.5	+.22	14.76			
17.3	+.24	+14.78	17.0	+7.34	+22.54 +.01 +.05 +22.59
	n = −.09	+.04 +.3	17.5	+2.50	+17.05 +16 −.01 +.02 +17.07
			18.2	+16.88	+32.51 −.04 −.01 +32.50
17.6	+.04	+15.55			
18.5	+.80	15.26	18.4	+3.21	+17.77 −.05 −.02 +17.75
18.0	+.92	+15.40			

I

4.8	+.66	+15.75	0 =	+7.10 +7.77 n = −.109
				+2.26 +2.26 +.11 −.1085
				+16.64 +17.69 −.106
				+2.97 +2.94 −.099
				−1.035 −.48

1876 Aug. 10

Star	Ra (h)	δ	tang δ	π Ra
	15.060			
	15.07 15.08			
	.05 .04			
	14.525			
	14.52 14.55			
	.53 .54			
	.46 .47			
	.59 .59			
	.58 .57			
	.52 .50			
	.58 .55			
	14.560			
	14.540			

				I	II
14.539					
18.7	−20.68	−6.185	−6.23	−6.19	
		−.07	−.03		
0 =	−20.92	−21.01	n = −1.00		
			−1.000		
0 =	−21.60	−21.59	n = −1.00		
			−1.000		

II

0 =	+6.42	+7.19	n = −1.12	
	+1.58	+1.67 +.11	−1.1613	
	+15.96	+17.10	−1.07	
	+2.29	+2.35	−1.03	
			−1.090 −.88	

1876 Aug. 12 $h = +.051$ $+.049$ $+.087$ $n = -1.09$ $e = .00$

Star	Ra (h)	δ	tang δ	π Ra
$h' = +.047$	4.5 +.5	73	+.29	+17.61 − .32
	5.1 −.1	86	+1.03	+18.40 − 1.12
	5.1 −.1	87	−.15	+17.24 + .16
	5.3 −.3	90	+.54	+17.93 − .59
	5.00			
	17.1 +0.8	237	+.26	+17.01 − .28
	17.5 +0.4	241	+.22	+16.99 − .24
17.30 —	17.6	244	+1.04	+17.76 − 1.13
	17.8 +0.1	249	+.76	+17.65 − .83
	18.5 −0.6	260	+.80	+17.71 − .87
18.33 —	18.7 −0.8	264	+.65	+17.54 − .71
	17.87			
	17.92			

				I	II
17.1	+.26	+17.01			
17.5	+.22	16.99			
17.3	+.24	+17.02	17.0	+7.34	+24.92 +.01 +.05 +24.93
	n = −.109	+.05 +.3	17.5	+2.50	+19.45 −.01 +.02 +19.36
17.6	+.04	+17.76	17.7	+3.12	+20.13 −.02 +.01 +20.14
18.5	+.80	17.71	17.9	+4.32	+21.50 −.03 +.00 +21.50
18.0	+.92	+17.74	18.2	+16.88	+35.34 −.04 −.01 +35.33
5.0	+.43	+17.80	18.4	+3.21	+20.35 −.05 −.02 +20.33

0 =	+7.10	+7.93	n = −1.12	
	+2.26	+2.33 +.11	−1.088	
	+2.88	+3.11	−1.08	
	+4.08	+4.47	−1.10	
	+16.64	+18.30	−1.10	
	+2.97	+3.30	−1.11	
			−1.098 .8	
0 =	+6.42	+7.23	n = −1.13	
	+1.58	+1.62 +.11	−1.089	
	+2.20	+2.40	−1.09	
	+3.40	+3.76	−1.11	
	+15.96	+17.59	−1.10	
	+2.29	+2.59	−1.13	
			−1.098 .88	

1876 Aug. 10

Star	Ra (h)	δ	tang δ	π Ra
	17.328			
	17.29 17.31			
	.28 .28			
	.40 .40			
	.34 .33			
	16.74 16.703			
	16.73 16.80			
	.75 .78			
	.63 .65			
	.82 .83			
	.84 .79			
	.83 .76			
	16.830			
	16.794			

				I	II
16.792					
18.7	−20.68	−5.59 −5.60	−5.67	−5.63	
		−.07	−.03		
0 =	−20.92	−22.67	n = −1.08		
			−1.080		
0 =	−21.60	−23.37	n = −1.08		
			−1.080		

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Sin Z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z												
h															
4.5	+.29	+.44		+3′ 45.3	+ 0.9	+ 3′ 46.2									
5.1	+1.03	−.06		45.9	− 0.1	45.8	46.00								
17.1	+.26	+.47		45.3	+ 1.0	46.3									
17.5	+.22	+.50		45.1	+ 1.0	46.1									
17.6	+1.04	−.06		46.7	− 0.1	46.6									
17.8	+.76	+.09		46.0	+ 0.2	46.2									
18.3	+.40	+.35		45.1	+ 0.7	45.8									
18.5	+.80	+.06		46.5	+ 0.1	46.6									
18.7	+.65	+.16		46.0	+ 0.3	46.3	46.27								

46.00

R.A.	tan δ	sin z	cos z												
h															
17.0	+ 7.34	−.64		+3′	47.5	− 1.3	+ 3′ 46.2								
17.5	+ 2.50	−.44			47.4	− 0.8	46.6								
18.2	+16.88	−.70			48.5	− 1.3	47.2								
18.4	+ 3.21	−.50			46.8	− 1.0	45.8								
6.7	−20.68	−.77			47.9	− 1.5	46.4	46.44							

				+.47	+45.3	+.35	+45.1	+.09	+46.0	−.06	+46.7				
				+.50	45.1			+.06	46.5						
								+.16	46.0						
7	189														
5	220			+.48	+45.2	+.35	+45.1	+.10	+46.2	−.06	+46.7				
12	409				+ 1.0		+ .7		+ .2		− .1				
					+46.2		+45.8		+46.4		+46.6				
		+3′ 46.35	(12)		924		458		1392		466				
		46.34			+ .2		+ .6		00		− .2				

												−.44	+47.4	−.64	+47.5
												−.50	46.8	−.70	48.5
														−.77	47.9
												−.47	+47.1	−.70	+48.0
													− .6		− 1.4
													+46.2		+46.6
													924		1398
													+ .2		− .2

5562

4.5	+.29	+.44		+3′ 44.2	+ 0.9	+ 3 45.1						17.0	+7.34	−.64	+3′
5.1	+1.03			45.9								17.5	+2.50	−.44	
5.1	− .15	+.77		45.4	+ 1.6	46.6						17.7	+3.12	−.50	
5.3	+ .84	+.24		46.5	+ 0.5	47.0	46.23					17.9	+ 4.32	−.57	
												18.2	+16.88	−.70	
17.1	+.26	+.47		46.1	+ 1.0	47.1						18.4	+ 3.21	−.50	
17.5	+.22	+.50		46.7	+ 1.0	47.7						6.7	−20.68	−.77	
17.6	+1.04	−.06		46.5	− 0.1	46.4									
17.8	+.76	+.09		45.4	+ 0.2	45.6									
18.5	+.80	+.06		46.1	+ 0.1	46.2									
18.7	+.65	+.16		46.4	+ 0.3	46.7	46.62								

				+.47	+46.1			+.09	+45.4	−.06	+46.5				
				+.50	46.7			+.06	46.1						
	46.23							+.16	46.4						
6	372														
7	630			+.48	+46.4			+.10	+46.0	−.06	+46.5				
13	1002				+ 1.0				+ .2		− .1				
					+47.4				+46.2		+46.4				
		+3′ 46.75	(13)		948				1386		464				
		46.77			− .6				+ .6		+ .4				

												−.44	+48.0	−.64	+48.0
												−.50	47.4	−.70	49.0
														−.77	48.2
												−.57	47.9		
												−.50	46.7		
												−.50	+47.5	−.70	+48.7
													− 1.0		− 1.4
													+46.5		+47.3
													1866		1419
													+.3		− .5

6077

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1876 Aug. 13 h = +.051 +.025 +.014

Star	Ra	δ	tang δ	m − Ra	n = −1.07 c = .00
	h				
	17.1+1.1	237	+ .26	+ 18.27 − .28	
	17.5 0.7	241	+ .22	+ 18.21 − .24	
17.30 —	17.8 +0.4	248	+ 1.53	+ 19.49 − 1.64	
	18.5−0.3	260	+ .80	+ 18.84 − .86	
	18.7 0.5	264	+ .65	+ 18.72 − .70	
	18.8 0.6	265	+ 1.68	+ 19.82 − 1.80	
18.72 —	18.9−0.7	268	+ 1.64	+ 18.72 − .68	
	18.19				
	18.25				

			I	II
17.1	+ .26	+ 18.27		
17.5	+ .22	18.21		
17.3	+ .24	+ 18.24		
	n = −1.04 +.06			
17.8	+ .53	+ 19.47		
18.5	+ .80	18.84		
18.8	+ 1.68	19.82		
18.4	+ 1.34	+ 19.38		
18.7	+ 1.24	+ 19.23		
17.0	+ 7.34	+ 25.89	+ 25.91	+ 25.96
		+ .02	+ .01	
17.7	+ 3.12	+ 21.31	+ 21.29	+ 21.35
		− .02	+ .04	
18.2	+ 16.88	+ 36.04	+ 35.99	+ 36.05
		− .05	+ .01	
0 =		+ 7.10 + 7.67	n = −1.08	
		+ 2.88 + 3.05	−.106	
		+ 16.64 + 17.75	−.107	
			−1.070	
0 =		+ 6.60 + 6.58	n = −1.10	
		+ 1.78 + 1.97	−.111	
		+ 15.54 + 16.67	−.107	
			−1.093	

1876 Aug. 13

Star	Ra	δ	tang δ	m − Ra
	h			
	17.980 7.997			
18.02	+.03 + 17.99			
7.99	+ .02 .97			
7.97	+ .01 +11 .85			
7.97	− .01 .98			
8.01	− .01 18.02			
8.01	− .01 .02			
8.02	− .02 .04			
	18.015			
	17.997	17.999		
	17.0	235	+ 7.34	+ 25.89
	17.7	484	+ 3.12	+ 21.31
	18.2	256	+ 16.88	+ 36.04
	6.7	111	− 20.68	− 3.98

			I	II
18.7	− 20.68	− 3.98	− 4.05	− 4.00
		− .07	− .02	
0 =	− 20.92	− 22.29	n = −.107	
			−1.070	
0 =	− 22.02	− 23.38	n = −.106	
			−1.060	

1876 Aug 15 h = +.050 +.046 n = −1.04 c = .00

h = +.046

5.1	+ .3 86	+ 1.03	+ 66.48 − 1.07		
5.3	+ .1 90	+ .54	+ 66.05 − .56		
5.8	− .4 102	+ .13	+ 65.67 − .14		
5.40					
17.1	+0.5 237	+ .26	+ 17.04 − .27		
17.5	+0.1 241	+ .22	+ 16.97 − .23		
17.7	−0.1 247	+ .05	+ 16.89 − .05		
17.9	−0.3 252	+ 1.26	+ 18.13 − 1.31		
17.55					

			I	II
17.1	+ .26	+ 17.04		
17.5	+ .22	16.97		
17.7	+ .05	16.89		
17.4	+ .18	+ 16.97		
	n = −.107 +.03			
17.9	+ .26	+ 18.13		
5.4	+ .57	+ 66.07		
17.6	+ 2.58	+ 19.42	+ 19.41	+ 19.44
		− .01	+ .02	
17.7	+ 3.12	+ 20.14	+ 20.12	+ 20.15
		− .02	+ .01	
17.9	+ 4.32	+ 21.21	+ 21.18	+ 21.21
		− .03	+ .00	
0 =		+ 2.40 + 2.44	n = −.102	
		+ 2.94 + 3.15	−.107	
		+ 4.14 + 4.21	−.102	
			−1.037	
0 =		+ 1.32 + 1.31	n = −.99	
		+ 1.86 + 2.02	−.109	
		+ 3.06 + 3.08	−.101	
			−1.030	

17.6	483	+ 2.58	+ 19.42	
17.7	484	+ 3.12	+ 20.14	
17.9	485	+ 4.32	+ 21.21	

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Sin Z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z				
h							
17.1	+ .26	+.47	+3′ 45.6″	+1.0	+3 46.7		
17.5	+ .22	+.50	45.6	+1.1	44.8		
17.8	+ 1.53	−.25	45.3	−0.5	46.0		
18.5	+ .80	+.86	45.9	+0.1	46.3		
18.7	+ .65	+.16	46.0	+0.3	47.2		
18.8	+ 1.68	−.29	47.7	−0.5	46.6	46.27	
18.9	+ 0.64	+.17	46.2	+0.4			

R.A.	tan δ	sin z	cos z				
h							
17.0	+ 7.34	−.64	+3′	47.3	−1.2	+3′ 46.1″	
17.7	+ 3.12	−.50		47.2	−1.1	46.1	
18.2	+ 16.88	−.70		47.1	−0.9	46.2	
6.7	− 20.68	−.77		49.1	−1.5	47.6	46.50

~~+.47~~ +.50 + 45.6

+.06 +45.9 ~~−.25 +45.3~~
+.16 46.0 ~~−.17~~
+.17 46.2

−.29 +47.7
−.26 +45.3

−.50 +47.2

−.64 +47.3
−.70 47.1
−.77 49.1

6 162
4 200
10 362
+3′ 46.″26
46.36

+.50 +45.6
+ 1.0
+46.6
(10) 466′
−.3

+.13 +46.0
+ .2
+46.2
1386³
+.1

~~−.25 +45.3~~
~~−.5~~
~~+46.8~~

27 46.3
−.29 +47.7
− .5
46.0
92.0²
+.3

−.50 +47.2
− 1.0
+46.2
462′
+.1

−.70 +47.8
−1.4
+46.1
139.2³
−.1

46.26

5.1 + 1.03 −.06
5.3 + .84 +.24
5.8 + .13 +.57

17.1 + .26 +.47
17.5 + .22 +.50
17.7 + .05 +.64
17.9 + 1.26 −.16

45.83″

+3′ 45.5″ −0.1
45.5 +0.5
44.9 +1.2
45.3 +1.0
46.5 +1.1
45.3 +1.3
44.7 −0.3

+3 45.4
46.0
46.1 ~~45.50~~ 45.83
46.3
47.6
46.6
44.4 46.22

17.6 + 2.58 −.44
17.7 + 3.12 −.50
17.9 + 4.32 −.57

+3′ 47.3″ −0.8
47.2 −1.0
46.7 −1.1

+3 46.5
46.2
45.6 46.10

+.64 +45.3
+.50 46.5

+.47 +45.3

−.16 +44.7

−.44 +47.3
−.50 47.2
−.57 46.7

4 88
3 30
7 118
+3′ 46.16
46.17

+.64 +45.3
+ 1.3
+46.6
(7) 466′
−.4

+.48 +45.9
+ 1.0
+46.9
938²
−.7

−.16 +44.7
− .3
+44.4
444′
+1.8

−.50 +47.1
− 1.0
+46.1
1383³
+.1

3231

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1876 Aug. 21 $k = +.015 +.007 -.020$

Star	Ra	δ	tang δ	π Ra	n = −.96 c = .00
	h	°		°	
$k = +.010$	5.1+0.1	86 +	1.03	+ 75.79 − .99	
	5.1+0.1	87 −	.15	+ 74.76 + .14	
	5.3−0.1	90 +	.54	+ 75.37 − .52	
	5.17				
	17.1+0.0	237 +	.26	+ 74.94 − .25	
	17.5 0.5	241 +	.22	+ 74.84 − .21	
	17.7 0.3	247 +	.05	+ 74.70 − .05	
17.43	17.8 0.2	248 +	1.53	+ 76.04 − 1.47	
	17.9+0.1	252 +	1.26	+ 75.84 − 1.21	
	18.5−0.5	260 +	.80	+ 75.40 − .77	
	18.8 0.8	265 +	1.68	+ 76.29 − 1.61	
18.52	18.9−0.9	268 +	.64	+ 75.27 − .61	
	18.05				

				I	II
17.1	+ .26	+ 74.94	17.0	+ 7.34 + 82.01	+ 82.02 + 82.03
17.5	+ .22	74.84		+ .01	+ .02
17.7	+ .05	74.70	17.6	+ 2.58 + 77.06	+ 77.06 + 77.07
17.4	+ .18	+ 74.83		− .02	+ .01
	n = −.93	+.01	17.7	+ 3.12 + 77.73	+ 77.73 + 77.74
				− .02	+ .01
17.8	+ 1.53	+ 76.04	17.9	+ 4.32 + 78.64	+ 78.63 + 78.64
17.9	+ 1.26	75.84		− .01	+ .00
18.5	+ .80	75.40	18.2	+ 16.88 + 91.25	+ 91.24 + 91.25
18.8	+ 1.68	76.29		− .01	+ .00
18.2	+ 1.32	+ 75.89		I	
18.4	+ 1.25	+ 75.84	0 =	+ 7.16 + 7.19	n = −.100
5.2	+ .47	+ 75.31		+ 2.40 + 2.23	−.93
				+ 2.94 + 2.90	−.99
				+ 4.14 + 3.80	−.92
				+ 16.70 + 16.41	−.98
					−.964

1876 Aug. 22 $k = +.013 +.021$ (14) $n = -.85$ $c = .00$

$k = +.006$	7.4	119 +	.63	+ 16.07 − .54	
	7.5+0.1	120 +	.10	+ 15.32 − .08	
	7.6 0.0	122 +	.54	+ 15.78 − .46	
	7.55				
	17.1+0.6	237 +	.26	+ 75.27 − .22	
	17.5+0.1	241 +	.22	+ 75.25 − .19	
	17.7−0.1	247 +	.05	+ 75.07 − .04	
	17.9−0.3	252 +	1.26	+ 76.23 − 1.07	
	17.55				

				I+II
17.1	+ .26	+ 75.27	17.6	+ 2.58 + 77.20 + 77.20
17.5	+ .22	75.25		− .00
17.7	+ .05	75.07	17.7	+ 3.12 + 77.75 + 77.75
17.4	+ .18	+ 75.20		− .00
	n = −.95	+.01		
17.9	+ 1.26	+ 76.23	0 =	+ 2.40 + 2.60 n = −.83
				+ 2.94 + 2.55 −.87
7.5	+ .42	+ 15.72		−.850
			0 =	+ 1.32 + .97 n = −.74
				+ 1.86 + 1.52 −.82
				−.820

1876 Aug. 21

Star	Ra	δ	tang δ	π Ra
	h	°		°
	17.0	235	+ 7.34	+ 82.01
	17.6	483	+ 2.58	+ 77.06
	17.7	484	+ 3.12	+ 77.73
	17.9	485	+ 4.32	+ 78.64
	18.2	256	+ 16.88	+ 91.25
	6.7	111	− 20.68	+ 54.70

					I	II
74.850	74.850					
+ .00	+ 74.85	74.80	17.0	− 20.68	+ 54.70	+ 54.68 + 54.69
.00	.90	.90	17.6		− .02	− .01
.00	.85	.85	17.7			
74.642	74.635		17.9			
+ .01	.69	74.70	18.2			
.00	.63	.63	6.7			
.00	.65	.65				
.00	+ .11 .57	.68				
.00	.63	.63				
+ .00	.63	.63				
− .01	.68	.67				
− .01	.66	.65				
	74.650					
	74.656					

						I	II
74.655							
18.7	− 20.68	+ 54.70	+ 54.68	+ 54.69			
		− .02	− .01				
0 =	− 20.86	− 20.15	n = − .97				
				−.970			
0 =	− 22.00	− 21.20	n = − .96				
				−.960			

					I
0 =	+ 6.02	+ 6.14	n = − .102		
	+ 1.26	+ 1.18	− .94		
	+ 1.80	+ 1.85	− .103		
	+ 3.60	+ 2.75	− .92		
	+ 15.56	+ 15.36	− .99		
			− .980		

75.28	15.280				
+ 75.53	75.53	17.6	483	+ 2.58	+ 77.20
+ .00	.24	75.24	17.7	484	+ 3.12	+ 77.75
− .00	.32	.32			
+ .01	75.05	75.06			
.00	.06	.06			
+ .00	.03	.03			
− .01	.16	.15			
75.075	75.075				

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sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z cos z			
h			+3′ ″		+3′ ″
5.1	+ 1.03	−.06		− 0.1	
5.1	− .15	+.77	44.6	+ 1.7	46.3
5.3	+ .54	+.24	47.0	+ 0.5	47.5 46.90
17.1	+ .26	+.47	47.0	+ 1.0	48.0
17.5	+ .22	+.50	48.0	+ 1.1	49.1
17.7	+ .05	+.64	46.8	+ 1.4	48.2
17.8	+1.53	−.25	47.5	− 0.5	47.0
17.9	+1.26	−.16	46.9	− 0.3	46.6
18.5	+ .80	+.06	47.2	+ 0.1	47.3
18.8	+1.68	−.29	48.8	− 0.6	48.2
18.9	+ .64	+.17	48.0	+ 0.4	48.4 47.85

R.A.	tan δ	sin z cos z				
h				″		′ ″
17.0	+ 7.34	−.64	+3′	50.5	−1.3	+3′ 49.2
17.6	+ 2.58	−.44		49.9	−0.9	49.0
17.7	+ 3.12	−.50		49.8	−1.0	48.8
17.9	+ 4.32	−.57		49.5	−1.2	48.3
18.2	+ 16.88	−.70		50.3	−1.4	48.9
6.7	− 20.68	−.77		50.3	−1.6	48.7 48.~~70~~/82

46.90″

+.64	+46.8	+.47	+47.0	+.06	+47.2	−.16	+46.9	−.25	+47.5	−.44	+49.9	−.64	+50.5
		+.50	48.0	+.17	48.0			−.29	48.8	−.50	49.8	−.70	50.3
										−.57	49.5	−.77	50.3

8 6280
6 5292
14 11572

+.64	+46.8	+.48	+47.5	+.12	+47.6	−.16	+46.9	−.27	+48.1	−.50	+49.7	−.70	+50.4
	+ 1.4		+ 1.0		+ .2		− .3		− .5		− 1.0		− 1.5
	+48.2		+48.5		+47.8		+46.6		+47.6		+48.7		+48.9
	48.2′		97.0²		95.6²		46.6′		95.2²		146.1³		146.7³
	0.0		−.3		+ .4		+1.6		+.6		−.5		−.7

+3′ 48.24″ (14) 6754

4827

R.A.	tan δ	sin z cos z			
7.4	+ .63		+3′ ″		
7.5	+ .10	+.60	48.1	+ 1.3	+3 49.4
7.6	+ .54	+.24	48.1	+ 0.5	48.6 49.00
17.1	+ .26	+.47	49.5	+ 1.0	50.5
17.5	+ .22	+.50	50.2	+ 1.1	51.3
17.7	+ .05	+.64	47.9	+ 1.4	49.3
17.9	+1.26	−.16	48.4	− 0.3	48.1 49.80

R.A.	tan δ	sin z cos z				
17.6	+ 2.58	−.44	+3′	50.5″	−0.9	+3 49.6
17.7	+ 3.12	−.50		50.2	−1.0	49.2 49.40

49.00″

+.64	+47.9	+.47	+49.5	−.16	+48.4	−.44	+50.5
		+.50	50.2			−.50	50.2

4 320
2 80
6 400

+.64	+47.9	+.48	+49.8	−.16	+48.4	−.47	+50.3
	+ 1.4		+ 1.0		− .3		− 1.0
	+49.3		+50.8		+48.1		+49.3
	49.3′		101.6²		48.1′		98.6²
	+.3		−1.2		+1.5		+.3

+3′ 49.60″ (6) 2976

4967

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1876phae.proj.1692.

