1972phmo.proc1.1502.

KG
11366
v.498

Fundamental Stars.
Observations and Reductions
B_3
From Apr. 7. to May 5. 1879.

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I69

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Values of i and log. 15 tan i

		log. tan i	log 15 tan i
April 8 ... April 16	4° 58′ 59″	8.94047	0.11656
April 19 ... April 22	4 58 43	8.94008	0.11617
April 23 ... May 5	4 57 55	8.93891	0.11500
May 6 ... May 12	4 58.36	8.93991	0.11600
May 13 ... May 31	4 57 24	8.93815	0.11424
	4 58 19	8.93950	0.11559

From April 8 to May 31 log 15 tan i = 0.11559

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275

β Cygni

h m
14 26

0.11658
+27° 42′ 9.94714
0.06372

1879 April 7

0.11659
1.17609
9.94714
1.12323

26 4.20	25 57.7	25 54.7	
6.60	8872	57.2	
8.86	8.87	59.0	59.0
11.20		1.0	
4436 13.50		29 51 3.2	
4436		29.51	
18.03		25 59.02	
20.42		+ 28.42	
22.75			
25.10	27.417		
27.40	27.42	27 8.4	
29.80	27.46	7.7	
32.05		9.3	9.5
34.45		11.5	
24675 36.72		479 14.0	
24675		479	
41.50		27 9.58	
43.77	46.064	− 42.14	
45.90	46.06		
48.35	5493		
23032 50.80		25 59.02	
23032	26 27.440	27 9.58	
		+ 28.42	
		− 42.14	
		70.56	
		1.848856	
		1.12323	
		2.97179	
		1.90693	
		8.93514	
		4 55 21	

277

γ Aquilae

h m
19 40

0.11658
+10° 19′ 9.99292
0.00950

April 7

0.11659
1.17609
9.99292
1.16901

40 46.23		40 41.8	
48.40	50.456	44.0	
50.45	50.45	45.8	45.5
52.55		47.3	
25228 54.65		2277 48.8	
25228		2277	
58.70		40 45.54	
0.80		+ 21.66	
3.00			
5.00	7.178		
7.17	7.18	41 35.9	
9.33	7.21	37.8	
11.35		39.9	39.8
13.50		41.8	
60460 15.65		1992 43.8	
60460		1992	
19.82		41 39.84	
21.88	23970	− 32.64	
24.05	23.97		
26.05	13442		
11985 28.05		40 45.54	
11985	41 7.195	41 39.84	
		+ 21.66	
		− 32.64	
		54.30	
19 40 [illegible]		1.73480	
		1.16901	
		2.90381	
		1.84023	
		8.93642	
		4 56 13	

280

ζ Aquilae

h m
19 45

0.11658
+8° 32′ 9.99516
0.11142

April 7

0.11659
1.17609
9.99517
1.17125

45 8.70		45 3.1	
10.85	12860	4.8	
12.80	12.86	6.8	6.6
14.95		8.3	
6430 17.00		332 10.2	
6430		332	
21.00		45 6.64	
23.30		+ 22.90	
25.40			
27.48	29561		
29.60	29.56	45 57.8	
31.70	29.52	56.7	
33.80		58.7	58.6
35.80		0.4	
26605 37.97		3431 2.5	
26605		29.31	
42.05		45 56.62	
44.05	46.178	− 29.08	
46.20	46.18		
48.20	5904		
23084 50.39		45 6.64	
23089	45 29.540	45 56.62	
		+ 22.90	
		− 29.08	
		51.98	
19 44 54.23		1.71584	
		1.17125	
		2.88709	
		1.82659	
		8.93950	
		4 58 49	

M 45 21.42 · 45 21.42
M 46 42.00 ·
R 46 42.15 ·
R 46 41.95 · 46 42.13
80.71

M 8 11.72 · 8 11.72
M 9 20.77 ·
R 9 21.05 ·
R 9 21.00 · 9 20.94
69.22

M 54 16.27 ·
M 55 23.35 ·
8 32 50.1
67.08

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282

ε Draconis

h m
19 48
+69 54

0.11658
9.53509
9.65167

April 1

0.11559

48 59.3
5.5
11.7
17.4
23.5
29.6
35.8
41.6
47.4
7 51.8
49 23.53

47 52.3
57.0
1.7
6.5
3099 12.4
99
48 1.98
+1 21.55
50 19.4
24.2
30.8
36.0
1517 41.3
1517
50 8034
−1 6.81
48 1.98
50 30.34

48 22.7
27.4
1.9 32.3
37.3
1622 42.5
1622
48 32.44
+0 57.09
51 9.0
30.3

49 37.6
41.7
324 48.0
53.5
2396 58.8
2396
49 47.92
−0 24.39
49 47.92

M 38 1.65
M 31 15.62
M 31 49.72
M 32 8.07
M 32 23.55

287

θ Aquilae

h m
20 5

0.11658
9.99991
0.11649

April 1

0.11559

5 19.70
21.65 23824
23.87 23.82
479 25.85
11912 28.05
11912
32.08
34.20
36.22
38.28 40345
40.30 4035
42.35 40.32
44.50
46.55
36313 48.65
36313
52.68
54.70 56826
56.76 56.82
58.98 8064
28413 1.02
28413 5 40.335

M 37 34.90 37 34.90
M 38 52.25
R 38 52.32
R 38 52.55 38 52.37
77.47

1.17609
1.17600

5 9.4
11.4
13.0 13.0
14.8
653 16.7
653
5 13.06
+ 27.28
27.27
6 9.3
10.8
12.7 12.6
14.4
632 16.0
632
6 12.64
− 32.30
32.31
5 13.06
6 12.64
+ 27.28
− 32.30
59.58
4.77510
1.17600
2.95110
1.88913
8.93803
4 68 14 4.57 19

0.11559

607

α² Capricorni

h m
20 11

0.11658
9.98884
0.10542

April 1

11 36.00
38.00
40.00 40.07
42.05
44.30
48.50
52.60
52.67
54.80 5-6961
56.90 56.96
59.17
1.18
3.35
51265 5.48
51265
9.72
11.70 13.854
13.90 13.85
15.95
6927 18.00
6927 11 56.96

M 21 26.95

20 11 31.99
12 55 18.4

11 28.3
30.0
32.5 32.1
32.9
1606 35.9
1606
11 32.12
+24.84
11 32.12

0.11559

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291

θ Cephei 0.11559

h m
20 28
+ 62° 34'
1879 April 7

0.11658 1.17609
966343
9.78001

307

β Aquarii.

h m
21 25
− 6° 7'
April 7

0.11658 0.11559
9.99752
0.11410

309

ε Pegasi

h m s
21 38 7
+ 9° 18'
April 7

0.11658 0.11859
9.99425
0.11083

27	51.3			27	1.9	28	5.2			26	26.60			27	15.5			39	29.62				
	65.8				4.0		9.9				28.80	30860			16.7				31.70	33900			
	0.3				7.2	79	14.2	134			30.75	30.86			18.4	18.5			33.88	3390			
	4.8	9.40			10.7		17.2				32.97				20.0				36.02				
	9.6	~~1692~~		398	15.8	669	20.4			15430	35.18			926	22.0			16950	38.18				
	13.9				398		669				154.30				926				169.50				
	18.4			27	7.96	28	13.38				39.20			27	18.52				42.20				
	22.9			+1	1.44	−0	3.98				41.25			−0	3.108				44.40				
	27.5										43.20								46.50				
	846										45.40	47467							48.55	50.650			
				28	41.8	29	7.3				47.47	47.47							50.70	5065	40	24.0	
					46.7		9.5				49.63	47.41							52.70	5066		25.7	2766
					48.9	49.4	14.4	144			51.60								54.90			23.0	276
					62.5		18.2				53.70								56.90			29.4	
				2473	58.4	721	22.7			42720	55.75							45585	59.00		1383	31.2	
					2473		721				42.720								45585		40	1383	
				28	49.46	29	14.42				57.80								3.22		40	27.66	
				−0	40.06	−1	5.02				1.85	3960							5.40	7424	−	37.00	
											3.98	3.96							7.40	742			
											6.02	9482							9.50	10132			
				27	7.96	28	13.38			31980	8.15			27	18.52			3712	11.60				
				28	49.46	29	14.42				19.80	26	47.440	−	31.08				8712	39	50.655	40	27.66
																						−	37.00

M 53 2.80.
M 53 43.25.
M 54 4.27.
M 54 18.97.

R 33 59.15.
R 33 59.410.

33 59.27

R 9 13.87.
R 9 14.05.

9 13.96

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329				S						
α Pegasi				Sun						
h m 22 59				h m 1 8						
+ 14° 32'	0.11658	1.17609	0.11559						0.11559	
	9.98588	9.98588								
April 7	0.10246	1.16197		April 8						
59 58.40		59 51.2		7 19.30		8 26.7	9 28.27		8 52.9	
0.60	2.680	53.0	5464	21.38	23.500	28.6	30.43	32.450	55.0	
2.70	268	54.7	546	23.50	23.50	30.6	306 32.48	3245	56.6	56.6
4.75		56.3		25.67		32.4	34.52		58.3	
31340 6.95		2732 58.0		11750 27.65		1529 34.6	16225 36.55		2831 0.3	
1340		2732		11750		1529	16225		2831	
11.30		59 54.64		31.70		8 30.58	40.72		8 56.62	
13.42		+ 25.11		33.80		− 50.48	42.80		+ 52.44	
15.53				35.90			44.98			
17.68	19.806			37.90	40.050		47.00	49.100		
19.90	19.80	1 0.5		40.00	4009		49.00	4899		
21.95	19.70			42.25	40.11		51.22	49.14		
23.97				44.23			53.30			
26.20				46.20			55.53			
17825 28.30				36045 48.47			44090 57.35			
17825				045			44090			
32.50				52.50			1.55			
34.70	36.736			54.60	56.720		3.70	5.846		
36.70	36.73			56.65	56.72		5.80	5.84		
38.80	3941			58.85	8022		7.98	9829		
18368 40.98		59 54.64		28360 1.00		8 30.58	2923 10.20		8 56.62	
18368	0 19.750	+ 25.11		28360	7 40.100	− 50.48	2923	9 49.065	+ 52.44	

22 58 44.55

M 53 58.25 · M 56 31.77 · M 29 9.85 ·
M 55 21.35
55 21.40 ·
55 21.55 ·
21.43
14 33 17.1

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33

α Aurigæ

0.11559

h m
2 0

+22 52'

0.11559
9.96445
0.08004

April 8

0 34.60
36.85 39.060
38.97 39.06
41.28
19530 43.60
19530
48.05
50.28
52.40
54.68 56959
56.97 56.96
59.10 56.92
1.50
3.65
51263 6.80
51263
10.37
12.50 14.792
14.80 14.79
17.00 14.785
7396 19.29
7396 0 56.940

2 0 21.67

0 28.4
30.3
32.7 32.5
34.8
1627 36.5
1627
0 3254
+0 2440
1 23.0
25.1
27.4 27.1
29.0
1358 31.3
1358
1 2716
− 0 8022
0 3254
1 27.16
+ 2440
− 30.22
57.62
1.73735
1.14054
2.87789
1.81371
8.93582
4 55 49

91

~~β Tauri~~

~~γ Orionis~~

h m
5 18

~~+6° 30'~~
+6° 14'

April 8

18 52.60
55.70 57760
57.80 57.76
59.91
28881 1.90
28880
5.95
8.20
10.20
12.25 14339
14.30 1434
16.40 14.31
18.45
20.55
12905 22.75
12905
26.75
28.80 30870
30.90 3087
33.00 13863
15435 35.00
15435 19 14.325

M 34 0.37.34 0.37
M 35 5.82
R 35 5.52
R 35 5.12 35 5.49
65.12

M 12 39.07 12 39.07
M 13 53.37
R 13 53.77
R 13 53.52 13 53.57
74458

22 53 29.0

0.11559
~~9.98174~~
~~0.09733~~

18 43.3
45.1
46.6 46.9
48.5
2345 51.0
2345
18 4690
+ 2742
19 41.7
43.2
45.0 45.0
47.0
2254 48.5
2254
19 4508
− 3076
18 4690
19 45.08
+ 27.42
− 30.76
58.18
1.76477
~~1.11994~~ 1.15783
~~2.88471~~ 2.92260
1.87186 1.87204
~~8.98710~~ 8.94944
~~5 5~~ 11

Recomputed with $\delta = +6° 14'$

93

S Orionis

h m
5 26

− 0° 24'

0.11559
9.99999
0.11558

April 8

26 4.60
6.50 8.650
8.67 8.65
10.70
4325 12.78
4325
16.90
19.00
21.00
23.00 25.183
25.225 25.18
27.30 25.14
29.30
31.40
22665 33.50
22665
37.50
39.60 41.640
41.60 41.64
43.70 5029
20820 45.80
20820 26 25.162

0.11559

25 54.3
55.8
57.2 57.1
58.4
2855 59.8
2855
25 5710
+ 2806

25 57.10
+ 28.06

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556

α Leporis 1.11559

h m
5 27
− 17° 55′ 0.11559 1.17609
9.97841 9.97841
0.09400 1.15450

April 8

27	37.20			27	37.5										
	39.25	41.496			38.6										
	41.50	41.49			40.7	40.7									
	43.70				42.4										
20748	45.85			2037	44.5										
	20748				2037										
	50.05			27	40.74										
	52.20			+	18.02										
	54.40														
	56.50	58.728													
	58.70	58.73		28	31.00										
	1.00	58.78			32.6	3498									
	3.00				35.0	34.9									
	5.25				37.2										
32855	7.45			1749	39.1										
	52855				1749										
	11.70			28	34.98										
	14.00	16070		−	8622										
	16.00	16.07													
	18.25	11756													
8035	20.40			27	40.74										
	8035	27 58.785		28	34.98										
				+	18.02										
				−	36.22										
					54.24										
				1.73432											
				1.15450											
				2.88882											
				1.83372											
				8.94490											
				5 2 2											

M 20 54.92 20 54.92
M 22 3.05 .
R 22 3.12 .
R 22 3.17 22 3.11
68.19

α

ζ Orionis

h m
5 35
− 2° 0′ 0.11559 1.17609 0.11559
9.99974 9.99973
0.11533 1.17582

April 8

34	54.15			34	44.0										
	56.32	58.400			45.3										
	58.40	58.40			47.0	47.0									
	0.30				48.5										
29200	2.60			2351	50.3										
	29200				2357										
	6.60			34	47.02										
	8.70			+	2783										
	10.75														
	12.75	14.839													
	14.85	14.84		35	43.3										
	16.80	14.86			45.0	4674									
	19.00				46.7	46.7									
	21.00				48.6										
13355	23.00			2337	50.1										
	13355				2337										
	27.28			35	46.74										
	29.29	31334		−	31.89										
	31.25	31.33													
	33.35	14973													
15667	35.50			34	47.02										
	15667	35 14.850		35	46.74										
				+	27.83										
				−	31.89										
					59.72										
				1.77612											
				1.89197	.17582										
				2.95194											
				1.89187											
				8.93993											
				4 58 37											

M 27 14.45 27 14.45
M 32.37 .
R 32.35 .28
R 32.50 32.41
7796

100

κ Orionis

h m
5 42
− 9° 43 0.11559 1.17609 a11559
9.99372 9.99372
0.10931 1.16981

April 8

42	15.33			42	8.3										
	17.65	19.756			9.8										
	19.80	19.75			11.7	11.6									
	21.80				13.3										
9878	24.00			579	14.8										
	9878				579										
	28.30			42	11.58										
	30.28			+	24.93										
	32.40	39													
	34.41	36.54													
	36.50	36.54		43	6.8										
	38.63	36.48			8.2										
	40.67				9.5	9.8									
	42.70				10.9										
32885	44.90			490	13.6										
	32885				490										
	48.95			43	9.80										
	51.00	53220		−	33.29										
	53.30	53.22													
	55.35	7297													
26610	57.50			42	11.58										
	26610	42 36.510		43	9.80										
				+	24.93										
				−	33.29										
					58.22										
				1.76507											
				1.16981											
				2.93488											
				1.84576											
				8.94088											
				4 59 16											

M 9 24.15 9 24.15
M 10 39.30 .
R 10 39.20 .
R 10 39.32 10 39.27
75.12

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102

α Orionis

0.11559

h m
5 48

+7° 23'

0.11559
9.99638
0.11197

April 8

1.17609
9.99638
1.17247

48 52.40

57.50 56570
56.55 56.57
55.70
28285 0.70
28285

4.88
6.94
9.00
11.00 13205
13.20 13.21
15.35 13.21
17.40
19.50
11887 21.60
11887

25.70
27.70 29860
29.90 29.86
31.95 14643
14930 34.05
14930 49 13.210

5 48 38.65

48 44.5

46.5 4816
48.2 48.1'
49.8
2408 51.8
2408

48 4816
+ 25.05

49 38.2

41.0 4294
42.9 42.9
45.0
2147 46.6
2147

49 42.94
− 29.73

48 48.16

49 42.94
+ 25.05
− 29.73
54.78
1.73862
1.17247
2.91109
1.85394
8.94285
5 0.37 5+76
5037

271

S Draconis L.C.

h m
19 12

+67° 26'

0.11559
9.58406
9.69965

April 8

43.2
11.9
12 32.1

58.0 3.54
3.6 35
8.8
14.1
19.6
25.2

0.11559

48.16

0.11559

11 43.4
47.8
53.3
57.4
2635 1.6
2635

11 52.70

13 28.5
32.8
37.7
42.6
1886 47.0
1886

13 37.72

12 31.4
36.3
52.7 41.4
45.6
2044 49.7
2044

12 40.88

12 40.88

118

β Cassiopeiae

h m
1 20

+ 8° 32'

~~2.99517~~
9.99516
1.17125

April 8

1.17609
9.99516
1.17125

20 50.90
53.10 55060
55.00 55.06
57.15
29530 59.25
27530

3.47
5.47
7.55
9.69 11.735
11.76 11.73
13.82 11.75
15.90 "
17.92
10562 20.03
10562

24.23
26.37 28446
28.40 28.45
30.55 14351
14223 32.68
14223 21 11.740

0.11559

20 41.3
43.4
45.0 45.0
46.7
2250 48.6
2250

20 4500
+ 2674

21 41.0
42.9
44.7 44.7
46.5
2235 48.4
2235

21 44.70
− 32.96

20 45.00

21 44.70
+ 26.74
− 32.96
59.70
1.77597
1.17125
2.94722
1.88598
8.93876
4 57 49

M 4 4.47 4 4.47
M 5 15.67
R 5 16.05
R 5 16.02 5 15.91
71.44

M 58 10.62
M 57 46.60
M 57 15.60
M 56 55.92

M 55 13.02 55 13.02
M 56 29.82
R 56 30.07
R 56 29.90 56 29.93
76.91

7 22 58.3

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119

ζ Geminor

h m
7 27
+ 32 10

0.11559 1.17609 0.11559
9.92763 9.92763
0.04322 1.10372

April 8

27 5.68
8.19 10.94
10.60 10.59
13.00
5297 15.50
5297
20.30
22.70
25.20
27.67 30.074
30.03 30.07
32.55 30.02
34.90
37.50
27067 39.82
27067
44.64
46.86 49.456
49.45 49.45
51.93 60.04
24728 54.30
24728 27 30.045

26 58.6
55.0
56.5 56.7
58.2
2837 0.4
2837
26 56.74
+ 33.30
28 4.6
6.7
9.0 8.9
11.3
446 13.0
446
28 8.92
− 38.88
26 56.74
28 8.92
+ 33.30
− 38.88
72.18
1.85842
1.10372
2.96214
1.90015
8.93801
4 57 18

7 26 54.86

M 18 18.15 · 18 18.15
M 19 37.72 ·
R 19 37.57 ·
R 19 37.55 · 19 37.61
79.46

82 8 72.1

120

ζ Can. Maj.

h m
7 33
+ 5 33

1.17609 0.11559
9.99796 9.99796
9.17405 0.11355

April 8

33 13.70
15.80 1.7850
17.55 17.85
19.90
8925 22.00
8925
26.10
28.20
30.20
32.34 34.388
34.40 34.39
36.50 34.40
38.50
40.55
30949 42.70
30949
46.80
48.80 50.960
50.95 5096
52.00 68.81
25480 53.16
25480 33 34.395

59
7 82 59.86

33 6.7
8.6
10.4 10.3
12.0
516 13.9
516
33 10.32
+ 24.08
34 2.4
4.2
6.0 6.0
7.7
300 9.7
300
34 6.00
− 31.60
33 10.32
34 6.00
+ 24.08
− 31.60
55.68
1.74570
1.17405
2.91975
1.86243 61
8.94268 86
4 58 16 50 37

0.11559

122

β Geminor

h m
7 38
+ 28 20

1.17609 0.11559
9.94458 9.94455
1.12067 0.06017

April 8

38 8.40
10.77 13.118
13.19 13.12
15.48
17.75
6559 20.05
6559
22.45
24.80
27.20
29.59 31.891
31.95 31.86
34.33 31.82
36.65
38.30
28702 41.25
28702
45.80
48.20 50.530
50.60 5053
52.85 63.65
25265 55.20
25265 38 31.855

38 1.4
3.4
5.3 5.3
7.5
266 9.0
266
38 5.32
+ 26.54
39 1.2
3.2
5.5 5.5
7.7
276 10.0
276
39 5.52
− 33.66
38 5.32
39 5.52
+ 26.54
− 33.66
60.20
1.77960
1.12067
2.90027
1.84080
8.94053
4 59 1

7 37 57.86

M 55 5.22 · 55 5.22
M 56 18.25 ·
R 56 18.07 ·
R 56 17.97 · 56 18.07 10
72.58

5 31 56.5

M 8 28.57 · 8 28.57
M 9 38.04 ·
R 9 37.65 ·
R 9 37.95 · 9 37.88
69.31

28 19 30

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282

ε Draconis Se. C. 0.11559

h m
9 48
+ 9 57
1879 April 8

0.11559
9.53507
9.65066

48 41.3
47.2
53.3
59.4 5.41
5.4
11.6
17.6
23.5
29.4
4.87
49 5.41

47 11.6 47 52.6
15.2 59.5
18.8 19.4 2.8 2.6
22.5 6.6
969 28.4 3129 41.4
1938 969 129
47 1938 48 258
+1 46.03 +1 2.83

48 26.8 49 10.7
33.0 15.7
37.6 37.5 20.5 2.10
42.0 26.4
1876 48.2 1050 32.7
37.52 1876 1050

48 37.52 49 2.100
+0 27.89 -0 15.57

50 8.5 47 2.58
13.1 49 2.10
24.973 18.0 1.89
22.0
901 28.5
50 18.02
-1 12.61

M 28 48.80
M 28 26.85
M 28 10.65
M 27 51.07
M 27 26.65

570

ι Argus 0.11557

h m
8 2
- 23 57'

0.11559
9.96090
0.07645

April 8

2 36.60
38.77 4 1.064
41.00 41.06
43.40
20532 45.55
20532
50.00
52.37
54.62
56.80 5 9.104
59.20 59.10
1.40 59.11
3.70
5.85
53194 8.00
53194
12.65
14.90 17.164
17.20 17.16
19.45 11.822
8582 21.62
8582 2 59.105

M 23 18.80 23 18.80
M 24 21.67
R 24 21.67
R 24 21.72 24 21.69
62.89

1.17609
9.96090
1.13699

April 8

2 36.3
38.2
40.4 40.5
42.8
2025 44.8
2025
2 4050
+0 18.60

3 29.1
30.9
32.5 32.8
34.6
1642 37.1
1642
3 32.84
- 33.74

2 40.50
3 32.84
+ 18.60
- 33.74
52.34
1.71883
1.13699
2.85582
1.7985 x 8
8.9426 ~~4.976~~
~~5.0 50 33 35 43~~
5 0 33

M 15 17.80
" 15.80
" 13.35
" 14 56.12
4792
4700

0.11557

Le

Saffold's Star.

h m
20 17

April 8

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291

θ Cephei L. C.

h m
20 27
+ 62 34
April 8

0.11559 0.11559
9.66343 −
9.77902

27 46.8
51.6
55.9
0.6 4.96
4.7
9.5
14.0
18.7
22.8
446
28 4.96

26 46.2 27 31.3
50.8 34.7
55.6 54.8 40.5
58.7 43.7
2743 2.0 1962 46.0
2743 1962
26 54.86 27 39.24
+1 10.10 +0 25.72

28 11.8 28 57.3
15.7 2.0
19.0 19.5 6.9
23.3 10.7
976 27.8 3306 13.7
976 306
28 16.52 29 6.12
−0 14.56 −1 1.16

26 54.86 27 39.24
28 19.52 29 6.12

M 7 37.35.
M 7 9.67.
M 6 44.42.
M 6 18.32.