1876 Aug. 23 h = +.032 +.005[6] + .010 (.02)

n = −.95 c = .00

Star	Ra	δ	tang. δ	π Ra				
	h						75.383 75.377	
	17.1 +1.0	237	+ .26	+75.63	− .25	+.01	+75.38	75.39
	17.5 0.6	241	+ .22	+75.57	− .21	00	36	36
	17.7 0.4	247	+ .05	+75.46	− .05	00	.41	.41
17.52 42 —	17.8 0.3	248	+ 1.53	+76.69	− 1.05	00	(+11) 24	.35
	17.9 +0.2	252	+ 1.26	+76.50	− 1.20	00	.30	30
	18.5 −0.4	260	+ .80	+76.13	− .76	00	37	37
	18.8 0.7	265	+ 1.68	+77.11	− 1.60	00	75.51	.51
18.52 —	18.9 −0.8	268	+ .64	+75.99	− .61	00	75.38	.38
	18.08						75.390	
							75.382	75.384

1876 Aug. 23

Star	Ra	δ	tang. δ	π Ra
	h			6
	17.6	483	+ 2.58	+ 77.78
	18.2	256	+ 16.88	+ 91.09
	6.7	111	− 20.68	+ 55.69 55.70
	18.9	493	+ 2.93	+ 78.28

17.1	+ .26	+ 75.63
17.5	+ .22	75.57
17.7	+ .05	75.46
17.4	+ .18	+ 75.55 +02

n = −.87 +.02

17.8	+ 1.53	+ 76.69
17.9	+ 1.26	76.50
18.5	+ .80	76.13
18.8	+ 1.68	77.11
18.1	+ 1.20	+ 76.44
18.4	+ 1.25	+ 76.58

			I	II
17.6	+ 2.58	+ 77.78	+ 77.78	+ 77.79
		− .00	+ .01	
18.2	+ 16.88	+ 91.09	+ 91.07	+ 91.09
		− 02	− .00	
18.9	+ 2.93	+ 78.28	+ 78.25	+ 78.26
		− .03	− .02	

			I	II
18.7	− 20.68	+ 55.69 +55.70	+ 55.66	+ 55.68
		− .03	− .01	

0 = + 2.40 + 2.23 n = −.93
+ 16.70 + 15.52 −.93
+ 2.75 + 2.70 −.98
−.947

0 = + 1.38 + 1.35 n = −.98
+ 15.68 + 14.65 −.93
+ 1.73 + 1.82 −1.05
−.930

0 = − 20.86 − 19.89 n = −.95
−.950

0 = − 21.88 − 20.76 n = −.95
−.950

1876 Aug. 26 h = +.020 +.011 + .006

n = −1.06 c = .00

h' = +.015

	Ra	δ	tang. δ	π Ra			77.772	77.772
	5.1 +0.9	86	+ 1.03	+ 78.90	− 1.09	+01	+ 77.81	77.82
	5.3 0.7	90	+ .54	+ 78.32	− .57	+01	.75	76
	5.8 +0.2	102	+ .13	+ 77.91	− .14	+ 00	.77	.77
	7.6 −1.6	122	+ .54	+ 78.33	− .57	− 02	.76	.74
	5.95						77.600	
	17.5 +1.6	241	+ .22	+ 77.81	− .23	+ 02	.58	77.60
18.00 —	18.5 0.6	260	+ .80	+ 78.47	− .85	01	.62	.62
	19.3 −0.2	274	+ .05	+ 77.70	− .05	00	.65	.65
	19.5 0.4	498	+ 1.19	+ 78.90	− 1.26	+ 00	.64	.64
	19.7 0.6	277	+ .18	+ 77.80	− .19	− 01	.61	.60
	19.7 0.6	280	+ .15	+ 77.74	− .16	01	.58	.57
19.75 —	19.8 −0.7	283	+ .11	+ 77.74	− .12	− 01	.62	.61
	19.14						77.620	
							77.614	77.613

17.9	485	+ 4.32	+ 82.13
19.8	284	+ 53.85	+ 134.57
18.2	256	+ 16.88	+ 95.87

17.5	+ .22	+ 77.81
19.3	+ .05	77.70
19.7	+ .18	77.80
19.7	+ .15	77.74
19.8	+ .11	77.74
19.2	+ .14	+ 77.76

n = −1.07

18.5	+ .80	+ 78.47
19.5	+ 1.19	78.90
19.0	+ 1.00	+ 78.68
6.0	+ .56	+ 78.36

			I	II
17.9	+ 4.32	+ 82.13	+ 82.16	+ 82.15
		+ .03	+ .02	
18.2	+ 16.88	+ 95.87	+ 95.89	+ 95.89
		+ .02	+ .02	
19.8	+ 53.85	+ 134.57	+ 134.56	+ 134.55
		− .01	− .02	

0 = + 4.18 + 4.40 n = −1.05
+ 16.74 + 18.13 −1.08
+ 53.71 + 56.80 −1.06
−1.063

0 = + 3.32 + 3.47 n = −1.05
+ 15.88 + 17.21 −1.08
+ 52.85 + 55.87 −1.06
−1.063

h = +.020 +.010 n = −1.06

1876 Aug. 27

7.5 120 + .10 + 78.64 −11 +78.53

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sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z				R.A.	tan δ	sin z	cos z			
h							h						
17.1	+ .26	+.47	+3′ 48.″1	+ 1.0	+ 3′ 49.″1		17.6	+ 2.58	−.44	+3′	49.″9	−0.9	+3′ 49.″0
17.5	+ .22	+.50	48.8	+ 1.1	49.9		18.2	+16.88	−.70		51.2	−1.4	49.8
17.7	+ .05	+.64	48.5	+ 1.4	48.9		6.7	− 20.68	−.77		52.5	−1.6	50.9
17.8	+ 1.53	−.25	48.2	− 0.5	47.7		18.9	+ 2.93	−.48		49.1	−1.0	48.1 49.45
17.9	+ 1.26	−.16	48.6	− 0.3	48.3								
18.5	+ .80	+.06	48.8	+ 0.1	48.9								
18.8	+ 1.68	−.29	49.8	− 0.6	49.2								
18.9	+ .64	+.17	48.3	+ 0.4	48.7 48.84								

			+.64	+47.5	+.47	+48.1		+.06	+48.8	−.16	+48.6	−.25	+48.2	−.44 +48.9 −.70 +51.2
					+.50	48.8		+.17	48.3			−.29	49.8	−.48 49.1 −.77 52.5
8	7072													
4	3780		+.64	+47.5	+.48	+48.5		+.12	+48.5	−.16	+48.6	−.27	+49.0	−.46 +49.5 −.73 +52.3
12	10852			+ 1.4		+ 1.0			+ .2		− .3		− .5	− 1.0 − 1.6
				+48.9		+49.5			+48.7		+48.3		+48.5	+48.5 +50.7
	+3′ 49.″08	(12)		48.6′		990″			974″		483′		970″	970″ 1014″ 5890
	49.04			+.2		−.4			+.4		+.8		+.6	+.6 −1.6

5.1	+ 1.03	−.06	+3′ 49.″3	− 0.1	+3 49.2		17.9	+ 4.82	−.57	+3′	52.″5	−1.2	+3 51.3	
6.3	+ .54	+.24	49.4	+ 0.5	49.9		19.8	+ 53.85	−.73		52.0	−1.6	50.4	
6.8	+ .13	+.57	48.9	+ 1.2	50.1		18.2	+16.88	−.70	+3	51.3	−1.5	49.8	50.50
7.6	+ .54	+.24	48.4	+ 0.5	48.9 49.52									
17.5	+ .22	+.50	49.4	+ 1.1	50.5									
18.5	+ .80	+.06	49.5	+ 0.1	49.6									
19.3	+ .05	+.64	+3′ 49.0	+ 1.5	50.5									
19.5	+ 1.19	−.13	49.8	− 0.3	49.5									
19.7	+ .18	+.53	49.3	+ 1.2	50.5									
19.7	+ .15	+.56	49.9	+ 1.3	51.2									
19.8	+ .11	+.59	49.1	+ 1.3	50.4 50.31									

49.″52

			+.64	+49.0	+.50	+49.4		+.06	+49.5	−.13	+49.8		−.57	+52.5 −.73 +52.0
					+.53	49.3								−.70 51.3
					+.56	49.9								
					+.59	49.1								
7	217													
3	150		+.64	+49.0	+.55	+49.4		+.06	+49.5	−.13	+49.8		−.57	+52.5 −.71 +51.6
10	367			+ 1.4		+ 1.2			+ .1		− .2			− 1.2 − 1.5
				+50.4		+50.6			+49.6		+49.6			+51.3 +50.1
	+3′ 50.″35	(10)		504′		2024″			496′		496′			513′ 1002″ 5035
	50.37			0.0		−.2			+.8		+.8			−.9 +.3

7.5	+ .10	+.60	+3′ 51.″2	+ 1.4	+3 52.6	52.60								

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1876 Aug. 28 $h = +.010 - .005$

Star	Ra	δ	tang δ	π Ra	n = −1.044 C = .00
h' = +.003	5.1 +1.6	86	+ 1.03	+ 79.60 − 1.07	
	7.5 −0.8	120	+ .10	+ 78.88 − .10	
	7.6 −1.9	122	+ .54	+ 78.28 − .56	
	6.73				
	17.1 +1.5	237	+ .26	+ 78.81 − .27	
	17.5 1.1	241	+ .22	+ 78.82 − .23	
	17.7 0.9	247	+ .05	+ 78.65 − .05	
17.52 —	17.8 0.8	249	+ .76	+ 79.36 − .79	
	[17.9] 0.7	252	+ 1.26	+ 80.11 − 1.31	
	18.5 +0.1	260	+ .80	+ 79.34 − .83	
	19.3 −0.7	274	+ .05	+ 78.58 − .05	
	19.7 1.1	277	+ .18	+ 78.89 − .19	
	19.7 1.1	280	+ .15	+ 78.66 − .16	
19.40 —	19.8 −1.2	288	+ .11	+ 78.70 − .11	
	18.58				

					I	II
17.1	+ .26	+ 7881	17.6	+ 2.58	+ 81.30	+ 81.31 + 81.30
17.5	+ .22	7882			+ .01	+ .00
17.7	+ .05	7865	18.2	+ 16.88	+ 96.60	+ 96.60 + 96.60
19.3	+ .05	78.58			+ .00	− .00
19.7	+ .18	78.89	19.8	+ 53.85	+ 134.63	+ 134.61 + 134.60
19.7	+ .15	78.66			− .02	− .03
19.8	+ .11	78.70				
18.5	+ .14	+ 78.70				

0 =	+ 2.44	+ 2.61	n =	− 1.07
	+ 16.74	+ 17.90		− 1.087
	+ 53.71	+ 55.91		− 1.04
				− 1.060

6.7	+ .56	+ 78.92	0 =	+ 1.32 + 1.19
				+ 15.62 + 16.49
				+ 52.59 + 54.49

n =	− .90			
	− 1.06			
	− 1.04			
	− 1.050			

78.343 .677	78.677					
+.00 + 78.53 78.53	17.6	483	+ 2.58	+ 81.30		
.00 .78 .78	18.2	256	+ 16.88	+ 96.60		
+.00 7772 .72	6.7	111	− 20.68	+ 58.22³		
78.575	19.8	284	+ 53.85	+ 134.63		
−.01 78.541 78.53						
−.01 .59 .58						
+.00 .60 .60						
.00 .57 .57						
.00 .80 .80						
.00 .51 .51						
.00 .53 .53						
+.01 .70 .71						
+.01 .50 .51						
+.01 .59 .60						
78.685						
78.566						
78.570	78.571	18.7	− 20.68	+ 58.22³	I + 58.22	II + 58.21
				− .00	− .01	

0 =	− 20.82	− 20.48	n =	− .98
				− .980
0 =	− 21.94	− 21.90	n =	− 1.00
				− 1.000

1876 Aug. 29 $h = +.010 + .035$ $n = -1.00$ $C = .00$

79.190	79.190					
h' = +.001	7.5 +0.1	120	+ .10	+ 79.32 − .10		
	7.6 0.0	122	+ .54	+ 79.70 − .54		
	7.55					
	17.5 +0.6	241	+ .22	+ 79.05 − .22		
	17.8 0.3	249	+ .76	+ 79.57 − .76		
17.77 —	18.0 +0.1	264	+ .17	+ 79.03 − .17		
	18.5 −0.4	260	+ .80	+ 79.57 − .80		
18.70 —	18.9 −0.8	268	+ .64	+ 79.43 − .64		
	18.14					

					I + II	
17.5	+ .22	+ 7905	18.2	+ 16.88	+ 96.73	+ 96.73
18.0	+ .17	7903			− .00	
17.8	+ .20	+ 7904	18.9	+ 2.93	+ 81.62	+ 81.61
n =	− .91				− .01	

79.220	79.222					
+.00 + 79.22 + 79.22	18.2	256	+ 16.88	+ 96.73		
.00 .16 .16	6.7	111	− 20.68	+ 58.82³		
78.833	18.9	493	+ 2.93	+ 81.62		
+.02 78.83 78.85						
+.01 .81 .82						
+.00 .86 .86						
−.01 .77 .76						
−.03 .79 .76						
78.780						
78.812	78.810	18.7	− 20.68	+ 58.82³	I + II + 58.81	
				− .01		

0 =	− 20.88	− 20.23	n =	− .97
				− .970
0 =	− 21.46	− 20.76	n =	− .97
				− .970

17.8	+ .76	+ 7957		
18.5	+ .80	7957		
18.2	+ .78	+ 7957	0 =	+ 16.68 + 17.69
				+ 2.73 + 2.57

n =	− 1.06			
	− .94			
	− 1.000			

7.6	+ .32	+ 79.51	0 =	+ 16.10 + 17.16
				+ 2.15 + 2.04

n =	− 1.07			
	− .95			
	− 1.010			

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Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z				
h							
5.1	+ 1.03	−.06	+3′ 48.″9	− 0.1	+3′ 48.″8		
7.5	+ .10	+.60	49.8	+ 1.4	51.2		
7.6	+ .24	+.24	50.0	+ 0.5	50.5	50.14	
17.1	+ .26	+.47	50.8	+ 1.1	51.9		
17.5	+ .22	+.50	51.6	+ 1.1	51.7		
17.7	+ .05	+.64	50.2	+ 1.1	51.3		
17.8	+ .76	+.09	52.0	+ 0.2	52.2		
17.9	+1.26	−.16	50.9	− 0.3	50.6		
18.5	+ .80	+.06	51.3	+ 0.1	51.4		
19.3	+ .05	+.64	49.1	+ 1.5	50.6		
19.7	+ .18	+.53	50.1	+ 1.2	51.3		
19.7	+ .15	+.56	48.6	+ 1.3	49.9		
19.8	+ .11	+.59	48.7	+ 1.4	50.1	51.00	

50.″17

		+.64	+50.2	+.47	+50.8	+.059 +52.0	−.16 +50.9
		+.64	49.1	+.50	50.6	+.06 51.3	
				+.53	50.1		
				+.56	48.6		
				+.59	48.7		

10	00								
4	340	+.64	+49.6	+.53	+49.8	+.07 +51.6	−.16 +50.9	−.44 +52.4	−.73 +53.6
14	340		+ 1.4		+ 1.2	+ .1	− .3	− 1.0	− 1.6
			+51.0		+51.0	+51.7	+50.6	+51.4	+52.0
	+3′ 51.″31	(14)	102.0		255.0	1034	506	514	1560
	51.24		+.3		+.3	−.4	+.7	−.1	+.7

7184

	7.5 + .10	+.60	+3′ 49.″4	+ 1.4	+3′ 50.″8				
	7.6 + .54	+.24	49.6	+ 0.5	50.1	50.45			
	17.5 + .22	+.50	50.8	+ 1.2	52.0				
	17.8 + .76	+.09	52.2	+ 0.2	52.4				
	18.0 + .17	+.54	50.0	+ 1.3	51.3				
	18.5 + .80	+.06	50.9	+ 0.1	51.0				
	18.9 + .64	+.167	50.3	+ 0.4	50.7	51.48			

50.″45

				+.50	+50.8	+.09 +52.2		−.48 +51.6	−.70 +52.6
				+.54	50.0	+.06 50.9			−.77 54.0
						+.17 50.3			
5	240								
3	90			+.52	+50.4	+.11 +51.1		−.48 +51.6	−.73 +53.3
8	330				+ 1.1	+ .2		− 1.0	− 1.6
					+51.5	+51.3		+50.6	+51.7
	+3′ 51.″36			(8)	1030	1539		506	1034
	51.41				−.1	+.1		+.8	−.3

4109

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1876 Aug. 30   h = +.010 −.015 (−.016)

	Star RA		δ	tang. δ	T−RA				
	h				°		n = 1.03 c = .00	78.985	78985
h' = −.017	7.5	+0.1	120 +	.10	+79.08	−.10	00 +	78.98	+78.98
	7.6	0.0	122 +	.54	+79.55	−.56	00	.99	.99
	7.55							79.070	
	17.8	+1.8²	249 +	.76	+79.87	−.78	−.02	79.09	79.07
	18.0	1.0	254 +	.17	+79.26	−.18	−01	.08	.07
	18.5	0.5	260 +	.80	+79.84	−.82	−01	.02	.01
18.30 —	18.9	+0.1	268 +	.64	+79.75	−.66	−00	.09	.09
	19.2	−0.2	272 +	1.33	+80.42	−1.37	+00	.05	.05
	19.4	0.4	276 +	1.25	+80.40	−1.29	+01	.11	.12
	19.5	0.5	498 +	1.19	+80.27	−1.23	+01	.04	.05
	19.7		277 +	.18	+79.43	−.19	+01	24]	25]
	19.7	0.7	280 +	.15	+79.18	−.15	+01	.03	.04
19.52 —	19.8	−0.8	283 +	.11	+79.14	−.11	+01	.03	.04
	19.05							~~76.083~~	
								~~79.052~~	79.060
								79.060	

1876 Aug. 30

Star	RA	δ	tang. δ	T−RA
	h			°
	18.2	256	+16.88	+96.24
	6.7	111	−20.68	+58.63⁴
	18.9	493	+2.93	+82.02
	19.2	271	+2.41	+81.60
	19.8	284	+53.85	+134.14

18.0	+.17	+79.26
[19.7]	+.18	79.43] ✓
19.7	+.15	79.18
19.8	+.11	79.14
19.2	+.15	+79.19

n = −1.04

19.2	+1.33	+80.42
19.4	+1.25	80.40
19.5	+1.19	80.27
19.4	+1.26	+80.36

7.6 +.32 +79.32

			I	II
18.2	+16.88	+96.24	+96.25	+96.25
		+ .01	+ .01	
18.9	+2.93	+82.02	+82.02	+82.02
		+ .00	.00	
19.2	+2.41	+81.60	+81.60	+81.60
		+ .00	.00	
19.8	+53.85	+134.14	+134.13	+134.14
		− .01	.00	

0 = +16.73 +17.06 n = −1.02
+2.78 +2.83 −1.02
+2.26 +2.41 −1.07
+53.70 +54.94 −1.02
−1.032

0 = +15.62 +15.89 n = −1.02
+1.67 +1.66 −.99
+1.15 +1.24 −1.08
+52.59 +53.78 −1.02
−1.028

		I + II
18.7	−20.68	+58.63⁴ +58.64
		+ .01

0 = −20.83 −20.55 n = −.99 −.990

0 = −21.94 −21.72 n = −.99 −.990

1876 Aug. 31   h = −.011 −.017   n = −1.02

7.5	+.0	120 +	.10	+18.37	−.14	00 + 18.27	+18.27
7.6	−.1	122 +	.54	+18.77	−.55	00 .22	.22
7.55						18.245	18.245

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sin z = +.60 +.80 +.40 +.60 +.20 +.40 0 +.20 0 −.20 −.20 −.40 −.40 −.60 −.60 −.80

R.A.	tan δ	sin z	cos z				
h							
7.5	+ .10	+.60		+3′ 49″.5 ✓	+1.4	+3′ 50″.9	
7.6	+ .54	+.24		50.8 ✓	+0.6	51.4	51.15
17.8	+ .76	+.09		52.3 ✓	+0.2	52.5	
18.0	+ .17	+.54		49.6 ✓	+1.3	50.9	
18.5	+ .80	+.06		51.3 ✓	+0.1	51.4	
18.9	+ .64	+.17		51.4 ✓	+0.4	51.8	
19.2	+ 1.33	−.19		50.1 ~~56.1~~ ✓	−0.4	49.7	
19.4	+ 1.25	−.16		51.1 ✓	−0.3	50.8	
19.5	+ 1.19	−.13		51.6 ✓	−0.3	51.3	
19.7	+ .18	+.58		51.6 ✓	+1.2	52.8	
19.7	+ .15	+.56		50.4 ✓	+1.3	51.7	
19.8	+ .11	+.59		50.9 ✓	+1.4	52.3	~~51.42~~ 51.52

R.A.	tan δ	sin z cos z				
h						
18.2	+16.88	−.70	+3′	53″.0 ✓	−1.5	+3′ 51″.5
6.7	−20.68	−.77		53.8 ✓	−1.7	52.1
18.9	+ 2.93	−.48		52.9 ✓	−1.1	51.8
19.2	+ 2.41	−.42		50.5 ✓	−1.0	49.5
19.8	+53.85	−.73		52.7 ✓	−1.6	51.1	51.20

51″.15

+.54	49.6	+.09	+52.3	−.19	+50.1	−.48	+52.9	−.70	+53.0		
+.53	51.6	+.06	51.3	−.16	51.1	−.42	50.5	−.77	53.8		
+.56	50.4	+.17	51.4	−.13	51.6			−.73	52.7		
+.59	50.9										
+.55	+50.6	+.11	+51.7	−.16	+50.9	−.45	+51.7	−.73	+53.2		
	+ 1.2		+ .2		− .3		−1.0		−1.6		
	+51.8		+51.9		+50.6		+50.7		+51.6		
(15)	2072 (4)		1557 (3)		1518 (3)		1014 (2)		1548 (3)	7709	
	−.4		−.5		+.8		+.7		−.2		

10 520
5 100
15 620

+3′ 51″.39
51.41

7.5	+ .10	+.60	+3′ 50″.6 ✓	+1.4	+3 52.0	
7.6	+ .54	+.24	50.8 ✓	+0.5	51.3	~~52.65~~ 51.65

+3′ 51.65

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1876 Sept. 2 $h = -.011 + .016 + .(2)$

Star	RA	δ	tang δ	π	RA	$n = -1.044$ @ = .00
$h' = -.022$	7.5 +0.1	120 +	.10	+	8.38	− .10
	7.6 0.0	122 +	.54	+	17.26	− .56
	7.55					
	17.8 +1.6	248 +	1.53	+	19.28	− 1.59
	18.0 1.4	254 +	.17	+	17.94	− .18
	18.3 1.1	258 +	.40	+	18.19	− .42
	18.5 0.9	260 +	.80	+	18.57	− .83
	18.8 0.6	265 +	1.68	+	19.51	− 1.75
18.40 —	19.0 +0.4	269 −	.09	+	17.63	+ .09
	19.4 −0.3	277 +	.18	+	17.95	− .19
	19.7 0.3	280 +	.15	+	17.84	− .16
	20.3 0.9	289 +	.83	+	18.61	− .86
	20.4 1.0	290 +	.19	+	17.96	− .20
	20.5 1.1	292 +	.25	+	18.01	− .26
	20.5 1.1	293 +	.28	+	18.07	− .29
20.24 —	20.6 1.2	294 +	.99	+	18.82	− 1.04
	19.39					