138

α Hydrae

h m
9 22
8 7
April 8

1.17609 0.11559
9.99563 9.99563
1.17172 0.11122

21 54.25
56.47 58.504
58.50 58.50
0.60
29252 2.70
29252
6.88
9.00
11.00
13.00 15.140
16.80 15.14
17.28 15.18
19.30
21.40
13626 23.40
13626
27.75
29.85 31.870
31.85 31.87
33.90 15.037
159.35 36.00
159.35 22 15.160

9 31 40.74

8 8 19.4

M 34 50.25 34 50.25
M 36 9.65
R 36 9.90
R 36 9.72 36 9.76
79.51

21 44.2
46.7
48.7 48.46
50.7
2423 52.0
2423
21 48.46
+0 26.70
22 44.8
47.3 4.928
49.3 46.2
51.5
2464 53.4
2464
22 49.28
−0 34.12
22 49.28
+ 26.70
− 34.12
60.82
1.78405
1.17172
2.95577
1.90042
8.94465
5 1 52

142

ε Leonis

h m
9 89
+ 24 21
April 8

0.11559 1.17609 0.11559
9.99563 9.99563
0.07513 1.13563

39 13.90 39 7.6
16.20 18.466 9.7
18.48 18.47 11.6 11.5
20.75 13.5
9233 23.00 579 15.5
9233 8 57.9
27.50 39 11.58
29.78 +0 25.00
32.07
34.35 36.568
36.60 36.57
38.76 36.59
41.00
43.35
32911 45.67
32911
50.20
52.50 54.710
54.70 34.71
56.87 73.18
27355 59.28 39 11.58
27363 39 36.580 + 25.00

M 7 44.95.

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146 α Leonis — 0.11559

h m
10 2
+12° 35′ — 0.11559 — 9.98944 — 1.17609
0.10503 — 9.98944 — 1.16553
1879 April 8

X2 12.60		2 4.1			
14.00	16.110	5.9			
16.05	16.11	7.7	7.5		
18.15		9.3			
8055 20.35		377 10.7			
8055		377			
24.50		2 7.54			
26.70		+0 2845			
28.70					
30.80	32.967				
33.00	32.97	3 1.6			
34.95	33.61	3.7			
37.25		5.7	5.5		
39.30		7.4			
29670 41.50		27.6 9.2			
29670		276			
45.70		3 5.52			
47.80	49.910	−082.53			
49.90	49.91				
52.00	66.02				
24955 54.15		2 7.54			
24955	X2 32.990	3 5.52			
		X2 25.45			
		+9 32.93			
		57.98			
10 158.29		1.76328			
		1.16553			
		2.92881			
		1.86976			
		8.94095			
		4 59.19			

M 53	53.22	53	53.22		
M 55	7.15				
R 55	7.27				
R 55	7.62	55	7.31		
			74.09		

12 33 17.4

582 ε Corvi — 0.11559

h m
12 4
− 21° 55′ — 0.11559 — 9.96742 — 1.17609
0.08301 — 9.96742 — 1.14351
April 8

4 8.80		4 4.5			
11.10	13350	6.7			
13.25	13.35	8.0			
15.60		9.3			
6675 17.80		392 10.7			
6675		392			
21.90		4 7.84			
24.45		+ 28.26			
26.60					
29.00	31.098				
31.25	31.10	5 0.0			
33.30	31.10	2.4			
35.60		4.5			
37.78		6.7			
2)988 40.00		216 8.0			
27988		216			
44.38		5 4.32			
46.68	48851	− 33.22			
48.80	48.85				
51.00	62.20				
24426 53.30		4 7.84			
24426	H 31.100	5 4.32			
		+ 23.26			
		− 33.22			
		5 46.48			
		1.75189			
		1.14351			
		2.89540			
		1.84029			
		8.94489			
		5 2 2			

M 22	52.60	22	52.60		
M 24	1.70				
R 24	1.82				
R 24	1.97	24	1.83		
			69.23		

584 ρ Corvi — 0.11559

h m
12 23
− 15° 49′ — 0.11559 — 9.98324 — 1.17609 — 0.11559
0.09883 — 9.98324 — 1.15933
April 8

23 51.80		23 45.8			
54.00	56.080	47.7			
56.50	56.08	49.3	49.7		
58.20		52.0			
28040 0.40		2485 53.7			
28040		2485			
4.65		23 49.70			
6.70		+ 23.64			
8.84					
11.20	13244				
13.30	13.24	24 46.0			
15.43	13.25	46.6			
17.60		49.5	49.4		
19.65		51.6			
11920 21.80		2471 54.4			
11920		2471			
26.00		24 49.42			
28.23	30426	− 36.18			
30.50	30.42				
32.60	14650				
15213 34.80		23 49.70			
15213	24 13.245	24 49.42			
		+ 23.54			
		− 36.18			
		59.72			
		1.77612			
		1.15933			
		2.93545			
		1.87280			
		8.93735			
		4 56.51			

M 17	1.15	17	1.15		
M 18	15.87				
R 18	15.70				
R 18	15.72	18	15.76		
			74.61		

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585

β Corvi

h m
12 28

° ′	0.11559	1.17609
−22 42	9.96498	9.96498
	0.08057	1.14107

April 8

28 16.55		28 8.7		
18.75	21.00	10.7		
21.00	21.00	12.3	12.4	
23.30		14.4		
10500 26.40		623 16.2		
10500		623		
29.90		28 12.46		
32.20		+ 26.40		
34.35				
36.50	38.828			
38.85	38.83	29 9.0		
41.00	38.89	10.8		
43.35		12.4	12.8	
45.50		14.7		
34945 47.30		641 17.2		
34945		641		
52.35		29 12.82		
54.60	56796	− 33.96		
56.80	5679			
59.00	7779			
28398 1.33		28 52.46		
28398	28 38.860	29 12.82		
		+ 26.40		
		− 33.96		
		60.36		
		1.78075		
		1.14107		
		2.92182		
		1.86988		
		8.94806		
		5 4 14		

M 9 34.80 - 9 34.80
M 10 48.92 -
R 10 49.00 -
R 10 48.82 - 10 48.91
74.11

172

γ Virginis

h m
12 35

° ′	0.11559	1.17609
0 46	9.99996	9.99996
	0.11555	1.17605

April 8

35 43.48		35 43.6		
50.60	52.576	45.3		
52.50	52.58	46.4	46.8	
54.60		48.7		
26288 56.70		2342 50.0		
26288		2342		
0.75		35 46.84		
2.90		+ 22.18		
4.80				
6.80	8.976			
8.50	897	36 38.5		
11.00	9.06	40.0		
13.20		41.9	42.0	
15.18		43.9		
8078 17.25		2102 45.9		
8078		2102		
21.40		36 4.204		
23.50	25540	− 33.02		
25.52	25.54			
27.58	13812			
12770 29.70		35 46.84		
12770	36 9.015	36 42.04		
		+ 22.18		
		− 33.02		
		55.20		
		1.74144		
		1.17605		
		2.91799		
		1.86308		
		8.94509		
		5 2.10		

M 14 16.22 - 14 16.22
M 15 29.27 -
R 15 29.17 -
R 15 29.10 - 15 29.18
72.96

0 47 27.0

174

Virginis

h m
12 49

	0.11559	
	9.99896	
° ′	0.11449	1.17609
+ 4 5		9.99896
		1.17499

April 8

49 47.30		49 38.0		
49.60	51460	39.7		
51.50	51.46	41.3	41.3	
53.50		42.9		
25730 55.50		2067 44.5		
25730		2067		
59.70		49 41.34		
1.67		+ 26.60		
3.80				
5.90	7.908			
7.90	6791	50 35.7		
9.90	7.98	37.5		
12.50		39.0	39.1	
14.05		40.6		
61117 16.25		1955 42.7		
7117		1955		
20.38		50 19.10		
22.36	24492	− 0 11.16		
24.50	2449			
26.55	13595			
12246 28.67		49 41.34		
12246	50 7.945	50 39.10		
		+ 26.60		
		− 31.16		
		57.76		
		1.76163		
		1.17499		
		2.93662		
		1.87245		
		8.93583		
		4 55 49		

M 23 54.52 - 23 54.52
M 25 9.15 -
R 25 9.15 -
R 25 8.92 - 25 9.07
74.55

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176

ε Virginis 0.11559

13h 56m 0.11559 9.99099 1.17609 9.99099 2.00658 1.16708

+ 1° 38′

1879 April 8

56 25.80
27.85 30020
30.09 30.02
32.05
34.35
15010
15010
35.81
40.45
42.60
44.65 46821
46.90 46.82
49.50 46.84
50.97
53.17
42139 55.28
42139
57.47
1.60 3660
3.68 3.66
5.80 3668
31830 7.75
1830 56 46.830

56 19.0
20.4 2190
21.8 21.9
23.4
1095 24.9
1095
56 21.90
+ 24.93
57 13.7
15.6
17.3 17.5
19.3
875 21.6
875
57 17.50
− 30.67
56 2190
57 17.50
+ 24.93
− 30.67
55.60
1.74507
1.16708
2.91215
1.85382
8.94167
4 59 48

M 50 53.45 50 53.115
M 52 5.02
R 52 4.72
R 52 4.87 52 4.87
71.42

α Virginis 0.11559

13h 19m 0.11559 9.99264 1.17609 9.99267 0.40826 1.16876

− 19° 30′

April 8

19 5.45
7.60 9.66
9.66 9.69
11.80
4848 13.97
4848
18.00
20.05
22.25
24.40 26.396
26.40 26.39
28.50 26.42
30.60
32.66
23756 34.70
23756
38.95
40.96 43.160
43.17 43.16
45.23 5285
21580 47.50
21580 19 26.405

18 56.2
57.8
59.6 59.9
2.0
2998 4.2
2998
18 59.96
+ 26.44
19 50.3
52.3
53.9 54.0
55.8
2703 58.0
2703
19 54.06
− 27.66
54.10
1.73320
1.16876
2.90196
1.84211
8.94015
4 58 46

M 58 27.92 58 27.92
M 59 37.60
R 59 37.60
R 59 37.12 59 37.414
69.52

10 81 646

277

γ Aquilae 0.11559

19h 40m 0.11559 9.99292 1.17609 9.99292 0.40851 1.16901

+ 10° 19′

April 8

40 45.30
47.25 49440
49.50 49.44
51.55
24720 53.60
24720
57.70
59.90
2.00
4.01 6.161
6.10 6.16
8.20 6.17
10.35
12.50
59545 14.60
5545
18.65
20.76 22.900
22.90 22.90
26.50 13234
11450 27.20
11450 41 6.165

40 36.0
37.6
39.4 39.3
40.8
1966 42.8
1966
40 39.32
+ 26.84
41 37.3
39.3
41.6 41.4
43.5
2070 45.3
2070
41 41.40
− 35.24
40 39.32
41 41.40
+ 26.84
− 35.24
62.08
1.79295
1.16901
2.96196
1.89916
8.93720
4 56.45

M 8 6.22 8 6.22
M 9 25.72
R 9 25.35
R 9 25.42 9 25.50
79.28

— — — — — —

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280 α Aquilae

0.11559

h m
19 45
° ′
+ 8 32

0.11559
9.99517
0.11076
9.99516
1.17125

April 8

45 7.68
9.82 11.840
11.80 11.84
13.90
5920 16.00
5920
20.20
22.30
24.40
26.45 28.525
28.50 28.53
30.60 28.49
32.70
34.80
25675 36.80
25675
40.90
43.00 45140
45.20 45.14
47.30 56.98
22570 49.30
22570 45 28.510

44 59.9
1.4
3.0 3.0
4.6
3053 6.4
153
45 306
+ 25.45
45 66.8
68.3
0.6 0.4
2.1
3024 4.6
24
46 048
− 31.97
45 3.06
46 0.48
+ 25.45
− 31.97
57.42
1.75906
1.17125
2.93031
1.89052
8.94021
4 58 48

19 44 54.26

M 54 14.00
M 55 28.22
R 55
R 55
74.22

8 32 50.4

282 ε Draconis

h m
19 48
° ′
+ 69 57

0.11559
9.53509
9.65068

April 8

48 46.7
52.5
58.5
4.4 10.47
10.7
16.3
22.3
28.3
34.5
942
49 10.47

47 48.0
51.8
56.4
1.6
2852 7.4
2852
47 57.04
+1 13.43
49 44.8
50.4
55.1
0.2
2773 6.8
2773
49 55.46
−0 44.99
51 5.1

48 50.8
56.7
57.0 1.4 3.5
6.7
3177 12.1
77
49 1.54
+0 8.93
50 31.7
36.5
55.4 43.0 42.5
47.4
2125 53.9
2125
50 42.50
−1 32.03
49 8.54
50 42.50

M 30 0.12
M 31 29.80
M 31 53.70
M 32 13.77
M 32 22.67

287 θ Aquilae

h m
20 5
° ′
− 1 11

0.11559 0.11559
9.99391
0.10950

April 8

5 18.60
20.70 22.760
22.75 22.76
24.80
11380 26.85
11380
31.00
33.10
35.20
37.28 3 9.329
37.30 39.33
41.32 39.27
43.40
45.66
35396 47.65
35396
51.70
53.70 55.760
55.70 55.78
57.80 7854
27890 0.50
27890 5 39.300

M 37 38.30 37 38.30
M 38 59.15
R 38 59.10
R 38 59.20 38 59.15
80.85

1.17609 0.11559
9.99991
1.17600

5 10.8
12.8
14.3 14.2
16.0
714 17.5
714
5 14.28
+0 25.02
6 12.3
14.4
16.3 16.1
17.9
808 19.9
80.8
6 16.16
−0 36.86
5 14.28
6 16.16
+ 25.02
− 36.86
61.88
1.49185
1.17600
2.96785
1.90768
8.94013
4 58 45

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607

α^2 Capricorni

h 20	m 11	,	0.11559	0.11559
−12	56		9.98884	
1879 April 8			0.10443	

	11	—		11 59.0		
		—		1.4		
+16.95	55.95	39.00		3.4	3.2	
14.83	55.83 167.78	41.00		5.4		
12.70	56.00 55.923	43.30		3162 7.0		
				162		
8.47	55.97 50352	47.50		12 324		
6.35	55.95 55.94	49.60		−0 731		
4.23	55.93	51.70				
2.09	55.84	53.80	55950			
−0.00	55.90	55.90	5595	12 28.5		
−2.11	56.04	58.20		30.7		
4.23	55.97	0.20		32.7	32.4	
6.35	55.90	2.25		34.4		
8.48	55.88 50355	4.40		1622 35.9		
		50355		1622		
12.70	55.95 27455	8.65		12 3244		
14.82	55.93 55.91	10.75	12860	−0 36.57		
16.94	55.86	12.80	1286			
19.05	55.95	15.00				
21.24	55.86 6430	17.10		12 324		
		6430		12 32.44		

55.924
55.932
20 11 22.02
~~19 49~~

☉ Sun

h 1 m 12

0.11559

April 9

10 58.0		12 7.8		13 7.20		12 26.0
0.0	2054	9.7		9.15	11286	28.0
2.0	2.05	11.5	11.58	11.30	11.28	30.0 29.8
4.0		13.3		13.30		31.9
31027 6.27		579 15.6		5643 15.48		1493 33.4
1027		579		5643		1493
10.40		12 11.58		19.60		12 2986
12.48		−0 5278		21.70		+0 58.15
14.50				23.90		
16.70	18814			26.05	28.041	
18.90	18.81			28.02	28.04	
20.90	18.78			30.18	27.98	
23.00				32.25		
25.20				34.27		
16933 27.25				25237 36.40		
16933				25237		
31.30				40.47		
33.50	35520			42.60	44686	
35.40	35.52			44.70	44.68	
37.65	37.57			46.70	55.96	
17760 39.75		12 11.58		22343 48.96		12 29.86
17760	11 18.795	− 52.78		22343	13 28.010	+ 58.15

M 22 9.40 .
M 22 46.07 .
R 22 45.90 .
R 22 45.82 .

22 45.93

M 34 16.92 .

M 6 4340 .

12 55 83

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118

β Can. Min. 0.11559

h m
7 26
+ 8 32'

April 9

20 30.00		20 42.3		27 4.75	
52.00	54160	48.9		7.18	9.606
54.15	54.16	46.6	4.55	9.60	9.60
56.30		47.0		12.00	
27080 58.35		2275 48.7		4803 14.50	
2080		2275		4803	
2.50		20 45.50		19.45	
4.60		+0 25.32		21.80	
6.60				24.25	
8.80	10.817			26.60	29.094
10.80	1082	21 42.2		29.10	29.09
12.85	1082	44.0	45.76	31.45	29.08
15.00		45.7	45.7	33.95	
17.00		47.4		36.40	
9735 19.20		2288 49.5		26185 38.85	
9735		288		26185	
23.30		21 45.76		43.70	
25.40	27492	−0 34.94		46.01	48.560
27.50	2749			48.60	4856
29.55	14165			51.00	5816
13746 31.70		20 45.50		24280 53.50	
13746	21 10.870	21 45.76		24280	27 29.085
		+ 25.32			
		− 34.94			
		60.26			
		1.78003		7 26 54.64	
		1.17125			
		2.95128			
		1.89182			
		8.94054			
		4 59 2			

β Can. Min. 0.11559

h m
7 27
+ 32.10'

April 9

26 55.0		33 12.80		33 8.0	
57.1		14.80	16.850	9.7	
58.8	58.9	16.85	16.85	11.7	11.4
0.9		18.90		13.2	
2948 3.0		8425 20.90		571 14.5	
2948		8425		571	
26 58.96		25.19		33 1.42	
+ 30.12		27.31		+ 2202	
		29.37			
		31.40	33473		
28 1.0		33.46	3347	34 3.5	
3.3		35.52	33.40	4.9	
5.0	5.1	37.57		6.4	6.6
7.1		39.70		8.2	
259 9.5		30126 41.75		333 10.8	
259		30126		333	
28 5.18		45.85		34 6.66	
− 36.10		47.90	49960	− 33.22	
		50.00	4996		
		52.00	6681		
26 58.96		24980 54.05		33 11.42	
		24980	33 33.435	34 6.66	
28 5.18				+ 22.02	
+ 30.12				− 33.22	
− 36.10				55.24	
66.22		7 32 57.84		1.74225	
1.82099				1.17405	
1.10372				2.91630	
2.92471				1.86046	
1.86207				8.94416	
8.93736				5 1.32	
4 56.52					

120

δ Can. Min. 0.11559

h m
7 33
+ 5 33'

April 9

1.17609	0.11559	1.17609	0.11559		
9.99706	9.99706	9.99706	9.99706		
1.17405	0.11355	1.17405	0.11355		

M 55 16.77 55 16.77
M 56 34.87
R 34.65
R 34.65 56 34.72
77.95

M 18 22.62 18 22.62
M 19 35.52
R 19 35.55
R 19 35.15 19 35.41
72.79

3.2 9 12.1

M 55 9.42 55 9.42
M 56 22.17
R 56 22.02
R 56 21.62 56 21.94
72.52

5 31 56.5

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122

β Geminor

0.11559

h m
7 38

0.11559 1.17609
9.94458 9.94458
0.06017 1.12067

1879 April 9

282

ε Draconis L. C.

h m
19 48

+ 69° 57'

0.11559 0.11559
9.53509
9.65068

April 9

570

i Argus

0.11559

h m
8 2

8° — 23 57

1.17609 0.11559
9.96090 9.96090
1.13699 0.07649

April 9

38 7.50 | 37 59.2 | 48 — | 47 11.0 47 57.0 | 2 35.60 | 2 27.3
9.80 12150 | 0.8 | — | 16.7 2.8 | 37.80 40080 | 29.2
12.10 12.15 | 2.5 2.7 | — | 21.5 213 6.9 670 | 40.00 40.04 | 31.1 31.2
14.50 | 4.6 | — | 26.6 11.4 | 42.30 | 33.5
6075 16.85 | 3837 6.6 | — | 1067 30.9 3350 16.9 | 20040 44.60 | 1561 35.0
6075 | 137 | | 21.34 1067 350 | 20040 | 1561
31.60 | 38 27.4 | +24.07 4.47 40.40 | 47 21.34 | 48 7.00 | 49.18 | 2 31.22
33.80 | + 28.14 | 18.06 4.36 46.30 | +1 43.11 | +0 57.45 | 51.40 | + 26.94
36.20 | | 22.06 — | | | 53.70
38.50 30896 | | 4.712 — | | | 56.00 58200
30.90 3089 | 39 1.5 | — | 48 27.3 | 49 33.6 | 58.22 58.20 | 3 33.9
33.26 30.88 | 3.3 | — | 33.0 38.7 | 0.50 58.12 | 35.8
35.60 | 5.8 | 5.742.04 4.33 16.37 | 36.5 366 45.1 44.7 | 2.70 | 37.8 37.7
37.90 | 8.0 | 18.86 4.36 22.40 | 39.7 50.7 | 4.90 | 39.4
23806 40.30 | 286 10.0 | 24.12 4.54 28.66 | 1831 46.6 2236 55.5 | 52380 7.20 | 1887 41.8
27806 | 286 | | 3662 1831 2236 | 52380 | 1884
44.90 | 39 5.72 | 26.12 4.48 22.48 40.60 | 48 3662 49 44.72 | 11.70 | 3 37.74
47.25 49620 | — 34.84 | 42.13 4.37 4.496 46.60 5270 | +0 27.83 −0 40.27 | 13.85 16.170 | − 39.58
49.60 49.60 | | 43.16 4.54 52.70 52.70 | | 16.18 16.17
52.01 6175 | | 54.17 4.53 58.70 | | 18.42 16.25
24810 54.35 | 38 2.85 | 60.16 2.6350 4.90 | 50 21.0 48 6.70 | 8085 20.70 | 2 31.25
24810 | 38 30.885 | 39 5.72 | 26350 | 26.5 49 44.72 | 8085 2 58.160 | 3 37.74
+ 28.03 | 9.793 | 31.9 | + 26.91
− 34.84 | 4.454 | 36.3 | − 39.58
62.87 | 4.454 | 1571 41.4 | 66.49
7 87 57.85 | 1.798144 | 3142 | 1.822476
1.12067 | 50 31.42 | 1.136 99
2.91911 | −1 26.97 | 2.959 75
1.86070 | 1.902 11
8.94159 | 8.94236
4 59 45 | 5 0 17

M 8 28.12 | 8 28.12 | M 28 41.37 | M 23 14.22 | 23 14.22
M 9 40.37 | M 28 19.70 | M 24 34.02
R 9 40.85 | M 28 6.32 | R 24 33.95
R 9 40.82 | 9 40.68 | M 27 35.90 | R 24 34.15 | 24 34.04
72.56 | M 27 15.25 | 79.82

28 19 3.0

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502

K Cephei Lo. Co.

h m
20 18
+77° 20'
April 9

0.11559

12 44.5
52.7
3.1
12.5 22.04
21.9
31.4
41.0
50.4
3+84 59.9
19.84
13 22.04

10 23.7
30.2
35.8
41.8
1815 50.4
1819
10 36.38
+2 4566

12 2.6
12.0
19.5
23.5
959 35.3
959
12 19.8
+1 286

13 43.4
52.2
0.3
8.6
3023 17.8
2.3
14 0.46
−0 38.42

11 19.0
27.3
363 31.9 32.6
38.2
1630 46.6
1630
11 32.60
+1 49.44

12 58.5
6.5
19.1 12.9 13.0
19.2
3651 25.0
651
13 13.02
+0 9.02

15 1.4
8.5
04 16.5
26.0
34.0
41.0
1274
15 2548 15 21.23
−2 34.4 1 59.19

M 51 18.87
M 51 1.47
M 50 47.05
M 50 30.52
M 50 16.90
M 49 55.50
M 49 49.35

291

O Cephei L.C.

h m
20 27
62 34

0.11559
9.66343
9.77902

April 9

27 46.2
50.6
55.0
59.4 3.97
3.7
8.7
12.8
17.4
21.9
3.57
28 3.97

M 7 29.47
M 7 38.32
M 6 40.40
M 6 10.02

138

α Hydrae

h m
9 21

0.11559
−8 7
9.99563
0.11122

April 9

0.11559

26 48.3
53.7
57.6
0.0
2855 4.9
2855
26 57.10
+1 6.87

28 10.2
13.8
18.7
22.5
907 25.5
907
28 18.14
−0 14.17

27 30.6
37.6
57.1 43.2 41.4
46.7
2071 49.0
2071
27 41.42
+0 22.55

29 3.2
6.6
10.4 10.0
13.5
502 16.5
502
29 10.04
−1 6.07

27 41.42
29 10.04

9 21 40.72

0.11559

0.
1.17609
9.99563
1.17172

April 9

21 53.30
55.32 57.420
57.40 57.42
59.48
28710 1.10
28710
5.60
7.70
9.85
12.00 13.989
14.00 13.99
16.00 14.04
18.20
20.20
12590 22.35
12590
26.45
28.60 30.670
30.70 30.67
32.70 148.09
15335 34.90
15335 22 14.015

M 34 57.10 · 34 57.10
M 36 11.25 ·
R 36 11.57 ·
R 36 11.52 · 36 11.52
11.45
74.35

8 8 204

21 46.1
48.3
50.4 50.6
52.5
2519 54.0
2519
21 50.38
+ 23.64

22 43.9
45.5
47.8 48.0
50.0
2392 51.8
2392
22 47.84
− 38.82

21 50.38
22 47.84
+ 23.63
− 33.83
57.46
1.75937
1.17172
2.93109
1.87128
8.94019
4.58447

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142

E Leonis

0.11559

h m
9 39

° '
+24 21

1879 April 9

0.11559 1.17609
9.99554 9.99554
0.07513 1.13563

39 12.90			39 5.2					
15.10	17.386		7.0					
17.35	17.38		8.9	8.0				
19.70			10.8					
8693 21.88			451 13.2					
8693			451					
26.40			39 9.02					
28.70			+ 26.47					
30.85								
33.26	35.501							
35.53	35.50		40 6.9					
37.82	35.48		8.9					
40.05			11.3	10.9				
42.30			13.0					
31951 49.60			548 14.7					
31951			548					
48.98			40 10.96					
51.25	53590		− 85.47					
53.65	53.59							
55.87	7097							
26795 58.17			39 9.02					
26795	39 35.490		40 10.96					
			+ 26.47					
			− 35.47					
			61.94					
			1.79194					
			1.13563					
			2.92760					
			1.86552					
			8.93792					
			4 54 15					

M 7 44.00 7 44.00
M 8 57.55
R 8 57.27
R 8 57.30 8 57.37
43.37

146

α Leonis

0.11559

h m
10 2

° '
+12 35

April 9

1.17609 0.11559
9.98944 9.98944
1.16553 0.10503

2 10.83			2 7.4					
12.97	15.120		9.2					
15.15	15.12		10.7	10.8				
17.20			12.4					
7560 19.35			543 14.6					
7560			543					
23.38			2 10.86					
26.50			+ 21.09					
27.72								
29.85	31.912							
31.88	31.91		3 1.8					
33.98	31.99		3.5					
36.20			5.0	5.1				
38.30			6.9					
28721 40.40			259 8.7					
28721			259					
44.70			3 5.18					
46.70	48.860		− 33.23					
48.92	48.86							
50.98	63.98							
24430 53.10			2 10.86					
24430	2 31.950		3 5.18					
			+ 21.09					
			− 33.23					
			54.32					
			1.73496					
			1.16553					
			2.90049					
			1.83506					
			8.93457					
			4 54.38					

10 158 28

M 54.095 54 0.95
M 55 59.20
R 55 59.47
R 55 59.37 55 9.35
68.40

12 38 17.5

148

G Leonis

h m
10 10

° '
+24 1

April 9

0.11559 1.17609 0.11559
9.96067 9.96067
0.07626 1.13676

10 11.70	8		10 1.7					
13.80	16.150		3.7					
16.19	16.18		6.2	5.94				
18.47			8.0					
8090 20.74			297 10.1					
8090			297					
25.00			10 5.94					
27.42			+ 28.26					
29.60								
31.93	34.192							
34.19	34.19		11 3.8					
36.45	34.21		6.0					
38.78			7.6	7.7				
41.10			9.5					
30773 43.36			387 11.8					
30773			387					
47.72			11 7.74					
49.92	52.250		− 33.54					
52.26	52.25							
54.55	68.43							
26125 56.80			10 5.94					
26125	10 34.200		11 7.74					
			+ 28.26					
			− 33.54					
			61.80					
			1.79099					
			1.13676					
			2.92775					
			1.86581					
			8.93806					
			4 57.20					

M 26 22.90
M 27 36.32

~~73.02~~
73.42

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C

γ Leonis

h m
10 13
+ 20° 28'
April 9

0.11559

1.17609 0.11559
9.97168 9.97168
1.14777 0.68727

13 32.80		13 26.5		7 55.00	
34.80	37.06	28.5		57.30	59.46
36.93	37.07	30.6	30.4	58.46	59.49
39.30		32.2		1.70	
18533 41.50		1520 34.2		29743 3.98	
18533		1520		29743	
45.70		13 3040		8.33	
47.89		+ 2422		10.57	
50.20				12.70	
52.40	54.618			14.80	17.133
54.63	54.62	14 29.5		17.20	17.13
56.87	54.61	32.0		19.40	17.14
58.97		34.5	34.1	21.50	
1.30		36.4		23.70	
49156 3.50		1707 38.3		15420 26.00	
49156		1707		15420	
7.80		14 34.14		30.35	
9.86	12168	− 29.52		32.55	34784
12.20	12.16			34.80	34.78
14.30	14923			36.95	15427
6084 16.68		13 30.40		17392 39.27	
6084	13 54.615	14 34.14		17392	8 17.135
		+ 24.22			
		− 39.52			
		63.74			
10 13 20.82		1.80441		11 [illegible] 43.47	
		1.14777			
		2.95218			
		1.89131			
		8.93913			
		4 58 44			

M	0	23.60	0	23.60	M	16	26.60	16	26.60
M	1	41.55			M	17	32.37		
R	1	41.40			R	17	32.45		
R	1	41.42	1	41.46	R	17	32.60	17	32.47
				77.86					65.87

10 27 1.1

21 10 58.6

156

S Leonis

h m
11 8
+ 21° 12'
April 9

0.11559

0.11559 1.17609
9.96955 9.96957
0.08516 1.14566

7 55.00		7 49.0			
57.30	59.486	50.5			
58.46	59.49	52.2	52.1		
1.70		53.7			
29743 3.98		2609 55.5			
29743		2609			
8.33		7 5218			
10.57		+ 24.96			
12.70					
14.80	17.133				
17.20	17.13	8 42.8			
19.40	17.14	44.6			
21.50		46.4	46.3		
23.70		48.0			
15420 26.00		2317 49.9			
15420		2317			
30.35		8 4634			
32.55	34784	− 29.20			
34.80	34.78				
36.95	15427				
17392 39.27		7 52.18			
17392	8 17.135	8 46.34			
		+ 24.96			
		− 29.20			
		54.16			
11 [illegible] 43.47		1.73368			
		1.14566			
		2.87934			
		1.81869			
		8.93935			
		4 58.13			

Chronograph stopped at 11h 30m
164

B Leonis

h m
11 43
+ 15° 16'
April 9

0.11559

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303 ζ Cygni

h m 21 7
+29° 43′
1879 April 12

0.11559 / 9.93876 / 0.05435 · 0.11559

7 56.46		8 2.0	
58.90	1.306	4.0	
1.27	1.30	5.8	5.96
3.70		8.1	
30653 6.20		298 9.9	
653		298	
10.80		8 5.96	
13.00		+0 14.28	
15.57			
17.90	20.227		
20.03	2023		
22.62	20.26		
24.97			
27.40			
18204 29.75			
18204			
34.50			
36.80	39.230		
39.20	39.23		
41.62	4053		
19615 44.03		8 5.96	
19615	8 20.245	+ 14.28	

R 43 65.25
R 44 64.90

307 β Aquarii

h m 21 25 · 0.11559 / 9.99752 / 0.11311
− 6° 7′
April 12

0.11559 · 1.17609 / 9.99752 / 1.17361

25 23.65		25 24.0		
25.65	27.750	26.0		
27.70	27.75	27.2	27.4	
29.85		29.0		
13875 31.90		1372 31.0		
13875		13.72		
35.97		25 27.44		
38.00		+ 16.84		
40.08				
42.20	44.262			
44.25	44.26	26 12.0		
46.40	44.30	14.2		
48.36		16.0	15.9	
50.50		17.8		
39836 52.60		797 19.7		
39836		797		
56.86		26 15.94		
58.70	0.848	− 31.66		
0.80	0.85			
2.90	8860			
30424 4.98		25 27.44		
424	25 44.280	26 15.94		
.848		+ 16.84		
		− 31.66		
		48.50		
		1.68574		
		1.17361		
		2.85935		
		1.80325		
		8.94390		
		5 1 21		

M 32 56.77 · 32 56.77
M 33 0.12 ·
R 34 0.30 ·
R 34 0.60 · 34 0.34
6357

309 ε Pegasi

h m 21 38
+ 9° 18′
April 12

0.11559 / 9.99425 / 0.10984 · 1.17609 / 9.99425 / 1.17034 · 0.11559

38 26.50		38 22.2	
28.60	30.754	24.4	
30.70	30.75	26.6	25.6
32.80		27.2	
15377 34.97		1283 28.9	
377		1283	
38.98		38 25.66	
41.17		+0 21.80	
43.26			
45.40	47.477		
47.50	47.47	39 11.9	
49.65	47.46	14.0	
51.63		15.7	15.7
53.70		17.6	
42729 56.00		789 19.7	
42729		789	
0.00		39 15.78	
2.05	4.166	−0 28.32	
4.18	4.17		
6.25	9492		
2083 8.35		38 25.66	
2083	38 47.465	39 15.78	
4166		+ 21.80	
		− 28.32	
		50.12	
		1.70001	
		1.17034	
		2.87035	
		1.81465	
		8.94430	
		5 1 37	

M 7 58.12 · 7 58.12
M 9 3.42 ·
R 9 3.30 ·
R 9 3.42 · 9 3.38
6526

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311

α Aquarii

0.11559

h m
21 39
− 0 56

1.17609 0.11559
9.99994 9.99994
1.17703 0.11553

April 12

59 46.40
48.32 50400
50.45 5040
52.33
25200 54.50
25200
55.65
1.75
2.85
4.80 6.89
6.80 7.00
9.10 6.88
11.00
13.00
60302 15.17
62.02
19.32
21.29 23360
23.29 2336
26.45 13376
11680 27.45
11680 00 6.940

21 59 35.16

59 44.2
45.6
47.2 47.1
48.6
2356 50.0
2356
59 47.12
+0 19.82
0 36.6
38.8
40.4 40.4
42.1
2019 44.0
2019
0 40.38
− 33.44
59 47.12
0 40.38
+ 19.82
− 33.44
53.26
1.72640
1.17703
2.90343
1.84280
8.93937
4 88 14

M 21 20.37 21 20.37
M 22 30.10
R 22 30.05
R 22 29.85 22 30.00
69.63

0 54 35.9

S Sun

h m
1 26

0.11559

April 13

25 37.45
39.22 41360
41.30 41.36
43.20
20680 45.60
20680
47.95
51.92
54.00
56.00
—
—
2.50
4.60
—
—
—
14.60
17.18
19.30

M 7 15.58

27 33.8
35.8
38.4 38.4
41.1
1921 43.0
1921
27 38.42

27 38.42

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172

y Origins 0.11559

h m
12 25
− 0 46

0.11559
9.99996
0.11555

1879 April 13

35 —
—
—
—
—

36 18.7
20.0
22.7 22.1
23.8
1108 25.6
1108

57.80 +8.25 6.05
59.82 6.19 6.01
2.03 4.12 6.15
4.00 +2.07 −0.73 6.09 6.061
6.07 −0.07 6.08
8.18 −2.06 6.06
10.20 4.13 6.07
12.26 6.19 6.06
59466 14.33 8.27 6.11
5466
18.40 12.38 6.02
20.50 14.45 60 6.06
22.50 16.51 22.56 5.99
24.70 18.57 6.13
11280 26.70 −20.70 6.00

36 22.16
54.65
6.061
36 44.8
46.4
47.7
30.20
6.04
36 22.16
11280
6.050
6.053

12 35 18.80

174

R Origins 0.11559

h m
12 49
+ 14 5

0.11559
9.99890
0.11449

1879 April 13

49 44.80
46.30 48310
48.25 48.31
50.46
24155 52.54
24155

56.50
58.60
0.70
2.85 4837
4.88 484 4.88
6.90
8.95
11.10
58353 13.15
4353
17.30
19.35 21458
21.48 21.46
23.49 12977
10729 25.67
10729 50 4.860

M 23 53.37 . 23 53.37
M 25 9.10 .
R 25 9.22 .
R 25 8.87 . 25 9.06
75.69

1.17609
1.17499

49 34.0
35.4
36.8 36.8
38.5
1843 39.6
1843

49 36.86
+0 28.00

50 31.0
32.0
34.7 34.7
36.5
1736 38.4
1736

50 34.72
− 28.86

49 36.86
50 34.72
+ 28.00
− 29.86
57.86
1.76238
1.17499
2.93737
1.87908
8.94167
4 59 48

176

E Origins 0.11559

h m
12 56
+ 11 38

0.11559
9.99099
0.10658

1879 April 13

56 22.70
24.78 26920
24.97 2692
28.00
31.15
13460 31.15
13460

35.40
37.50
39.55
41.70 43800
43.80 43380

45.90 43.79
48.00
50.05
39420 52.30
39420

56.50
58.50 0.66
0.66 0.66
2.75 8758
30330 4.80
330
0.660

M 50 51.42 . 50 51.42
M 52 7.00 .
R 52 6.67 .
R 52 6.65 . 52 6.74
75.35

1.17609 0.11559
1.16708

56 13.6
15.4
17.3 17.1
18.7
855 20.5
855

56 17.10
+0 26.70

56 43.795

57 15.76
+ 26.70
− 31.96
58.66
1.76834
1.16708
2.93542
1.87708
8.94166
4 59 48

M 15 8.50 .
M 15 40.35 .
R 15 40.20 .
R 15 40.27 .
15 40.27

8 47 27.9

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587 α Virginis 0.11559

h 13 m 19

− 10° 30′

0.11559 1.17609
9.99267 9.99267
0.10826 1.16876

April 13

19 2.48		18 52.7	
4.50	6.576	54.1	
6.50	6.57	55.0	56.2
8.70		58.3	
3288 10.70		2811 0.0	
3288		2811	
14.80		18 56.22	
16.92		+0 27.10	
19.00			
21.23	2.3278		
23.40	23.28	19 50.4	
25.40	23.36	52.3	
27.45		54.3	54.1
29.58		56.0	
20950 31.72		2707 57.7	
20950		2707	
35.77		19 54.14	
38.05	40.154	−0 30.82	
40.15	40.15		
42.32	46.72		
20077 44.48		18 56.22	
20077	19 23.320	19 54.14	
		+ 27.10	
		− 30.82	
		57.92	
13 18	52.18	1.76283	
		1.16876	
		2.93159	
		1.86670	
		8.93511	
		4 5520.	

M 58 28.72 · 58 28.72
M 59 42.20
R 59 42.32
R 59 42.35 59 42.29
73.57

10 31 64.9

329 α Pegasi

h 22 m 58

+ 14° 32′

0.11559 0.11559
9.98588
0.10147

April 13

58 54.90		58 53.2	
57.20	59.150	55.1	
59.00	59.15	56.5	
1.30		58.0	
29575 3.35		2828 0.0	
29575		2828	
7.50		58 56.56	
9.70		+0 19.54	
11.80			
14.00	16061		
16.00	16.06		
18.20	16.13		
20.30			
22.45			
14455 24.60			
14455			
28.80			
31.00	33114		
33.15	33.11		
35.12	15226		
16557 37.50		58 56.56	
16557	59 16.095	+ 19.54	

22 58 44.68

R 54 6.12 ~~54 6.12~~
R 54 6.07

54 6.09

19 33 17 2

1 α Androm.

h 0 m 2

+ 28° 24′

0.11559 0.11559
9.94431
0.05990

April 13

200.42	+23.47	40.22	16.65		2 13.4	
40.080	21.20	40.10	18.90	2.1310	14.9	
56.5	18.78	40.18	21.40	21.31	17.0	16.9
	16.43	40.03	23.60		18.5	
	14.09	10655	26.00		845 20.7	
			10655		845	
360.59	9.39	40.09	30.70		2 1690	
40.064	7.04	40.17	33.13		+0 23.17	
	4.69	40.11	35.42			
	2.32	40.02	37.70	4.0069		
	−0.00	40.10	40.00	4007		
	2.34	40.03	42.37			
	4.69	40.01	44.70			
	7.04	40.06	47.10			
	9.40	36062	49.50			
			36062			
80.12	19.08	40.04	54.17			
40.06	16.42	40.03	56.45			
			—			
			—			
			—		2 1690	
40.070						
40.071						

0 2 8.81

M 2 14.62

28 25 22.5

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3

γ Pegasi

h m

0 / '

0.11559 0.11539

9.98597

0.10156

1879 April 13

7 — 7 24.0

13.25 +19.18 32.43 124.20 25.5

15.15 17.06 32.21 32.30 27.7

17.30 14.92 32.22 30.1

12.65 12.79 32.34 107.3

23.30 8.53 32.38 130.27 26.82

26.00 6.39 32.39 32.567 +5.75

28.35 4.26 32.61

30.83 2.11 32.94

57.70 −19.18 32.52 94.94

58.80 38.38 32.42 32.47

32.446

32.441

5 0.27

5

Sun

h m

1 30

0.11539

April 14.