			I	II
18.0	+.17	+17.94		
19.0	−.09	17.63		
19.7	+.18	17.95		
19.7	+.15	17.84		
20.4	+.19	17.96		
20.5	+.25	18.04		
20.5	+.28	18.07		
19.9	+.16	+17.92		
			0 = +16.72	+17.34 n = −1.04
				−1.040
			0 = +15.48	+16.06 n = −1.04
				−1.040

n = −1.04 +.01

17.8	+.153	+19.28	
18.8	+.168	19.51	
20.6	+.99	18.84	
~~19.1~~	~~+1.40~~	~~+19.21~~	
19.7	+1.34	+19.17	

1876 Sept. 3 $h = -.019 - .024 - .015 - .026$ $n = -1.03$ @ = .00

Star	RA	δ	tang δ	π	RA
$h' = -.021$	7.4	119 +	.63	+	18.17 − .65
	7.5 +0.1	120 +	.10	+	17.38 − .10
	7.6 0.0	122 +	.54	+	17.77 − .56
	7.55				
	13.6 +3.1	212 +	.12	+	14.65 − .12
	18.8 0.9	248 +	1.53	+	18.88 − 1.58
	18.5 +0.2	260 +	.80	+	18.28 − .82
	18.8 +0.1	265 +	1.68	+	19.17 − 1.73
17.928 —	19.0 −0.1	269 −	.09	+	17.42 + .09
	19.0 0.3	494 +	.72	+	18.15 − .74
	19.7 1.0	277 +	.18	+	17.66 − .19
	19.7 1.0	280 +	.15	+	17.55 − .15
19.55 —	19.8 −1.1	283 +	.11	+	17.54 − .11
	~~18.66~~				
	18.766				

			I	II
15.6	+.12	+17.65		
19.0	−.09	17.42		
19.7	+.18	17.66		
19.7	+.15	17.55		
19.8	+.11	17.54		
18.8	+.09	+17.56		
			0 = +16.79	+17.75 n = −1.06
			+53.76	+56.13 −1.04
				+1.050
			0 = +15.28	+16.30 n = −1.07
			+52.25	+54.67 −1.05
				−1.060

n = −.97 +.01

17.8	+.153	+18.88	
18.8	+.168	19.17	
~~18.8~~	~~+1.60~~	~~+19.02~~	
7.5	+.42	+17.77	

1876 Sept. 2

Star	RA	δ	tang δ	π	RA
	16.990				
	17.28				
	17.28	+.42			
	17.70	21.70			
		16.70			
	17.740				
	17.69	17.71			
	.76	.78			
	.77	.78			
	.74	.75			
	.76	.74			
	.72	.72			
	.76	.76			
	.68	.68			
	.78	.77			
	.76	.75			
	.78	.77			
	.78	.77			
	.80	.79			
	17.763				
	17.752	17.754			

				I	II
18.2	+16.88	+35.28	+35.26	+35.27	
			−.02	−.01	
			0 = +16.72	+17.34	n = −1.04
					−1.040
			0 = +15.48	+16.06	n = −1.04
					−1.040

					I	II
18.2	+16.88	+35.28	+35.32	+35.31	+35.32	
			−.01	.00		
19.8	+53.85	+73.67	+73.69	+73.69		
			+.02	+.02		
			0 = +16.79	+17.75	n = −1.06	
			+53.76	+56.13	−1.04	
					+1.050	
			0 = +15.28	+16.30	n = −1.07	
			+52.25	+54.67	−1.05	
					−1.060	

1.2	× 19	−42.45	−38.49			
18.2	256	+16.88	+35.32			
6.7	111	−20.67	−3.24			
19.8	284	+53.85	+73.67			

				I	II	III
18.7	−20.67	−3.24	−3.24	−3.28		
			.00	+.01		
		0 = −20.76	−20.80	n = −1.00		
					−1.000	
		0 = −2227	−2225	n = −1.00		
					−1.000	
1.2	−42.45	−38.49				−38.58
						−.09
		0 = −4287	−5735	n = −1.31		

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1876phae.proj.1692.

Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 -.20 | -.20 -.40 | -.40 -.60 | -.60 -.80

R.A. tan δ sin z cos z

h
7.5 + .10 +.60 +3' 47.1" + 14 +3' 48.5" 48.50
7.6 + .54 +.24 — + 0.6

17.8 + 1.53 -.25 51.5 - 0.6 50.9
18.0 + .17 +.54 50.5 + 1.3 51.8
18.3 + .40 +.35 51.2 + 0.9 52.1
18.5 + .80 +.06 52.3 + 0.1 52.4
18.8 + 1.68 -.29 52.2 - 0.7 51.5
19.0 - .09 +.74 49.5 + 1.6 51.1

19.7 + .18 +.53 49.6 + 1.3 50.9
19.7 + .15 +.56 50.9 + 1.3 52.2
20.3 + .83 +.04 46.1 + 0.1 46.2
20.4 + .19 +.52 47.0 + 1.2 48.2
20.6 + .25 +.47 49.0 + 1.1 50.1

20.5 + .28 +.45 49.8 + 1.1 50.9
20.6 + .99 -.04 51.8 - 0.1 51.7 51.42

48.50

+.74 +49.5 | +.57 +50.5 | +.35 +51.2 | +.06 +52.3 | -.04 +51.8 | -.25 +51.5 | -.70 +53.8
+.53 49.6 | +.04 46.1 | -.29 52.2 | -.77 53.9
+.56 50.9
+.52 47.0
+.47 49.0
+.45 49.8

11 1562
2 450
13 2012

+.74 +49.5 | +.51 50.0 | +.35 +51.2 | +.086 +52.3 | -.04 +51.8 | -.27 +51.8 | -.73 +53.8
+1.6 | +1.1 | +.8 | +.1 | -.1 | -.6 | -1.6
+51.1 | +51.1 | +52.0 | +52.4 | +51.7 | +51.2 | +52.2
+3' 51.50 (13/25) 511' | 2555 5 | 520' | 524 3 | 517 | 1024 2 | 1044 2 | 6695
51.55 +.4 | +.4 | -.5 | -.9 | -.2 | +.3 | -.7

7.4 + .63 +.18 — +4.4 +3
7.5 + .10 +.60 50.6 +4.4 +3 52.0
7.6 + .54 +.24 50.8 +0.6 57.4 57.70
15.6 + .12 +.58 +3' 52.3" +1.4 53.7

17.8 + 1.53 -.25 52.9 - 0.6 52.3
18.5 + .80 +.06 52.3 + 0.2 52.5
18.8 + 1.68 -.29 52.8 - 0.7 52.1
19.0 - .09 +.74 50.4 + 1.6 52.0
19.0 + .72 +.11 53.0 + 0.3 53.3

19.7 + .18 +.53 52.0 + 1.3 53.3
19.7 + .15 +.56 51.3 + 1.3 52.6
19.8 + .11 +.59 51.2 + 1.4 52.6 52.71

57.70

+.74 +50.4 | +.58 +52.3 | +.06 +52.3 | -.25 +52.9 | -.75 +50.3
+.53 52.0 | +.11 53.0 | -.29 52.8 | -.70 54.2
+.56 51.3 | -.77 55.5
+.59 51.2 | -.73 54.8

9 2439
3 969
12 3408

+.74 +50.4 | +.56 +51.7 | +.08 +52.6 | -.27 +52.8 | -.73 54.8
+1.6 | +1.2 | +.2 | -.6 | -1.6
+52.0 | +52.9 | +52.8 | +52.2 | +53.2
+3' 52.77 (12/25) 520' | 2116 4 | 1056 2 | 1044 4 | 1596 3 | 6332
52.84 +.8 | -.1 | 0.0 | +.6 | -.4

1 1562
2 450
12 1872

1.2 -42.45 -.725 +3' 50.3" -.16 +3 48.7
18.2 +16.88 -.70 54.2 -.15 52.7
6.7 -20.67 -.77 55.5 -.17 53.8
19.8 +53.85 -.73 54.8 -.16 53.2 53.23

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1876phae.proj.1692.

1876 Sept 4 l = -.019 -.017 -.020 n = -.100

Star	Ra	δ	tang δ	π = Ra	
	5.3 +1.6	90	+ .524	+ 17.39 − 524	
5.55 —	5.8 +1.6	102	+ .13	+ 16.96 − 13	
	7.40	119	+ .63	+ 17.64 − 63	
	7.5 −1.0	120	+ .10	+ 16.92 − 10	
7.55 —	7.6 −1.0	122	+ .54	+ 17.33 − 54	
	6.72				
	6.71.55				

Star	Ra	δ	tang δ	π = Ra	
				+16.840	
				−.02 + 16.85	16.83
				−.01 .83	.82
				+ 02 17.01	17.033
				+ 02 .82	16.84
				+ 02 .79	.81
				16.760	
				16.805	
				16.822	16.825

1876 Sept 6 l = -.019 .000 .000 n = -.97 e = .00

	18.5 +0.4	260	+ .80	+ 16.82 − .77			16.050			
	18.8 0.4	265	+ 1.68	+ 17.69 − 1.03			+ .00 + 16.05	18.2	256	+ 16.88 + 33.07
	19.0 0.2	269	− .09	+ 15.97 + .09			00 16.06	6.7	111	− 20.67 − 3.085
18.82 —	19.0 +0.2	494	+ .72	+ 16.73 − .90			00 .06	16.9	493	+ 2.93 + 19.00
	19.7 −0.5	277	+ .18	+ 16.22 − .17			00 .03	19.8	284	+ 53.85 + 66.85
	19.7 0.5	280	+ .15	+ 16.21 − .15			00 .05			
19.73 —	19.8 −0.6	283	+ .11	+ 16.15 − .11			00 .06			
	19.21						+ .01 .04			
							16.050			

			I	II				I	II
19.0	− .09	+ 15.97	18.2	+ 16.88	+ 33.07	+ 33.04	+ 33.05	16.050		
19.7	+ .18	16.22			− .03	− .02		18.7	− 20.67	− 3.08 × 5 − 3.08 − 3.06
19.7	+ .15	16.21	18.9	+ 2.93	+ 19.00	+ 18.99	+ 19.00			− .02 .00
19.8	+ .11	16.15			− .01	+ .00				
19.6	+ .09	+ 16.14	19.8	+ 53.85	+ 66.85	+ 66.85	+ 66.87	0 =	− 20.76	− 19.22 n = − .93
		+ 2			+ .00	+ .02				− .930
	n = −.97 +.01									
18.8	+ .18	+ 17.69						0 =	− 22.35	− 20.75 n = − .93
										− .930

0 = + 16.79 + 16.90 n = − 1.01
+ 2.84 + 2.85 − 1.00
+ 53.76 + 50.71 − .94
−0.983

0 = + 15.20 + 15.36 n = − 1.01
+ 1.25 + 1.31 − 1.05
+ 52.17 + 49.18 − .94
− .975

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Sin Z =	+.60	+.80	+.40	+.60	+.20	+.40	0	+.20	0	−.20	−.20	−.40	−.40	−.60	−.60	−.80

R.A.	tan δ	sin z	cos z					R.A.	tan δ	sin z	cos z					
h																
5.3	+.54	+.24		+3′ 51″.0	J	+0.6	+3′ 51″.6									
5.8	+.13	+.57		50.5	J	+1.4	51.9									
~~7.4~~	~~+.63~~	~~+.18~~														
7.6	+.10	+.60		51.5	J	+1.4	52.9									
7.6	+.54	+.24		52.3	J	+0.6	52.9	52.32								
+3′	52.32															
18.5	+.80	+.06		+3′ 52.9	J	+0.2	+3 53.1			18.2	+16.88	−.70		+3′	54.4	J −1.6	+3 52.8	
18.8	+1.68	−.29		52.5	J	−1.7	57.8			6.7	−20.67	−.77			54.7	J −1.7	53.0	
19.0	−.09	+.74		50.8	J	+1.8	52.6			18.9	+2.93	−.45			53.5	J −1.1	52.4	
19.0	+.72	+.11		53.5	J	+0.3	53.8			19.8	+53.85	−.73			55.9	J −1.6	54.2	53.10
19.7	+.18	+.53		52.9	J	+1.3	54.2									
19.7	+.15	+.56		52.6	J	+1.3	53.9									
19.8	+.11	+.59		51.3	J	+1.4	52.7	~~53.0~~ 53.16								

		+.74	+50.8	+.53	+52.9		+.06	+52.9		−.29	+52.5	−.48	+53.5	−.70	+54.4	
				+.56	52.6		+.11	53.5						−.77	54.7	
				+.59	51.3									−.73	55.8	
7	112															
4	40	+.74	+50.8	+.56	+52.3		+.08	+53.2		−.29	+52.5	−.48	+53.5	−.73	+55.0	
11	152		+ 1.6		+ 1.3			+ .2			− .6		− 1.1		− 1.6	
			+52.4		+53.6			+53.4			+51.9		+52.4		+53.4	
+3′	53.″18	(11)	52.4′		1608³			1068²			519′		52.1′		1602³	5845
	53.14		+.7		−.5			−.3			+1.2		+.7		−.3	

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1876phae.proj.1692.

1876 Oct. 2 $h = -.014$ $-.015$ $-.020$

Star	Ra	δ	tang δ	π	Ra				
	h m						$n = -.90^2$	$e = .00$	
$h' = -.015$	7.4	119 +	.63	+	2.87	− .57			
	7.5 +0.1	120 +	.10	+	2.21	− .09			
	7.6 0.0	122 +	.54	+	2.55	− .50	$n = -.90$		
	7.55								
	19.0 +1.4	494 +	.72	+	2.82	− .65			
	19.2 1.2	272 +	1.33	+	3.42	− .93			
	19.3 1.1	274 +	.05	+	2.38	− .04			
	19.4 1.0	276 +	1.25	+	3.38	− .12			
	19.5 0.9	498 +	1.19	+	3.33	− .07			
19.35 —	19.7 +0.7	280 +	.15	+	2.42	− .14			
	20.6 −0.2	294 +	.99	+	3.07	− .89			
	20.7 0.3	298 +	.66	+	2.80	− .59			
	21.2 0.8	306 +	1.89	+	3.95	− 1.70			
	21.7 1.3	517 +	1.121	+	3.26	− 1.03			
	21.9 1.5	549 +	.22	+	2.42	− .20			
21.35 —	22.0 −1.6	311 −	.02	+	2.25	+ .02			
	20.35								

					I	II
19.3	+ .05	+ 2.38				
19.7	+ .15	2.42				
21.9	+ .22	2.42				
22.0	− .02	2.25				
20.7	+ .10	+ 2.37				
	$n = -.94$	+.09				
			18.9	+ 2.93	+ 4.97	+ 4.94 + 4.92 5
					− .03	− .02
			21.4	+ 2.75	+ 5.05	+ 5.06 + 5.07
					+ .01	+ .02
			0 =	+ 2.83	+ 2.57	$n = -.91$
19.2	+ .33	+ 3.42		+ 2.65	+ 2.69	−.102
19.4	+ .25	3.38				−.965
19.5	+ .19	3.33	0 =	+ 1.63	+ 1.55	$n = -.95$
20.6	+ .99	3.07		+ 1.45	+ 1.60 7	−.115
21.2	+ 1.89	3.95				III −.950
21.7	+ 1.14	3.25	6.7	+ 20.67	+ 21.167	+ 21.13
20.3	+ 1.30	+ 3.40			− .03	
7.5	+ .42	+ 3.54	0 =	+ 20.25	+ 18.59	$n = -.92$
						−.920

1876 Oct. 3 $h = -.012$ $-.014$ $-.015$ $-.053$ 18

$h' = -.010$	7.4	119 +	.63	+	2.15 2.57	− .56	$n = -.89$	$e = .00$	
	7.6	122 +	.54	+	2.21	− .54	−.104		
	7.60								
	18.5 +1.1	260 +	.80	+	2.61	− .71	$n = -.89$		
	19.2 0.7	272 +	1.33	+	3.17	− 1.18			
	19.3 0.6	274 +	.05	+	2.05	− .04			
	19.4 0.5	276 +	1.25	+	3.00	− 1.11			
19.15 —	19.5 +0.4	498 +	1.19	+	2.90	− 1.06			
	20.6 −0.7	294 +	.99	+	2.68	− .88			
	20.7 0.8	299 +	1.83	+	3.42	− 1.63			
	21.0 1.1	301 +	.95	+	2.68	− .85			
20.88	21.2 −1.3	306 +	1.89	+	3.53	− 1.68			
	19.93								

					I	II
19.3	+ .05	+ 2.05				
	$n = -.07$	7 −.01				
19.2	+ .33	+ 3.17				
19.4	+ .25	3.00				
19.5	+ .19	2.90				
20.7	+ .83	3.42				
20.6	+ .99	2.68				
21.0	+ .95	2.68				
21.2	+ .89	3.53				
20.2	+ .35	+ 3.05				
			18.2	+ 16.89	+ 17.38	+ 17.37 + 17.35
					− .01	− .03 5.99
			21.1	+ 4.56	+ 5.98	+ 6.00 + 6.01
					+ .02	+ .01
			21.4	+ 2.75	+ 4.33	+ 4.36 + 4.38 5
					+ .03	+ .02
			0 =	+ 16.84	+ 15.32	$n = -.91$
				+ 4.61	+ 3.95	−.88
				+ 2.70	+ 2.31	−.86
						−.883
			0 =	+ 15.54	+ 14.30	$n = -.92$
				+ 3.21	+ 2.98 4	−.92
				+ 1.40	+ 1.33 0	−.93
						−.920
7.5	+ .58	+ 2.38 18				
						III
			6.7	+ 20.67	+ 20.60 1	+ 20.59
					− .01	
			0 =	+ 20.09	+ 20.21 2041	$n = -.101$
						−.010

1876 Oct 2

Star	Ra	δ	tang δ	π	Ra				
	h m								
	2.090								
	+ 2.30	+ 2.30							
	.12	.12							
	.085	.05							
	2.255	.085							
	2.090 .85	6.7 ×	111	+ 20.67	+ 21.187				
		6.7	111	− 20.67	− 14.52 1				
		18.9	493	+ 2.93	+ 4.97				
		9.4	418	− 2.80	− 0.18				
		21.4	308	+ 2.75	+ 5.05				
	.17	2.15							
	.22	.20							
	.34	.32							
	.26	.24							
	.26	.25							
	.28	.27							
	.18	.19							
	.21	.22							
	.25	.26							
	.22	.24							
	.22	.24							
	.27	.29							
	2.225								
	2.240	2.239							

					I	II
			187	− 20.67	− 14.52 1	− 14.58 − 14.55
					− .03	− .03
			214	− 2.80	− 0.18	− 0.17 − 0.15 6
					+ .01	+ .02
			0 =	− 20.77	− 16.92	$n = -.81$
				− 2.90	− 2.54	−.88
						−.845
			0 =	− 21.97	− 17.95	$n = -.82$
				− 4.10	− 3.55 6	−.87
						−.845
			0 =	− 4.15	− 3.40	$n = -.82$
						−.820
			0 =	− 2.85	− 2.39	$n = -.84$
						−.840
			0 =	− 20.77	− 16.92	$n = -.81$
				− 2.90	− 2.54	−.88
						−.845
			0 =	− 21.97	− 17.95	$n = -.82$
				− 4.10	− 3.55 6	−.87
						−.845

1730 1670

	6.7 ×	111	+ 20.67	+ 20.60 1					
	18.2	256	+ 16.89	+ 17.38					
	21.1	510	+ 4.56	+ 5.98					
	9.4	418	− 2.80	− 0.37					
	21.4	308	+ 2.75	+ 4.33					

					I	II
			21.4	− 2.80	− 0.37	− 0.34 − 0.35
					+ .03	+ .02

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1876phae.proj.1602.

sin z =	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80

R.A.	tan δ	sin z	cos z
h			
~~7.4~~	~~+.63~~	~~+.18~~	~~+3′ 11″ J +0.4 +3~~
7.5	+.10	+.60	49.4 J +1.5 +3 50.9
7.6	+.54	+.24	51.2 J +0.6 51.8 51.35
19.0	+.72	+.11	51.7 J +0.3 52.0
19.2	+1.83	−.19	51.7 J −0.5 51.2
19.3	+.105	+.64	50.4 J +1.6 52.0
19.4	+1.25	−.16	51.6 J −0.4 51.2
19.5	+1.19	−.183	52.8 J −0.3 52.0 51.90
19.7	+.15	+.56	49.8 J +1.4 51.2
20.6	+.99	−.04	51.8 J −0.1 51.7
20.7	+.166	+.15	51.1 J +0.4 51.5
21.2	+1.89	−.34	52.9 J −0.8 52.1
21.7	+1.14	−.11	52.5 J −0.3 52.2 52.70
21.9	+.22	+.50	50.6 J +1.2 51.8
22.0	−.02	+.69	51.5 J +1.6 53.1 51.83

2 270
1 270
3 540″
51.80

		+.64	+50.4	+.56	+49.8		+.11	+51.7	−.19	+51.7	−.34	+52.9	−.48	+51.6	−.71	+54.3
		+.69	51.5	+.50	50.6		+.15	51.1	−.16	51.6			−.46	53.2	−.77	54.9
									−.13	52.3						
									−.04	51.8						
									−.11	52.5						
12	996															
3	270	+.66	+50.9	+.53	+50.2		+.13	+51.4	−.13	+52.0	−.34	+52.9	−.47	+52.4	−.74	+54.6
15	1266		+1.5		+1.2			+.3		−.3		−.8		−1.1		−1.7
			+52.4		+51.4			+51.7		+51.7		+52.1		+51.3		+52.9
+3′	51″.88	(16)	1048^2		1028^2			1034		2585^5		521		1026^2		1058^2
	5184		−.5		+.5			+.2		+.2		−.2		+.6		−1.0

~~7.4~~	~~+.63~~	~~+.18~~		~~+3′ 11″ J +0.4 +3~~												
7.6	+.54	+.24		52.0 J +0.6		+3 52.6	52.60									
18.5	+.80	+.06		52.1 J +0.2		52.3										
19.2	+1.83	−.19		52.2 J −0.5		51.7										
19.3	+.105	+.64		52.0 J +1.6		53.6										
19.4	+1.25	−.16		51.5 J −0.4		51.4										
19.5	+1.19	−.13		51.4 J −0.3		51.1										
20.6	+.99	−.04		52.6 J −0.1		52.5										
20.7	+1.83	−.33		52.9 J −0.8		52.1										
21.0	+.95	−.02		51.9 J −0.0		51.9										
21.2	+1.89	−.34		52.6 J −0.8		51.8	52.04									

1 360
1 200
2 460″
52.30

		+.64	+52.0				+.06	+52.1	−.19	+52.2	−.33	+52.9	−.58	+54.2	−.71	+53.6
									−.16	51.5	−.34	52.6	−.46	53.4	−.70	54.2
									−.13	51.4						
									−.04	52.6						
									−.02	51.7						
9	36															
3	189	+.64	+52.0				+.06	+52.1	−.11	+51.9	−.33	+52.8	−.52	+53.8	−.70	+53.9
12	225		+1.5					+.1		−.3		−.8		−1.2		−1.6
			+53.5					+52.2		+51.6		+52.0		+52.6		+52.3
+3′	52″.12	(13)	535′					522′		2580^5		1040^2		1052^2		1046^2
	52.19		−1.4					−0.1		+.5		+.1		−.5		−.2