29 17.40

19.52 21564

21.40 21.56

23.70

10782 25.80

10782

28.80

31.90

34.05

36.20 38.283

38.30 38.28

40.40 38.33

42.60

44.50

34455 46.30

34455

57.00

53.00 55100

55.00 55.10

57.20 7666

27550 59.30

27550 29 38.305

30 28.7

30.9

33.1 .328

34.6

1642 36.9

1642

38.80

30 32.84

−0 54.54

30 32.84

+ 54.54

31 26.75

29.00 31050

31.10 31.05

33.10

15525 35.30

15525

38.50

41.65

43.60

45.70 47872

47.90 47.87

43085 50.00 47.86

52.05

54.15

43085

0.53

2.60 4.682

4.70 468

6.78 9573

2341 8.80

2341 31 47.865

30 30.6

52.3

54.3 54.2

56.0

2712 58.0

2712

30 54.24

+0 53.62

30 54.24

+ 53.62

M 44 40.25

M 17 8.70

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33

α Arietis

h m
2 0
+ 22° 52'

0.11559 0.11559
9.96445
0.08004

April 14

0 31.50		0 24.0		18 47.80	
33.50	35476	26.0	27.84	50.05	52470
35.45	35.47	27.8	27.8	52.50	52.47
37.65		29.5		54.50	
17738 40.28		1392 31.9		26235 57.20	
17738		1392		26235	
44.29		0 27.84		1.88	
46.50		+ 25.46		4.34	
48.77				6.63	
50.93	53.262			8.90	11.298
53.30	53.26			11.30	11.29
55.40	53.34			13.63	11.24
57.90				15.90	
0.00				18.38	
47936 2.27				10168 20.72	
47936				10168	
6.80				25.35	
8.95	11.220			27.70	30012
11.25	11.22			30.00	30.01
13.40	10669			32.34	14248
5610 15.70		0 27.84		15006 34.67	
5610	0 53.300	+ 2546		15006	19 11.265

2 0 21.68

M 34 0.15

2 2 53 28.8

90

β Tauri

h m
5 18
0 ' "
+ 28 30

April 14

18 41.6					
43.4					
45.3	45.3				
47.1					
2268 49.4					
2268					
18 4536					
+ 25.90					
19 40.6					
42.1					
44.4	44.6				
46.8					
2234 49.0					
2234					
19 4468					
− 3342					
184536					
1944.68					
+ 25.90					
− 33.42					
59.32					
1.79320					
1.11999					
2.89319					
1.83251					
8.93932					
45812					

3988
5 18 44.27

M 57 15.00 · 57 15.00
M 58 22.85 ·
R 58 23.17 ·
R 58 22.97 · 58 23.00
68.00

28 80 19.4

1.17609 0.11559
9.94390 9.94390
1.11999 0.05549

93

β Orionis

h m
5 26
0 ' "
− 0 21

April 14

26 0.80				25 50.5	
2.80	4.940			52.0	
4.90	4.94			53.5	53.3
6.97				54.8	
2470 9.13				2668 56.0	
2470				2668	
13.98				25 5336	
15.28				+ 0 28.08	
17.30					
19.42	21.444				
21.52	21.44				
23.55	21.43				
25.65					
27.60					
19300 29.70					
19300					
3383					
35.96	37926				
37.89	3792				
39.95	4286				
18963 42.00				25 5336	
18963				26 21.435	+ 28.08
3					

M 50 13.70 ·

0.11559 0.11559
9.99999
0.11558

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i Orionis

h 5 29
− 5° 59'
1879 April 14

0.11559 0.11559
9.99763
0.11322

29 41.30 +20.75 2.68
43.86 45.93 2.53
45.85 2.45
48.04 14.33 2.57
2968 50.03 12.44 2.47
22968

54.40 8.30 2.70
51.40 6.22 2.62
50.58 4.15 2.60
0.70 2.85 2.75
—
—
6.67 4.15 2.52
8.32 6.22 2.68
10.30 8.31 2.49
15.00 12.44 2.56
17.00 14.48 2.47
19.20 16.66 2.60
21.25 18.68 2.57
49590 23.45 20.81 2.64
9590

29 55.6
12.67 57.2
2.534 57.0 58.8
0.3
2941 2.0
2941

29 . 5.882
+ 3.76
28.741
5.630

2576
2.577

G Orionis

h 5 35
− 2° 00'
April 14

34 50.45
52.40 54.510
54.85 54.51
56.65
27255 58.60
27255
2.62
4.82
6.96
8.90 10.990
10.93 10.99
13.10 11.01
15.15
17.25
9891 19.28
9891
23.40
25.40 27.510
27.45 27.51
29.60 142.02
13755 31.70
13755

0.11559 1.17609 0.11559
9.99973 9.99973
0.11533 1.17582

34 41.8
43.4 4524
45.2 452
46.8
2262 49.0
2262
34 4524
+ 25.76
35 40.6
42.4 4394
43.9 439
45.6
2197 47.2
2197
35 4394
− 32.94
34 45.24
35 43.94
+ 25.76
− 32.94
58.70
1.468644
1.17582
2.94446
1.88660
9.94214
5 08

M 27 19.80 27 19.80
M 28 36.72
R 28 36.92
R 28 36.82 28 36.82
77.02

K Orionis

h m
5 42
− 9° 43'

42 11.80
13.90 15.960
16.00 15.96
18.00
7980 20.00
7980
34.30
26.35
28.55
30.58 32.677
32.72 32.67
34.75 32.68
36.70
38.77
29409 40.97
29409
45.20
47.30 49.390
49.40 49.39
51.43 65.35
24695 53.62
24695

M 9 31.80 9 31.80
M 10 43.37
R 10 43.42
R 10 43.50 10 43.60
71.80

0.11559 1.17609 0.11559
9.99372 9.99372
0.10931 1.16981

42 8.1
9.8
11.5 11.6
13.4
583 15.5
583
42 11.66
+ 21.02
42 3.2
4.9
6.7 68
8.6
340 10.6
340
42 6.80
− 34.12
42 11.66
42 6.80
+ 21.02
55.14
1.741144
1.16981
2.91128
1.85612
8.94484
5 1 59

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102 δ Orionis

0.11559

h m
5 48

+ 7 23

April 14

48 48.67		48 42.5			
50.75	52814	44.0			
52.80	52.81	45.5	45.5		
54.90		46.1			
26407 56.85		2276 48.9			
26407		2276			
1.15		48 45.52			
3.28		+ 23.92			
5.35					
7.40	9494				
9.45	9.49	49 36.1			
11.62	9.40	37.9			
13.70		39.4	39.6		
15.70		41.3			
8545 17.80		1980 43.3			
8545		1980			
21.83		49 39.60			
23.90	26006	− 30.16			
26.00	26.01				
28.05	13881				
13003 30.25		48 45.52			
13003	49 9.445	49 39.60			
		+ 23.92			
		− 30.16			
		541.08			
5 48 38 56		1.73304			
		1.17247			
		2.90551			
		1.84634			
		8.94083			
		4 59 14			

1.17609 0.11559
9.99638 9.99638
1.17247 0.11197

M 4 8.12	4 8.12		
M 5 18.40			
R 5 18.25			
R 5 18.30	5 18.32		
	40.20		

7 22 58.4

106 μ Geminorum

0.11559

h m
6 15

+ 22 35

April 14

15 42.80		15 39.2			
50.97	53316	40.7			
53.36	53.32	42.5	42.56		
55.60		44.2			
26658 57.85		2128 46.2			
26658		2128			
2.26		15 42.56			
4.54		+ 28.62			
6.73					
8.97	11206				
11.22	11.21	16 43.2			
13.38	11.15	45.0			
15.65		47.0	47.1		
17.90		49.1			
10085 20.20		2357 51.4			
10085		2357			
24.50		16 47.14			
26.70	28984	− 35.96			
28.98	28.98				
31.24	142.30				
14492 33.50		15 42.56			
14492	16 11.180	16 47.14			
		+ 28.62			
		− 35.96			
		64.58			
		1.81010			
		1.14144			
		2.95154			
		1.89537			
		8.94383			
		5118			

1.17609 0.11559
9.96535 9.96535
1.14144 0.08094

M 52 52.57	52 52.57		
M 54 11.15			
R 54 11.20			
R 54 11.12	54 11.16		
	78.59		

107 γ Geminorum

h m
6 31

+ 16 30

April 14

30 54.40		30 46.2			
56.60	58756	47.9			
58.78	58.75	49.9	49.8		
1.00		51.6			
29378 3.00		2493 53.7			
29378		2493			
7.31		30 49.86			
9.55		+ 26.11			
11.70					
13.90	15991				
16.00	15.99	31 46.8			
18.10	15.95	48.6			
20.28		50.4	50.4		
22.35		52.0			
14392 24.67		2524 54.6			
14392		252.14			
28.88		31 50.48			
30.95	33152	− 34.51			
33.14	33.15				
35.29	15190				
16576 37.58		30 49.86			
16576	38 15.970	31 50.48			
		+ 26.11			
		− 34.51			
		60.62			
		1.78267			
		1.15783			
		2.94045			
		1.88070			
		8.94025			
		4 58 50			

1.17609 0.11559
9.98174 9.98174
0.09733 1.15783

M 57 13.63	57 13.63		
M 58 29.50			
R 58 29.65			
R 58 29.67	58 29.61		
	75.98		

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118

β Can. Min. 0.11559

h m
7 28

+ 8° 32' 0.11559 1.17609
9.99517 9.99515
0.11076 1.17124

April 14

20 47.15		20 37.8			
47.21	51.330	39.1			
57.28	51.33	40.9	40.96		
57.47		42.6			
25665 55.55		2048 44.4			
25665		2048			
58.67		20 40.96			
1.70		+ 27.01			
3.81					
5.85	7.960				
8.00	6.96	21 38.2			
10.00	7.98	38.9			
12.12		41.9	41.8		
14.20		43.9			
61164 16.30		2094 45.5			
7164		2094			
20.51		21 41.88			
22.56	24638	− 33.91			
24.65	24.64				
26.70	13597				
12319 28.75		20 40.96			
12319	21 7.970	21 41.88			
		+ 27.01			
		− 3391			
		60.92			
		1.78476			
		1.17124			
		2.95600			
		1.89691			
		8.94091			
		4 5917			

M 55 15.15 · 55 15.15
M 56 33.90 ·
R 56 34.05 ·
R 56 34.10 · 56 34.02
78.87

119

α Gemina 0.11559

h m
7 27

+ 32° 10' 0.11559 1.17609
9.92763 9.92763
0.04322 1.10372

April 14

27 1.95		26 55.0			
4.43	6.838	57.0			
6.87	6.84	57.7	58.8		
9.26		1.0			
3419 11.68		2940 2.3			
3419		2940			
16.57		26 58.80			
19.00		+ 27.52			
21.47					
23.87	2 6311				
26.30	2631	27 57.0			
28.74	26.32	58.4			
31.20		1.3	1.3		
3365		3.4			
23680 36.00		3069 5.8			
23680		69			
40.80		28 1.38			
43.40	45.806	− 3506			
45.90	45.80				
48.26	5264				
22903 50.67		26 58.80			
22903	27 26.315	28 1.38			
		+ 27.52			
		− 3506			
		62.58			
		1.79644			
		1.10372			
		2.90016			
		1.83797			
		8.93781			
		4 5722	10		

M 18 25.67 · 18 25.67
M 19 34.62 ·
R 19 34.50 ·
R 19 34.47 · 19 34.53
68.86

726 54.55

120

α Can. Min.

h m
7 33

+ 5° 33' 0.11559 1.17609 0.11559
9.99796 9.99796
0.11355 1.17405

April 14

33 2.85		33 0.0			
11.90	14.000	1.8			
14.00	14.00	3.3	3.5		
16.00		5.4			
7000 18.25		178 7.3			
7000		178			
22.30		33 356			
24.40		+ 27.02			
26.40					
28.50	30.578				
30.56	30.58	34 3.0			
3264	30.57	4.5			
34.70		6.2	6.2		
36.80		7.7			
27520 38.90		314 10.0			
27520		314			
42.92		34 6.28			
45.11	47.138	− 35.70			
47.15	47.14				
49.25	6114				
23570 51.37		33 356			
23569	33 30.575	34 6.28			
		+ 27.02			
		− 35.70			
		62.72			
		1.79441			
		1.17405			
		2.97146			
		1.91030			
		8.93884			
		4 5752			

M 55 4.10 · 55 4.10
M 56 25.35 ·
R 56 25.55 ·
R 56 25.42 · 56 25.44
81.34

732 59.76

528 72.2

531 56.6

+23.45
21.09
18.76
16.41
14.06

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122

β Geminor

h m
7 38
° '
+ 28 20

0.11559 0.11559
9.94468
0.06017

April 14

+23.45 28.06 38 4.60
21.04 28.04 140.41 7.00 9.330
18.76 28.11 28.08 9.35 9.33
16.41 28.11 11.70
14.06 28.06 4665 14.00
4665
—
—
—
—
—
—
—
—
—
—
—
—
—
—

37 55.5
57.7
59.7 59.5
1.6
2979 3.4
2979
37 59.58
+ 28.50

37 59.58

7 37 56.87

M 8 28.22.

28 19 3.1

570

i Argus

h m
8 2
° '
− 23 57

April 14

2 32.70
34.85 37.200
37.25 37.20
39.50
18600 41.70
18600
46.30
48.45
50.70
53.00 55.274
55.25 55.27
57.57 55.24
59.80
2.10
49747 4.30
49747
8.70
11.00 13.282
13.30 13.28
15.60 11048
6641 17.80
6641 2 55.255

0.11559
1.17609 0.11559
9.96090 9.96090
1.13699 0.07649

2 23.4
25.3
27.3 27.3
29.2
1369 31.7
1369
2 27.38
+ 27.88

3 25.7
27.8
29.7 29.7
31.7
1487 33.8
1487
3 29.74
− 34.48

2 27.38
3 29.74
+ 27.88
− 34.48
62.36
1.79491
1.13699
2.93190
1.87198
8.94008
4.58 70 43

M 23 12.70 . 23 12.70
M 24 27.25.
R 24 27.15.
R 24 27.10 . 24 27.17
74.47

146

α Leonis

h m
10 2
° '
+ 12 35

April 14

2 8.15
10.30 12390
12.40 12.39
14.50
6195 16.60
6195
20.72
22.88
25.00
27.20 29278
29.35 29.28
31.47 29.28
33.55
35.63
26350 37.70
26350
41.92
44.03 46.180
46.20 46.18
48.30 5857
23090 50.45
23090 2 29.280

10 1 58 53

M 53 54.32. 53 54.32.
M 55 9.62.
R 55 9.45.
R 55 9.65. 55 9.58
75.26

12 38 17.8

1 59.6
1.5
3.2 3.2
5.0
3163 7.0
163
2 3.26
+ 26.02

2 58.8
1.0
2.7 2.6
4.3
3132 6.4
132
3 2.64
− 33.36

2 3.26
3 2.64
+ 26.02
− 33.36
59.38
1.77364
1.16553
2.93917
1.87656
8.93739
4.56 53

0.11559
1.17609 0.11559
9.98944 9.98944
1.16553 0.10503

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ζ Leonis 0.11559

h m
10 10
24° 1'
1879 April 14

0.11559	1.17609				
9.96067	9.96067				
0.07626	1.13676				
10 9.00*	9.10*	9 57.0			
11.37	13.558	1.3			
13.66	13.56	3.1	2.9		
15.76		4.7			
6779 18.00		3145 6.4			
6779		145			
22.32		10 2.90			
24.83		+ 28.74			
27.11					
29.44	31.644				
31.72	31.64	11 3.8			
33.93	31.64	5.8			
36.20		7.6	7.5		
38.35		9.3			
24480 40.70		379 11.4			
28480		379			
45.20		11 7.58			
47.45	49.730	− 38.94			
47.78	49.73				
52.02	6329				
24865 54.20		10 2.90			
24865	10 31.640	11 7.58			
	+.005	+ 28.74			
	31.645	− 35.94			
		64.68			
		1.81077			
		1.13676			
		2.94753			
		1.88899			
		8.94144			
		4 59.39			

C

ν² Leonis 0.11559

h m
10 13
+ 20° 28'
April 14

0.11559	1.17609				
9.97168	9.97168				
0.08727	1.14777				
13 30.0					
32.20	34450				
34.50	3445				
36.65					
17225 38.90					
17225					
43.00					
45.30					
47.62					
49.80	51.973				
5204	51.97				
54.32	52.63				
56.30					
58.58					
46776 0.80					
46776					
5.26					
7.43	9.610				
9.52	9.61				
11.85	10406				
4805 14.00					
4805	13 52.000				
9.610					

10 18 20.77

13 26.6					
28.9					
30.5	30.6				
32.6					
1533 34.7					
1533					
13 30.66					
+ 21.34					
14 20.4					
22.3					
23.8	23.9				
25.6					
1198 27.7					
1198					
14 23.96					
+ 21.34					
− 31.96					
53.30					
1.72673					
1.14777					
2.87450					
1.81544					
8.94094					
4 59.18					

156

S Leonis

h m
11 8
+ 21° 12'
April 14

0.11559	1.17609	0.11559			
9.97168	9.97168				
0.08727	1.14777				
7 52.35					
54.50	56750				
57.70	5675				
58.85					
28375 1.25					
28375					
5.70					
7.90					
10.00					
1238	14510				
14.52	14.51				
16.70	14.44				
18.85					
21.17					
13059 23.37					
13059					
27.70					
29.95	32140				
32.05	32.14				
34.40	14889				
16076 36.60					
16070	8 14.475				

11 7 48.43

0.11559	1.17609	0.11559			
9.96957	9.96957				
0.08516	1.14566				
7 42.7					
44.3					
46.3	46.2				
48.0					
2312 49.9					
2312					
7 46.24					
+ 28.24					
8 45.5					
47.7					
49.8	49.7				
51.9					
2488 53.9					
2488					
8 49.76					
− 35.28					
7 46.24					
8 49.76					
+ 28.24					
− 35.28					
63.52					
1.80291					
1.14566					
2.94857					
1.89126					
8.94269					
5 0.31					

M 22.82	26 22.82	M 0 27.77	0 27.77	M 16 22.92	16 22.92
M 27 40.37		M 1 33.22		M 17 40.92	
R 27 40.15		R 1 33.12		R 17 40.60	
R 27	27 40.26	R 1 33.12	1 33.15	R 17 40.80	17 40.77
	77.42		65.38		77.85

20 27 15

21 10.59.0

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β Leonis

0.11559

h m
11 43
+ 15° 16' 9.9"
April 14

43 5.98		
8.10	10260	
10.35	10.26	
12.37		
5130 14.50		
5130		
18.70		
20.88		
23.00		
25.18	27266	
27.27	27.26	
29.45	27.34	
31.50		
33.65		
24539 35.76		
24539		
40.18		
42.27	44.424	
44.40	44.42	
46.57	5468	
22212 48.70		
22212	43 27.350	

1.17609 0.11559
9.98440 9.98440
1.16049 0.09999

43 1.3		
4.0		
5.6	5.2	
7.0		
264 8.5		
264		
43 5.28		
+ 22.02		
43 50.6		
59.0	1.06	
1.2	1.0	
3.2		
3053 5.3		
3053		
44 1.06		
− 33.76		
55.78		
1.746648		
1.16049		
2.90697		
1.85052		
8.94355		
516		

11 42 56.20

582

E Corvi

0.11559

h m
12 4
− 21° 55'
April 14

4 5.27		
7.40	9.698	
?9.68	9.70	
11.90		
4449 14.24		
4849		
18.50		
20.70		
23.00		
25.32	27.431	
27.46	27.43	
29.70	27.45	
31.90		
34.00		
24688 36.30		
24688		
40.78		
43.00	45.208	
45.28	45.21	
47.38	54.91	
22604 49.60		
22604	4 27.440	

0.11559 +1
9.96742 1.17609
0.08301 9.96742
1.14351

4 1.0		
3.3		
4.8	4.9	
6.7		
246 8.8		
246		
4.492		
+ 22.52		
4 57.4		
59.7		
1.6	1.6	
3.7		
3080 5.6		
8.0		
5 1.60		
− 34.16		
56.68		
1.75343		
1.14351		
2.89694		
1.83988		
8.94294		
5041		

M 12 41.07 · 12 41.07
M 13 51.92 ·
R 13 52.07 ·
R 13 51.87 · 13 51.95
70.88

15 14 39.6

584

S Corvi

h m
12 23
− 15° 49'
April 14

23 43.30		
50.35	52490	
52.45	52.49	
54.60		
26245 56.75		
26245		
1.01		
3.25		
5.40		
7.63	9.678	
9.70	9.68	
11.82	9.65	
14.00		
16.00		
58710 18.30		
58710		
22.50		
24.67		
26.90	26.81	
28.98	13930	
13405 31.18	31.10	
13405	24 9.665	
26810	+005	
	9.670	

0.11559 1.17609 0.11559
9.98324 9.98324
0.09883 1.15933

23 43.1		
45.0		
46.4	46.5	
47.7		
2328 50.6		
2328		
23 46.56		
+ 23.11		
24 37.0		
39.5		
41.5	41.3	
43.3		
2067 45.4		
2067		
24 41.34		
− 31.67		
23 46.56		
24 41.34		
+ 23.10		
− 31.68		
54.78		
1.73862		
1.15933		
2.89795		
1.83753		
8.93958		
4 58 23		

M 22 58.45 · 22 58.45
M 24 7.55 ·
R 24 7.65 ·
R 24 7.70 · 24 7.63
69.18

M 17 4.85 · 17 4.85
M 18 13.50 ·
R 18 13.72 ·
R 18 13.70 · 18 13.64
68.79

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β Corvi

0.11559

h m
12 28

° ′
22 42

1879 April 14

0.11559	1.17609	
9.96498	9.96498	
0.08057	1.14107	

28 12.0			
15.25	17.440		
17.37	17.44		
19.70			
8720 21.88			
8720			
24.20			
28.60			
30.80			
32.97	35.211		
35.30	35.10		
37.47	35.28		
39.65			
41.86			
31590 44.05			
31690			
48.70			
50.90	53130		
53.15	53.13		
55.30	7057		
26565 57.60			
26565	28 35.195		

28 8.2			
10.8			
13.5	12.9		
15.5			
648 16.8			
648			
28 1296			
+ 22.24			
29 3.9			
6.2			
8.0	8.0		
7.7			
402 12.2			
402			
29 804			
− 32.84			
28 1296			
29 8.04			
+ 22.24			
− 32.84			
55.08			
1.74099			
1.14107			
2.88206			
1.82334			
8.94128			
4 5932			

M 9 44.62 · 9 44.62
M 10 51.35 ·
R 10 51.27 ·
R 10 50.97 · 10 51.20
66.58

172

γ Virginis fold

0.11559

h m
12 35

° ′
− 0 46

April 14

0.11559	1.17609	
9.99996	9.99996	
0.11555	1.17605	

35 45.0			
46.90	49.060		
49.00	49.06		
51.20			
24530 53.20			
24530			
57.25			
59.35			
1.50			
3.60	5.556		
5.60	5.55		
7.60	5.52		
9.65			
11.70			
59000 13.75			
5000			
17.80			
19.97			
22.00	21.99		
24.04	131.05		
10995 26.14			
10995	36 5.535		
21.990			
1285 84.80			

35 39.9			
41.6			
43.5	43.3		
45.2			
2166 46.4			
2160			
35 43.32			
+ 22.22			
36 32.7			
34.7			
36.5	36.3		
38.0			
1819 40.0			
1819			
36 36.38			
− 30.85			
35 43.32			
36 36.38			
+ 22.22			
− 30.84			
53.06			
1.72477			
1.17605			
2.90082			
1.84856			
8.94774			
5 4 0			

M 14 22.77 · 14 22.77
M 15 33.45 ·
R 15 33.45 ·
R 15 33.10 · 15 33.33
70.56

0 47 26.9

174

α Virginis

h m
12 49

° ′
+ 11 5

0.11559	1.17609	0.11559
9.99890	9.99890	
0.11449	1.17499	

49 43.68			
45.72	47.850		
47.85	47.85		
50.00			
23925 52.00			
23925			
55.85			
58.10 58.00			
0.20			
2.27	4.302		
4.40	4.29		
6.40	4.33		
8.50			
10.58			
57865 12.60			
3872			
16.70			
18.80	20.810		
20.87	20.81		
22.80	12.866		
10405 24.95			
10405	50 4.310		
20810	+ .005		
	4.315		

49 32.6			
35.5			
37.2	36.8		
38.5			
1844 39.6			
1844			
49 36.88			
+ 27.43			
50 29.7			
31.7			
33.4	33.4		
35.0			
1674 37.6			
1674			
50 33.48			
− 29.17			
49 36.88			
50 33.48			
+ 27.43			
− 29.17			
56.60			
1.75282			
1.17499			
2.92781			
1.86800			
8.94019			
4 5847			

M 23 54.45 · 23 54.45
M 25 8.50 ·
R 25 8.27 ·
R 25 7.95 · 25 8.24
73.79

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ε Virginis

0.11559

h m
12 86

+ 11° 38'

April 14

1.17609 0.11559
9.99099 9.99090
1.16708 0.10658

58	22.25		56	15.6		19	1.90		18	68.8		7	55.70		7	62.6	
	24.30	26.400		17.6			4.00	6.006		69.0			58.18	0.400		54.8	
	26.50	26.44		18.9	19.0		5.93	6.00		1.2	1.0		0.40	0.40		56.1	56.3
	28.65			20.8			8.00			3.1			2.72			57.5	
13220	30.60		954	22.5		3003	10.21		3053	5.2		30200	8.00		2816	0.6	
	13220			954			3003			153			200			2816	
	34.70		56	19080			14.40		19	350			9.87		7	56.32	
	36.85		+	2418			16.50			7.06			12.18		+	23.04	
	38.98						18.68		+	21.70			14.58				
	41.11	43239					20.65	22.776					16.90	19.341			
	43.27	43.24	57	11.8			22.80	22.77	19	47.2			19.43	19.34			
	45.40	43.27		13.4			24.90	22.76		48.7	5066		21.71	19.37			
	47.50			15.3	15.3		26.90			51.6	506		24.10				
	49.55			17.3			29.00			52.4			26.50				
38915	51.90		768	19.0		20498	31.15		2533	54.4		17407	28.80				
	38915			768			20498		19	2533			17407				
	55.80		57	15.36			33.20		19	5066			33.88				
	60.01	0.106	+	32.10			37.40	39.520	−	27.90			35.90	38340			
	0.15	010					39.50	39.52					38.25	38.34			
	2.20	8654					41.70	4552					40.70	3874			
30053	4.28		56	19.08		19760	43.70		19	1.06		19170	43.17			7 56.32	
	053	56 43.255	57	15.36			19760	19 22.765	19	50.66			19170	8 19.355	+	23.04	
			+	24.18					+	21.70							
			−	32.10					−	27.90							
				56.28						49.60							
			1.750 35			18 18 52.19			1.69648								
			1.16708						1.16876								
			2.91743						2.86424								
			1.85558						1.79671								
			8.93815						8.93247								
			4 57 24						4 53 33								

M	50	55.40	50	55.40		M	58	36.87	58	36.87		R	43	56.10					
M	52	7.30				M	59	39.60	59			R	43	56.25					
R	52	7.05				R	59	39.45											
R	52	6.97	52	7.11		R	59	39.42	59	39.49						43	56.18		
				71.71						62.62									

10 32 15.0

587

ε Virginis

0.11559

h m
13 19

− 10° 30'

April 14

0.11559 1.17609
9.99267 9.99267
0.10826 1.16876

303

ζ Virginis

0.11559

h m
21 8

+ 29° 43'

April 14

0.11559
9.93876
0.05435

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309

ε Pegasi

h m
21 38
+ 9° 18'
1879 April 14

0.11559 0.11559
9.99425
0.10984

38 26.13
27.70 26.82
29.81 29.82
31.92
14910 34.05
14910
38.31
40.38
42.45
44.52 46.57
46.58 46.54
48.58 46.50
50.70
52.76
48917 54.90
41919
57.00
1.07 3.190
3.20 3.19
5.25 8.301
31595 7.80
1595 38 46.535

38 36.5
37.7
39.7 39.7
41.6
1987 43.2
1987
38 39.74
+ 6.80
38 46.54

1

ζ Andromedæ

h m
0 2
+ 28° 24'
April 15

0.11559 1.17609
9.94431 9.94431
0.05990 1.12040

2 16.00
18.40 20.714
20.77 2071
23.17
10357 28.40
10357
30.60
32.80
34.70
37.07 39.395
39.40 39.39
41.70 39.42
44.00
46.45
35455 48.87
35455
52.60
55.80 58.130
55.10 55.13
0.40 7884
29065 2.85
29065 2 39.405
+.005
39.410

2 11.3
12.9 14.84
14.6 14.8
16.6
742 18.8
742
2 14.84
+ 24.57
3 8.2
9.9 1236
12.4 12.3
14.5
618 16.8
618
3 12.36
− 32.95
3 12.36
+ 24.56
− 32.96
57.52
1.75982
1.12040
2.88022
1.81704
8.93682
4 56.30

0 2. 8.87

3

γ Pegasi

h m
0 7
+ 14° 29'
April 15

0.11559
9.98597
0.10156

7 10.75 24.32 31.07
12.90 19.50 31.40
15.07 14.85 31.06
16.70 19.53 31.65
7425 18.90 12.74 31.64
7425
22.88 8.53 31.41
25.32 6.39 31.71
27.40 4.26 31.66
29.60 2.11 31.71
31.60 31.60
33.81 2.11 31.64
36.05 4.26 31.79
44.80 12.76 31.71
46.65 14.94 31.73
48.60 16.88 31.55
50.80 19.18 31.62
24355 53.00 21.38 31.62
24355

7 6.2
7 158.53 8.6
31.906 10.3
12.0
513 14.2
513
7 1026
+ 21.52
222.57
31.745
158.22
31.724
7 1026
+ 21.52

0.11559

Mar 22, 1904 the mean of four is 31.653 which will affect the final T. JW

31.808
31.783

0 7 0. 94

R 8 19.15
R 8 19.40
8 19.27

M 2 14.10 2 14.10
M 3 19.95
R 3 19.72
R 3 19.50 3 19.72
65.62

M 56 38.77

28 25 28.2

14 30 41.5

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S

Sun

h m
1 38

April 16

36	40.05		37	49.5	38	50.07		38	10.8		9	33.70		9	49.3		
	42.30	44380		57.4		52.05	54182		12.5			55.80	57.850		50.8		
	44.40	44.38		63.4	53.3	54.18	54.18		14.3	14.3		57.90	57.85		52.4	52.5	
	46.65			55.4		56.27			16.0			59.85			54.3		
22190	48.50		2668	57.1	27091	58.40		716	18.0		28925	2.07		2628	56.0		
	22190			2668		27091			716			28925			2628		
	52.70		37	53.36		2.51		38	14.32			6.20		9	52.56		
	55.01			− 52.16		4.70			+ 56.66			8.27		4	21.95		
	57.30					6.80						10.33					
	59.67	1256				8.25	10.973					12.36	14504				
	1.30	1.25				11.00	10.97					14.40	14.50	10	42.4		
	3.40	1.14				13.80	10.98					16.60	14.52		44.0		
	5.45					15.25						18.60			45.8	45.9	
	7.85					17.25						20.77			47.5		
55130	9.60				9876	19.30					13053	22.07		2295	49.8		
	11.30					9876						13054			52.95		
	13.60					23.45						27.07		10	45.90		
	15.90	17.900				25.66	27780					29.20	31200	−	31.39		
	17.95	17.90				27.80	27.78					31.20	3120				
	20.07	122.28				30.00	14496					33.30	14905				
8950	22.05		37	53.36	13890	32.00		38	14.32		15600	35.30		9	52.56		
	8950	37 1.195	−	52.16		13890	39 10.975	+	56.66			15600	10 14.510	10	45.90		
														+	21.95		
														−	31.39		
															53.34		
											5 8	44.26			1.72705		
															1.17146		
															2.89851		
															1.84116		
															8.94316		
															5 0 50		

M 1 46.85 ·

M 34 14.75 ·

87

B Orionis

h m
5 9
− 8 21 ·

April 16

M 47 13.10 · 47 13.10 ·
M 48 · 22.45 ·
R 48 22.62 ·
R 48 22.57 · 48 22.55
69.45

8 20 36.5

0.11559

1.17609 0.11559
9.99537 9.99537
1.17146 0.11096

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90

β Tauri

0.11559

h m
5 19

28° 30'

1879 April 16

19 47.32		19 36.8			
49.70	52080	38.4			
52.05	52.08	40.0			
54.43		41.7			
26040 57.90		2011 44.2			
26040		2011			
1.40		19 40.22			
3.77		+ 30.62			
6.20					
8.60	10.843				
10.90	10.84	20 40.0			
13.25	10.84	42.0			
15.46		44.2			
17.82		46.3			
9759 20.20		2208 48.3			
9759		2208			
24.90		20 44.16			
27.28	29.604	− 33.32			
29.56	29.60				
32.10	141.68				
14802 34.28		19 40.22			
14802	20 10840	20 44.16			
		+ 30.62			
		− 33.32			
		63.94			
5 18 39.886		1.805577			
		1.11999			
		2.92576			
		~~60577~~			

0.11559

α

S Orionis

h m
5 25

− 2° 00'

April 16

35 50.10		35 46.0			
52.05	54.136	47.7			
54.05	54.13	49.4			
56.30		51.5			
27068 58.28		2480 53.4			
27068		2480			
2.37		35 49.60			
4.50		+ 21.04			
6.55					
8.70	10.658				
10.70	10.66	96 43.6			
12.70	10.62	45.5			
14.70		47.7			
16.80		49.7			
9592 18.90		2379 51.4			
9592		2379			
22.00		36 47.58			
25.00	27.100	− 36.94			
27.00	27.10				
29.20	141.23				
13550 31.30		35 49.60			
13550	35 10.640	36 47.58			
		+ 21.04			
		− 36.94			
		57.98			
		1.76328			
		1.17582			
		2.93910			
		1.87800			
		8.93890			
		4 57 55			

0.11559

100

K Orionis

h m
5 42

− 9° 43'

April 16

43 11.22		43 14.6			
13.30	15514	16.6			
15.35	15.51	19.0			
17.70		20.5			
7757 19.80		931 22.4			
7757		931			
23.80		43 18.62			
26.30		+ 18.62			
28.05					
30.20	32.261				
32.30	32.26	44 1.8			
34.40	32.22	4.0			
36.46		6.0			
38.69		7.6			
29035 40.55		292 9.8			
29035		292			
44.70		44 5.84			
46.90	48920	− 33.60			
49.00	48.92				
51.00	6443				
24460 53.00		43 18.62			
24460	43 32.240	44 5.84			
		+ 13.62			
		− 33.60			
		47.22			
		1.67413			
		1.16984			
		2.84397			
		1.78888			
		8.89491			
		5 2 2			

0.11559

0.11559	1.17609				
9.99372	9.99372				
0.10931	1.16984				

M 56 7.82	.56 7.82	M 27 24.30	.27 24.30	M 9 40.77	.9 40.77
M 58 21.22	.	M 28 39.82	.	M 10 42.15	.
R 58 21.55	.	R 28 39.60	.	R 10 42.42	.
R 58 21.50	.58 21.42	R 28 39.82	.28 39.81	R 10 42.25	.10 42.27
	1383.60		75.51		61.50

28 30 19.2

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102 α Orionis

0.11537

h m
5 48
+ 7° 23'

0.11559 1.17609
9.99638 9.99638
0.11197 1.17247

April 16

49 43.28			49 44.0			16 48.48			16 40.2		
50.40	52402		45.8			50.69	52.904		41.8		
52.40	52.40		43.5			52.90	52.90		43.8		
54.40			50.0			56.00			45.4		
26201 56.53			2403 52.0			26452 57.45			2186 47.4		
26201			2403			26452			2186		
0.70			49 48.060			1.80			16 4372		
2.80			+ 2.095			4.05			+ 2704		
4.90						6.35					
7.00	8.987					8.60	10.783				
9.00	8.99		51 37.8			10.80	10.78		17 39.7		
11.00	9.03		39.7			13.00	10.74		42.0		
13.00			41.3			15.15			43.6		
15.15			43.5			17.50			45.4		
8088 17.33			2080 45.2			9705 19.80			2177 47.0		
8088			2080			9705			2177		
21.50			50 41.60			24.10	24.00		17 43.54		
23.56	25660		− 32.59			26.40	28576		− 32.78		
25.70	25.66					28.60	28.57				
27.75	13806					30.90	14147				
12830 29.80			49 48.06			14288 32.98			16 43.72		
12830	50 9.010		50 41.60			14288	17 10.760		17 43.54		
			+ 20.95				7.005		+ 2.704		
			− 32.59				10.765		− 32.78		
			53.541						59.82		
5 48 38.53			1.72868						1.77685		
			1.17247						1.141444		
			2.90115						2.91829		
			1.83860						1.85469		
			8.93745						8.93940		
			4 56.55						4 58.15		

M 4 10.67	4 10.67		M 52 53.87	52 53.87		M 57 11.22	57 11.22	
M 5 19.80			M 54 6.17			M 58 28.37		
R 5 19.75			R 54 5.85			R 58 28.35		
R 5 19.35	5 19.63		R 54 5.78	54 5.93		R 58 28.17	58 28.30	
	68.96			72.06			77.08	

7 22 58.0

106 μ Geminor

0.11559

h m
6 16
+ 22° 35'

0.11559 1.17609
9.96535 9.96535
0.08094 1.14144

April 16

107 γ Geminor

0.11557

h m
6 31
+ 16° 30'

0.11559 1.17609
9.98174 9.98174
0.09733 1.15783

April 16

31 34.0			31 44.0								
51.20	58380		45.8								
58.57	58.38		47.9								
0.65			49.2								
29191 2.65			2385 51.6								
29190			2385								
6.85			31 47.70								
9.80			+ 27.82								
11.20											
13.45	15.550										
15.55	15.49		32 46.6								
17.60	15.55		48.0								
19.80			49.9								
21.90			51.4								
13945 24.00			2493 53.4								
13945			2493								
28.45			32 49.86								
30.60	32720		− 34.34								
32.75	32.72										
34.80	15110										
16360 37.60			31 47.70								
16360	32 15.520		32 49.86								
			+ 27.82								
			− 34.34								
			62.16								
			1.79351								
			1.15783								
			2.95134								
			1.88694								
			8.93560								
			4 55.40								

M 57 11.22	57 11.22										
M 58 28.37											
R 58 28.35											
R 58 28.17	58 28.30										
	77.08										

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118

β Can. Min. 0.11559

h 7	m 20		
+ 8°	32'	0.11559	1.17609
1879		9.99517	9.99516
April 16		0.11076	1.17125

20 46.78		20 39.8	
48.80	50916	42.0	
51.00	50.92	43.8	
52.00		45.4	
25458 55.00		2180 47.0	
25458		2180	
59.28		20 4360	
1.32		+ 23.96	
3.40			
5.40	7.550		
7.50	7.55	21 42.0	
9.65	7.56	43.7	
11.70		45.3	
13.75		47.0	
60795 16.95		2269 48.9	
6795		2269	
20.05		21 4538	
22.05	24200	− 37.82	
24.20	24.20		
21.30	13512		
12100 28.40		20 43.60	
12100	21 7.555	21 45.38	
		+ 23.96	
		− 37.82	
		61.78	
		1.79085	
		1.17125	
		2.96210	
		1.90816	
		8.94606	
		5 2 50	

M 55 17.02 · 55 17.02
M 56 38.02 ·
R 56 38.10 ·
R 56 37.77 · 56 37.96
80.94

119

α Geminor foll. 0.11559

h 7	m 27		
+ 32	10	0.11559	1.17609
		9.92763	9.92763
April 16		0.04322	1.10372

27 1.50		26 52.2	
3.92	6.380	54.5	
6.40	6.38	56.6	
8.80		58.6	
3190 11.28		2829 1.0	
3190		2829	
16.10		26 5658	
18.60		+ 29.26	
21.00	866		
23.37	~~25977~~		
25.83	25.86	27 55.9	
28.20	25.83	57.9	
30.80		59.7	
33.20		1.9	
23278 35.68		2994 4.0	
23279		2994	
40.40		27 5988	
42.77	45284	− 34.04	
45.33	45.28		
47.70	5166		
22642 50.22		26 56.58	
22642	27 25.845	27 59.88	
		+ 29.26	
		− 34.04	
		63.30	
7 26	54.50	1.80140	
		1.10372	
		2.90512	
		1.84547	
		8.94035	
		4 5854	

M 18 23.25 · 18 23.25
M 19 33.70
R 19 33.25
R 19 32.97 · 19 33.31
70.06

3 2 9 12.2

120

α Can. Min.

h 7	m 33			
+ 5°	33'	0.11559	1.17609	0.11559
		9.99796	9.99796	
April 16		0.11355	1.17405	

33 9.50	9.40	33 1.6	
11.50	13580	3.2	
13.60	13.58	4.8	
15.66		6.6	
6790 17.64		249 8.7	
6790		249	
21.90		33 498	
23.90		+ 25.13	
26.00			
28.05	30119		
30.05	30.12	33 59.3	
32.20	30.10	1.5	
34.28		3.3	
36.29		5.2	
27107 38.40		3161 6.8	
27107		161	
42.55		34 322	
44.55	46634	− 33.11	
46.60	46.63		
48.67	6021		
23317 50.80		33 4.98	
23317	33 30.110	34 3.22	
	−.005	+ 25.13	
	30.105	− 33.11	
		58.24	
7 32	59.33	1.46527	
		1.17405	
		2.93927	
		1.87712	
		8.93787	
		4 5712	

M 55 5.20 · 55 5.20
M 56 20.62 ·
R 56 20.60 ·
R 56 20.47 · 56 20.56
75.36

5 31 56.7

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122

β Geminor

h m
7 38

° ′
+ 28 20

April 16

0.11559 1.17609
9.94458 9.94458
0.06017 1.12067

0.11559

38 4.27 +23.35 27.92 | 37 54.6
6.60 21.09 27.69 | 138.41 57.7
8.90 18.76 27.66 | 27.682 58.6
11.27 16.41 27.68 8.928 | 0.6
4464 13.60 14.06 27.66 | 2881 2.6
4464 | 2881
18.28 9.38 27.66 | 37 57.62
20.57 7.07 27.60 | 248.50 30.02
23.00 4.68 27.68 | 27.611
25.27 2.32 27.59 27.620
27.67 -0.10 27.67 | 39 6.4
30.00 -2.34 27.66 | 8.1
32.32 4.69 27.63 | 10.3
34.63 7.03 27.60 | 12.0
24875 37.01 9.39 27.61 | 508 14.0
24858 | 508
39 10.16
− 42.52

37 57.62
39 10.16

27.646
27.636

72.54
7 37 56.74 1.86058
1.12067
2.98125
1.91360
8.93235
4 53 28

M 8 27.05 . 8 27.05
M 9 49.05
R 9 48.95
R 9 49.02 . 9 49.01
81.96

28 19 3.2

138

α Hydrae

h m
9 21

° ′
− 8 7

April 16

0.11559
9.99563
0.11122

0.11559

22 42.2
44.2
46.0
47.6
2295 49.5
2295
22 | 22 45.90
25.35 -14.54 10.76 | 53.81 35.14
27.40 16.68 10.72 | 10.762
29.60 18.76 10.84
31.70 20.91 10.79

22 45.90
− 35.14

10.778
9 21 40.63

M 36 13.47 ~~2.2~~

8 8 20.6

142

ε Leonis

h m
9 39

° ′
+ 24 21

April 16

0.11559 1.17609 0.11559
9.95954 9.95954
0.07513 1.13563

39 9.85 | 39 3.0
12.20 14.370 | 5.2
14.35 14.37 | 7.3
16.55 | 9.2
7185 18.90 | 356 10.9
7185 | 356
23.33 | 39 7.12
25.66 | + 25.32
27.80
30.20 32.432
32.40 32.43 | 40 6.0
34.70 32.46 | 8.0
36.95 | 9.7
39.27 | 11.5
29189 41.58 | 486 13.4
29189 | 486
46.00 | 40 9.72
48.35 50.550 | − 37.28
50.55 50.55
52.90 64.92
25275 54.95 | 39 7.12
25275 39 32.445 | 40 9.72
+ 25.32
− 37.28
62.60
1.79657
1.13563
2.93220
1.86864
8.93644
4 56 14

M 7 44.95 . 7 44.95 .
M 8 . 58.92
R 8 58.77
R 8 58.87 . 8 58.85
73.90

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146 — ζ Leonis — 0.11559

h 10 m 2 — + 12° 35′ — 1879 April 16

0.11559	1.17609		
9.98944	9.98944		
0.16503	1.16553		

2	7.80		2	1.0			
	10.00	12.030		3.2			
	12.10	12.03		5.3			
	14.10			7.1			
6015	16.25		256	9.0			
	6016			256			
	20.47		2	512			
	22.60		+	28.74			
	24.73						
	26.70	28876					
	28.86	28.88	2	88.6			
	31.00	28.84		0.0			
	33.50			1.5			
	35.18			3.3			
25988	37.35		3090	5.6			
	25988			90			
	41.58		3	180			
	43.12	4576	−	32.94			
	45.75	45.66					
	47.35	57.69					
22830	51.00		2	512			
	22880	2 28.860	3	180			
			+	23.74			
			−	32.94			
				56.168			
	10 1	58.20		1.753143			
				1.16553			
				2.91846			
				1.858772			
				8.93976			
				4 58 30			

M	53 57.12	53	57.12
M	55 9.32		
R	55 9.37		
R	55 9.37	55	9.35
			72.23

12 33 17.8

148 — ξ Leonis — 0.11559

h 10 m 10 — + 24° 1′ — April 16

0.11559	1.17609		
9.96067	9.96067		
0.07626	1.13676		

10	8.80		9	6.8			
	10.97	13294		2.2			
	13.19	1329		3.8			
	15.61			6.3			
6647	17.90		3204	8.3			
	6647			204			
	22.24		10	408			
	24.49		+	27.20			
	26.70						
	29.10	31264					
	31.35	31.26	10	39.9			
	33.50	31.30		1.5			
	35.74			3.4			
	38.06			5.8			
28138	40.30		31811	7.8			
	28138			184			
	44.70		11	368			
	47.00	49320	−	32.40			
	49.30	49.32					
	51.60	6261					
24660	54.01			10 408			
	24660	10 31.280		11 3.68			
				+ 27.20			
				− 32.40			
				59.60			
				1.775125			
				1.13676			
				2.91201			
				1.849241			
				8.93723			
				4 56.46			

M	76 24.50	26	24.50
M	27 35.12		
R	27 35.22		
R	27	27	35.17
			70.67

C — ψ Leonis pr. — 0.11559

h 10 m 13 — + 20° 28′ — April 16

0.11559	1.17609	0.11559	
9.97168	9.97168		
0.08727	1.14777		

13	25.70		13	24.7			
	31.90	34100		27.0			
	34.05	34.10		29.4			
	36.30			31.2			
17050	38.55		1453	33.0			
	17050			1463			
	42.90		13	29.06			
	45.00		+	22.62			
	47.35						
	49.55	51883					
	51.70	51.66	14	20.4			
	53.80	51.71		23.4			
	56.00			25.0			
	58.20			26.9			
46490	0.45		1244	28.7			
	46495			244			
	1.80		14	24.88			
	7.20	9120	−	33.20			
	9.36	9.32					
	11.55	10342					
4660	13.70			13 29.06			
	4660	13 51.685		14 24.88			
			+	22.62			
			−	33.20			
				55.82			
10	13 20.74			1.74679			
				1.14777			
				2.89456			
				1.83072			
				8.93616			
				4 56.3			

M	0 25.65	0	25.65
M	1 33.42		
R	1 33.32		
R	1 33.37	1	33.37
			67.72

20 27 1.7

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584

S Coronae

0.11559

h m
12 23

− 15° 49'

April 19

23 42.60		
42.70	51.910	
52.03	51.91	
53.97		
25955 56.25		
25955		
0.55		
2.80		
4.90		
7.20	9.200	
9.18	9.20	
11.30	9.11	
13.57		
15.68		
8281 17.81		
8280		
22.00		
24.15	26.310	
26.28	26.31	
28.48	13822	
13155 30.64		
13158	24 9.155	

23 39.7		
42.2		
44.5		
46.3		
22.14 48.7		
2214		
23 44.28		
+ 24.88		
24 40.1		
42.5		
44.5		
46.2		
2220 48.7		
2220		
24 44.40		
− 35.24		
23 44.28		
24 44.40		
+ 24.88		
− 35.24		
60.12		
1.17609		
1.15933		
2.93835		
1.87576		
8.93741		
4 56 54		

1.17609 0.11559
9.98324 9.98324
1.15933 0.09883

M 17 3.10 . 17 3.10
M 18 17.97 .
R 18 18.35 .
R 18 18.35 . 18 18.22
75.12

585

β Coronae

0.11559

h m
12 28

− 22° 42'

April 19

28 12.50		
14.60	16866	
16.75	16.87	
19.18		
8433 21.30		
8433		
25.80		
28.10		
30.30		
32.53	34.794	
34.70	34.79	
36.97	34.83	
39.33		
41.63		
31315 43.86		
31315		
48.18		
50.30	52.798	
52.77	52.80	
55.30	6967	
26399 57.44		
26399	28 34.810	

28 4.4		
7.2		
9.6		
11.5		
4555 12.8		
455		
28 9.10		
+ 25.71		
29 0.1		
2.0		
4.0		
5.8		
197 7.8		
197		
29 3.94		
− 29.13		
28 9.10		
29 3.94		
+ 25.71		
− 29.13		
54.84		
1.73910		
1.14107		
2.88017		
1.83171		
8.95157		
5 6 41		

0.11559 1.17609
9.96498 9.96498
0.08057 1.14107

M 9 39.45 . 9 39.45
M 10 47.22 .
R 10 47.40 .
R 10 47.37 . 10 47.33
67.88

172

γ Virginis Jde

h m
12 35

− 0° 46'

April 19

35 44.15		
46.43	48536	
48.50	48.54	
50.70		
24268 52.60		
24268		
56.80		
58.85		
1.00		
3.00	5.102	
5.00	5.10	
7.00	5.09	
9.29		
11.40		
58592 13.49		
4592		
17.53		
19.52	21.636	
21.65	21.64	
23.68	13018	
10818 25.80		
10818	36 5.090	

35 39.4		
41.7		
43.6		
45.2		
2166 46.7		
2166		
35 43.32		
+ 21.77		
36 35.0		
38.7		
39.5		
41.4		
1953 42.7		
1953		
36 39.06		
− 33.97		
35 43.32		
36 39.06		
+ 21.77		
− 33.97		

12 85 84.80

M 14 24.04 .