R.A.	tan δ	sin z	cos z
h			
6.7	+20.67	−.71	+3′ 54″.3 J −1.6 +3 52″.7
6.7	−20.67	−.71	54.3 J −1.8 53.1
18.9	+2.93	−.48	51.6 J −1.1 52.5
9.4	−2.80	−.92	56.6 J −2.2 54.4
21.4	+2.75	−.46	53.2 J −1.1 52.1 51.90
6.7	+20.67	−.71	+3′ 53″.6 J −1.6 +3 52.0
18.2	+16.89	−.70	54.2 J −1.6 52.6
21.1	+4.56	−.58	54.2 J −1.3 52.9
9.4	−2.80	−.92	54.5 J −2.2 52.3
21.4	+2.75	−.46	53.4 J −1.0 52.4 52.63 52.00

									−.19	+51.7	−.34	+52.9	−.48	+51.6	−.71	+54.3
									−.16	51.6			−.46	53.2	−.77	54.9
									−.13	52.3						
									−.04	57.8						
									−.11	52.5						
12	996															
3	270	+.66	+50.9	+.53	+50.2		+.13	+51.4	−.13	+52.0	−.34	+52.9	−.47	+52.4	−.74	+54.6
15	1266		+1.5		+1.2			+.3		−.3		−.8		−1.1		−1.7
			+52.4		+51.4			+51.7		+51.7		+52.1		+51.3		+52.9
+3′	51″.88	(16)	1048^2		1028^2			1034		2585^5		521		1026^2		1058^2
	5184		−.5		+.5			+.2		+.2		−.2		+.6		−1.0

~~7.4~~	~~+.63~~	~~+.18~~		~~+3′ 11″ J +0.4 +3~~												
7.6	+.54	+.24		52.0 J +0.6		+3 52.6	52.60									
18.5	+.80	+.06		52.1 J +0.2		52.3										
19.2	+1.83	−.19		52.2 J −0.5		51.7										
19.3	+.105	+.64		52.0 J +1.6		53.6										
19.4	+1.25	−.16		51.5 J −0.4		51.4										
19.5	+1.19	−.13		51.4 J −0.3		51.1										
20.6	+.99	−.04		52.6 J −0.1		52.5										
20.7	+1.83	−.33		52.9 J −0.8		52.1										
21.0	+.95	−.02		51.9 J −0.0		51.9										
21.2	+1.89	−.34		52.6 J −0.8		51.8	52.04									

		+.64	+52.0				+.06	+52.1	−.19	+52.2	−.33	+52.9	−.58	+54.2	−.71	+53.6
									−.16	51.5	−.34	52.6	−.46	53.4	−.70	54.2
									−.13	51.4						
									−.04	52.6						
									−.02	51.7						
9	36															
3	189	+.64	+52.0				+.06	+52.1	−.11	+51.9	−.33	+52.8	−.52	+53.8	−.70	+53.9
12	225		+1.5					+.1		−.3		−.8		−1.2		−1.6
			+53.5					+52.2		+51.6		+52.0		+52.6		+52.3
+3′	52″.12	(13)	535′					522′		2580^5		1040^2		1052^2		1046^2
	52.19		−1.4					−0.1		+.5		+.1		−.5		−.2

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1876 Oct. 9 $L = -.008$ +.024 (10, +.016)

Star	Ra	δ	tang δ	π-Ra	n = -.83 (n = -.70)	c = .00		
h! = -.002	7.4 +.0	119	+ .63	+ 0.65	- 52.44	00	+ 0.13 .21 +.021	
	7.5 -.1	120	+ .10	+ 0.13	- .05 .07	00	.05 .06 .06	
	7.45						0.060	
18.50	18.5 +1.7	260	+ .80	+ 0.72	- 66	+04	06	0.10
	20.2 0.0	500	+ 1.49	+ 1.24	- 124	00	+10.00	.10
	20.3 -0.1	289	+ .83	+ 0.79	- 69	00	.10	.10
	20.4 0.2	290	+ .19	+ 0.28	- 16	+00	12	.12
	20.5 0.3	292	+ .25	+ 0.35	- 21	-01	.14	.13
	20.5 0.3	293	+ .28	+ 0.33	- 23	01	.10	.09
20.42	20.6 -0.4	294	+ .99	+ 0.90	- 82	-01	08	.07
	20.14						0.090	
							0.107	
							0.100	

1876 Oct. 9

Star	Ra	δ	tang δ	π-Ra
0.090 .130	6.7 x	111	+ 20.67	+ 14.678
	18.2	256	+ 16.89	+ 14.64
	6.7	111	- 20.67	- 16.321
	19.8	284	+ 53.96	- 7.30
	20.2	502	+ 4.45	+ 3.87

20.4 + .19 + 0.28
20.5 + .25 0.35
20.5 + .28 0.33
20.5 + .24 + 0.32 +1
n = -.75 +.02

18.5 + .80 + 0.72
[20.2 + 149 1.24]
20.3 + .83 0.79
20.6 + .99 0.90
~~19.9 + 103 + 1.22~~
19.8 + .87 + .80 .91

7.4 + .36 + 0.39

I, II:
18.2 + 16.89 + 14.64 − .02 | + 14.62 − .02 | + 14.62
19.8 + 53.96 ~~− 7.30~~ + 44.64 − .01 | ~~− 7.31~~ + 44.63 − .00 | ~~− 7.30~~ + 44.64
20.2 + 4.45 + 3.87 − .00 | + 3.87 + .00 | + 3.87

0 = + 16.65 + 14.30 n = -.86
+ 53.72 ~~− 7.63~~ +44.31 -.82
+ 4.21 + 3.55 -.84
-.840

0 = + 15.86 + 13.71 n = -.86
+ 52.93 ~~− 8.52~~ +43.73 -.82
+ 3.42 + 2.96 -.87
-.850

III
6.7 + 20.67 + 14.678 − .01 + 14.66

0 = + 20.31 + 14.27 n = -.70
-.700

0.101 18.7 − 20.67 − 16.321 − .02 | I − 16.34 − .01 | II − 16.353

0 = − 20.91 − 16.66 n = -.80
-.800

0 = − 21.70 − 17.24 n = -.79
-.790

1876 Oct. 10 $L = -.014$ +.015 (11, +.016) n = -.80 c = .00 (n = -.81)

Star	Ra	δ	tang δ	π-Ra				
							0.260	0.260
h! = -.007	7.4	119	+ .63	+ 0.48	- 50		-0.02	-0.02
	7.6	122	+ .54	+ 0.17	- 43		26	-0.26
	7.50					02	0.173	
	19.3 +1.3	274	+ .05	- 0.11	- 04	+02	-.15	0.13
	19.4 1.2	276	+ 1.25	+ 0.80	- 1.00	02	-.20	.18
19.47	19.7 0.9	280	+ 0.15	- 0.05	- 12	01	-.17	.16
	20.6 +0.0	294	+ .99	+ 0.62	- 79	+00	-.17	.17
	21.1 -0.5	303	+ .57	+ 0.32	- 46	-01	-.14	.15
	21.2 0.6	306	+ 1.89	+ 1.33	- 1.51	01	-.18	19
	21.7 1.1	517	+ 1.14	+ 0.80	- 91	02	-.11	.13
21.30	21.9 -1.3	519	+ .22	+ 0.05	- 18	-02	-.13	.15
	20.61						-0.146	
							-0.156	- 0.158

Ra	δ	tang δ	π-Ra
6.7 x	111	+ 20.67	+ 16.8x2
19.8	284	+ 53.96	+ 43.73
9.4	418	- 2.80	- 2.40
21.4	308	+ 2.75	+ 2.05

19.3 + .05 − 0.11
19.7 + .15 − 0.05
21.9 + .22 + 0.05
20.3 + .14 − 0.04
n = -.79

19.4 + 1.25 + 0.80
20.6 + .99 0.62
21.2 + 1.89 1.33
21.7 + 1.14 0.80
20.7 + 1.32 + 0.89

7.5 + .36 + 0.39

I + II
19.8 + 53.96 + 43.73 − .01 + 43.72
21.4 + 2.75 + 2.05 + .01 + 2.06

0 = + 53.82 + 43.76 n = -.81
+ 2.61 + 2.10 -.81
-.810

0 = + 52.64 + 42.83 n = -.81
+ 1.43 + 1.17 -.82
-.815

III
6.7 + 20.67 + 16.812 − .01 + 16.80

0 = + 20.31 + 16.41 n = -.81
-.810

I + II
21.4 − 2.80 − 2.40 + .01 − 2.39

0 = − 2.94 − 2.35 n = -.80
-.800

0 = − 4.12 − 3.28 n = -.80
-.800

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1876phae.proj.1602.

Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z cos z						R.A.	tan δ	sin z cos z			
h								h					
~~7.4~~	~~+.63~~	+.18	~~+3′ ″~~ ~~+0.4~~	~~+3′ ″~~				6.7	+20.67	−.71	+3′	53.8 −1.6	+3′ 52.2
7.5	+.10	+.60	51.4 +1.5	+3 52.9	52.90			18.2	+16.89	−.70		53.4 −1.6	51.8
								6.7	−20.67	−.71		51.8 −1.8	52.0
18.5	+.80	+.06	51.7 +0.2	51.9				19.8	+53.96	−.73		55.5 −1.6	53.9
20.2	+1.49	−.24	52.1 −0.6	51.5				20.2	+4.45	−.57		55.2 −1.3	53.9 ~~52.80~~
20.3	+.83	+.04	53.0 +0.1	53.1									52.90
20.4	+.19	+.52	51.8 +1.3	53.1									
20.5	+.25	+.47	51.2 +1.2	52.5									
20.5	+.28	+.45	52.0 +1.1	53.1									52.40
20.6	+.99	−.04	52.2 −0.1	52.1	52.47								

1 90
1 40
2 130 ″
52.65

			+.52 +51.8		+.06 +51.7	−.04 +52.2	−.24 +52.1	−.57 +53.2	−.71 +54.0				
			+.47 51.3		+.04 53.0				−.70 53.4				
			+.45 52.0						−.77 53.8				
									−.73 53.5				

7 329

4	360		+.48 +51.7		+.05 +52.3	−.04 +52.2	−.24 +52.1	−.57 +53.2	−.73 +54.2				
11	689		+1.1		+.1	−.1	−.5	−1.3	−1.7				
			+52.8		+52.4	+52.1	+51.6	+53.9	+52.5				
+3′	52″57		(12) 158.4	3	1048	521	516	539	2100	4	63.08		
	52.63		−.2		+.2	+.5	+1.0	−1.3	+.1				

~~7.4~~	~~+.63~~	~~+.18~~	~~+3′ ″~~ ~~+0.4~~	~~+3~~				6.7	+20.67	−.71	+3′	53.8 −1.6	+3 52.2
7.6	+.84	+.24	54.7 +0.6	+3 55.3	53.30			19.8	+53.96	−.73		57.5 1.7	55.8
								9.4	− 2.80	−.92		55.4 −2.2	53.2
19.3	+.05	+.64	50.5 +1.6	52.1				21.4	+ 2.75	−.46		52.8 1.0	51.8
19.4	+1.25	−.16	51.2 −0.4	50.8									
19.7	+.15	+.56	50.4 +1.4	51.8									51.80
20.6	+.99	−.04	51.0 −0.1	50.9									
21.1	+.57	+.22	51.7 +0.5	52.2									
21.2	+1.89	−.84	52.2 −0.8	51.4									52.20
21.7	+1.14	−.11	51.6 −0.2	51.4									
21.9	+.22	+.50	54.8 +1.2	56.0	51.61								

″ 52.20

		+.64 +50.5	+.56 +50.4	+.22 +51.7		−.16 +51.2	−.34 +52.2	−.46 +52.8	−.71 +53.8				
			+.50 54.8			−.04 51.0			−.73 57.5				
						−.11 51.6							

7 357
1 80
8 437

		+.64 +50.5	+.58 +50.4	+.22 +51.7		−.10 +51.3	−.34 +52.2	−.46 +52.8	−.71 +53.8				
		+ 1.5	+ 1.2	+ .5		− .2	− .8	− 1.0	− 1.7				
		9 +52.0	+51.7	+52.2		+51.1	+51.4	+51.8	+52.1				
+3′	51.61	(11) 520	517	522		1533	514	518	521	4	1645		
	51.55	−.4	−.1	−.6		+.5	+.2	−.2	−.5				

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1876phae.proj.1692.

1876 Oct 11 L = -.018 -.010
-.017 16

Star RA δ tang δ π RA n = -.79 c = .00

18.5+0.7 260 + .80 +0.14 - .63
18.9+0.3 268 + .64 +0.02 - .51
19.0 0.2 269 - .09 - 0.48 + .07
19.0 0.0 494 + .72 +0.09 - .57
18.92 — 19.2+0.0 272 + 1.33 +0.55 - 1.05
19.3-0.1 274 + .05 - 0.42 - .04
19.4 0.2 276 + 1.25 +0.52 - .99
19.5 0.3 488 + 1.19 +0.45 - .94
19.7 0.5 277 + .18 - 0.31 - .14
19.52 — 19.7-0.5 280 + .15 - 0.41 - .12
19.22

0.474 0.454
-.01 - 0.49 0.50
+00 .49 .49
00 .41 .41
00 .48 .48
00 .50 .50
00 .46 .46
00 .47 .47
+00 .49 .49
+.01 .45 .44
+.01 .53 .52
0.480
0.477 0.476

1876 Oct. 11
Star RA δ tang δ π RA
18.2 256 +16.89 +13.82
6.7 111 -20.67 -16.31
18.9 493 + 2.93 + 1.83
19.2 271 + 2.41 + 1.51
19.8 284 +53.96 +39.80

19.0 - .09 - 0.48
19.3 + .05 0.42
19.7 + .18 0.31
19.7 + .15 0.41
19.4 + .07 - 0.40
n = - .92

I + II
18.2 +16.89 +13.82 +13.80
- .02
18.9 + 2.93 + 1.83 + 1.82
- .01
19.2 + 2.41 + 1.51 + 1.51
- .00
19.8 +53.96 +39.80 +39.81
+ .01

I + II
18.7 -20.67 -16.31 -16.32
- .01
0 = -20.74 -15.92 n = -.77 -.770
0 = -21.93 -16.83 n = -.77 -.770

19.2 + 1.33 + 0.55
19.4 + 1.25 0.52
19.5 + 1.19 0.45
19.4 + 1.26 + 0.51

I
0 = +16.82 +14.20 n = -.84
+ 2.86 + 2.22 -.78
+ 2.34 + 1.91 -.82
+53.89 +40.21 -.75
-.798

II
0 = + 15.63 + 13.29 n = - .85
+ 1.67 + 1.31 - .79
+ 1.15 + 1.00 - .87
+ 52.70 + 39.30 - .75
-.815

1876 Oct. 12 L = -.019 -.010
-.012
n = -.76 c = .00

19.4+1.0 276 + 1.25 - 0.05 - .95
19.7 0.7 277 + .18 - 0.80 - .14
19.60 — 19.7+0.7 280 + .15 - 0.81 - .11
20.6-0.2 294 + .99 - 0.16 - .75
21.2 0.8 386 + 1.89 + 0.35 - 1.44
21.27 — 22.0-1.6 311 - .02 - 0.93 + .02
20.43

0.953
-.01 - 1.00 1.01
-01 0.94 0.95
-01 0.92 0.93
+00 0.91 0.91
+01 1.09 1.08
+02 0.91 0.89
0.970
0.962 0.961

19.8 284 +53.96 +39.00
9.4 418 - 2.80 - 3.23
21.4 308 + 2.75 + 1.13

19.7 + .18 - 0.80
19.7 + .15 0.81
22.0 - .02 0.93
20.5 + .10 - 0.85
n = -.70

I + II
19.8 +53.96 +39.00 +38.99
- .01
21.4 +2.75 + 1.13 + 1.15
+ .02

I + II
21.4 - 2.80 - 3.23 - 3.21
+ .02
0 = -2.90 -2.36 n = -.81 -.810
0 = -4.18 -3.26 n = -.78 -.780

0 = +55.86 +39.84 n = -.74
+2.65 + 2.00 -.76
-.750

19.4 + 1.25 - 0.05
20.6 + .99 - 0.16
21.2 + 1.89 + 0.35
20.4 + 1.38 + 0.05

0 = +52.58 +38.94 n = -.74
+1.37 + 1.10 -.81
-.770

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1876phae.proj.1692.

sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z					R.A.	tan δ	sin z	cos z			
h								h						
18.5	+ .80	+.06		+3′ 51.3″	+ 0.2	+3′ 51.5″		18.2	+16.89	−.70		+8′	53.8″	−1.6	+3′ 52.2″
18.9	+ .64	+.17		51.1	+ 0.4	51.5		6.7	−20.67	−.77			54.5	−1.8	52.7
19.0	− .09	+.74		49.8	+ 1.8	51.6		18.9	+ 2.93	−.48			53.5	−1.1	52.4
18.0	+ .72	+.11		52.7	+ 0.3	53.0		19.2	+ 2.41	−.42			53.6	−1.0	52.6
19.2	+ 1.33	−.19		52.0	− 0.5	51.5		19.8	+53.96	−.73			55.1	−1.7	53.4 52.66
19.3	+ .05	+.64		50.5	+ 1.6	52.1									
19.4	+ 1.25	−.16		52.6	− 0.4	52.2									
19.5	+ 1.19	−.13		52.5	− 0.3	52.2									
19.7	+ .18	+.53		50.9	+ 1.2	52.1									
19.7	+ .15	+.56		50.3	+ 1.3	51.6 51.93									
		+.74	+49.8	+.53	+50.9	+.06	+51.3	−.19	+52.0		−.48	+53.5	−.70	+53.8	
		+.64	50.5	+.56	50.3	+.17	51.1	−.16	52.6		−.42	53.6	−.77	54.5	
						+.11	52.7	−.13	52.8				−.73	55.1	
10	1930														
5	1330	+.69	+50.1	+.54	+50.6	+.41	+51.7	−.16	+52.4		−.45	+53.5	−.73	+54.8	
15	3260		+1.6		+1.2		+1.4		+1.4			− 1.0		− 1.7	
			+51.7		+51.8		+53.1		+52.0			+52.5		+52.8	
	+3′ 52.38″	(15)	1034²		1036²		1593³		1560³			1050²		1584³	7857
	52.17		+.7		+.6		−.7		+.4			−.1		−.4	
	19.4	+ 1.25	−.16		+3′ 52.9″	− 0.4	+ 3 52.5				19.8	+53.96	−.73	+3′	56.5″	−1.7	+ 3 54.8
	19.7	+ .18	+.53		51.6	+ 1.2	52.8				9.4	− 2.80	−.92		55.3	−2.2	53.1
	19.7	+ .15	+.56		50.6	+ 1.4	52.0				21.4	+ 2.75	−.46		53.4	−1.0	52.4
	20.6	+ .99	−.04		52.2	− 0.1	52.1										53.60
	21.2	+ 1.89	−.34		53.0	− 0.8	52.2										
	22.0	− .02	+.69		51.6	+ 1.6	53.2 52.47										
			+.69	+51.6	+.53	+51.6			−.16	+52.9	−.34	+53.0	−.46	+53.4	−.73	+56.5	
					+.56	50.6			−.04	52.2							
6	1482																
2	720	+.69	+51.6	+.54	+51.1				−.10	+52.5	−.84	+53.0	−.46	+53.4	−.73	+56.5	
8	2202		+1.6		+1.2				− .2		− .8		− 1.1		− 1.7		
			+53.2		+52.3				+52.3		+52.2		+52.3		+54.8		
	+3′ 52.71″	(8)	532′		1046²				1046²		522′		523′		548′	4217	
	52.75		− .5		+.4				+.4		+.5		+.4		−2.1		

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1876 Oct. 15 L = -.013 -.023 -.00416

Star	Ra	δ	tang δ	τ Ra	n = -.72 c = .00		Star	
h' = +.001	7.4	119 +	.63	-1.58	-.45	-	2.270 -2.03	-2.03
	7.5	120 +	.10	-2.20	-.07		.27	.27
	7.45						2.250	
	18.5 +2.5	260 +	.80	-1.70	-.58	-.01 -	28	2.29
	19.7 1.3	277 +	.18	-2.09	-.13	.00	22	.22
19.30 —	19.7 1.3	280 +	.15	-2.14	-.11	.00	25	.25
	20.5 0.5	293 +	.28	-2.05	-.20	.00	25	.25
	20.6 0.4	294 +	.99	-1.52	-.71	.00	23	.23
	20.7 +0.3	298 +	.66	-1.76	-.48	-.00	24	.24
	22.0 -1.0	311 -	.02	-2.27	+.01	+.00	.26	.26
	22.2 1.2	317 -	.03	-2.26	+.02	.00	.24	.24
	22.3 1.3	524 +	1.26	-1.35	-.91	.00	26	.26
	22.4 1.4	318 +	1.59	-1.20	-1.14	.00	.34	.34
21.64 —	22.4 -1.4	319 +	1.18	-1.39	-.84	+.00	.23	.23
	21.00						2.244 2.256	

1876 Oct. 15

Star	Ra	δ	tang δ	τ Ra
2.270	1.2 ×	19	-42.58	-16.24
	19.8	284	+53.96	+38.56
	9.4	418	-2.80	-4.17
	21.4	308	+2.75	-0.27

2255

					I	II
19.7 + .18 - 209		19.8	+53.96	+38.56	+38.54	+38.54
19.7 + .15 214				- .02	- .02	
20.5 + .28 205		21.4	+2.75	-0.27	-0.26	-0.27
22.0 - .02 227				+ .01	.00	
22.2 - .03 226						
20.8 + .11 -2.16						

2.255

				I	II
21.4	-2.80	-4.17		-4.16	-4.17
		+ .01		.00	

0 = -2.91 -2.00 n = -.69 -.690

n = -.70

0 = +53.85 +40.70 n = -.76
+2.64 +1.90 -.72
-.740

0 = -3.96 -2.74 n = -.69 -.690

18.5 + .80 - 1.70
20.6 + .99 1.52
22.3 +1.26 1.35
22.4 +1.59 1.20
22.4 +1.18 1.39
21.2 +1.16 -1.43

0 = +52.80 +39.97 n = -.76
+1.59 +1.16 -.73
-.745

III

13.2 -42.58 -16.24 -16.14
+ .10

7.4 + .36 - 1.89

0 = -42.91 -19.25 n = —

1876 Oct 16 L = -.016 -.002 n = -.67 c = .00

	Ra	δ	tang δ	τ Ra			Star
	19.7 +0.3	280 +	.15	-2.46	-.10	-.00	2.532 -2.56
	20.2 0.5	502 +	1.49	-1.51	-1.00	.00	.51
	20.3 0.4	289 +	.83	-1.96	-.56	.00	.52
	20.4 0.3	290 +	.19	-2.39	-.13	.00	.52
	20.5 0.2	292 +	.25	-2.36	-.17	.00	.53
20.27 —	20.5 0.2	293 +	.28	-2.36	-.19	.00	.55
	20.6 0.1	294 +	.99	-1.87	-.66	.00	.53
	20.7 +0.0	298 +	.66	-2.09	-.44	-.00	.53
	21.0 -0.3	301 +	.95	-1.95	-.64	+.00	.59
	21.2	306 +	1.89	-1.42	-1.27	.00	.69
	21.9 1.2	519 +	.22	-2.39	-.15	.00	.54
21.24 —	22.0 -1.3	311 -	.02	-2.49	+.01	+.00	.48
	20.75						2.566 2.534