0 47 26.8

0.11559 0.11559
0.99996
0.11556

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174 ρ Virginis

0.11559

h m
12 49

4° 5'

1879 April 19

0.11559 1.17609 0.11449 1.17499

49 43.30 47.394 47.40 47.39 49.50 51.47 23697 55.55 57.55 59.67 1.80 3.870 3.96 3.87 6.03 3.89 8.05 10.02 57483 12.20 3483 16.17 18.30 20394 20.60 2039 22.50 6778 10197 24.52 10197 50 3.880

49 34.7 36.2 38.0 40.0 1912 42.3 1912 49 38.24 + 2.564 50 39.9 31.7 33.7 35.3 1681 37.5 1681 50 33.62 − 29.74 49 38.24 50 33.62 + 25.64 − 29.74 55.38 1.74335 1.17499 2.91834 1.85321 8.93487 4 55 10

M 23 57.25 23 57.25
M 25 8.50
R 25 8.50
R 25 8.42 25 8.57 71.32

176 ε Virginis

0.11559

h m
12 56

+ 11° 38'

1879 April 19

0.11559 1.17609 0.10658 1.16708

56 21.55 23.68 25.91 28.05 12923 30.06 12923 32.26 34.34 36.40 40.50 42.63 42.66 44.75 46.80 49.00 38390 51.17 38390 53.26 57.51 59.70 1.67 8540 29778 3.58 29778 56 42.680

56 15.7 17.2 19.4 21.0 959 22.6 959 56 19.18 + 23.50 42.66 57 9.5 10.9 12.5 14.3 638 16.6 6.38 57 12.76 + 3.008 59.56 8540 56 19.18 57 12.76 + 23.50 − 30.08 53.58 1.72900 1.16708 2.89608 1.81948 8.92340 4 47 31

M 50 57.17 50 57.17
M 52 3.42
R 52 3.07
R 52 3.60 52 3.16 6599

587 α Virginis

0.11559

h m
13 19

− 10° 30'

1879 April 19

1.17609 0.11559 9.99267 9.99267 1.16876 0.10826

19 1.37 3.36 5532 5.48 5.53 7.55 2766 9.90 2766 14.02 16.26 18.28 20.37 22421 22.36 22.42 24.45 22.34 26.67 28.67 20179 30.87 20179 34.87 37.01 39154 39.24 39.15 41.28 4468 19577 43.36 19577 19 22.380

18 52.3 54.4 56.2 58.0 2806 59.7 2806 18 56.12 + 26.26 19 30.2 52.0 53.7 55.7 2685 58.9 2685 19 53.70 − 31.82 18 56.12 19 53.70 + 26.26 − 31.32 57.58 1.76027 1.16876 2.92903 1.86806 8.93903 4 58 0

M 58 29.65 58 29.65
M 59 43.55
R 59 43.35
R 59 43.45 59 43.45 73.80

18 18 52.23

10 31 65.2

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See min of Struct No 2 –

277

γ Aquilae 0.11559

h m
19 40
+ 10° 19'

0.11559 1.17609
9.99292 9.99292
0.10851 1.16901

April 19

39 41.75		39 32.0	
43.95	46040	33.6	
46.05	46.04	35.4	
48.20		37.7	
23020 50.25		1783 39.6	
23020		178.3	
54.28		39 3566	
56.40		+ 2714	
58.70			
1.66	2746		
2.75	275	40 34.2	
4.82	2.84	35.9	
6.90		37.8	
9.00		39.5	
56471 11.20		1887 41.3	
2471		1887	
15.40		40 3774	
17.60	19650	− 3494	
19.75	19.65		
21.70	12569		
9825 23.80	795	39 35.66	
9825	40 2.845	40 37.74	
		+ 27.18	
		− 34.90	
		62.08	

19 40 81.22

1.79295
1.16901
2.96196
1.89037
8.92841
4 30 60

ℓ Aquilae 0.11559

h m
19 45
+ 8° 32'

0.11559 1.17609
9.99517 9.99516
0.11076 1.17125

April 19

44 4.25		43 54.4	
6.35	8450	56.3	
8.50	845	58.4	
10.63		0.2	
42225 12.60		2912 1.9	
42225		2912	
16.80		43 5824	
18.80		+ 26.93	
20.88			
23.20	25187		
25.20	25.19	44 53.7	
27.29	25.15	56.0	
29.37		58.3	
31.54		0.4	
20668 33.60		2906 2.2	
22668		2906	
37.70		44 5812	
39.70	41850	− 3295	
41.85	41.85		
44.00	5030		
20925 46.00		43 58.24	
20925	44 25.170	44 58.12	
		+ 26.93	
		− 3295	
		59.88	

19 44 57.59

1.77728
1.17125
2.94853
1.88581
8.93728
4 56.48

θ Aquilae

287

h m
20 5
− 0° 11'

0.11559 1.17609 0.11559
9.99991 9.99991
0.11550 1.17600

April 19

4 15.40		4 12.0	
17.40	19456	14.4	
19.48	19.46	15.6	
21.48		17.0	
9728 23.52		778 18.8	
9728		778	
27.75		4 1556	
29.78		+ 2042	
31.85			
33.92	35956		
36.0	3596	5 16.2	
38.17	35.99	17.0	
40.05			
42.05			
32360 44.20			
32360			
46.47			
48.47	52528		
52.56	52.53		
54.60	7199		
26264 56.55		4 1556	
26264		4 35.975	+ 20.42

M 8 6.60. 8 6.60
M 9 24.02.
R 9 24.50.
R 9 24.37. 9 24.29
77.69

M 54 12.72. 54 12.72
M 55 29.42.
R 55 29.67.
R 55 29.72. 55 29.60
76.88

M 37 44.88. 37 44.88.
M 39 5.25.
R 39 5.27.
R 39 5.12. 39 5.21

8 32 5.14

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291

θ Cephei

h m
20 27
62° 1'
1879 April 19

0.11559 0.11559
9.66343
9.77902

26 47.0
51.7
56.3
1.7 5.133
5.1
2.6
13.9
18.7
23.2
2262
~~2617~~
462
27 5.13

25 57.7 26 26.0
3.7 29.2
6.1 32.6
9.9 35.4
3312 12.8 1617 38.5
312 1617
26 604 26 3234
+ 59.09 + 32.79
27 37.1 28 7.0
41.5 11.6
46.6 15.7
49.2 18.7
2272 53.8 761 23.1
2272 761
27 4544 28 15.22
− 40.31 − 10.09
26 624 26 3234
27 45.44 28 15.22

303

γ Cygni

0.11559

h m
21 8
+ 29° 43'
9.93876
V. 11485

1.17609 0.11559
9.93876
0.05435

April 19

7 53.42
57.78 0.160
0.15 0.16
2.60
30080 4.85
080
9.70
12.07
14.50
16.70 19.150
19.15 19.15
21.50 19.13
23.93
26.20
17235 28.67
17235
33.30
35.72 38.10
38.08 38.10
40.50 38.26
19050 42.90
19050 8 19.140
38.100

7 45.8
47.9
50.2
52.2
2504 54.3
2504
7 5008
+ 29.06
8 53.7
55.4
57.5
59.2
2874 1.6
2874
8 5748
− 38.34
7 50.08
8 57.48
+ 29.06
− 38.34
67.40
1.82866
1.11485
2.94351
1.88627
8.94276
5 0 33

M 43 47.58 . 43 47.58
M 45 4.65 .
R 45 4.48 .
R 45 4.48 45 4.54
76.96

307

β Aquarii

h m
21 25
− 6° 7'
9.99752
0.11311

1.17609 0.11559
9.99752
1.17361

April 19

25 ~~23.17~~
24.31
26.47 13.287
28.85 26.37
31.04
34.80
36.87
38.90
40.97 43.081
43.00 43.08
46.20
47.28
49.40
38773 51.38
38773
55.47
57.60 59.608
59.57 59.61
1.65
29804 3.75
29804 25 4308

25 30.8
32.8
34.0
36.0
1719 38.3
1719
25 3438
+ 8.70
26 18.6
20.4
22.1
23.8
1106 25.7
1106
26 22.12
− 39.04
25 3438
26 22.12
1.67888
1.17361
2.85249
1.78923
8.93674
4 56 26

M 53 6.65 .
M 53 22.25 .
M 54 5.62 .
M 54 22.82 .

M 33 7.47 . 33 7.47
M 34 9.12 .
R 34 8.95 .
R 34 8.98 . 34 9.02
61.55

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Sheet No. 3 — for hours.

31

α Aquarii

h m
21 39
° ′
— 0 56

0.11559
9.99994
0.11548

0.11559

April 19

59 45.10 | 59 42.6
47.20 49.230 | 44.4
49.30 49.23 | 46.7
51.25 | 48.6
24615 53.30 | 2329 50.6
24615 | 2329
54.55 | 59 46.58
56.58 | + 19.14
1.55
3.57 5.717
5.70 5.72
7.80 5.71
9.80
11.90
59 145 14.10
57145
18.10
20.15 22.190
22.20 22.19
24.20 131 42
11095 26.40 | 59 46.58
11095 6 5.715 | + 19.14

21 59 35.52

R 21 21.28
R 21 21.28

0 54 25.10

S

Sun α = 46.747

h m s
1 52 31
+ 11 34

1.17609 0.11559 | 0.11559
9.99109 9.99109
1.16718 0.10668

April 19-20

51 21.20 | 52 36.2 | 53 41.47 | 53 11.5
33.35 35490 | 38.3 | 43.50 45634 | 13.4
35.50 35.49 | 40.5 | 45.60 45.63 | 15.4
37.60 | 42.6 | 47.70 | 17.8
17745 39.80 | 2021 44.5 | 22817 49.90 | 758 18.5
17745 | 2021 | 22817 | 758
43.80 | 52 4042 | 54.05 | 53 1516
46.05 | — 48.08 | 56.30 | + 47.42
48.05 | | 58.40
50.10 52.261 | | 0.50 2609
52.25 52.28 | | 2.60 2.61
54.40 52.36 | | 4.68 2.56
56.50 | | 6.90
58.68 | | 8.87
47053 0.80 | | 56348 11.13
17053 | | 2348
5.00 | | 15.35
7.00 9236 | | 17.50 19490
9.28 9.24 | | 19.59 19.49
11.40 19473 | | 21.60 12512
4618 13.50 | 52 4042 9745 | 23.70 | 53 1516
4618 51 52.337 | — 48.08 | 9745 | 54 2.585 | + 47.42

M 8 37 6.75 | M 10 48.60

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33

α Arietis

0.11559

h	m	s			
2	0	21			
			0.11559	1.17609	
+	22	53	9.96440	9.96440	
			0.07999	1.14049	

1879 April 20

0	29.97		0	26.0				
	32.33	34480		28.0				
	34.50	34.48		30.5				
	36.70			32.7				
17240	38.90		1521	34.9				
	17240			1521				
	43.30		0	3042				
	45.57		+	21.92				
	47.83							
	50.00	52.286						
	52.29	52.29	1	27.4				
	54.50			29.0				
	56.75			31.3				
	59.00			33.1				
47057	1.30		1558	35.0				
	47057			1558				
	5.76		1	3116				
	8.80	10.210	−	3882				
	10.20	10.21						
	12.44	10469						
5105	14.65		0	3042				
	5105	0 52.345	1	31.16				
			+	21.92				
			−	38.82				
				60.74				
20	21.72			1.78324				
				1.14049				
				2.92396				
				1.86356				
				8.93960				
				4 58 23				
				1.86356				

M	34	9.07	.34	9.07					
M	35	22.60							
M	35	22.17							
M	35	22.15	.35	22.11					
				73.04					

22 53 28.5

47

Shut down at first

α Coli

0.11559

h	m	s			
2	55	54			
	0	1	0.11559	1.17609	
+	3	37	9.99913	9.99913	
			0.11472	1.17522	

April 20

57	7.65			57	0.9			
	9.98	11.880			3.7			
	11.84	11.88			6.2			
	13.93				8.0			
5940	16.00			291	10.3			
	5940				291			
	20.00			57	5.82			
	22.17			+	22.46			
	24.18							
	26.16	28.246						
	28.23	28.25		57	54.6			
	30.30	28.32			1.6			
	32.38				3.3			
	34.35				5.0			
25421	36.65			3164	6.9			
	25421				1641			
	40.65			58	3.28			
	42.65	44.770		−	35.00			
	44.80	44.77						
	46.75	5665						
22385	49.00				57.582			
	22385	57 28.285		57	3.28			
				+	2246			
				−	35.00			
					57.46			
				1	75937			
				1	17522			
				2	93459			
				1	88717			
				8	95258			
				5	724			

M	50	6.15	.50	6.15					
M	51	23.35							
R	51	23.10							
R	51	23.35	.51	23.27					
				77.12					

84

β Eridani

0.11559

h	m	s			
4	1	54			
			1.17609	0.11559	
−	5	15	9.99817	9.99817	
			1.17426	0.11376	

April 20

2	4.50			1	57.6			
	6.60	8600			57.4			
	8.60	8.60			0.8			
	10.60				2.5			
4300	12.70			3045	4.2			
	4300				45			
	16.70			2	090			
	18.80			+	2423			
	21.00							
	22.90	25089						
	25.15	25.09		2	55.4			
	27.20	25.17			57.2			
	29.27				58.7			
	31.34				0.3			
22580	33.44			2933	1.7			
	22580				2933			
	37.50			2	5866			
	39.70	41740		−	3353			
	41.76	41.74						
	43.80	5034						
20870	45.94			2	0.90			
	20870	2 25.130		2	58.66			
				+	24.23			
				−	33.53			
					57.76			
				1	76163			
				1	17426			
				2	93589			
				1	87864			
				8	94275			
				5	033			

M	41	22.78	.41	22.78					
M	42	38.45							
R	42	38.40							
R	42	38.35	.42	38.40					
				75.62					

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87

β Orionis

h m s
5 8 43
° ′
−8 21

April 20

8 53.53		8 48.3
55.67	57.720	49.4
57.60	57.72	51.3
59.55		53.0
28860 1.93		2570 55.0
28860		~~630~~
6.03		2570
8.10		8 51.40
10.25		+ 22.95
12.30	14.372	
14.40	14.37	9 41.3
16.40	14.33	43.2
18.55		44.6
20.65		46.7
12935 22.70		2243 48.5
12936		2243
26.70		9 44.86
28.85	80946	− 30.51
30.87	30.94	
33.13	148.66	
15473 35.18		8 51.40
15473	9 14.350	9 44.86
		+ 22.95
		− 30.51
		53.46
5 8 44.21		1.72803
		1.14116
		2.86919
		1.83897
		8.93948
		4 58 18

R 47 14.12 · 47 14.12
M 48 22.95
R 48 23.30
R 48 23.17 · 48 23.14
69.02

8 20 36.2

0.11559

1.17609
9.99537
1.17146

0.11559
9.99537
0.11096

90

β Tauri

h m s
5 18 39
° ′
+28 30

April 20

18 47.25		18 39.6
47.55	51.692	41.6
47.90	51.69	43.7
48.26		45.2
25946 46.50		2176 47.5
25946		2176
1.28		18 43.52
3.55		+ 27.26
6.00		
8.29	10.643	
10.65	10.64	19 43.8
13.00	10.93	45.9
15.35		47.7
17.67		48.8
9579 20.10		2391 51.9
9579		2391
24.65		19 47.82
27.00	29.370	− 37.04
29.40	29.37	
31.71	141.86	
14985 34.03		18 43.52
14685	19 10.785	19 47.82
		+ 27.26
		− 37.04
		64.30
5 18 39.82		1.80821
		1.11999
		2.92820
		1.18606
		8.93286
		4 53.49

M 57 14.20 · 57 14.20
M 58 26.55
R 58 26.95
R 58 26.95 · 58 26.82
72.62

28 30 19.1

0.11559

1.17609
9.94390
1.11999

0.11559
9.94390
0.06949

93

S Orionis

h m s
5 25 50
° ′
−0 23

April 20

26 0.10		25 50.8
2.20	4.272	52.7
4.30	4.27	54.5
6.35		56.0
2135 8.41		2717 57.7
2136		2717
12.67		25 54.34
14.60		+ 26.44
16.68		
18.72	20.774	
20.70	20.77	26 50.8
22.90	20.78	52.8
24.90		54.5
26.90		58.3
18697 29.00		2725 58.1
18697		2725
33.18		26 54.50
35.26	37.292	− 33.72
37.27	37.29	
39.35	41.56	
18646 41.40		25 54.34
18646	26 20.775	26 54.50
		+ 26.44
		− 33.72
		60.16
		1.77931
		1.17608
		2.95539
		1.89542
		8.94003
		4 58.41

M 50 16.20 · 50 16.20
M 51 34.80

51 34.80
78.60

0.11559

1.17609
9.99999
1.17608

0.11559
9.99999
0.11558

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96

ι Orionis

0.11559

h m s
5 29 31
− 5° 57

0.11559 1.17609
9.99763 9.99763
0.11322 1.17372

1879 April 20

29 41.20		29 36.2	
43.30	45410	37.7	
45.45	45.41	39.2	
47.55		40.6	
22705 48.55		1963 42.6	
22705		1963	
53.70		29 39.26	
55.75		+ 22.72	
57.85			
59.95	1.978		
2.00	1.98	30 34.7	
4.15	1.99	36.9	
6.00		38.8	
8.20		40.5	
55780 10.20		1929 42.0	
1780		1929	
14.45		30 38.58	
16.50	18580	− 36.60	
18.60	18.58.		
20.65	12399		
9290 22.70		29 39.26	
9290	30 1.985	30 38.58	
		+ 22.72	
		− 36.60	
		59.32	
		1.77320	
		1.17372	
		2.94692	
		1.88041	
		8.93349	
		4 57414	

α

β Orionis

0.11559

h m s
5 34 39
− 2 0

0.11559 1.17609
9.99974 9.99974
0.11533 1.17583

April 20

34 49.70		34 46.0	
51.85	53952	46.8	
54.03	53.95	48.0	
56.00		50.1	
26976 58.18		2439 52.3	
26976		2439	
2.24		34 48.78	
4.30		+ 21.68	
6.35			
8.46	10489		
10.48	1049	35 38.8	
12.58	10.44	41.8	
14.65		43.6	
16.70		45.3	
9440 18.70		2172 46.8	
9440		2172	
22.37		35 43.44	
24.37	26940	− 32.98	
27.00	2694		
28.96	14089		
13470 31.00		34 48.78	
13470	35 10.465	35 43.44	
		+ 21.68	
		− 32.98	
		54.66	
		1.73764	
		1.17583	
		2.91350	
		1.85297	
		8.93047	
		4 58718	

100

κ Orionis

h m s
5 42 1
− 9 43

0.11559 1.17609 0.11559
9.99372 999372
0.10931 1.16981

April 20

42 11.37		42 10.3	
13.40	15494	12.0	
15.56	15.49	14.0	
17.60		15.9	
7747 19.65		700 17.8	
7747		700	
23.70		42 1400	
25.75		+ 18.12	
27.85			
30.02	32094		
32.03	32.09	42 58.7	
34.05	32.14	1.4	
36.28		3.1	
38.50		4.7	
28885 40.57		3153 6.4	
28885		153	
44.70		43 3060	
46.70	48790	− 30.94	
48.70	48.79		
50.80	6428		
24395 52.95		42 14.00	
24395	42 32.115	43 3.06	
		+ 18.12	
		− 30.94	
		49.06	
		1.69073	
		1.16981	
		2.86054	
		1.80260	
		8.94196	
		5 0 0	

M 26 12.07 26 12.07
M 27 28.35
R 27 28.25
R 27 28.00 27 28.08
75.93

M 27 24.07 27 24.07
M 28 35.27
R 28 35.25
R 28 35.35 28 35.35
71.28

M 9 35.02 9 35.02
M 10 38.67
R 10 38.38
R 10 38.38 10 38.48
63.46

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102

α Orionis 0.11559

h m s
5 48 27
+ 7° 23'

0.11559 1.17609
9.99638 9.99638
0.11197 1.17247

April 20

48 48.80 43 41.4
50.25 52260 43.0
52.20 52.26 45.6
54.35 47.5
26130 56.30 2268 49.3
26130 2268
0.55 48 4536
2.38 + 2348
4.70
6.75 8.806
8.77 8.81 49 36.0
10.80 8.88 37.6
12.90 39.3
15.10 40.9
7925 17.20 1968 43.0
7925 1968
21.37 49 39.36
23.40 25510 − 30.52
25.50 25,51
27.58 13777 48 4536
12755 29.70
12755 49 8.845 49 39.36
+ 23.48
− 30.52
54.00
5 48 38.49 1.73239
1.17247
2.90586
1.84997
8.94411
5 1 29.