19.8	284	+53.98	+33.72 +41.70
20.2	50.2	+4.45	+0.39

				I + II
19.7 + .15 - 2.46	19.8	+53.98	+33.72 +41.70	+41.69 +33.71
20.4 + .19 2.39			- .01	
20.5 + .25 2.36	20.2	+4.45	+0.39	+0.38
20.5 + .28 2.36			- .01	
21.9 + .22 2.39				
22.0 - .02 2.49				
20.8 + .18 -2.41				

2.533 2533

0 = +53.80 +36.12 +44.10 n = -.67 -.82
+4.27 +2.79 -.65
-.660

n = -.67

20.2 +1.49 -1.51
20.3 +.83 1.96
20.6 +.99 1.87
21.0 +.95 1.95
21.2 +1.89 1.42
~~20.7 +1.23 - 1.74~~
20.8 +1.16 -1.80

0 = +52.75 +35.45 +43.43 n = -.67 -.82
+3.22 +2.12 -.66
-.665

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$\sin\beta$ =	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80

R.A. tan δ sin z cos z

h					
~~7.4 + .63~~	+.18	~~+3′ ″ ✓~~	+0.4	+3′	
7.5 + .10	+.60	60.9✓	+1.5	+3 52.4	52.40
18.5 + .80	+.06	54.1✓	+0.2	54.3	
19.7 + .18	+.53	51.4✓	+1.3	52.7	
19.7 + .15	+.56	50.3✓	+1.4	51.7	
20.5 + .28	+.45	52.1✓	+1.1	53.2	
20.6 + .99	−.04	53.5✓	−0.1	53.4	
20.7 + .66	+.15	52.4 ~~51.8~~ ✓	+0.4	52.8	
22.0 − .02	+.69	51.0✓	+1.7	52.7	
22.2 − .03	+.70	51.1✓	+1.7	52.8	
22.3 + 1.26	−.16	52.3✓	−0.4	51.9	
22.4 + 1.59	−.27	52.3✓	−0.7	51.6	
22.4 + 1.18	−.13	51.9✓	−0.3	51.6	52.~~79~~ 61

h					
1.2	−41.58 −.75		+3′	57.2✓ −1.7	+3′ 55.5
19.8	+53.96 −.73			56.3✓ −1.7	54.6
9.4	− 2.80 −.92			57.6✓ −2.1	55.5
21.4	+ 2.75 −.46			53.5✓ −1.0	52.5

5355

5552

1 240
1 ~~585~~ 8
2 790 ~~595~~ ″ ~~52.98~~

	+.69	+51.0	+.53	+51.4		+.06	+54.1	−.04	+53.5	−.27	+52.3	−.46	+53.5	−.75	+57.2
53.95	+.70	57.1	+.56	56.3		+.15	52.4	−.16	52.3					−.73	56.3
			+.45	52.1				−.13	51.9						

11 2871
2 710
13 3581

	+.69	+51.0	+.51	+51.3		+.10	+53.2	−.14	+52.6	−.27	+52.3	−.46	+53.5	−.74	+56.8
		+ 1.6		+ 1.2			+ .2		− .3		− .6		− 1.1		− 1.7
		+52.6		+52.5			+53.11		+52.3		+51.7		+52.4		+55.1
+3′ 52.91	(14)	1052		1575			1068		1569		517		524		1102
52.75		+ .3		+ .4			− .5		+ .6		+1.2		+ .5		− 2.2

740)

	+.69	+52.3	+.56	+50.8		+.04	+52.4	−.04	+53.0	−.24	+50.9	−.57	+53.3	−.73	+54.1
			+.52	51.9		+.15	51.8	−.02	52.4	−.34	53.4				
			+.47	52.0											
			+.45	52.8											
			+.50	52.8											

12 936
2 40

	+.69	+52.3	+.50	+52.1		+.10	+52.1	−.03	+52.7	−.29	+52.1	−.57	+53.3	−.73	+54.1
		+ 1.6		+ 1.1			+ .2		− .1		− .7		− 1.3		− 1.7
		+53.9		+53.2			+52.3		+52.6		+51.4		+52.0		+52.4
+3′ 52.64	(14)	539		2660			1046		1052		1028		520		524
52.69		− 1.3		− .6			+ .3		0.0		+ 1.2		+ .6		+ .2

14 976

736)

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1876 Oct. 17 L = -.024 -.029 -.035 20

Star	RA	δ	tang. δ	π RA	n = -.72 n = -.66	e = .00	Star	RA
h' = -.010	h 10.0 +0.8	146	+ .22	- 3.10	- .185	- 01 3.275	3.285	3.276
10.85	11.7 -0.9	164	+ .27	- 3.10	- .198	+ 01	.298	.287
	19.7 +1.3	277	+ .18	- 2.81	- .13	-.04 2.938	2.94	298
	19.7 1.3	280	+ .15	- 2.83	- .11	- .04	.94	2.98
	20.3 0.7	289	+ .83	- 2.32	- .60	- .02	.92	2.94
	20.4 0.6	290	+ .19	- 2.78	- .14	- .02	.92	2.94
	20.5 0.5	292	+ .25	- 2.73	- .18	- .01	.91	2.92
	20.5 0.5	293	+ .28	- 2.75	- .20	- .01	.95	2.96
	20.6 0.4	294	+ .99	- 2.27	- .71	- .01	.98	2.99
20.30 —	20.7 0.3	298	+ .66	- 2.46	- .48	- 01	.94	2.95
	20.7 0.3	299	+ 1.83	- 1.61	- 1.32	- 01	.93	2.94
	21.0 +0.0	301	+ .95	- 2.35	- .68	- 00	3.03	3.03
	21.1 -0.1	303	+ .57	- 2.49	- .41	+ 00	2.90	290
	22.0 1.0	311	- .02	- 2.91	+ .01	+ .03	.90	2.87
	22.1 1.1	316	+ 1.58	- 1.95 +.11	- 1.14	+ .03	.92	2.89
	22.2 1.2	317	- .03	- 2.96	+ .02	+ .03	.94	2.91
	22.3 1.3	524	+ 1.26	- 2.19	- .91	+ .04	3.10	3.06
21.72 —	22.4 -1.4	318	+ 1.59	- 1.97	- 1.14	+ .04	3.11	3.07
	21.01						2.979 2.958	2.958

1876 Oct. 17

Star	RA	δ	tang. δ	π RA
3.275 h 1.2 ×	19	- 42.58	- 31.39
19.8	284	+ 53.96	+ 33.94
20.2	502	+ 4.45	+ 0.50
9.4	418	- 2.80	- 6.99
21.4	308	+ 2.75	- 1.01
22.1	521	+ 3.03	- 0.91

19.7	+ .18	- 2.81
19.7	+ .15	2.83
20.4	+ .19	2.78
20.5	+ .25	2.73
20.5	+ .28	2.75
[22.0	- .02	2.91]
22.2	- .13	2.96
~~20.7~~	~~+ .14~~	~~- 2.84~~ (.81)
20.5	n = -.62 -.03	
20.6	+ .99	- 2.27
20.7	+ 1.83	1.61
21.0	+ .95	2.35
22.1	+ 1.58	1.95 +.11
22.3	+ 1.26	2.19
22.4	+ 1.59	1.97
21.5	+ 1.37	- 2.08 (4)

11.4 + .24 - 3.10

			I	II
19.8	+ 53.96	+ 33.94	+ 33.92	+ 33.91
		- .02	- .03	
20.2	+ 4.45	+ 0.50	+ 0.49	+ 0.47
		- .01	- .03	
21.4	+ 2.75	- 1.01	- 1.00	- 1.01
		+ .01	- .00	
22.1	+ 3.03	- 0.91	- 0.88	- 0.90
		+ .03	+ .01	

0 = + 53.82 + 36.74 n = - .68
+ 4.31 + 3.31 - .77
+ 2.61 + 1.82 - .70
+ 2.89 + 1.94 - .67
- .705

0 = + 52.59 + 35.97 (5) n = - .68 (7)
+ 3.08 + 2.53 (1) - .82 (1)
+ 1.38 + 1.05 (3) - .76 (5)
+ 1.66 + 1.18 (4) - .70 69
- .733
- .723

		I	II
21.4	- 2.80	- 6.99 (4)	- 6.98 (4)	- 6.99 (4)
		+ .01	.00	

0 = - 2.94 - 4.16 (2) n = - .73 (1) - .730

0 = - 4.17 - 4.93 (2, 5) n = - .78 (1) - .700 - .710

			III
13.2	- 42.58	- 31.39	- 31.35
		+ .04	

0 = - 42.82 - 28.25 n = - .66 - .660

1876 Oct. 18 L = -.027 -.005 -.020 25 n = -.64 e = .00

Star	RA	δ	tang. δ	π RA				
	19.7 +1.3	277	+ .18	- 3.36	- .12	- 01	3.495 3.48	3.49
19.70 —	19.7 +1.3	280	+ .15	- 3.41	- .10	- 01	.51	.52
	21.2 -0.2	306	+ 1.89	- 2.19	- 1.21	+ 00	.40	.40
	21.7 0.7	517	+ 1.14	- 2.80	- .73	+ 00	.53	.53
	21.9 0.9	519	+ .22	- 3.42	- .14	+ 00	.56	.56
21.70 —	22.0 -1.0	311	- .02	- 3.54	+ .01	+ 01	.53	.52
	21.03			n = -.68	n = -.68		3.505	
h' = -.016	7.5 +0.9	120	+ .10	- 3.75	- .07	- 01	3.502	3.83 3.503
	7.6 +0.8	122	+ .54	- 3.45	- .37	- 01	3.82 82	.83
	10.0 -1.6	146	+ .22	- 3.63	- .15	+ .03	.78	.75
	8.37						3.807	3.803

Star	RA	δ	tang. δ
19.8 ×	284	- 53.97	- 40.66
1.2 ×	19	- 42.58	- 32.86
19.8	284	+ 53.96	+ 30.88

19.7	+ .18	- 3.36
19.7	+ .15	3.41
21.9	+ .22	3.42
22.0	- .02	3.54
20.8	+ .13	- 3.43
		- 1

n = - .67 - .01

21.2	+ 1.89	- 2.19
21.7	+ 1.14	2.80
21.4	+ 1.52	- 2.50

8.4 + .29 - 3.61

I + II

19.8 + 53.96 + 30.88 + 30.86
- .02

0 = + 53.83 + 34.29 n = - .64 - .640

0 = + 52.44 + 33.36 n = - .64 - .640

			III
7.8	- 53.97	- 40.66	- 40.67
		- .01	
13.2	- 42.58	- 32.86	- 32.74
		+ 12	

0 = - 54.26 - 37.06 n = - .68
- 42.87 - 29.13 - .68
- .680

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sin β =	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80

R.A.	tan δ	sin z cos z				
h						
10.0	+ .22	+.50	+3′ 52″.2 ✓	+1.2	+3′ 53″.4	
11.7	+ .27	+.46	53.2 ✓	+1.1	54.3	53.85
19.7	+ .18	+.53	52.6 ✓	+1.3	53.9	
19.7	+ .15	+.56	52.1 ✓	+1.4	53.5	
20.3	+ .83	+.04	53.6 ✓	+0.1	53.7	
20.4	+ .19	+.52	52.3 ✓	+1.2	53.5	
20.5	+ .25	+.47	52.3 ✓	+1.1	53.4	
20.5	+ .28	+.45	52.6 ✓	+1.1	53.7	
20.6	+ .99	−.04	54.2 ~~52.4~~ ✓	−0.1	54.1	
20.7	+ .66	+.15	53.6 ✓	+0.4	54.0	
20.7	+1.83	−.33	54.9 ✓	−0.8	54.1	
21.0	+ .95	−.02	53.1 ✓	−0.0	53.1	
21.81	+ .57	+.22	52.2 ✓	+0.5	52.7	
22.0	− .02	+.69	51.3 ✓	+1.7	53.0	
22.1	+1.58	−.26	54.1 ✓	−0.6	53.5	
22.2	− .03	+.70	51.0 ✓	+1.7	52.7	
22.3	+1.26	−.16	53.7 ✓	−0.4	53.3	
22.4	+1.59	−.27	54.9 ✓	−0.7	54.2	53.5~~8~~2

R.A.	tan δ	sin z cos z				
h						
1.2	−42.58	−.75	+3′ 54″.3 ✓	−1.7	+3′ 52″.6 ×	
19.8	+53.96	−.73	55.8 ✓	−1.7	54.1	
20.2	+ 4.45	−.57	54.1 ✓	−1.3	52.8	
9.4	− 2.80	−.92	59.1 ✓	−2.1	57.0	
21.4	+ 2.75	−.46	54.4 ✓	−1.0	53.4	
22.1	+ 3.03	−.49	57.7 ✓	−1.1	[56.6]	
					53.43	
					52.60	

	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80
2 770								
1 260								
3 1030								
53″.43	+.69 +51.3	+.50 +52.2	+.22 +52.2	+.04 +53.6	−.04 +54.2	−.33 +54.9	−.57 +54.1	−.75 +54.3
	+.70 51.0	+.46 53.2		+.15 53.6	−.02 53.1	−.26 54.1	−.46 54.4	−.73 55.8
		+.53 52.6			−.16 53.7	−.27 54.9	−.49 57.7 ✓	
		+.56 52.1						
		+.52 52.3						
		+.47 52.3						
		+.45 52.6						
16 832								
3 129	+.70 +51.1	+.50 +52.7	+.22 +52.2	+.10 +53.6	−.07 +53.7	−.29 +54.6	−.51 54.2	−.74 +55.0
19 961	+ 1.6	+ 1.1	+ .5	+ .2	− .2	− .7	− 1.2	− 1.7
	+52.7	+53.8	+52.7	+53.8	+53.5	+53.9	53.0	+53.3
+3′ 53″.5~~8~~0 (~~23~~ 22)	1054^2	3766^7	527^1	1076^2	1605^3	1617^3	1060^3 2	1066^2 117~~871~~ 71
~~53.60~~	+.8	−.3	+.8	−.3	00	−.4	+.5	+.2
51								

R.A.	tan δ	sin z cos z				
19.7	+ .18	+.53	+3′ 54″.7 ✓	+1.3	+3 56.0	
19.7	+ .15	+.56	52.0 ✓	+1.4	53.4	
21.2	+1.89	−.34	54.5 ✓	−0.8	53.7	
21.7	+1.14	−.11	56.0 ✓	−0.3	55.7	
21.9	+ .22	+.50	55.2 ✓	+1.2	56.4	
22.0	− .02	+.69	54.4 ✓	+1.7	56.1	55.22
7.5	+ .10	+.60	51.2 ✓	+1.5	52.7	
7.6	+ .54	+.24	54.2 ✓	+0.5	54.7	
10.0	+ .22	+.50	53.1 ✓	+1.2	54.3	53.90

R.A.	tan δ	sin z cos z				
19.8	−53.97	−.75	+3′ 57″.7 ✓	−1.7	+3 56.0 ×	
1.2	−42.58	−.75	55.8 ✓	−1.7	54.1	
19.8	+53.96	−.73	56.6 ✓	−1.6	55.0	~~55.05~~ 54.55
						56.00

	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80
~~8~~3 1170 ~~780~~								
1 600								
34 1770 ~~1380~~ 53.90								
~~54.60~~	+.69 +54.4	+.53 +54.7			−.11 +56.0	−.34 +54.5		−.75 +57.7
54.12		+.56 52.0						−.75 55.8
		+.50 55.2						−.73 56.6
6 3132								
2 910	+.69 +54.4	+.53 +54.0			−.11 +56.0	−.34 +54.5		−.74 +56.7
8 4042	+ 1.6	+ 1.2			− .3	− .8		− 1.7
	+56.0	+55.2			+55.7	+53.7		+55.0
+3′ 55″.11 (9)	560^1	1656^3			557^1	537^1		1650^5 4960
55.05	−.9	−.1			−.6	+1.4		+.1

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1876phae.proj.1612.

1876 Oct. 19 $h = -.019 \; -.021 \; -.025$ 23

Star	Ra	δ	tang δ	π Ra	n = −.78	e = .00
	h	°		s		
19.70	19.7 +1.7	277	+ .18	− 4.07 − .14		
	19.7 +1.7	280	+ .15	− 4.04 − .12		
	22.0 −0.6	311	− .02	− 4.18 + .02		
	22.1 0.7	314	+ .10	− 4.14 − .08		
	22.1 0.7	316	+ 1.58	− 3.13 +11 − 1.23		
	22.2 1.8	317	− .03	− 4.31 + .02		
22.14	22.3 −0.9	524	+ 1.26	− 3.28 − .98		
	21.44					

				I	II
19.7	+.18	− 4.07			
19.7	+.15	4.04			
22.0	−.02	4.18			
22.1	+.10	4.14			
22.2	−.03	4.31	19.8	+53.98	+36.44 +36.41 +36.38
					− .03 − .06
			0 =	+53.90	+40.56 n = −.75
21.1	+.08	− 4.15			−.750
	n = −.71				
22.1	+1.58	− 3.13 +11			
22.3	+1.26	3.28	0 =	+52.56	+39.58 n = −.75
22.2	+1.42	− 3.20 .13			−.750

Star	Ra	δ	tang δ	π Ra	n = −.89	e = .00
	h	°		s		
h' = −.001	10.0	146	+ .22	− 6.37 − .20 .18		
	22.0 +0.9	311	− .02	− 6.45 + .02		
	22.6 0.3	322	+ .57	− 5.91 − .51		
22.43	22.7 0.2	323	+ .42	− 6.04 − .37		
	23.0 −0.1	329	+ .26	− 6.21 − .23		
	23.2 0.3	330	+ .05	− 6.39 − .04		
	23.2 0.3	531	+ .43	− 6.01 − .38		
23.18	23.3 −0.4	532	+ .42	− 6.07 − .37		
	22.86					

				I	II
22.0	−.02	− 6.45			
23.0	+.26	6.21			
23.2	+.05	6.39	22.5	+3.27	− 3.62 − 3.62 − 3.63
22.7	+.10	− 6.35			− .00 − .01
	n = −.92	−.02	22.7	+2.20	− 4.47 − 4.47 − 4.48
					− .00 − .01
			23.0	+3.66	− 3.05 − 3.04 − 3.05
22.6	+.57	− 5.91			+ .01 + .00
22.7	+.42	6.04	23.6	+4.31	− 2.45 − 2.43 − 2.44
23.2	+.43	6.04			+ .02 + .01
23.3	+.42	6.07			
23.0	+.46	− 6.02	0 =	+3.17	+2.73 n = −.86
				+2.10	+1.88 −.90
				+3.56	+3.31 −.93
				+4.21	+3.92 −.93
10.0	+.22	− 6.37			−.905
			0 =	+2.81	+2.39 n = −.85
				+1.74	+1.54 −.87
				+3.20	+2.97 −.93
				+3.85	+3.58 −.93
					−.900

1876 Oct. 19

Star	Ra	δ	tang δ	π Ra	e = .00
	h	°		s	
	4.185				
∠.04	4.21	4.25			
− .04	.16	.20			
+ .01	.16	.15			
+ .01	.22	.21			
+ .01	.25	.24			
+ .02	.29	.27			
+ .02	.26	.24			
	4.236				
	4.221				

				I	II
22.4		− 4.12		− 7.55	− 7.52 − 7.58
				+ .03	.00
0 =		− 4.20	− 3.37	n = −.80	
					−.800
0 =		− 5.54	− 4.35 .40	n = −.79	
					−.790

6.574 .80

Star	Ra	δ	tang δ	π Ra	e = .00
	h	°		s	
	6.575 − .655				
	6.420				
	1.2 x	19	− 42.58	− 40.82	
	22.5	525	+ 3.27	− 3.62	
	22.7	525	+ 2.20	− 4.47	
	23.0	529	+ 3.66	− 3.05	
	23.6	534	+ 4.31	− 2.45	
	6.427				

				III
13.2		− 42.58	− 40.82	− 40.77
			+ .05	
0 =		− 42.80	− 34.50	n = −.80
				−.800

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1876phae.proj.1692.

sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z					R.A.	tan δ	sin z	cos z				
h								h							
19.7	+.18	+.53		+3′ 53.″9	+1.3	+3′ 55.″2		19.8	+53.98	−.73		+3′	55.″2	−1.7	+3′ 53.″5 53.50
19.7	+.15	+.56		53.6	+1.4	55.0		10.4	−4.12	−.88			58.0	−2.0	56.0
22.0	−.02	+.69		53.9	+1.7	55.6									
22.1	+.10	+.60		53.5	+1.5	55.0									
22.1	+1.58	−.26		54.7	−0.6	54.1									
22.2	−.03	+.70		54.2	+1.7	53.9									
22.3	+1.26	−.16		54.9	−0.4	54.5	55.04								

		+.69	+53.9	+.53	+53.9			−.16	+54.9	−.26	+54.7		−.73	+55.2	
		+.60	53.5	+.56	53.6										
		+.70	54.2												
7	3528														
1	350	+.66	+53.9	+.54	+53.7			−.16	+54.9	−.26	+54.7		−.73	+55.2	
8	3878		+1.5		+1.2				−4.8 (0.4)		−.6			−1.7	
	6		+55.4		+54.9				+58.5		+54.1			+53.5	
+3′	54.″8	(8)	1662		1098				545′		541′			535′	4381
	54.85		−.6		−.1				+.3		+.7			+1.3	

10.0	+.22	+.50		+3′	50.″7	+1.2	+3 57.9	51.90		1.2	−42.58	−.75	+3′	55.″9	−1.7 +3 54.2 54.20
22.0	−.02	+.69			51.9	+1.7	53.6			22.5	+3.27	−.51		53.2	−1.2 52.0
22.6	+.57	+.22			51.8	+0.5	52.3			22.7	+2.20	−.39		54.0	−0.9 53.1
22.7	+.42	+.33			52.0	+0.8	52.8			23.0	+3.66	−.53		55.2	−1.2 54.0
23.0	+.26	+.47			51.2	+1.1	52.3			23.6	+4.81	−.57		53.9	−1.3 52.6 52.92
23.2	+.05	+.64			50.7	+1.5	52.2								
23.2	+.43	+.33			51.9	+0.8	52.7								
23.3	+.42	+.34			52.6	+0.8	53.4	52.76							
1	190														
1	420														
2	610														
	5805″														
		+.69	+51.9	+.47	+51.2	+.22	+51.8			−.39	+54.0	−.51	+53.2		
		+.64	50.7			+.33	52.0					−.53	56.2		
		−				+.33	51.9					−.57	53.9		
						+.34	52.6								
7	532														
4	368	+.66	+51.3	+.47	+51.2	+.30	+52.1			−.39	+54.0	−.54	+54.1		
11	900		+1.6		+1.1		+.7				−.9		−1.2		
			+52.9		+52.3		+52.8				+53.1		+52.9		
+3′	52.″83	(11)	1058		523′		2112				531′		1587	5811	
	5282		−.1		+.5		00				−.3		−.1		

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1876phae.proj.1602.

1876 Oct. 25 h = +.018 +.001 (.020)

Star	Ra	δ	tang δ	π − Ra	n = −.79 c = .00
	h			s	
	20.4 + 1.3	290	+ .19	− 6.59 − .15	+.00
	20.5 1.2	292	+ .25	− 6.60 − .20	
	20.5 1.2	293	+ .28	− 6.56 − .22	
	20.6 1.1	294	+ .99	− 6.02 − .78	
	20.7 1.0	299	+ 1.83	− 5.33 − 1.45	
20.62	21.0 + 0.7	301	+ .95	− 6.07 − .75	
	22.0 − 0.3	311	− .02	− 6.81 + .02	
	22.6 0.9	322	+ .57	− 6.39 − .45	
	22.7 1.0	323	+ .42	− 6.40 − .33	
	22.9 1.2	327	+ .89	− 6.10 − .70	
	23.0 1.3	329	+ .26	− 6.61 − .21	
22.72	23.1 − 1.1	530	+ 1.51	− 5.54 − 1.19	+.00
	21.67				

Star	Ra	δ	tang δ	π − Ra	n = −.79 c = .00
					6.787
	h			s	
	21.1	510	+ 4.56	− 3.08	+.00 − 6.74
	22.5	525	+ 3.27	− 4.28	.80
	22.7	325	+ 2.20	− 5.04	.78
					.80
					.78
					.82
					.79
					.84
					.73
					.80
					.82
					.73
					6.785
					6.786

				I	II
20.4	+.19	− 6.59	21.1	+ 4.56 − 3.08	− 3.08 − 3.09
20.5	+.25	6.60		− .50	− .01
20.5	+.28	6.56	22.5	+ 3.27 − 4.28	− 4.26 − 4.27
22.0	−.02	6.81		+ .02	+ .01
23.0	+.26	6.61	22.7	+ 2.28 − 5.04	− 5.01 − 5.02
21.3	+.19	− 6.63		+ .03	+ .02
	n = −.79 +.01	+1			
20.6	+.99	− 6.02	0 =	+ 4.37 + 3.55	n = −.81
21.7	+1.83	5.33		+ 3.08 + 2.37	−.77
21.0	+.95	6.07		+ 2.01 + 1.62	−.81
22.9	+.89	6.10			−.797
23.1	+1.51	5.54			
21.7	+1.23	− 5.81	0 =	+ 3.33 + 2.72	n = −.82
				+ 2.04 + 1.54	−.76
				+ .97 + .79	−.81
					−.797

1877 Oct. 26 h = −.017 −.008 n = −.75

9.3	+.3	138	− .14	− 7.60	+.10	− 7.50	or	−7.50
10.0	−.4	144	+ .22	− 7.32	−.16	− 7.48	or	.48
9.65								

−7.490 7.490

1877 Oct. 28 h = −.028 −.010 n = −.66 c = .00

10.0	146	+ .22	− 8.64	−.15	−8.79	1.2 x .79 − 42.58 − 36.92
10.0	+.22	− 8.64				13.2 − 42.58 − 36.92 − 36.83
						+ .09
						0 = − 42.80 − 28.19 n = −.66
						−.660

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sin ζ = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z			
h						
20.4	+.19	+.52	+3′ 50.″8 ✓	+1.2	+3′ 52.″0	
20.5	+.25	+.47	50.2 ✓	+1.1	51.3	
20.5	+.28	+.45	51.0 ✓	+1.1	52.1	
20.6	+.99	−.04	51.5 ✓	−0.1	51.4	
20.7	+1.83	−.33	51.8 ✓	−0.8	51.0	
21.0	+.95	−.02	51.0 ✓	−0.0	51.0	
22.0	−.02	+.69	48.9 ✓	+1.6	50.5	
22.6	+.57	+.22	49.9 ✓	+0.5	50.4	
22.7	+.42	+.33	51.7 ✓	+0.8	52.5	
22.9	+.89	+.01	50.4 ✓	+0.1	50.5	
23.0	+.26	+.47	50.2 ✓	+1.1	51.3	
23.1	+1.51	−.24	51.9 ✓	−0.5	51.4	51.28

R.A.	tan δ	sin z	cos z			
h						
21.1	+4.56	−.58	+3′ 53.″1 ✓	−1.3	+2′ 51.″8	
22.5	+3.27	−.51	52.7 ✓	−1.2	51.5	
22.7	+2.20	−.39	53.1 ✓	−0.9	52.2	51.83

+.69	+48.9	+.52	+50.8	+.22	+49.9	+.01	+50.4	−.04	+51.5	−.33	+51.8	−.58	+53.1
		+.47	50.2	+.33	51.7			−.02	51.0	−.24	51.9	−.51	52.7
		+.45	51.0							−.39	53.1		
		+.47	50.2										
+.69	+48.9	+.48	+50.7	+.27	+50.8	+.01	+50.4	−.03	+51.2	−.32	+52.3	−.55	+52.9
	+1.6		+1.1		+.6		+.0		−.1		−.8		−1.3
	+50.5		+51.8		+51.4		+50.4		+51.1		+51.5		+51.6
	505		2072		1028		504		1022		1545		1032
	+.9		−.4		0.0		+1.0		+.3		−.1		−.2

12 336
3 549
15 885

+3′ 51.″39 (15) 7708
51.59

9.3	−.14	+.77	+3′ 50.″6	+1.7	+3 52.3	
10.0	+.22	+.50	51.4	+1.2	52.6	52.45

+3′ 52.″45

10.0	+.22	+.50	+3′ 52.″0	+1.2	+3 53.2	53.20
1.2	−42.58	−.75	+3′ 55.″7	+1.7	+3 54.0	54.00

1 320
1 400
2 720

+3′ 53.″60

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1876phae.proj.1692.

1876phae.proj.1692.

1876 Oct. 29 h = -.037 -.014 -.012

Star	Ra	δ	tang δ	π Ra			
h' = -.002	9.3	138 -	.14	-9.32	+.10	9.240	9.22 -9.22
10.50	11.7	164 +	.27	-9.07	-.188		265 .26
	19.7 +2.0	277 +	.18	-8.89	-.13	-.02 9.053	.02 9.04
	19.7 2.0	280 +	.15	-8.98	-.10	-.02	.08 .10
	20.3 1.4	289 +	.83	-8.46	-.58	-.02	.04 .06
	20.4 1.3	290 +	.19	-8.92	-.13	-.02	.05 .07
	20.5 1.2	292 +	.25	-8.84	-.18	-.01	.02 .03
20.20	20.6 +1.1	294 +	.99	-8.42	-.69	-.01	.11 .12
	22.6 -0.0	322 +	.57	-8.66	-.39	+.01	.05 .04
	22.7 1.0	323 +	.42	-8.79	-.29	+.01	.08 .07
	22.9 1.2	327 +	.89	-8.48	-.62	+.01	.10 .09
	23.0 1.3	329 +	.26	-8.91	-.18	+.02	.09 .07
	23.1 1.4	530 +	1.51	-8.06	-1.06	+.02	.12 .10
	23.3 1.6	532 +	.42	-8.77	-.29	+.02	.06 .04
23.00	23.4 -1.7	536 +	.59	-8.69	-.41	+.02	.10 .08

n = -.70 c = .00   n = -.67

21.48 / .71   9.09   9.086 / 9.071   9.070

Star	Ra	δ	tang δ	π Ra
9.053	19.8 ×	284	-53.97	-45.48
	19.8	284	+53.98	+26.47
	20.2	502	+4.45	-5.90
	22.5	525	+3.27	-6.93
	22.7	325	+2.20	-7.62
	23.0	529	+3.66	-6.55
	11.4	162	-2.75	-11.06
	23.6	334	+4.31	-6.06
	23.7	537	+2.37	-7.36

19.7 +.18 -8.89
19.7 +.15 8.98
20.4 +.19 8.92
20.5 +.25 8.84
23.0 +.26 8.91
20.X7 +.21 -8.91
n = -.65 -.04

20.3 +.83 -8.46
20.6 +.99 8.42
22.9 +.89 8.48
23.1 +1.51 8.06
21.7 +1.06 -8.36

10.5 +.06 -9.20

			I	II
19.8	+53.98	+26.47	+26.44	+26.40
		-.03	-.07	
20.2	+4.45	-5.90	-5.92	-5.96
		-.02	-.06	
22.5	+3.27	-6.93	-6.86	-6.90
		+.07	+.03	
22.7	+2.20	-7.62	-7.55	-7.58
		+.07	+.04	
23.0	+3.66	-6.55	-6.47	-6.50
		+.08	+.05	
23.6	+4.31	-6.06	-5.95	-5.99
		+.11	+.07	
23.7	+2.37	-7.36	-7.25	-7.48 29
		+.11	+.07	

I

0 = +53.77 +35.35 n = -.66
+4.24 +2.99 -.71
+3.06 +2.05 -.67
+1.99 +1.36 -.68
+3.45 +2.44 -.71
+4.10 +2.96 -.72
+2.16 +1.66 -.77
-.703

		I	II
23.4	-2.75	-11.06	-10.96	-11.00
		+.10	+.06	

0 = -2.96 -2.05 n = -.69 -.690

0 = -3.81 -2.64 n = -.69 -.690

II

0 = +52.92 +34.76 n = -.66
+3.39 +2.40 -.71
+2.21 +1.46 -.66
+1.14 +.78 -.68
+2.60 +1.86 -.72
+3.25 +2.37 -.73
+1.31 +.93 1.07 -.82 .693

III

7.8 -53.97 -45.42 -45.52
-.10

0 = -54.03 -36.32 n = -.67 -.670

c = +1.50

1876 Oct 30 h = -.038 +.029 -.002   n = -.79 c = -.10

		sec δ						9.503
	20.6 +1.3	294 + .99	141 -	10.82 +2.26	-8.56	-.78	-.1400	9.48
	20.7 1.2	298 + .66	120 -	10.75 +1.90	-8.85	-.52	.12	.49
20.67	20.7 +1.2	299 + 1.83	208 -	11.21 +3.33	-7.88	-1.45	.21	.54
	22.6 -0.7	322 + .57	115 -	10.82 +1.84	-8.98	-.45	.12	.55
	22.7 0.8	323 + .42	108 -	10.77 +1.73	-9.04	-.33	.11	.48
	22.9 -1.0	327 + .89	134 -	10.83 +2.14	-8.69	-.70	.13	.52
22.80	23.0 -1.1	329 + .26	103 -	10.82 +1.65	-9.17	-.21	-.1000	.48

sec δ 21.89   c = +1.26 +1.60   9.508 / 9.506   9.506

22.7 +.42 108 -10.77
23.0 +.26 103 10.82
22.8 +.34 -10.80

20.6 +.99 141 -10.82 +1.78
20.7 +1.83 208 11.21 +2.62
22.9 +.89 1.34 10.83 +1.65
21.4 +1.24 -10.95

			I	II
19.8	+53.98			
		-.11	-.06	
22.5	+3.27	-11.95	-10.96	-11.91
		-.01	+.04	
22.7	+2.20	-11.10	-11.10	-11.05
		-.00	+.05	
23.0	+3.66	-12.35	-12.34	-12.29
		+.01	+.06	

0 = +53.64 n =
+2.93 -1.16 -
+1.86 -.80 -
+3.32 -1.54 -

0 = +52.74 - n = -
+2.63 -0.96
+0.96 -1.10
+3.42 -1.34

19.8	284	+53.98 +53.98	-47.77	+86.37	+38.60
22.5	525	+3.27 3.42	-11.95	+5.47	-6.48
22.7	325	+2.20 2.42	-11.10	+3.87	-7.23
23.0	529	+3.66 3.79	-12.35	+6.06	-6.29

See end of book for values of n.

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Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | ⊙ +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. (h)	tan δ	sin z	cos z			
9.3	−.14	+.77	+3′ 49.8″	+1.8	+3′ 51.6″	
11.7	+.27	+.46	53.5	+1.1	54.6	53.10
19.7	+.18	+.53	51.6	+1.3	52.9	
19.7	+.15	+.56	52.6	+1.3	53.9	
20.3	+.83	+.04	53.5	+0.1	53.6	
20.4	+.19	+.52	53.3	+1.1	54.4	
20.5	+.25	+.47	53.5	+1.1	54.6	
20.6	+.99	−.04	54.0	−0.1	53.9	
22.6	+.57	+.22	52.7	+0.5	53.2	
22.7	+.42	+.33	53.0	+0.8	53.8	
22.9	+.89	+.01	52.7	+0.0	52.7	
23.0	+.26	+.47	52.9	+1.1	54.0	
23.1	+1.51	−.24	53.1	−0.5	52.6	
23.3	+.42	+.34	53.4	+0.8	54.2	
23.4	+.59	+.20	52.0	+0.4	52.4	53.55

53.10″

R.A. (h)	tan δ	sin z cos z			
19.8	−53.97	−.75	+3′ 58.5″	−1.7	×+3′ 56.8″
19.8	+53.98	−.73	54.7	−1.7	53.0
20.2	+4.45	−.57	54.9	−1.3	53.6
22.5	+3.27	−.51	55.0	−1.1	53.9
22.7	+2.20	−.39	54.1	−0.9	52.2
23.0	+3.66	−.53	55.7	−1.2	54.5
11.4	−2.75	−.92	56.8	−2.1	54.7
23.6	+4.31	−.57	55.1	−1.3	53.8
23.7	+2.37	−.42	54.8	−0.9	53.9
					53.56

+.77	+49.8	+.46	+53.5	+.22	+52.7	+.04	+53.5	−.04	+54.0	−.24	+53.1	−.57	+54.9	−.75	+58.5
		+.53	51.6	+.33	53.0	+.01	52.7			−.39	54.1	−.51	55.0	−.73	54.7
		+.56	52.6	+.34	53.4							−.53	55.7		
		+.52	53.3	+.20	52.0							−.57	55.1		
		+.47	53.5									−.42	54.8		
		+.47	52.9												

13 65
7 42
20 107

		+.77	+49.8	+.50	+52.9	+.27	+52.8	+.02	+53.1	−.04	+54.0	−.31	+53.6	−.52	+55.1	−.74	+56.6
			+1.8		+1.1		+.6		+.1		−.1		−.7		−1.2		−1.7
			+51.6		+54.0		+53.4		+53.2		+53.9		+52.9		+53.9		+54.9
+3′ 53.68″ 53.55		(23)	516[1] +21		3240[6] −.3		2136[4] +.3		1064[2] +.5		539[1] −.2		1058[2] +.8		2695[5] −.2		1098[2] −1.2	12346

R.A. (h)	tan δ	sin z	cos z			
20.6	+.99	−.04	+3′ 54.0″	−0.1	+3 53.9	
20.7	+.66	+.15	54.5	+0.4	54.9	
20.7	+1.83	−.33	55.1	−0.8	54.3	
22.6	+.57	+.22	54.0	+0.5	54.5	
22.7	+.42	+.33	54.7	+0.8	55.5	
22.9	+.89	+.01	54.7	+0.1	54.8	
23.0	+.26	+.47	54.5	+1.1	55.6	54.79

R.A. (h)	tan δ	sin z cos z				
19.8	+53.98	−.73	+3′ 56.6″	−1.7	+3 54.9	
22.5	+3.27	−.51	55.9	−1.1	54.8	
22.7	+2.20	−.39	55.1	−0.9	54.2	
23.0	+3.66	−.53	57.0	−1.2	55.8	54.92

+.47	+54.5	+.22	+54.0	+.15	+54.5	−.04	+54.0	−.33	+55.1	−.51	+55.9	−.73	+56.6
		+.33	54.7	+.01	57.7			−.39	55.1	−.53	57.0		

8 632
4 368
12 1000

	+.47	+54.5	+.27	+54.3	+.15	54.5	−.04	+54.0	−.36	+55.1	−.52	+56.5	−.73	+56.6	
		+1.1		+.6		+.3		−.1		−.8		−1.2		−1.7	
		+55.6		+54.9		+54.8		+53.9		+54.3		+55.3		+54.9	
+3′ 54.82″ 54.83	(10)	556[1] −.8		1098[2] −.1		548[1] 00		539[1] +.9		1086[2] +.5		1106[2] −.5		549[1] −.1	5482

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1876phae.proj.1692.

187~~7~~6 Oct. 31 ($h = -.040$)

$h = ~~.056~~$ $c = \frac{+1.50}{~~+1.10~~}$

Star	Ra	δ	tang δ	sec δ	Ra	n = u = −.80	c = −.10 + 10.840			
h' = −.014	h				s					
	10.0 +2.1	146	+ .22	1.02	12.11	+ 1.63	− 10.48	− .18	−.10 −.03 10.76	10.79
12.10	14.2 −2.1	187	+ .36	1.06	12.22	+ 1.70	− 10.52	− .29	.11 +.03 .92	.89
	21.9 +0.3	519	+ .22	1.02	11.70	+ 1.63	− 10.07	− .18	.10 −.01 .35	10.36
	22.0 0.2	311	− .02	1.00	11.79	+ 1.60	− 10.19	+ .02	.10 −.01 .27	.28
	22.1 0.1	314	+ .10	1.00	11.74	+ 1.60	− 10.14	− .08	.10 .00 .32	.32
	22.1 0.1	316	+ 1.58	1.87	11.96	+ 2.99	− 8.97	− 1.26	.19 .42 31	.31
	22.2 +0.0	317	− .03	1.00	11.88	+ 1.60	− 10.28	+ .02	.10 .36	.36
	22.3 −0.1	524	+ 1.26	1.61	11.79	+ 2.58	− 9.21	− 1.01	.16 .38	.38
	22.4 0.2	319	+ 1.18	1.55	11.77	+ 2.48	− 9.29	− .95	.16 +.01 .40	.39
	22.6 −0.1	322	+ .57	1.15	11.64	+ 1.84	− 9.80	− .46	−.12 +.02 .38	.36
	22.200	$c = +1.60$							10.346	

187~~7~~6 Oct. 31

Ra	δ	tang δ	sec δ	Ra		
10.840 h				s		
22.1	521	+ 3.03	3.19	12.60	+ 5.10	− 7.50
10.4	150	− 4.12	4.23	7.43	− 6.77	− 14.20
22.5	525	+ 3.27	3.42	12.97	+ 5.47	− 7.50
22.7	325	+ 2.20	2.42	12.20	+ 3.87	− 8.33

10.345

21.9	+.22	− 11.70
22.0	−.02	11.79
22.1	+.10	11.74
22.2	−.03	11.88
22.0	+.07	− 11.78

			I	II
22.1	+ 3.03	− 12.60 / + .00	− 12.60 / − .01	− 12.61
22.5	+ 3.27	− 12.97 / + .02	− 12.95 / + .01	− 12.96
22.7	+ 2.20	− 12.20 / + .03	− 12.17 / + .02	− 12.18

			I	II
22.4	− 4.12	− 7.43 / + .02	− 7.41 / .03	− 7.43

$c = -1.20$

22.1	+ 1.58	− 11.96
22.3	+ 1.26	11.79
22.4	+ 1.18	11.77
22.3	+ 1.34	− 11.84

0 = + 2.96 − 0.832
+ 3.20 − 1.187
+ 2.13 − 0.7039

0 = − 4.19 + 4.387

0 = − 5.46 + 4.41

See end of book for values of u.

12.1	+.29	− 12.16

0 = + 1.69 − 0.77
+ 1.93 − 1.12
+ 0.86 − 0.34

187~~7~~6 Nov. 1

1.2 × 19 − 42.65 − 48.86

187~~7~~6 Nov. 2

19.8 284 + 53.98 + 45.98

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1876phae.proj.1602.

sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z	cos z					R.A.	tan δ	sin z	cos z				
h								h							
10.0	+.22	+.50		+3′ 51.″1	+1.2	+3′ 52.″3		22.1	+3.03	−.49		+3′	56.″8	−1.1	+3′ 55.″7
14.2	+.36	+.38		53.3	+0.9	58.2	52.30	~~10.4~~	~~−4.12~~	~~−.88~~					
21.9	+.22	+.50		54.5	+1.2	55.7		22.5	+3.27	−.51			55.4	−1.1	54.3
22.0	−.02	+.69		55.0	+1.6	56.6		22.7	+2.20	−.39			55.7	−0.9	54.8
22.1	+.10	+.60		55.1	+1.4	56.5									54.93
22.1	+1.58	−.26		55.5	−0.6	54.9									
22.2	−.03	+.70		54.0	+1.6	55.6									
22.3	+1.26	−.16		54.0	−0.4	53.6									
22.4	+1.18	−.13		54.6	−0.3	54.3									
22.6	+.57	+.22		53.8	+0.5	54.3	~~54.98~~ 55.19								

[52.″30]

		+.69	+55.0	+.50	+51.1	+.38	+57.3		−.16	+54.0	−.26	+55.5	−.49	+56.8	
		+.60	55.1	+.50	54.5	+.22	53.8		−.13	54.6	−.39	55.7	−.51	55.4	
		+.70	54.0												
8	4152														
3	1479	+.66	+54.7	+.50	+52.8	+.30	+55.5		−.14	+54.3	−.32	+55.6	−.50	+56.1	
11	5631		+ 1.5		+ 1.1		+ .7			− .3		− .8		− 1.1	
			+56.2		+53.9		+56.2			+54.0		+54.8		+55.0	
+3′	55.″11	(13)	168.6^3		107.8^2		112.4^2			108.0^2		109.6^2		110.0^2	1/64
	55.12		− 1.1		+[illegible].2		− 1.1			+1.1		+.3		+.1	

+3′	55.30										1.2	−42.65	−.73	+3′	57.″0 −1.7 +3 53.3 55.30

+3′	53.80										19.8	+53.98	−.73	+3′	55.″5 −1.7 +3 53.8 53.80

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1876phae.proj.1692.