M 4 8.00 4 8.00
M 5 18.95
R 5 18.80
R 5 18.60 5 18.79
70.79

7 22 58.5

256

λ Mus. Min. Lo. C.

h m s
18 11 21
+93 24

0.11559 0.11559
9.99923
0.11482

April 20

9 14.5
50.6
10 25.4
57.9 34.64
11 34.5
12 9.4
45.2
13 18.9
54.4
3118

5 3.9 5 41.5 6 36.4
7 33.0 8 24.0 9 1.7
10 5.5

M 6 15.92
M 6 12.90
M 6 7.80
M 6 1.98
M 55 57.18
M 55 48.00

106

μ Geminor 0.11559

h m s
6 15 38
+22 34'

0.11559 1.17609
9.96541 9.96541
0.08100 1.14150

April 20

15 48.20 15 40.4
50.40 52670 42.5
52.60 52.67 44.4
54.85 46.0
26335 57.20 2213 48.0
26335 2213
1.60 15 4426
3.80 + 2626
6.00
8.35 10.542
10.55 10.54 16 40.2
12.75 10.56 42.1
15.00 43.8
17.25 46.5
9488 19.48 2194 47.8
9488 2194
23.87 16 4388
26.06 28340 − 3336
28.33 28.34
30.60 14101
14170 3285 15 4426
14170 16 10.520 16 43.88
+ 26.26
− 33.36
59.62
1.77539
1.14150
2.91689
1.85872
8.94183
4 59 55

M 52 56.32 52 56.32
M 54 8.80
R 54 8.52
R 54 8.55 54 8.55
72.23

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107

γ Geminor

h m s
6 30 43
° ′
+ 16 30

0.11559 1.17609
9.98174 9.98174
0.09733 1.15783

1879 April 20

20 53.80			20 47.4												
53.40	58060		49.6												
54.10	58.06		51.3												
0.20			53.1												
25030 2.40			2563 54.9												
29030			2563												
6.47			20 51.26												
8.87			+ 24.02												
11.00															
13.20	1.5288														
15.28	15.29		31 2 42.2												
17.42	15.27		45.1												
19.55	8		47.3												
21.70			49.1												
13759 23.90			2357 51.0												
13759			2357												
28.16			21 47.14												
30.40	32478		− 31.86												
32.38	32.48														
3465	15054														
16239 36.50			20 51.26												
16239	21 15.280		31 47.14												
			+ 24.02												
			31.86												
			55.88												
			1.74726												
			1.15783												
			2.90509												
			1.84936												
			8.94427												
			5 1.36												

M 57 15.80 · 57 15.80
M 58 26.50 · ~~26.~~
R 58 26.47 ·
R 58 26.50 · 58 26.49
70.69

0.11559 1.17609

118

β Can. Min.

h m s 35
7 20 8
° ′
+ 8 32

0.11559 1.17609
9.99517 9.99516
0.11076 1.17125

April 20

20 46.45			20 37.8												
48.50	50600		39.5												
50.55	50.60		41.1												
52.70			42.7												
25300 54.80			2058 44.7												
300			2058												
52.00			20 41.16												
1.00			+ 26.10												
3.00															
5.25	7289														
7.30	729		21 37.7												
9.40	7.24		39.9												
11.48			41.6												
13.57			43.4												
60560 15.60			2074 44.8												
6560			2074												
19.70			21 41.48												
21.80	23876		− 34.22												
23.88	23.88														
26.00	13448														
11938 28.10			20 41.16												
11938	21 7.265		21 41.48												
			+ 26.10												
			− 34.22												
			60.32												
			1.78046												
			1.17125												
			2.95171												
			1.88784												
			8.93613												
			4 56 2												

M 55 15.75 · 55 15.75
M 56 33.00 ·
R 56 33.02 ·
R 56 32.95 · 56 32.99
77.24

0.11559 1.17609

119

α Geminor

h m s
7 26 52
° ′
+ 32 9

0.11559 1.17609
9.92771 9.92771
0.04330 1.10380

April 20

27 1.28			26 56.8												
3.62	6060		57.7												
6.00	6.06		59.8												
8.50			1.7												
3030 10.90			2983 3.3												
3030			2983												
15.80			26 59.66												
18.20			+ 28.88												
20.70															
23.10 23.08	25522														
25.50	25.54		27 57.5												
21.97	25.54		57.2												
30.38			1.4												
32.85			3.4												
22970 35.30			3076 6.1												
22970			76												
40.15			28 4.52												
42.55	45020		− 35.98												
44.96	45.02														
47.47	5108														
22510 49.97			26 59.66												
22510	27 25.540		28 1.52												
	+ .005		+ 25.88												
	25.545		− ~~24.02~~	35.98											
			~~49.90~~	61.86											
7 26 54 41			~~1.69810~~	1.79141											
			1.10380												
			~~2.79890~~	2.89521											
			1.83366												
			~~9.03476~~	8.03845											
			4 57 35												

M 18 27.72 · 18 27.72
M 18 36.25 ·
R 18 35.90 ·
R 18 35.57 · 19 35.91
68.19

32 9 12.2

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120

α Can. Min. 0.11559

h m s
7 82 58
+ ° ' 5 32

0.11559 1.17609
9.99797 9.99797
0.11356 1.17406

April 20

33 9.20		32 59.0			
11.28	13.36	0.7			
13.40	13.36	2.4			
15.40		4.2			
6678 17.30		3122 5.9			
6678		122			
21.60		33 244			
23.75		+ 27.48			
25.17					
27.30	29.909				
29.82	29.91	33 55.2			
32.03	29.93	57.3			
34.06		59.0			
36.05		0.6			
26918 38.20		2949 2.8			
26918		2949			
42.38		33 58.98			
44.40	46.02	− 29.06			
46.45	46.50				
48.60	5986				
23251 50.68		33 244			
232.51	33 29.920	33 58.98			
		+ 27.48			
		− 29.06			
		56.54			
7 32 59.66		1.75236			
		1.17406			
		2.92642			
		1.86127			
		8.93785			
		4 57 12			

M 55 3.25 . 55 3.25
M 56 16.62 .
R 56 16.27 .
R 56 16.55 . 56 16.41
73.16

5 31 56.8

122

β Geminæ 0.11559

h m s
7 27 53
+ ° ' 28 12

0.11559 1.17609
9.94465 9.94465
0.06024 1.12074

April 20

38 4.56			37 55.2				
6.28	8.634		56.7				
8.64	8.63		58.9				
10.85			0.9				
4317 13.30			2949 3.2				
4317			2949				
17.97			37 5898				
20.25			+ 28.36				
22.66							
25.51	27.340						
27.30	27.34		38 57.3				
29.70	27.34		1.2				
32.00			3.3				
34.38			5.4				
24606 36.81			3172 8.0				
24606			172				
41.40			39 3.44				
4367	46.050		− 36.10				
46.03	46.05						
48.40	5468						
23025 50.75							
23025	38 27.340		37 5898				
			38 3.44				
			+ 28.36				
			− 23.90	3610			
			52.26	6446			
			41 812	1.80929			
			1.12074				
			2.83891				
			1.87192				
			4.07330	8.94189			
			4 59 58				

M 8 27.78 . 8 27.78
M 9 42.02 .
R 9 42.38 .
R 9 42.32 . 9 42.24
74.46

28 19 8.2

282

ε Draconis Le. C.

h m s
19 48 34
+ ° ' 110 2

0.11559 1.17609 0.11557
9.97285
0.08848

April 20

48 38.0			48 22.3		49 3.0		
44.3			27.2		10.3		
50.3			33.0		16.5		
56.0			37.4		20.5		
2.0	2.02	1629	43.0	756	26.3		
8.0			1629		756		
13.8			3258		4514		
19.9							
25.9							
			49 47.6		49 35.3		
			52.2				
			57.6				
			8.2				
		2902	8.1				
			2902				
			58.04				
			48 32.58		49 15.12		
			49 58.04				

M 28 8.92 .
M 27 49.15 .
M 27 30.22 .
M 27 19.25 .

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291

δ Cephei L. C.

h m s
20 27 23
+ 117 25

0.11559
9.94826
0.06385

0.11559

1879 April 20

27 42.3
49.5
52.4
56.9
1.5
6.0
10.3
14.8
55 23 19.2
55 23
28 1.37

26 55.4 | 28 5.2
0.8 | 13.0
3.7 | 17.3
6.7 | 20.8
3186 9.0 | 843 24.0
186 | 843
27 3.72 | 28 1686
+ 57.65 | − 15.49

28 48.6 | 28 1686
53.7
57.0
1.8
2949 8.8
2949
28 58.98
− 57.61

27 3.72
28 58.98

138

α Hydrae

h m s
9 21 38
−8° 8'

April 20

21 49.80
57.70 54.010
57.15 54.01
58.00
27005 58.20
27005
2.38
4.50
6.55
8.60 10.690
10.68 10.69
12.80 10.68
14.80
16.90
9621 19.00
9621
23.20
25.25 27.360
27.28 27.36
29.50 14.137
13680 31.57
13680 22 10.685

9 21 40.57

0.11559
9.99561
0.11120

0.11559

21 47.7
49.0
50.7
52.2
2541 54.5
2541
21 50.82
+ 19.86

21 50.82
13680 22 10.685 + 19.86

R 35 3.15
R 35 2.87 35 3.01

8 8 20.7

142

ε Leonis

h m s
9 38 59
+ 24° 20'

0.11559
9.95960
0.07519

0.11559

39 8.22
10.53 12.810
12.50 12.81
15.10
17.40
6405
6405
21.80
24.05
26.25 26.45
27.60 30.907
30.85 30.91
33.25 30.92
35.50
37.68
27816 39.98
27816
44.45
46.78 49.026
49.17 49.03
51.33 6.184
24514 53.57
24513 39 30.915

38 57.8
59.4
1.4
3.3
3072 5.3
72
39 1.44
+ 29.48

39 1.44
24513 39 30.915 + 29.48

? y 40.40
? y 40.70 . 7 40 55

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146

α Leonis

h m s
10 1 36
+12 33

April 20

0.11559
9.98950
0.10509

0.11559

2 7.60		2 0.5	
9.55	11.750	2.4	
11.70	11.75	4.6	
13.85		6.6	
5875 16.05		226 8.5	
5875		226	
20.03		2 4.52	
22.30		+ 24.11	
24.40			
26.48	28.598		
28.60	28.60		
30.65	28.66		
32.80			
35.01			
25738 37.12			
25738			
41.37			
43.47	45558		
45.53	45.56		
47.60	5731		
22779 49.80		2 4.52	
22779	2 28.630	+ 24.11	

10 158.15

R 53 55.92 · 53 55.99
R 53 56.07

12 33 18.1

148

β Leonis

h m s
10 9 37
+24 1

April 20

0.11559
9.96067
0.07626

0.11559

10 8.38		10 1.8	
10.62	12930	3.9	
12.95	12.93	5.7	
15.23		7.5	
6465 17.47		283 9.4	
6465		283	
21.90		10 5.66	
24.20		+ 25.31	
26.40			
28.64	30972		
30.86	3097		
33.40	30.97		
35.55			
37.70			
27875 40.00			
27875			
44.47			
46.70	49006		
49.01	49.01		
51.26	6194		
24503 53.60		10 5.66	
24503	10 30.970	+ 25.31	

R 26 26.15

c

ζ Leonis pr. 0.11559

h m s
10 13 18
+20 27

April 20

0.11559
9.97173
0.08732

13 29.33		13 20.0	
31.50	33700	22.3	
33.72	33.72	24.0	
35.95		25.6	
16860 38.10		1192 27.3	
16850		1192	
42.60		13 2384	
44.70		+ 27.52	
47.00			
49.25	51353		
51.38	51.38		
53.55	51.33		
55.77			
58.00			
46245 0.20			
46245			
4.50			
6.75	8940		
9.00	8.94		
11.15	102.66		
4470 13.30		13 2384	
4470	13 51.355	+ 27.52	

R 0 20.02
R 0 19.82 · 0 19.92

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585

β Corvi

h m s
12 28 2
° ′
-22 44

0.11559
9.96488
0.08047

1879 April 20

28 12.55			28 20.6			35 44.30			35 36.4			49 43.20			49 32.9
14.65	16974		22.3			46.39	48476		38.5			45.35	47340		34.9
16.90	1697		24.0			48.50	48.48		40.0			47.30	47.34		36.5
19.27			25.5			50.51			41.8			49.35			38.6
8487 21.50			1201 27.7		24238	52.68			2006 43.9			23670 51.50			1831 40.2
8487			1201			24238			2006			23670			1831
24.00			28 2402			56.63			35 4012			53.56			49 3662
23.20			+ 10.82			55.70			+ 24.82			57.50			+ 27.20
30.27						1.77						59.68			
32.52	34847					2.80	4,944					1.65	3,778		
34.90	34.85		29 5.5			4.95	4.94		36 36.5			3.75	3.78		50 32.7
37.10	34.83		1.6			6.95	4.94		38.2			5.86	3.85		34.5
39.28			10.6			9.17			40.2			7.95			36.4
41.55			12.7			11.35			42.3			10.00			38.5
31362 43.80			514 15.0		58450	13.28			2014 44.2			57400 12.05			1828 40.7
31362			514			4450			2014			3400			1828
48.28			29 1025			17.20			36 40.28			16.20			50 36.56
50.45	52692		− 35.44			19.30	21400		− 35.34			18.20	20370		− 32.74
52.70	52.69					21.40	2140					20.40	20.37		
53.00	6966					23.50	12988					22.50	12771		
26346 57.00			28 2402		10700	25.60			35 4012			10185 24.55			49 36.62
26346	28 34.840		29 10.28		10700	36 4.940			36 40.28			10185	50 3.815		50 36.56
			+ 10.82						+ 24.82						+ 27.20
			− 35.44						− 35.34						− 32.74
									60.16						59.94
					12 35 34.86				1.77931						1.77772
									1.14605						1.17500
									2.95536						2.95272
									1.90037						1.89553
									8.94501						8.94281
									5 27						50 35

M 9 58.92	9 58.92		M 14 14.95	14 14.95		M 23 54.27	23 54.27								
M 10 56.25			M 15 34.60			M 25 13.27									
R 10 56.27			R 15 34.35			R 25 12.75									
R 10 55.85	10 56.12		R 15 34.40	15 34.45		R 25 12.65	25 12.89								
				79.50			78.62								

0 47 26.8

172

γ Virginis pr.

h m s
12 35 22
° ′
- 0 47

1.17609
9.99996
1.17605

0.11559
9.99996
0.11555

April 20

35 44.30			35 36.4			49 43.20			49 32.9						
46.39	48476		38.5			45.35	47340		34.9						
48.50	48.48		40.0			47.30	47.34		36.5						
50.51			41.8			49.35			38.6						
52.68			2006 43.9			23670 51.50			1831 40.2						
24238			2006			23670			1831						
56.63			35 4012			53.56			49 3662						
55.70			+ 24.82			57.50			+ 27.20						
1.77						59.68									
2.80	4,944					1.65	3,778								
4.95	4.94		36 36.5			3.75	3.78		50 32.7						
6.95	4.94		38.2			5.86	3.85		34.5						
9.17			40.2			7.95			36.4						
11.25			42.3			10.00			38.5						
58450 13.28			2014 44.2			57400 12.05			1828 40.7						
4450			2014			3400			1828						
17.20			36 40.28			16.20			50 36.56						
19.30	21400		− 35.34			18.20	20370		− 32.74						
21.40	2140					20.40	20.37								
23.50	12988					22.50	12771								
10700 25.60			35 4012			10185 24.55			49 36.62						
10700	36 4.940		36 40.28			10185	50 3.815		50 36.56						
			+ 24.82						+ 27.20						
			− 35.34						− 32.74						
			60.16						59.94						
			1.77931						1.77772						
			1.14605						1.17500						
			2.95536						2.95272						
			1.90037						1.89553						
			8.94501						8.94281						
			5 27						50 35						

M 14 14.95	14 14.95														
M 15 34.60															
R 15 34.35															
R 15 34.40	15 34.45														
	79.50														

174

S Virginis

h m s
12 49 30
° ′
+ 4 3

1.17609
9.99891
1.17500

0.11559
9.99891
0.11450

April 20

49 43.20			49 32.9												
45.35	47340		34.9												
47.30	47.34		36.5												
49.35			38.6												
23670 51.50			1831 40.2												
23670			1831												
53.56			49 3662												
57.50			+ 27.20												
59.68															
1.65	3,778														
3.75	3.78		50 32.7												
5.86	3.85		34.5												
7.95			36.4												
10.00			38.5												
57400 12.05			1828 40.7												
3400			1828												
16.20			50 36.56												
18.20	20370		− 32.74												
20.40	20.37														
22.50	12771														
10185 24.55			49 36.62												
10185	50 3.815		50 36.56												
			+ 27.20												
			− 32.74												
			59.94												
			1.77772												
			1.17500												
			2.95272												
			1.89553												
			8.94281												
			50 35												

M 23 54.27	23 54.27														
M 25 13.27															
R 25 12.75															
R 25 12.65	25 12.89														
	78.62														

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ε Virginis

h m s
12 56 9
+11 37

April 20

56 21.70		
23.80	25930	
26.00	25.93	
28.10		
12965 30.15		
12965		
34.33		
36.42		
38.52		
40.60	42727	
42.74	42.72	
44.84	42.76	
46.90		
48.03		
38450 51.15		
38450		
53.42		
57.50	59590	
59.58	59.59	
1.60	8552	
29795 3.85		
29795	56 42.740	

1.17609 0.11559
9.99101 9.99101
1.16710 0.10660

56 15.2		
17.0		
18.8		
20.6		
936 22.0		
936		
56 18.72		
+ 24.02		
57 14.5		
16.3		
18.2		
19.7		
902 21.5		
902		
57 18.04		
− 35.30		
56 18.72		
57 18.04		
+ 24.02		
35.30		
59.32		
1.774320		
1.16710		
2.94030		
1.88053		
8.94023		
4 58.49		

M 50 55.10 · 50 55.10
M 52 11.35 ·
R 52 10.82 ·
R 52 10.94 · 52 11.05
45.95

587

ζ Virginis

h m s
13 18 49
−0 22

April 20

19 1.35		
3.42	5.470	
5.43	5.47	
7.55		
2735 9.60		
2735		
12.90		
16.10		
18.20		
20.30	22,344	
22.35	22.34	
24.45	22.29	
26.60		
28.65		
20110 30.65		
20110		
3485		
37.00	39110	
39.15	39.11	
41.20	44.58	
19555 43.35		
19555	19 22.315	

1.17609 0.11559
9.99262 9.99262
1.16871 0.10821

18 57.0		
59.0		
1.6		
3.0		
3056 5.0		
56		
19 1.12		
+ 21.20		
19 53.9		
57.9		
59.8		
1.8		
2995 4.1		
2995		
19 59.90		
− 37.58		
19 1:12		
19 59.90		
+ 21.20		
− 37.58		
58.78		
1.76923		
1.16871		
2.93794		
1.87656		
8.93862		
4 57.43		

M 58 35.62 · 58 35.62
M 59 51.20 ·
R 59 50.88 ·
R 59 50.88 · 59 50.88
75.26

10 32 5.2

275

β Cygni

h m s
19 25 50
+27 42

April 20

25 59.50		
1.90	4200	
4.40	4.20	
6.40		
32100 8.80		
2100		
13.50		
15.90		
18.20		
20.40	22848	
22.75	22.85	
25.20	22,85	
27.60		
29.88		
20563 32.20		
20563		
36.78		
39.17	41.512	
41.48	41.51	
43.85	45.71	
20756 46.28		
20756	26 22,850	

0.11559 0.11559
9.94714 0.11559
0.06273

25 49.0		
57.0		
52.4		
55.0		
2647 57.3		
2647		
25 52.94		
+ 29.91		
25 52.94		
+ 29.91		

R 45 19.37 ·
R 19.42 · 45 19.39

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γ Aquilae

0.11559
9.99292
0.10851
1.17609
9.99292
1.16901

h m s
19 40 30
+10 19

1877 April 20

40 41.72
43.84 45882
45.90 45.88
47.97
50.00 22941
22941
54.20
56.25
58.40
0.52 2.636
2.70 2.64
4.80 2.64
6.85
9.00
11.00 2372
13.20
17.30 19402
19.40 19.40
21.40 12528
23.65 9701
9701 41 2.640

40 35.5
36.8
38.3
40.0
1926 42.0
19.26
40 38.52
+ 24.12
41 32.6
35.0
37.4
39.0
1848 40.8
1848
41 36.96
− 34.32
40 38.52
4136.96
+ 24.12
− 34.32
58.44
1.76671
1.16901
2.93572
1.87221

19 40 32.27

280

δ Aquilae

0.11559
9.99515
0.11074
1.17609
9.99515
1.17124

h m s
19 44 53
+ 8 33

April 20

45 4.05
6.27 8.264
8.10 8.26
10.34
12.56
4132
16.60
18.80
20.78
22.92 24.947
24.80 24.95
27.00 24.98
29.10
31.20
3322
22452
37.55
39.60 41.690
41.60 41.69
43.73 49.95
45.87
20845

44 58.8
0.9
3.1
4.5
6.5
3138
138
45 27.6
+ 22.20
45 50.5
59.2
1.0
3.1
6.5
3063
63
46 1.26
− 36.30
45 24.96
45 2.76
46 1.26
+ 22.20
− 36.30
58.50
1.76716
1.17124
2.93840
1.88491
8.94651
5 3 9

19 44 54.64

0.11559

283

β Aquilae

0.11554

h m s
19 49 22
+ 6 6

1.17609 0.11559
9.99753 9.99753
1.17362 0.11312

April 20

49 33.70
35.50 37.720
37.70 37.72
39.80
41.90 18860
18860
46.03
48.20
50.30
52.30 54.376
52.30 54.38
56.45 54.32
58.60
0.60
2.60 48938
48938
6.70
8.80 10.920
10.90 10.92
13.00 10.864
15.20 5460
5460 49 54.350

49 25.8
27.9
29.6
31.2
1475 33.0
1475
49 29.50
+ 24.85
50 25.7
25.0
30.0
32.0
1499 34.2
149.9
50 29.98
− 35.63
49 29.50
50 29.98
+ 24.85
− 35.63
60.48
1.78168
1.17362
2.95530
1.90515
8.94985
5 5 29

19 49 24.03

M 48 7 9.70 7 9.70
M 9 24.12
R 9 24.40
R 9 24.10 9 24.21
13 24.51

M 54 17.40 54 17.40
M 55 34.12
55 31.12
76.72

M 20 47.62 20 47.62
M 22 7.92
R 22 8.02
R 22 8.05 22 8.00
80.38

6 + 5 10 19 1.3

8 32 51.5

6 6 12.6

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287

θ Aquilae 0.11559

h m s
20 8 4
−1 11 ★

April 20

5	15.15				
	17.15	19.264			
	19.30	19.26			
	21.30				
9632	23.42				
	9632				
	27.55				
	29.55				
	31.60				
	33.10	30706			
	35.65	35.71			
	37.81	35.71			
	39.85				
	41.85				
32135	43.90				
	32135				
	48.00				
	50.05	52160			
	52.20	52.16			
	54.25	71.42			
26080	56.30				
	26080	5	35.710		

1.17609	0.11559		
9.99991	9.99991		
1.17600	0.11550		
5	9.2		
	11.2		
	12.6		
	14.1		
632	16.1		
	632		
5	1264		
+	23.07		
6	5.7		
	7.8		
	9.4		
	11.3		
476	13.4		
	476		
6	9.52		
−	33.81		
5	1264		
6	9.52		
+	23.07		
−	33.81		
	56.88		
1.75496			
1.17600			
2.93096			
1.87181			
8.94085			
4	59.15		