9 C

1876 Nov 4 ℓ = −.019 +.024 +.030

Star	Ra ℓ	δ	tang. δ sec δ	π Ra ⊙	n = −.81	c = −.10			
	20.3 +2.2	289 +	.83 +1.32	12.26	− .67	−.13	+05	13.088 13.05	13.00
	20.6 1.9	294 +	.99 1.40	12.16	− .80	.14	+05	.10	3.05
	20.7 1.8	299 +	1.83 2.08	11.46	− 1.48	.21	+04	.15	3.11
20.68	21.1 +1.4	303 +	.57 1.15	12.07	− .46	.12	+03	.05	3.02
	23.0 −0.5	329 +	.26 1.03	12.72	− .21	.10	−.01	.03	3.04
	23.1 0.6	530 +	1.51 1.81	11.68	− 1.22	.16	−.01	.08	3.09
	23.2 0.7	330 +	.05 1.00	12.87	− .04	.10	−.02	.01	3.03
	23.2 0.4	531 +	.43 1.09	12.58	− .35	.11	−.02	.04	3.06
	23.3 0.8	532 +	.42 1.09	12.50	− .34	.11	−.02	12.95	2.97
	23.4 0.9	536 +	.59 1.16	12.48	− .48	.12	−.02	13.08	3.10
	23.5 1.0	331 +	1.03 1.43	12.24	− .83	.14	−.02 +.08	.21	3.15
	23.8 1.3	538 +	.33 1.05	12.63	− .27	.10	−.03	.00	3.03
23.36	23.9 −1.4	336 +	.11 1.00	12.82	− .09	−.10	−.03	.01	3.04

22.55
22.47

Star	Ra ℓ	δ	tang. δ	π Ra ⊙
19.8	284	+53.98	+41.27
20.2	502	+4.45	−9.08
23.0	529	+3.66	−9.80
11.4	162	−2.75	−18.69
23.6	334	+4.31	−9.13
23.7	537	+2.37	−10.95

13.046
13.025
13.060
.052
13.053

230 +.26 −12.72
232 +.05 12.87
23.9 +.11 12.82
23.4 +.14 −12.80

n = −.76 +4

20.3 +.83 −12.25
20.6 +.99 12.16
20.7 +1.83 11.46
23.1 +1.51 −11.68
23.5 +1.03 12.24
21.6 +1.24 −11.96
21.2 +1.29 −11.89

			I	II
19.8	+53.98	+41.27 − .07	+41.20 − .03	+41.24
20.2	+4.45	−9.08 − .06	−9.14 − .03	−9.11
23.0	+3.66	−9.80 − .01	−9.81 + .03	−9.77
23.6	+4.31	−9.13 + .00	−9.13 + .04	−9.09
23.7	+2.37	−10.95 + .01	−10.94 + .04	−10.91

0 = +53.84 +54.00 n = −1.00
+4.31 +3.66 −.85
+3.52 +2.99 −.85
+4.17 +3.67 −.88
+2.23 +1.86 −.83
−.882

			I	II
23.4	−2.75	−15.67 −18.69 .00	−18.69 −15.67 +.03	−18.66 −15.64

0 = −2.89 −5.89 −2.87 n = −.99 −.990

0 = −3.99 −4.04 −6.70 −3.75 n = −.93 −.920 −.930

0 = +52.74 +53.20.13 n = −1.01 −1.01
+3.21 .16 +2.85 .78 −.89 −.88
+2.48 .37 +2.19 .12 −.91 −.89
+3.07 .02 +2.87 .80 −.94 −.93
+1.13 .08 +1.05 0.98 −.93 −.93
−.938
−.928

1876 Nov. 5 ℓ = −.022 +.044 +.047 .21 n = −.83 c = −.10

Star	Ra	δ	tang. δ sec δ	π Ra					
h' = +.000 10.00	10.0	146 +	.22 +1.02	13.39	− .18	−.10		13.670 13.67	13.670
	20.6 +1.5	294 +	.99 1.40	12.59	− .82	.14	+07	13.617 .55	13.48
	20.7 1.4	298 +	.66 1.20	12.85	− .55	.12	+.06	.52	.46
20.67	20.7 +1.4	299 +	1.83 2.08	12.05	− 1.52	.21	+.06	.78	.72
	22.1 0.0	314 +	.10 1.00	13.35	− .08	.10	−.00	.53	.53
	22.1 0.0	316 +	1.58 1.15	12.18 +11	− 1.31	.12	−.00	.50	.50
	23.0 0.9	329 +	.26 1.03	13.17	− .22	.10	−.04	.49	.53
	23.1 1.0	530 +	1.51 1.12	12.23	− 1.25	.11	−.04	.59	.63
	23.2 1.1	330 +	.05 1.00	13.33	− .04	.10	−.05	.47	.52
22.78	23.2 −1.1	531 +	.43 1.09	13.09	− .36	−.11	−.05	.56	.61

22.08

13.523
13.554
13.553

Star	Ra	δ	tang. δ	π Ra
19.8	284	+53.98	+41.13
22.1	521	+3.03	−11.00
23.0	529	+3.66	−10.05

22.1 +.10 −13.35
23.0 +.26 13.17
23.2 +.05 13.33
22.8 +.14 −13.28 +3

n = −.76

20.6 +.99 −12.59
20.7 +1.83 12.05
22.1 +1.58 12.18 +11
23.1 +1.51 12.23
21.6 +1.48 −12.24

			I	II
19.8	+53.98	+41.13 − .02	+41.11 − .04	+41.09
22.1	+3.03	−11.00 − .01	−11.01 + .01	−10.99
23.0	+3.66	−10.05 + .00	−10.05 + .03	−10.02

0 = +53.84 +54.39 n = −1.01
+2.89 +2.27 −.79
+3.52 +3.23 −.92
−.907

0 = +52.50 +53.38 n = −1.02
+1.55 +1.275 −.82 1
+2.18 +2.242 −1.03 2
−.9570

100 +.22 −13.39

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1876phae proj. 1692.

sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z

h						
20.3	+.83	+.04	+3′ 56.″2	+.01	+3′ 56.″3	
20.6	+.99	−.04	56.8	−.01	56.7	
20.7	+1.83	−.33	56.5	−0.8	55.7	
21.1	+.57	+.22	56.5	+0.5	57.0	
23.0	+.26	+.47	56.2	+1.1	57.3	
23.1	+1.51	−.24	56.7	−0.5	56.2	
23.2	+.06	+.64	55.5	+1.5	57.0	
23.2	+.43	+.33	55.1	+0.8	55.9	
23.3	+.42	+.34	54.6	+0.8	55.4	
23.4	+.59	+.20	56.5	+0.4	56.9	
23.5	+1.03	−.06	57.1	−0.1	57.0	
23.8	+.33	+.41	54.6	+1.0	55.6	
23.9	+.11	+.59	55.2	+1.4	56.6	56.43

R.A. tan δ sin z cos z

h						
19.8	+53.98	−.73	+3′ 56.″1	−1.6	+3′ 54.″5	
20.2	+4.45	−.57	56.8	−1.3	55.5	
23.0	+3.66	−.53	58.4	−1.2	57.2	
11.4	−2.75	−.92	4 3.4	−2.1	+4 1.3	
23.6	+4.81	−.57	3 57.3	−1.3	+3 56.3	
23.7	+2.37	−.42	57.5	−0.9	56.6	
						56.02

+.64	+55.5	+.47	+56.2	+.22	+56.5	+.04	+56.2	−.04	+56.8	−.33	+56.5	~~+.41~~	~~+57.6~~	−.73	+56.1
		+.41	54.6	+.33	55.1			−.06	57.1	−.24	56.7	~~+.59~~	~~55.2~~		
		+.59	55.2	+.34	54.6							−.57	56.8		
				+.20	56.5							−.53	55.4		
												−.57	57.3		
												−.42	57.5		

13 559									
5 10	+.64 +55.5	+.49 +55.3	+.30 +55.9	+.04 +56.2	−.05 +56.9	−.28 +56.6	−.52 +57.5	−.73 +56.1	
18 569	+1.5	+1.1	+.7	+.1	−.1	−.7	−1.2	−1.7	
	+57.0	+56.4	+56.6	+56.3	+56.8	+55.9	+56.3	+54.4	
+3′ 56.″33 (18)	570[1]	1692[3]	2264[4]	563[1]	1136[2]	1118[2]	2252[4]	544[1]	1013 9
56.32	−.7	−.1	−.3	0.0	−.5	+.4	0.0	+19	

10.0	+.22	+.55	+3′ 54.″5	+1.1	+3 55.8	55.80
20.6	+.99	−.04	56.2	−0.1	56.1	
20.7	+.66	+.15	55.3	+0.4	55.7	
20.7	+1.83	−.33	56.5	−0.8	55.7	
22.1	+.10	+.60	55.1	+1.4	56.5	
22.1	+1.58	−.26	56.9	−0.6	56.3	
23.0	+.26	+.47	56.7	+1.1	57.8	
23.1	+1.51	−.24	56.0	−0.5	55.5	
23.2	+.06	+.64	55.5	+1.5	57.0	
23.2	+.43	+.33	55.1	+0.8	55.9	56.28

19.8	+53.98	−.73	+3′ 58.″0	−1.6	+3 56.4	
22.1	+3.03	−.49	58.9	−1.1	57.8	
23.0	+3.66	−.53	59.4	−1.2	58.2	57.47

55.″80

+.60	+55.1	+.50	+54.7	+.33	+55.1	+.15	+55.3	−.04	+56.2	−.33	+56.5	−.49	+58.9	−.73	+58.0
+.64	55.5	+.47	56.7							−.26	56.9	−.53	59.4		
										−.24	56.0				

9 5652									
3 2241	+.62 +55.3	+.48 +55.7	+.33 +55.1	+.15 +55.3	−.04 +56.2	−.28 +56.5	−.51 +59.1	−.73 +58.0	
12 7893	+1.4	+1.1	+.8	+.4	−.1	−.6	−1.1	−1.7	
	+56.7	+56.8	+55.9	+55.7	+56.1	+55.9	+58.0	+56.3	
+3′ 56.″52 (13)	1134[2]	1136[2]	559[1]	557[1]	561[1]	1677[3]	1160[2]	563[1]	7347
56.58	−.2	−.3	+.6	+.8	+.4	+.6	−1.5	+.2	

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1876 Nov. 12 $l = .022 - .018$ $-.010$ $-.019$ $n = -.72$ $e = .00$

Star	RA		δ	tang. δ	π RA
	h		°		s
	0.0 − 1.2	1	+	.54	− 16.83 − .39
	0.0 1.2	2	+	1.63	− 16.02 − .17
	0.1 − 1.3	3	+	.26	− 17.08 − .19
	11		+		
	14.2 − 1.4	187	+	1.36	− 17.19 − .26
	21.0 + 1.8	361	+	.95	− 16.48 − .68
	22.0 0.8	311	−	.02	− 17.16 + .01
	22.1 0.7	314	+	.10	− 17.12 − .07
21.80 —	22.1 0.7	316	+	1.58	− 16.12 + 1.1 − 1.14
	22.2 0.6	317	−	.03	− 17.20 + .02
	22.3 + 0.5	524	+	1.26	− 16.34 − .91
	23.0 − 0.2	329	+	.26	− 16.97 − .19
23.34 —	23.0 − 1.1	336	+	.11	− 17.00 − .08
	22.99				

						I	II			
22.0	− .02	− 1.16	0.1	+ 4.09	− 14.25	− 14.22	− 14.21			
22.1	+ .10	17.12			+ .03	+ .04				
22.2	− .03	17.20	21.1	+ 4.56	− 13.86	− 13.90	− 13.89			
23.0	+ .26	16.97			− .04	− .03				
23.9	+ .11	17.00	22.1	+ 3.03	− 14.93	− 14.95	− 14.94			
0.1	+ .26	17.08			− .02	− .01				
22.9	+ .11	− 17.09								
	n =	− .68 − .02	0 =		+ 3.98	+ 2.87	n = − .72			
					+ 4.45	+ 3.19	− .72			
					+ 2.92	+ 2.14	− .73			
21.0	+ .95	− 16.48					− .723			
22.1	+ 1.58	16.12 + .11	0 =		+ 2.73	+ 2.030	n = − .743			
22.3	+ .26	16.34			+ 3.20	+ 2.352	− .732			
0.2	+ .63	16.00			+ 1.67	+ 1.30 27	− .78			
22.4	+ .36	− 16.24					− .725			
						III				
14.2	+ .36	− 17.19	13.2	− 42.65		− 4583	− 4585			
						43.01	− .04			
			0 =			− 4299	− 2866	n = − .67		
								− .670		

1876 Nov. 12

Star	RA	δ	tang. δ	π RA
	h		°	s
	0.1	338	+ 4.09	− 14.25
	13.2	19	− 42.65	− 45.83
	21.1	510	+ 4.56	− 13.86
	22.1	521	+ 3.03	− 14.93
	11.9	440	− 4.55	− 20.41

										I
								17.184	23.9	− 4.55 − 20.41 − 20.39 − 20.38
										+ .02 + .03
									0 =	− 4.66 − 3.30 n = − .71
										− .710
									0 =	− 5.91 − 4.17 n = − .70
										− .700

										I
23.0	+ .26	− 17.49	21.1	+ 4.56	− 14.52	− 14.58	− 14.55	17.719	23.9	− 4.55 − 20.93 − 20.90
23.9	+ .11	17.68				− .06	− .03			+ .00 + .03
0.1	+ .26	17.51								
23.7	+ .21	− 17.56							0 =	− 4.76 − 3.37 n = − .71
	n =	− .67 + .02	0 =		+ 4.35	+ 2.98	n = − .68			− .710
							− .680			
20.6	+ .99	− 16.91							0 =	− 5.72 − 4.12 n = − .70
21.0	+ .95	17.03	0 =		+ 3.19	+ 2.23	n = − .70			− .700
0.0	+ .63	16.69					− .700			
0.4	+ .90	16.51								
22.5	+ .37	− 16.78								

1876 Nov. 13 $h = .022 - .034$ $-.032$ $n = -.69$ $e = .07$

Star	RA		δ	tang. δ	π RA
	h		°		s
	0.0 − 0.9	1	+	.54	− 17.36 − .37
	0.0 − 0.9	2	+	1.63	− 16.69 − .12
	0.1 − 1.0	3	+	.26	− 17.51 − .18
	0.4 − 1.3	5	+	1.90	− 16.51 − .131
	20.6 + 2.5	294	+	.99	− 16.91 − .68
20.80 —	21.0 + 2.1	301	+	.95	− 17.03 − .66
	23.0 + 0.1	329	+	.26	− 17.49 − .18
23.90 —	23.9 − 0.8	336	+	.11	− 17.68 − .08
	23.12				

										I
								17.747	21.1	510 + 4.56 − 14.52
								17.762	11.9	440 − 4.55 − 20.93
								17.770		
								.78		
								.66		
								.78		
								.67		
								.76		
								.67		
								.73		
						I	II	17.673		
								17.690		
								17.720		
23.0	+ .26	− 17.49	21.1	+ 4.56	− 14.52	− 14.58	− 14.55		23.9	− 4.55 − 20.93 − 20.90
23.9	+ .11	17.68				− .06	− .03			+ .00 + .03
0.1	+ .26	17.51								
23.7	+ .21	− 17.56							0 =	− 4.76 − 3.37 n = − .71
	n =	− .67 + .02	0 =		+ 4.35	+ 2.98	n = − .68			− .710
							− .680			
20.6	+ .99	− 16.91							0 =	− 5.72 − 4.12 n = − .70
21.0	+ .95	17.03	0 =		+ 3.19	+ 2.23	n = − .70			− .700
0.0	+ .63	16.69					− .700			
0.4	+ .90	16.51								
22.5	+ .37	− 16.78								

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1876phae.proj.1697.

Sin Z = +.60 +.80 +.40 +.60 +.20 +.40 0 +.20 0 −.20 −.20 −.40 −.40 −.60 −.60 −.80

R.A.	tan δ	sin Z	cos Z													
h									h							
0.0	+.54	+.24		+3′ 56.5″ ✓	+0.5	+ 3′ 57.0″			0.1	+4.09	−.56		+3′ 58.0″ ✓	−1.2	+3′ 56.8″	
0.0	+1.63	−.28		57.0 ✓	−0.6	56.4			13.2	−42.65	−.75		57.9 ✓	−1.7	56.2 ✗	
0.1	+.26	+.47		55.5 ✓	+1.1	56.6 ~~56.67~~			21.1	+4.56	−.38		57.9 ✓	−1.2	56.7	
									22.1	+3.03	−.49		58.5 ✓	−1.1	57.4	~~56.74~~
14.2	+.36	+.38		56.8 ✓	+0.8	57.6	57.60		11.9	−4.55	−.87		58.5 ✓	−2.0	56.8	56.94
21.0	+.95	−.042		57.1 ✓	−0.0	57.1										
22.0	−.02	+.69		56.0 ✓	+1.6	57.6										
22.1	+.10	+.60		56.0 ✓	+1.4	57.4										56.20
22.1	+1.58	−.26		56.9 ✓	−0.6	56.3										
22.2	−.03	+.70		55.6 ✓	+1.6	57.2										
22.3	+1.26	−.16		56.6 ✓	−0.4	56.2										
23.0	+.26	+.47		55.6 ✓	+1.1	56.7	56.48									
23.9	+.11	+.59		55.8 ✓	+1.4	57.2	~~57.03~~									

1 3 760 ~~201~~
1 620 ~~220~~
2 4 1380221 "

	~~57.37~~	+.69	+56.0	+.47	+55.6	+.38	+56.8		−.02	+57.1	−.26	+56.9	−.56	+58.0	−.75	+57.9
	~~56.52~~	+.60	56.0	+.59	55.8				−.16	56.6			−.58	57.9		
	56.90	+.70	55.6										−.49	58.5		
11 9	7568 ~~6327~~															
3	2091 2091	+.66	+55.9	+.53	+55.7	+.38	+56.8		−.09	+56.9	−.26	+56.9	−.54	+58.1	−.75	+57.9
14 12	9659 8418		+ 1.5		+ 1.2		+ .9			− .2		− .6		− 1.2		− 1.7
			+57.4		+56.9		+57.7			+56.7		+56.3		+56.9		+56.2
	+3′ 56.95	(13)	1722		1138		577			1134		563		1707		562
	~~57.01~~		−.4		+.1		−.7			+.3		+.7		+.1		+.8
	56.90															

0.0	+.54	+.24		+3′ 56.4″ ✓	+0.5	+ 3 56.9			21.1	+4.56	−.58		+3′ 57.9″ ✓	−1.2	+3 56.7	56.70
0.0	+1.63	−.28		57.1 ✓	−1.6	56.5			11.9	−4.55	−.87		4	C.1 ✓	−.20	58.1
0.1	+.26	+.47		56.1 ✓	+1.1	57.2										
0.4	+1.90	−.34		57.9 ✓	−0.8	57.1										
20.6	+.99	−.04		56.2 ✓	−0.1	56.1										
21.0	+.95	−.02		56.0 ✓	−0.0	56.0										
23.0	+.26	+.47		55.9 ✓	+1.1	57.0										
23.9	+.11	+.59		55.4 ✓	+1.4	56.8	56.70									

+3′ 56.70

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1876phae.proj.1692.

1876 Dec 4 $h = -.057$ $-.039$

Star	Ra	δ	tang δ	T-Ra		$n=-.57$	$c=.00$		
	0.0 +0.2	1	+ .54	− 36.72	− .31		+.01	−37.03	37.02
	0.1 −0.3	3	+ .26	− 36.86	− .15		+.01	37.01	7.00
	23.4 +0.4	536	+ .59	− 36.54	− .34		−.02	36.88	6.90
	23.5 +0.3	331	+ 1.03	− 36.46	− .59		−.01 +.08	37.05	6.98
	23.8 −0.0	538	+ .33	− 36.81	− .19		+.00	37.00	7.00
	23.9 −0.1	336	+ .11	− 36.93	− .06		+.00	36.99	6.99
	23.78 / 84							37.933 / 36.982	38.982

						I	II	
23.8	+ .33	− 36.81		23.6	+ 4.31	− 34.59 / − .02	− 34.61 / + .01	− 34.58
23.9	+ .11	36.93						~~36.963~~
0.1	+ .26	36.86		23.7	+ 2.37	− 35.59 / − .01	− 35.60 / + .01	− 35.58
23.9	+ .18 .23	− 36.87 +2						

0 = + 4.08 + 2.26 n = −.55
+ 2.14 + 1.27 −.59
−.570

0 = + 3.28 + 1.88 n = −.57
+ 1.34 + .88 −.66
−.615

1876 Dec 4

Star	Ra	δ	tang δ	T-Ra
13.2 ×	19	− 42.74	− 28.71
23.6	334	+ 4.31	− 34.59
23.7	537	+ 2.37	− 35.59

I II

13.2 − 42.74 + .76 + .78

0 = − 42.97 −

0 = − 43.77 −

1876 Dec 5 $h = -.061$ $-.060$ $-.056$ 59 $n = -.57$ $c = .00$

38.502

Ra		δ	tang δ	T-Ra				
0.0	−0.6	1	+ .54	− 38.10	− .31	+.04	−38.41	38.37
1.6	2.2	25	+ .15	− 38.45	− .09	+.13	.54	.41
1.7	2.3	26	+ 1.97	− 37.43	− 1.12	+.14	.55	.41
1.8	2.4	30	+ .37	− 38.26	− .21	+.14	.47	.33
1.9	2.5	32	+ .89	− 37.96	− .51	+.15	.47	.32
2.0	−2.6	33	+ .42	− 38.33	− .24	+.16	.57	.41
21.7	+1.7	517	+ 1.14	− 37.62	− .65	−.10	.27	.37
21.9	1.5	519	+ .22	− 38.15	− .13	−.09	.28	.37
22.0	1.4	311	− .02	− 38.27	+ .01	−.08	.26	.34
22.1	1.3	314	+ .10	− 38.24	− .06	−.08	.30	.38
22.1	1.3	316	+ 1.58	− 37.52 +11	− .90	−.08	.31	.39
22.2	1.2	317	− .03	− 38.28	+ .02	−.07	.26	.33
22.3	1.1	524	+ 1.26	− 37.61	− .72	−.07	.33	.40
22.4	1.0	318	+ 1.59	− 37.47	− .91	−.06	.38	.44
22.4	1.0	319	+ 1.18	− 37.64	− .67	−.06	.31	.37
22.6	0.8	322	+ .57	− 38.03	− .32	−.05	.35	.40
22.9	0.5	327	+ .89	− 37.80	− .51	−.03	.31	.34
23.0	+0.4	329	+ .26	− 38.22	− .15	−.02	.37	.39

1.50 — 22.30 — 23.37

38.311 38.374 38.371

Star	Ra	δ	tang δ	T-Ra
13.6	455	− 3.05	− 40.25
1.2	19	+ 42.74	− 12.73
19	31	+ 3.04	− 36.62
13.2 ×	19	− 42.74	− 61.80
22.1	521	+ 3.03	− 36.62
22.5	525	+ 3.27	− 36.69
22.7	325	+ 2.20	− 37.09

I+II

21.9	+ .22	− 38.15	22.1	+ 3.03	− 36.62 / − .04	− 36.66	
22.0	− .02	38.27					
22.1	+ .10	38.24	22.5	+ 3.27	− 36.69 / − .02	− 36.71	
22.2	− .03	38.28					
23.0	+ .26	38.22	22.7	+ 2.20	− 37.09 / − .01	− 37.10	
1.6	+ .15	38.45					
22.8	+ .11	− 38.27	1.2	+ 42.74	− 12.73 / + .14	− 12.59	

n = −.54

1.9 + 3.04 − 36.62 + .18 − 36.44

21.7	+ .114	− 37.62
22.1	+ .158	37.52 +11
22.3	+ .126	37.61
22.4	+ .159	37.47
22.4	+ .118	37.64
1.7	+ .197	37.43
22.8	+ .145	− 37.55 3

I+II

1.6 − 3.05 − 40.25 + .17 − 40.08

13.2 − 42.74 − 61.80 + .84 − 60.96

0 = − 3.16 − 1.81 n = −.57
− 42.85 − 22.69 −.53
−.550

0 = − 4.50 − 2.53 n = −.56
− 44.19 − 23.41 −.53
−.545

I

0 = + 2.92 + 1.61 n = −.55
+ 3.16 + 1.56 −.49
+ 2.09 + 1.17 −.56
+ 42.63 + 25.68 −.60
+ 2.93 + 1.83 −.62
−.564

II

0 = + 1.58 + 0.88 7 n = −.58 5
+ 1.82 + 0.84 2 −.48 5
+ 0.75 + .48 3 −.60
+ 41.29 + 24.98 4 −.60
+ 1.59 + 1.10 9 −.70
−.540
−.533

18 5 23 +3'

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1876phae.proj..tog.

Sin z = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A. tan δ sin z cos z

0.0 +.54 +.24 +3' 58.9 +.05 +3' 56.4
0.1 +.26 +.47 58.9 +.10 56.9 ~~56.65~~
23.4 +.59 +.20 56.5 +.04 56.9
23.5 +1.03 −.06 57.3 −.1 57.2
23.8 +.33 +.41 55.2 +.9 56.1
23.9 +.11 +.59 55.7 +1.3 57.0 ~~56.80~~ 56.75

+.41 +55.2 +.20 +56.5 −.06 +57.3
+.59 55.7

6 4050
1 570
7 4620
+3' 56"56 (8) 1030 +.1 569 −.3 572 −.6
56.70

+.50 +56.4 +.20 +56.5 −.06 +57.3
+.1 +.4 −.1
+56.5 +56.9 +57.2
1130

R.A. tan δ sin z cos z

13.2 −42.74 −.75 +4' 2.4 −1.6 +3'60".8 ×
23.6 +4.31 −.57 3 56.9 −1.2 55.7
~~23.7 +2.87 −.42~~ −.9
55.70

−.57 +56.9 −.75 +2.4
−.42

−.57 +56.9 −.75 +2.4
−1.2 −1.7
+55.7 +0.7
55.7 Rej 2828
+.9

0.0 +.54 +.24 +3' 57.5 +0.5 +3 58.0
1.6 +.15 +.56 54.5 +1.2 53.7
1.7 +1.97 −.35 58.1 −0.7 57.4
1.8 +.37 +.38 55.7 +0.8 ~~56.5~~
1.9 +.89 +.01 56.5 +0.1 56.6
2.0 +.42 +.33 58.7 +0.7 56.4 ~~56.77~~
21.7 +1.14 −.11 57.7 −0.2 57.5
21.9 +.22 +.50 56.8 +1.1 57.9
22.0 −.02 +.69 56.3 +1.5 57.8
22.1 +.10 +.60 56.3 +1.3 57.6
22.1 +1.58 −.26 58.7 −0.5 58.2
22.2 −.03 +.70 55.4 +1.5 56.9
22.3 +1.26 −.16 55.9 −0.3 55.6
22.4 +1.59 −.27 55.9 −0.5 55.4
22.4 +1.18 −.13 56.0 −0.3 55.7
22.6 +.57 +.22 55.5 +0.5 56.0
22.9 +.89 +.01 57.7 +0.1 57.8
23.0 +.26 +.47 ~~55.9~~ 57.6 +1.0 58.0 ~~57.75~~ 56.94
~~56.70~~

13.6 −3.05 −.91 +3' 59.9 −1.9 +3 58.0
1.2 +42.74 −.72 58.8 −1.5 57.3
1.9 +3.04 −.49 57.4 −1.0 56.4
13.2 −42.74 −.75 58.3 −1.6 56.7 ×
22.1 +3.03 −.49 58.2 −1.0 57.2
22.5 +3.27 −.51 57.3 −1.0 56.3
22.7 +2.20 −.39 57.2 −0.8 56.4

56.64

56.70

+.69 +56.3 +.50 +56.8 +.22 +55.5 +.01 +57.7 −.11 +57.7 −.26 +58.7 −.49 +57.4 −.72 +58.8
+.60 56.3 +.47 57.0 −.16 55.9 −.27 55.9 −.49 58.2 −.75 58.3
+.70 55.4 −.13 56.0 −.39 57.2 −.51 57.3

18 1692
5 320
23 2012
+3' 56"86 (18) 1722
56.87

+.68 +56.0 +.48 +56.9 +.22 +55.5 +.01 +57.7 −1.3 +56.5 −.31 +57.3 −.50 +57.6 −.73 +58.5
+1.4 +1.0 +.5 +.0 −.3 −.7 −1.1 −1.6
+574 +57.9 +56.0 +57.7 +56.2 +56.6 +56.5 +56.9
1158 560 577 1686 1698 1693 1138
−.5 −1.0 +.9 −.8 +.7 +.3 +.4 00

10234

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1876phae.proj.1692.

1876 Dec 6 h = -.056 -.057 -.055 58

Star	Ra	δ	tang.δ	T RA	n = -.59	c = .00	Star		Ra	δ	tang.δ	T RA		
	h			s		39.957	39.920					s		3992
	0.0 +0.3	1	+ .54	- 39.58	- .32	- .02	- 39.90	39.92	0.1	338	+ 4.09	- 37.60	- 2.41	- 40.01
	0.1 +0.2	3	+ .26	- 39.76	.15	- .01	.91	39.92	1.2	19	+ 42.74	- 13.63	- 25.22	- 38.85
	0.4 -0.1	5	+ 1.90	- 39.71	.90	+ .01	.61]	60]	14.1	459	- 4.76	- 42.84	+ 2.80	- 40.04
	0.5 0.2	6	+ 1.34	- 39.21	.79	+ .01	40.00	39.99	2.3	36	+ 2.34	- 38.58	- 1.38	- 39.96
	0.5 0.2	10	+ 1.48	- 39.03	.87	+ .01	39.90	.89	11.9	440	- 4.55	- 42.40	+ 2.68	- 39.72
	0.7 0.4	12	+ 1.55	- 38.98	.92 .91	+ .02	.89	.87						
	0.8 0.5	13	+ 1.73	- 38.97	1.02	+ .03	.99	.96						
	0.9 0.6	15	+ .13	- 39.85	.08	+ .03	.93	.90						
	1.0 0.7	16	+ .70	- 39.60	.41	+ .04	40.01	.97						
	2.1 1.8	351	+ 1.21	- 39.25	- .71	+ .10	39.96	.86						
	2.2 1.9	35	- .06	- 40.01	+ .04	+ .11	.97	.86						
1.01 —	2.3 -2.0	37	+ .14	- 39.89	- .08	+ .11	.97 -	.86						
	22.0 +2.3	311	- .02	- 39.76	+ .01	- .13	.75	.88						
	22.9 1.4	327	+ .89	- 39.36	- .53	- .08	.89	.97						
	23.0 1.3	329	+ .26	- 39.66	.15	- .07	.81	39.88						
	23.1 1.2	530	+ 1.51	- 39.04	.89	- .07	.93	40.00						
22.84	23.2 +1.1	330	+ .05	- 39.76	- .63	- .06	.79	39.85						
	0.353						39.834							

39.912 39911

22.0	- .02	- 39.76
23.0	+ .26	39.66
23.2	+ .05	39.76
0.1	+ .26	39.76
0.9	+ .13	39.85
2.2	- .06	40.01
23.9	+ .10	- 39.80
		-1.4

n = -.44 -.03

23.1	+ 1.51	- 39.04		
[0.4	+ 1.90	39.71]		
0.5	+ 1.34	39.21		
0.5	+ 1.48	39.03		
[0.7	+ 1.55	38.98]		
0.8	+ 1.73	38.97		
2.1	+ 1.21	39.25		
~~0.6~~	~~+ 1.53~~	~~- 39.17~~		
~~0.6~~	~~+ 1.47~~	~~- 39.08~~		
0.6	+ 1.45	- 39.10		

			I	II
0.1	+ 4.09	- 37.60	- 37.59	- 37.63
		+ .01	- .03	
1.2	+ 42.74	- 13.63	- 13.55	- 13.60
		+ .08	+ .03	
2.3	+ 2.34	- 38.58	- 38.44	- 38.48
		+ .14	+ .10	

0 = + 3.99 + 2.21 n = -.55
+ 42.64 + 26.25 -.62
+ 2.24 + 1.36 -.61
-.593

0 = + 2.56 + 1.54 n = -.60
+ 41.21 + 25.57 -.62
+ 0.81 + 0.69 -.85]
-.610

			I	II
2.1	- 4.76	- 42.84	- 42.71	- 42.75
		+ .13	+ .09	
23.9	- 4.55	- 42.40	- 42.40	- 42.38 44
		+ .00	- .04	

0 = - 4.86 - 2.91 n = -.60
- 4.65 - 2.60 -.56
-.580

0 = - 6.29 - 3.54 8 n = -.57
- 6.08 - 3.28 7 -.54
-.555

1876 Dec 7 h = -.056 -.042 n = -.50 c = .00

						41.100						
	21.7 +0.6	517	+ 11.4	- 40.47	- .57	- .03	- 41.04	41.07	22.1	521	+ 3.03	- 39.58
	22.0 0.3	311	- .02	- 41.09	+ .01	- .01	.08	.09				
	22.1 +0.2	314	+ .10	- 41.03	- .05	- .01	.08	.09				
22.05 —	22.4 -0.1	318	+ 1.59	- 40.40	.80	.00	.20 -	.20				
	22.4 0.1	319	+ 1.18	- 40.59	.59	.00	.18	.18				
	22.7 0.4	323	+ .42	- 40.98	.21	+ .02	.19	.17				
22.73 —	23.0 -0.7	329	+ .26	- 41.02	- .13	+ .03	.15	.12				
	22.33						41.173					

41.131 41.131

22.0	- .02	- 41.09
22.1	+ .10	41.03
23.0	+ .26	41.02
22.4	+ .11	- 41.05
		+1

			I	II
22.1	+ 3.03	- 39.58	- 39.60	- 39.59
		- .02	- .01	

n = -.47 +.01

21.7	+ 1.14	- 40.47
22.4	+ 1.59	40.40
22.4	+ 1.18	40.59
22.2	+ 1.30	- 40.49

0 = + 2.92 + 1.46 5 n = -.50
-.500

0 = + 1.73 + 0.90 n = -.52
-.520

1876 Dec 9

~~13.2~~ × - ~~18.74~~

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sin β = +.60 +.80 | +.40 +.60 | +.20 +.40 | 0 +.20 | 0 −.20 | −.20 −.40 | −.40 −.60 | −.60 −.80

R.A.	tan δ	sin z cos z			
h					
0.0	+.54	+.24	+3′ 56.″4 ✓	+ 0.5	+3′ 56.″9
0.1	+.26	+.47	56.5 ✓	+ 1.0	57.5
0.4	+1.90	−.34	57.7 ✓	− 0.6	57.1
0.5	+1.34	−.19	56.9 ✓	− 0.4	56.5
0.5	+1.48	−.23	56.6 ✓	− 0.4	56.2
0.7	+1.55	−.26	57.0 ✓	− 0.5	56.5
0.8	+1.73	−.30	56.7 ✓	− 0.6	56.1
0.9	+.13	+.58	55.8 ✓	+ 1.2	57.0
1.0	+.70	+.13	57.3 ✓	+ 0.3	57.6
2.1	+1.21	−.14	56.0 ✓	− 0.3	55.7
2.2	−.06	+.72	54.9 ✓	+ 1.6	56.5
2.3	+.14	+.57	56.4 ✓	+ 1.2	57.6 ~~56.77~~
22.0	−.02	+.69	55.1 ✓	+ 1.5	56.6
22.9	+.89	+.01	56.0 ✓	+ 0.1	56.1
23.0	+.26	+.47	55.2 ✓	+ 1.0	56.2
23.1	+1.51	−.24	56.3 ✓	− 0.4	55.9
23.2	+.05	+.64	56.6 ✓	+ 1.4	58.0 ~~56.56~~
					56.71

R.A.	tan δ	sin z cos z			
h					
0.1	+4.09	−.56	+3′ 59.″0 ✓	− 1.1	+3′ 57.″9
1.2	+42.74	−.72	59.5 ✓	− 1.5	58.0
14.1	−4.76	−.85	+4 3.1 ✓	− 1.7	+4 1.4
2.3	+2.34	−.41	3 57.7 ✓	− 0.8	+3 56.9
11.9	−4.55	−.87	58.5 ✓	− 1.8	56.7
					57.60

+.72 +54.9	+.47 +56.5	+.24 +56.4	+.13 +57.3	−.19 +56.9	−.34 +57.7	−.56 +59.0	−.72 +59.5
	+.58 55.8			−.14 56.0	−.23 56.6	−.41 57.7	
	+.57 56.4				−.26 57.0		
					−.30 56.7		

17 11407
3 2280
20 13687

	+.72 +54.9	+.54 +56.2	+.24 +56.4	+.13 +57.3	−.16 +56.5	−.28 +57.0	−.48 +58.3	−.72 +59.5	
	+ 1.6	+ 1.2	+ .5	+ .3	− .3	− .6	− 1.0	− 1.6	
	+56.5	+57.4	+56.9	+57.6	+56.2	+56.4	+57.3	+57.9	
+3′ 56.″91 (15)	565	1722	569	576	1124	2256	1146	579	8537
56.84	+.4	−.5	00	−.7	+.7	+.5	−.4	−1.0	

R.A.	tan δ	sin z cos z			
21.7	+1.14	−.11	+3′ 56.″3 ✓	− 0.2	+3 56.1
22.0	−.02	+.69	56.0 ✓	+ 1.6	57.6
22.1	+.10	+.60	56.0 ✓	+ 1.3	57.3
22.4	+1.59	−.27	57.3 ✓	− 0.5	56.8
22.4	+1.18	−.13	56.0 ✓	− 0.3	55.7
22.7	+.42	+.33	56.1 ✓	+ 0.7	56.8
23.0	+.26	+.47	57.0 ✓	+ 1.0	58.0 56.90

22.1 +3.03 −.49 +3′ 57.″9 ✓ −1.0 +3 56.9 56.90

+.69 +56.0	+.47 +57.0	+.33 +56.1		−.11 +56.3	−.27 +57.3	−.49 +57.9
+.60 56.0				−.13 56.0		

	+.64 +56.0	+.47 +57.0	+.33 +56.1		−.12 +56.1	−.27 +57.3	−.49 +57.9	
	+ 1.4	+ 1.0	+ .7		− .3	− .6	− 1.0	
	+57.4	+58.0	+56.8		+55.8	+56.7	+56.9	
+3′ 56.85 (8)	1148	580	568		1116	567	569	4548
56.90	∓.6	−1.82	−.0		+1.0	+.1	−.1	

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1876 Mar. 30 h = −.022 −.005 +.027

Star	R.A.	δ	tang δ	sec δ	T − R.A.	u = −.10	c = −.10		
	h				s			50.402	
	8.0 +1.3	405	+ 1.27	+1.62	− 50.00	− .13	−.16	− 01 −	50.29 / 50.30
	8.2 1.1	407	+ .95	1.37	− 50.19	.10	.14	− 01	.43 / .44
	8.6 0.7	~~404~~ 176	+ .34	1.06	− 50.27	03	.11	− 00	.41 / .41
	9.1 +0.2	134	+ .05	1.00	− 50.33	.01	.10	− 00	.44 / .44
8.66	9.4 −0.1	140	+ 1.29	1.63	− 50.15	13	.16	+ 00	.44 / .44
	9.6 0.3	141	+ .19	1.02	− 50.29	02	.10	+ 00	.41 / .41
	9.6 0.3	142	+ .45	1.10	− 50.26	04	.11	+ 00	.41 / .41
	9.7 0.4	144	+ .50	1.12	− 50.25	05	.11	+ 00	.41 / .41
	9.8 0.5	422	+ .89	1.33	− 50.24	09	.13	+ 00	.46 / .46
	9.9 0.6	423	+ .15	1.01	− 50.26	02	.10	+ 00	.38 / .38
9.76	10.0 −0.7	146	+ .22	1.02	− 50.26	02	.10	+ 00	.38 / .38
	9.26							50.405	50.408
h′ = −.024	19.7 +0.1	280	+ .15	1.01	− 50.45	02	.10	00	.57
	19.8 0.0	283	+ .11	1.00	− 50.43	− 01	− .10	00	.54
	19.75								50.555

1876 Mar 30

Star	R.A.	δ	tang δ	T − R.A.		
				s		
19.8	284	− 53.39	− 62.39	+ 10.68	50.71
20.2	502	− 4.45	− 51.78	+ 59	29
8.4	410	+ 3.50	− 49.78	− 70	48
20.5	504	− 3.61	− 51.34	+ 72	.62
9.0	415	+ 2.43	− 49.88	− 49	.37
9.3	137	+ 7.01	− 48.68 −.08	− 40	.08
21.5	308	− 2.75	− 51.06	+ 55	.51
9.5	420	+ 2.72	− 50.03	− 54	50.57
21.7	516	− 2.86	− 51.83	+ 57	51.26
9.8	421	+ 3.37	− 49.78	− 67	50.45
					50.56

50.408

50.555

			I		II
7.8	− 53.39	− 62.39	− 62.43	− 62.41
		− .04	− .02	
8.2	− 4.45	− 51.18	− 51.21	− 51.19
		− .03	− .01	
8.5	− 3.61	− 51.34	− 51.36	− 51.35
		− .02	− .01	
9.5	− 2.75	− 51.06	− 51.06	− 51.04
		.00	+ .02	−
9.7	− 2.86	− 51.83	− 51.83	− 51.81
		.00	+ .02	

9.1	+ .05	− 50.33
9.6	+ .19	50.29
9.9	+ .15	50.26
10.0	+ .22	50.26
9.6	+ .15	− 50.28 +2

n = −.15 +02

8.0	+ 1.27	− 50.00
8.2	+ .95	50.19
9.4	+ 1.29	50.15
[9.8	+ .89	50.24]
~~8.8~~	+ ~~1.10~~	− ~~50.14~~
5	+ 1.17	− 50.11

			I	II
8.4	+ 3.50	− 49.78	− 49.81	− 49.79
		− 03	− 01.01	
9.0	+ 2.43	− 49.88	− 49.89	− 49.88
		− .01	+ .00	
9.3	+ 7.01	− ~~48.68~~ −48.76	− 48.69 −.08	− 48.67 −.08
		− .01	+ .01	
9.5	+ 2.72	− 50.03	− 50.03	− 50.01
		.00	+ .02	
9.8	+ 3.37	− 49.78	− 49.78	− 49.76
		.00	+ .02	

0 = + 3.35 + .47 n = −.14
+ 2.28 + .39 −.17
+ 6.86 + 1.59 −.08 −.28 2
+ 2.57 + .25 −.10
+ 3.22 + .50 −.16
− ~~.160~~ .158

0 = + 2.40 + .35 n = −.15
+ 1.33 + .26 −.20
+ 5.91 + 1.47 −.08 −.25 4
+ 1.62 + .13 −.08
+ 2.27 + .38 −.17
− ~~.170~~ .168

0 = − 53.54 − 12.15 n = − .23
− 4.60 − .93 − .20
− 3.76 − 1.08 − .29
− 2.90 − .78 − .27
− 3.01 − 1.55 − .52]
− .248

0 = − 54.49 − 12.27 n = − .23
− 5.55 − 1.05 − .19
− 4.71 − 1.21 − .26
− 3.85 − .90 − .23
− 3.96 − 1.67 − .42]
− .228

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$\sin z =$	+.60 +.80	+.40 +.60	+.20 +.40	0 +.20	0 −.20	−.20 −.40	−.40 −.60	−.60 −.80

R.A.	tan δ
h	
8.0	+1.27
8.2	+.95
8.6	+.84
9.1	+.05
9.4	+1.29
9.6	+.19
9.6	+.45
9.7	+.50
9.8	+.89
9.9	+.15
10.0	+.22
19.7	+.15
19.8	+.11

R.A.	tan δ
h	
19.8	−53.39
20.2	− 4.45
8.4	+3.50
20.5	− 3.61
9.0	+2.43
9.3	+ 7.01
21.5	− 2.75
9.5	+2.72
21.7	− 2.86
9.8	+3.37

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1876 Oct. 30 h = -.038 -.002 n = -.79 c = -.10
+.020
+.014

Star	R.A.	δ	tang δ sec δ	π - R.A.				
	h							9.503
	20.6 +1.3	294 +	.99 +1.40	8.56	- .78	-.14	+00	-9.48
	20.7 +1.2	298 +	.66 1.20	8.85	- .52	.12		.49
20.66 —	20.7 +1.2	299 +	1.83 2.08	7.88	- 1.45	.21		.54
	22.6 -0.7	322 +	.57 1.15	8.98	- .45	.12		.55
	22.7 -0.8	323 +	.42 1.09	9.04	- .33	.11		.48
	22.9 -1.0	327 +	.89 1.33	8.69	- .70	.13		.52
22.80 —	23.0 -1.1	329 +	.26 1.03	9.17	- .21	-.10	+00	.48
	21.89					I	II	9.508
								9.506

9.506

1876 Oct. 30

Star	R.A.	δ	tang δ	π - R.A.
	19.8	284	+53.98	+38.60
	22.5	525	+3.27	-6.48
	22.7	325	+2.20	-7.23
	23.0	529	+3.66	-6.29

22.7 + .42 - 9.04
23.0 + .26 - 9.17
22.8 + .34 - 9.10 +.05
n = -.80 +.06

20.6 + .99 - 8.56
20.7 + 1.83 - 7.88
[22.9 + .89 - 8.69]
~~21.4 + 1.24 - 8.38~~
21.6 + 1.41 - 8.22

			I	II
19.8	+53.98	+38.60	+38.49	+38.54
		- .11	- .06	
22.5	+3.27	-6.48	-6.49	-6.44
		- .01	+ .04	
22.7	+2.20	-7.23	-7.23	-7.18
		.00	+ .05	
23.0	+3.66	-6.29	-6.28	-6.23
		+ .01	+ .06	

0 = +53.64 +47.59 n = -.89
+2.93 +2.61 -.89
+1.86 +1.87 -1.00
+3.32 +2.82 -.85
-.908

0 = +52.74 +46.92 n = -.89
+2.03 +1.94 -.96
+0.96 +1.20 -1.26]
+2.42 +2.15 -.89
-.913

1876 Oct. 31 h = -.040 n = -.80 c = -.10

h' = -.014

	R.A.	δ							
								10.840	
	10.0 +2.1	146 +	.22 1.02	10.48	- .18	-.10	-.03	-10.76	10.79
	14.2 -2.1	187 +	.36 1.06	10.52	- .29	.11	+.03	.92	.89
	12.10							10.312	
	21.9 +0.3	519 +	.22 1.02	10.07	- .18	.10	-.02	.35	10.37
	22.0 0.2	311 -	.02 1.00	10.19	+ .02	.10	-.01	.31 27	.28
	22.1 0.1	314 +	.10 1.00	10.14	- .08	.10	00	.32	.32
22.02 —	22.1 +0.1	316 +	1.58 1.87	8.97 +.11	- 1.26	.19		.31	.31
	22.2 -0.0	317 -	.03 1.00	10.28	+ .02	.10		.40 36	.36
	22.3 0.1	524 +	1.26 1.61	9.21	- 1.01	.16	00	.38	.38
	22.4 0.2	319 +	1.18 1.55	9.29	- .94	.15	+.01	.38	.37
22.38	22.6 -0.4	322 +	.57 1.15	9.80	- .46	-.12	+.02	.38	.36
	22.20							10.375	
								10.356	
								.344	

10.840

22.1	521	+3.03	-7.50
10.4	150	-4.12	-14.20
22.5	525	+3.27	-7.50
22.7	325	+2.20	-8.33

			I	II
22.4	-4.12	-14.20	-14.18	-14.20
		+ .02	.00	

0 = -4.19 -4.01 n = -.96
-.960

10.344
0 = -5.46 -5.08 n = -.93
-.920
.930

21.9 + .22 - 10.07
22.0 - .02 10.19
22.1 + .10 10.14
22.2 - .03 10.28
22.0 + .07 - 10.17
-1
n = -.80 -.03

22.1 + 1.58 - 8.97 +.11
22.3 + 1.26 9.21
22.4 + 1.18 9.29
22.3 + 1.34 - 9.18 2

			I	II
22.1	+3.03	-7.50	-7.50	-7.51
		.00	- .01	
22.5	+3.27	-7.50	-7.48	-7.49
		+.02	+ .01	
22.7	+2.20	-8.33	-8.30	-8.31
		+ .03	+ .02	

0 = +2.96 +2.67 n = -.90
+3.20 +2.69 -.84
+2.13 +1.87 -.88
-.873

12.1 + .29

0 = +1.69 +1.68 1 n = -.98 5
+1.93 +1.67 3 -.87 4
+0.86 +.85 1 -1.00]
-.925
.895

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1876phaeproj.1602.

R.A.	tan δ
4	
20.6	+.99
20.7	+.66
20.7	+1.83
22.6	+.57
22.7	+.42
23.9	+.89
23.0	+.26

R.A.	tan δ
4	
19.8	+53.98
22.5	+ 3.27
22.7	+ 2.20
23.0	+ 3.66

10.0	+.22
14.2	+.86
21.9	+.22
22.0	−.02
22.1	+.10
22.1	+1.58
22.2	−.03
22.3	+1.26
22.4	+1.18
22.6	+.57

22.1	+3.03
10.4	−4.12
22.5	+3.27
22.7	+2.20

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