M 37 41.42 · 37 41.42
M 38 53.80 ·
R 38 53.92 ·
R 38 53.85 · 38 55.86
74.44

607

α² Capricorni 0.11559

h m s
20 11 20
−12 55 ·

April 20

11	31.10				
	33.33	35446			
	35.44	3545			
	37.60				
17723	39.76				
	17723				
	43.90				
	46.04				
	48.10				
	50.20	52351			
	62.35	52.35			
	54.40	52.343			
	56.57				
	58.80				
47116	0.90				
	47116				
	5.00				
	7.20	9.340			
	9.40	9.34			
	11.50	10479			
4670	13.60				
	4670	11	52,370		

20 11 22.41

0.11559	1.17609	0	
9.98887	9.98887		
0.10446	1.16496		
11	25.9		
	27.7		
	29.5		
	30.7		
1461	32.3		
	1461		
11	29.22		
+	23.15		
12	25.3		
	27.0		
	28.1		
	30.7		
1446	32.5		
	1446		
12	28.92		
−	36.55		
11	29.22		
12	28.92		
+	23.15		
−	36.55		
	59.70		
1.77597			
1.16496			
2.94093			
1.87978			
6.93885			
4	57.53		

R 21 30.35 · 21 30.35
M 22 46.12 ·
R 22 46.30 ·
R 22 46.10 · 22 46.17
75.82

12 54 66.9

291

θ Cephei 0.11559

h m s
20 27 23
+62 ° 35 ' ·

April 20

27	47.2				
	51.7				
	56.2				
	0.6	5.10			
	5.0				
	9.6				
	14.1				
	18.5				
3859	23.0				
	459				
	32.0				
	36.3				
	40.9	4090			
	45.6				
2045	49.7				
	2045				
	4090				

0.11559	1.17609		
9.66319	9.66319		
9.77878	0.83928		
27	0.8	27	39.8
	5.3		42.9
	9.0		46.6
	12.0		49.7
433	16.2	2315	52.6
	433		2315
27	8.66	27	46.30
28	50.1	29	16.1
	54.0		19.2
	58.3		21.8
	1.5		26.4
2892	5.3	1132	29.7
	2892		1132
28	57.84	29	22.64
27	8.66	27	46.30
28	57.84	29	22.64

M 53 7.65 ·
M 53 30.72 ·
M 54 13.20 ·
M 54 27.10 ·

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503 — δ Cygni — 0.11559
h m s
21 7 47.
+29° 44'
1879 April 20

1.17609 | 0.11559
9.93869 | 9.93869
1.11478 | 0.05428

307 — β Aquarii — 0.11559
h m s
21-25-11
−6° 6'
April 20

0.11559
9.99755
0.11314

309 — ε Pegasi — 0.11559
h m s
21 38 14
+ 9° 18'
April 20

0.11559 | 1.17609
9.99425 | 9.99425
0.10984 | 1.17034

7 55.30		7 48.3	+20.76 42.87	25 22.12		25 13.0		38 25.23		38 17.0
57.62	0014	50.1	18.67 42.84	214.40 24.18	26276	15.0		27.28	29420	19.2
0.00	0.01	52.3	16.61 42.86	·42.880 26.25	26.28	16.5		29.40	29.42	20.8
2.40		54.4	14.54 42.92	28.38		18.1		31.53		22.7
22 30007 4.75		2616 56.5	12.45 42.90	3138 30.45		824 19.8		14710 33.66		1041 24.4
007		2616		13138		824		14710		1041
9.50		7 5232	8.30 42.88	214.24 34.58		25 1648		37.70		38 2082
11.90		+ 2666	6.23 42.85	42.848 36.62		+ 2638		39.85		+ 25.28
14.30			4.14 42.84	38.70				41.90		
16.60	18983		2.05 42.83	40.78				44.00	46.099	
18.90	1898	8 47.5	−0.00 42.86	42.86		26 10.6		46.05	46.10	39 13.9
21.40	18.98	49.6		—		12.3		48.20	46.10	16.2
23.70		52.0		—		13.9		50.30		18.3
26.05		54.4		—		15.6		52.40		20.3
56 17085 28.50		2605 57.0		—		704 18.0		41488 54.48		913 22.6
17085		2605				704		41488		913
33.20		8 5210	−12.48 42.95	214.32 55.40		26 1408		58.55		39 1826
35.60	37950	− 33.12	14.59 42.76	42.864 57.35	59490	− 3122		0.72	2780	− 3216
38.00	37.95		16.60 42.95	59.55	59.49			2.78	278	
40.30	3796		18.67 42.83	1.50				4.85	9220	
9 18975 42.65		7 52.32	20.82 42.88	9745 3.65		25 1648		31390 7.00		38 2082
18975	8 18980	8 52.10		29745		26 14 08		1390	38 46.100	39 18.26
		+ 2666								+ 25.28
		− 33.12	42.864							− 32.16
		59.78	42.864							57.44
		1.77656								1.75921
		1.14478								1.17034
		2.89134								2.92955
		1.82969								1.86688
		8.93835								8.93733
		4 57 32								4 56 50

M M 43 51.65 43 51.65
M M 44 59.40.
R R 44 59.15.
R R 44 59.07 44 59.21
67.56

M 32 44.67 32 44.67
M 59.32.
R 59.35.
R 59.25. 32 59.31

M 7 54.52 . 7 54.52
M 9 8.12,
R 9 8.08,
R 9 8.15 · 9 8.12
73.60

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311

α Aquarii

h m s
21 59 34
− 0 ° 87

1.17609
9.99995
1.17604

0.11559
9.99995
0.11554

April 20

59 45.00		59 38.0	
47.00	49.060	39.8	
49.00	49.06	41.3	
51.10		42.9	
24530 53.20		2064 44.4	
24530		2064	
57.37		59 41.28	
59.36		+ 24.30	
1.38			
3.40	5521		
5.50	5.52	0 33.1	
7.58	5.54	35.0	
9.80		36.4	
11.70		38.0	
58469 13.80		1822 39.7	
4969		1822	
18.00		0 36.44	
20.95	22.230	− 30.86	
22.00	22.23		
24.05	13129		
11115 26.18		59 41.28	
11115	0 5.580	0 36.44	
		+ 24.30	
		− 30.86	
		55.16	
21 59 35.37		1.74162	
		1.17804	
		2.91966	
		1.85481	
		8.93815	
		4 57.24	

M 21 15.40 · 21 15.40
M 22 27.27 ·
R 22 27.58 ·
R 22 27.60 · 22 27.48
12.08

0 54 23.9

1

α Androm.

0.11559
9.94424
0.05983

h m s
0 2 8
+ 28 25

April 20

2 15.70		2 11.9	
18.00	20.400	13.4	
20.40	20.40	15.9	
22.75		18.2	
102.00	25.15	794 20.0	
102.00		794	
28.50		2 15.88	
32.05		+ 23.25	
34.40			
36.67	39.100		
39.10	39.10		
41.53	39.18		
43.80			
46.00			
35190 48.53			
35190			
53.25			
55.60	57.966		
57.90	57.97		
0.18 0.38	7837		
28983 2.70		2 15.88	
28983	2 39.140	+ 23.26	
	− .011		
	39.129		

R 0 16.45 ·
R 0 16.25 ·

0 54 28.47

3

β Regasi

h m s
0 5 0
+ 14 ° 81

0.11559
9.98591
0.10150

April 20

7 10.80		7	
12.07	14266		
14.35	14.27		
16.47			
7133 18.50			
7133			
22.90			
24.85			
27.00			
28.20	31317		
31.20	31.54	7 59.5	
33.53	31.29	1.9	
35.67		4.2	
37.60		6.3	
28185 39.70		3205 8.6	
28185		2.05	
44.05		8 4.10	
46.27	48.320	− 32.68	
48.30	48.32		
50.48	62.59		
24160 52.50		8 4.10	
24160	7 31.415	+ 32.68	

R 57 47.35 · .
R 57 47.47 · 57 47.41

22 58 28.4

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S

Sun

h m s
1 56 15
+ 11 54

0.11559
9.99056
0.10615

0.11559

1879 April 20-21

	55 14.92			56 24.8	57 25.20			56 54.8			0 29.80			0 21.4	
	17.00	19.098		26.8	27.85	29.534		57.0			31.80	34.060		24.0	
	19.00	19.00		28.7	29.60	29.53		58.4			33.98	34.06		26.0	
	21.20			30.3	31.55			0.3			36.22			28.2	
	9549 23.37			1428 32.2	14767 33.77			2925 2.0			17030 38.50			1296 30.0	
	9549			1428	14767			2925			17030			1296	
	27.48			56 2856	38.00			56 5850			42.90			0 25.92	
	29.65			− 5261	40.02			+ 47.94			45.20			+ 26.10	
	31.68				42.26						47.50				
	33.76	35.931			44.32	46.428					49.70	51.961			
	35.90	35.93			46.40	46.43					51.80	52.07			
	38.03	35.97			48.60	46.46					54.25	51.97			
	40.00				50.60						56.60				
	42.28				52.70						58.70				
	32338 44.50				41785 54.35						46865 0.90				
	32338				41785						46766				
	46.50				56.20						5.48				
	50.70	52836			1.30	3.394					7.62	9.890			
	52.85	52.84			3.40	339					9.85	9.89			
	54.93	71.94			5.50	9292					12.12	19395			
	26418 57.20			56 2856	31697 7.51			56 5850			4945 14.38			0 25.92	
	26418	55 35.950		− 52.61	1697	58 46.445		+ 47.94			4945	0 52.020		+ 26.10	

2 0 21.72

M 17 46.30

M 50 21.80

M 34 0.87

22 53 28.4

2 0 21.

+22 53

0.11559
9.96446
0.07999

0.11559

April 21

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See min on shut.

100

κ Orionis

α 5h 42m 1s
δ −9° 43′

0.11559
9.99372
0.10931

0.11379

April 21

41 11.00		41 1.2	
13.00	15.130	2.9	
15.00	15.13	4.4	
17.35		6.0	
7565 19.30		227 8.2	
7565		227	
23.60		41 4541	
25.63		+ 27.31	
27.64			
29.80	31.852		
31.80	31.85		
33.90	31.85		
36.00			
38.10			
28667 40.20			
28667			
44.40			
46.45	48.580		
48.60	48.58		
50.65	6371		
24290 52.80		41 4541	
24290		41 31.850	+ 27.31

R 9 22.64
R 9 22.62 9 22.64

106

μ Geminor

0.11379

h m s
6 15 38
+22° 34′

1.87609
9.96511
1.14150

0.11559
9.96541
0.08100

April 21

15 48.00		15 39.9	
50.30	52460	41.5	
52.40	52.46	43.8	
54.60		46.0	
26230 57.00		2195 48.3	
26230		2195	
1.38		15 43.90	
3.60		+ 26.39	
5.82			
8.10	10,264		
10.23	10.26	16 44.1	
12.50	10.32	46.0	
14.68		47.9	
16.97		50.0	
9238 19.20		2401 52.1	
9238		2401	
23.75		16 4802	
25.97	28164	− 37.73	
28.20	28.16		
30.38	14065		
14097 32.67		15 4390	
14097	16 10.290	16 48.02	
		+ 2639	
		− 37.73	
		6412	
		1.80699	
		1.14150	
		2.94849	
		1.88824	
		8.93975	
		4 58 30	

M 52 55.47 52 55.47
M 54 12.90
R 54 12.75
R 54 12.70 54 12.78
77.31

107

γ Geminor

0.11559

h m s
6 20 43
+16° 30′

1.17609
9.98174
0.09733

0.11559
9.98541
0.08100

April 21

30 53.55		30 50.8	
55.75	57870	52.7	
57.80	57.87	54.7	
0.10		56.7	
28935 2.15		2734 58.5	
28935		2734	
6.50		30 5468	
8.60		+ 20.39	
10.80			
13.55	15067		
15.07	15.07	31 44.6	
17.25	15.07	46.6	
19.35		48.1	
21.45		49.9	
13560 23.70		2414 52.2	
13560		2414	
27.95		31 4828	
30.20	32,266	− 33.21	
32.38	32.27		
34.40	150 14		
16133 36.50		30 5468	
16133	31 15.070	31 48.28	
32,266		+ 20.39	
		− 33.21	
		5360	
		1.72916	
		1.15783	
		2.88699	
		1.82805	
		8.94109	
		4 59 24	

M 57 20.45 57 20.45
M 58 27.62
R 58 27.80
R 58 27.87 58 27.76
67.31

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118

β Can. Min 0.11559

h m s
7 20 35
° ′
+8 32 8

1.17609 0.11559
9.99516 9.99517
1.17125 0.11076

1879 April 21

20 46.26			20 37.5			27 0.87			26 51.5			33 8.92			33 0.2				
48.28	50390		39.2			3.30	5800		53.9			11.00	13100		1.9				
50.40	50.39		40.9			5.83	5.80		55.8			13.14	13.10		3.7				
52.41			42.7			8.30			58.0			15.16			5.6				
25195 54.60			2050 44.7			2900 10.70			2792 0.0			6550 17.28			188 7.4				
25195			2050			2900			2792			6550			188				
58.70			20 41.00			15.60			26 55.84			21.35			33 3.76				
0.75			+ 26.06			18.00			+ 29.48			23.45			+ 25.92				
2.80						20.50						25.52							
5.00	7036					22.90	25353					27.67	29.679						
7.00	7.04		21 44.0			25.40	25.35		27 47.5			29.70	29.68		33 57.2				
9.00	7.07		46.0			27.80	25.30		49.3			31.80	29.68		59.0				
11.27			47.5			30.18			51.2			33.80			0.9				
13.30			48.7			32.65			53.3			35.87			2.5				
960332 15.40			2369 50.7			22818 35.15			2573 56.0			26712 37.92			3038 4.2				
63.32			2369			22818			2573			26711			38				
19.55			21 47.38			40.07			27 51.46			42.02			34 0.76				
21.65	23750		− 40.32			42.40	44.810		− 26.14			44.20	46252		− 31.08				
23.75	23.75					44.70	44.81					46.26	46.25						
25.85	134.14					47.25	5061					48.38	5935						
11875 27.95			20 40.00			22405 49.70			26 55.84			23126 50.40			33 3.76				
11875	21 7.055		21 47.38			22405	27 25.325		27 51.46			23126	33 29.680		34 0.76				
			+ 26.06						+ 29.48						+ 25.92				
			− 40.32						− 26.14						− 31.08				
			66.38						55.62						57.00				
			1.82204			5 26 54.40			1.74523			7 32 59.65			1.75587				
			1.17125						1.10380						1.17406				
			2.99329						2.84903						2.92993				
			1.47824						1.48965						1.86917				
			8.94498						8.94062						8.93924				
			5 25						4 59 5						4 58 9				

M 55 1147.55	1147		M 18 23.20	18 23.20					M 55 4.66	.55 4.65								M	
M 56 41.72			M 19 24.82						M 56 18.87									M	
R 56 41.85			R 19 24.82						R 56 18.57									R	
R 56 41.66	.54 41.72		R 19 24.80	19 24.81					R 56 18.47	.56 18.64								R	
	86.75			61.61						73.99									

32 8 72.2

5 31 56.8

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122

β Geminor 0.11559

h m s
7 37 05
+28 19

0.11559 1.17609
9.94465 9.94465
0.06024 1.12074

502

K Cephei Lc. 6.

h m s
20 12 56
+102 39

0.11559 0.11559
9.98933
0.10492

125

O Urs. Maj. 0.11559

h m s
8 20 12
+61 °

0.11559
9.68394
9.99956

38	3.70			37	52.0			12	41.8	12	40.2	13	37.7	20	30.0	19	43.6	20	5.9
	1.03	8426			54.9				57.4		49.2		46.4		34.0		44.9		10.5
	8.47	8426			56.6				0.7		56.4		53.6		38.4		46.2		13.6
	10.78				58.2				10.3		4.6		1.0		42.7	6701	134.7		17.2
4213	13.15			2837	1.0				19.2	2830	12.6	2678	9.1		47.0		44.9	679	21.7
	4213				2837				19.0		2830		2678		51.4				689
	17.80			37	56.74				38.5	12	56.60	13	53.56		55.7			20	13.78
	20.03				+ 30.42				47.6		+ 22.92		− 34.04		58.8				+ 33.23
	22.47							57	57.2					42.31	4.1				
	24.73	27.139							2957						42 31				
	27.16	27.14		38	59.2					14	28.2	15	17.7	20	47.01	21	9.0	21	53.4
	29.82	27.17			1.2			13	19.52		38.0		22.2				12.2		58.0
	31.80				3.3						45.4		29.6				16.0		2.3
	34.25				5.2						52.3	695	69.5				19.0		6.3
24425	36.50			3171	8.2					2272	3.3	15	23.18				23.7	3127	10.7
	24425				171						2272						799		127
	41.22			39	342					14	45.44					21	15.98	22	2.54
	43.60	45924			− 36.26						− 1 25.92						− 28.97		− 1 15.53
	45.90	45.92																	
	48.30	54.34																	
22962	50.60			37	56.74					12	56.60	13	53.56					20	13.58
	22962	38	27.155	39	3.42					14	45.44					21	15.98	22	2.54
				+	30.42													+	62.40
				−	36.26													−	46.56
					66.68														166501
787	56.64			1.82400															
				1.12074															
				2.94474															
				1.88178															
				5.93704															
				4 56 39															

M 8 26.68. 8 26.68
M 9 42.52.
R 9 42.95.
R 9 43.07. 9 42.85
76.17

M 50 35.88.
M 50 20.10.
M 50 5.70.
M 50 56.32.

M 20 32.80.
M 20 51.90.
M 21 31.52.
M 21 59.30.

28 18 68.2

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291

θ Cephei L.6.

h m s
20 27 33
+ 117 25

1879 April 21

0.11559
9.94826
0.06385

0.11559

27 43.2
47.8
52.2
56.8 1.111
1.2
5.5
10.2
14.2
5500 18.9
100
28 41.1

27 54.5 28 32.0
59.8 36.0
2.9 40.5
7.5 43.3
3153 10.6 2001 47.3
153 2001
18 3060 18 4002
− 1.95 − 38.91
29 7.2

28 3.06 28 4002

138

α Hydrae

h m s
9 21 38
− 8 8

21 49.50
51.67 53730
53.70 5373
55.83
26865 57.95
26865
2.00
4.15
6.20
8.35 10.378
10.40 10.38
12.50 10.39
14.50
16.60
9340 18.70
9340
22.80
24.80 27050
27.00 27.05
28.18 14078
13525 31.27
13526 22 10.385

9 21 40.56

0.11559

1.17609 0.11559
9.99561 9.99561
1.17170 0.11120

21 39.6
40.8
42.2
43.8
2117 45.3
2117
21 42.340
+ 2804
22 37.7
39.9
41.8
43.8
2092 46.0
2092
22 42.84
− 31.46
21 42.34
22 41.84
+ 28.04
− 31.46
59.50
1.17170
1.17170
2.94622
1.88649
8.94027
4 58 50

142

ε Leonis

h m s
9 38 59
+ 24 20

0.11559

1.17609 0.11559
9.95960 9.95966
1.13569 0.07519

39 9.22
11.65 13810
13.50 13.81
16.03
6905 18.36
6905
22.80
25.15
27.40
28.72 31.928
31.93 31.93
34.20 31.93
36.50
38.72
28735 40.93
28735
45.54
47.80 50048
50.10 50.05
52.30 6386
25024 54.60
25024 39 31.930

38 58.8
0.4
2.4
4.1
3117 6.0
117
39 2.84
+ 29.59
39 59.6
1.5
3.4
5.8
3185 8.2
185
40 3.70
− 31.77
39 2.34
40 3.70
+ 29.59
− 31.77
61.36
1.78789
1.13569
2.92358
1.86410
8.94052
4 59 1

+16.52
13.80
13.68
8.96
6.34
4.22
2.04
0.00
2.11
4.23
6.34
8.37
13.68
15.80
16.91
19.03
21.21

M
J

M 6 50.75.
M 6 29.12.
M 6 13.74.

M 34 52.45 . 34 52.49
M 35 9.47.
R 35 9.50.
R 35 9.50 . 36 9.49
77.00

M 7 40.40 . 7 40.40
M 8 53.55.
R 8 53.50.
R 8 53.55 . 8 53.53
73.13

8 8 20.7

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146

2 Leonis

h m s
10 1 56
+12 53

0.11559
9.98950
0.10509

2 — 2 31.0
— 32.9
+16.92 24.32 11.40 84.94 34.4
13.80 26.32 13.52 28.313 36.0
13.68 26.38 15.62 1721 37.8
1721

4.36 28.36 19.90 255.55 2 3442
4.34 26.24 21.90 28.344 — 6.07
4.22 24.37 24.15
2.69 28.36 26.27 28.399
1.20 25.41 27.41 28.40 3 2.8
2.11 28.49 30.60 4.5
4.23 24.47 32.70 6.4
6.34 28.46 34.80 8.0
6.47 25338 36.85 317 10.0
25558 141.49 317

12.68 28.22 40.90 28.298 3 6.34
13.80 28.40 43.20 45224 −37.99
16.91 28.36 45.27 45.02
19.03 28.32 47.35
21.21 22512 49.40 28.19 2 3442
22612 3 6.34

28.335
28.351

18 1 58.14

M 54 35.17 54 35.17
M 55 15.87
R 55 16.05
R 55 16.12 55 16.01
40.84

12 38 18.1

148

8 Leonis

h m s
10 9 37
+24 1

0.11559 0.11559

10 8.20
10.55 12642
12.60 12.64
14.86
6321 17.00
6321
21.62
33.90
26.27
28.53 30729
30.80 30.73
33.00 30.71
35.24
37.40
27656 39.80
27656
44.20
46.47 48.780
48.80 48.78
51.13 61.42
24390 53.30
24390 10 30.720

M 26 28.12 26 28.12
M 27 35.88
R 27 36.07 27 36.04
R 27
35.98
67.95
27 23.97

C

γ Leonis pr.

0.11559

h m s
10 13 18
+20 27

1.14609 0.11559
9.96067 9.96067
1.13676 0.07626

10 2.7
4.7
6.6
8.8
330 10.2
330
10 660
+ 2412
10 59.4
1.0
2.7
4.9
3155 7.5
155
11 2.108
− 32.38
10 6.60
11 3.10
+ 24.12
− 32.38
56.50
1.75205
1.13676
2.88881
1.83219
8.94338
5 0 59

1.14609 0.11559
9.97173 9.97173
1.14782 0.08732

13 29.15
31.15 33440
33.48 33.44
35.60
37.82
16720 37.82
16720
42.28
44.48
46.70
48.90 51076
51.08 51.08
53.30 51.05
55.54
57.66
45975 59.80
45968
4.30
6.38 8660
8.60 8.66
10.90 10210
4330 13.12
4330 13 51.065

M 0 22.05 0 22.05
M 1 36.80
R 1 37.02
R 1 36.72 1 36.84
74.79

20 27 2.0

13 21.6
23.3
25.5
27.0
1261 28.7
1261
13 25.22
+ 25.84
14 22.4
24.7
26.5
28.4
1324 30.4
1324
14 26.48
− 35.42
14 26.48
+ 25.84
− 35.42
61.26
1.75711
1.14782
2.93493
1.87384
8.94391
4 57 55

10 13 20.68

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269

α Aquilae

1879 April 21

h m s
18 39 30
° ′
−5 4

0.11559 0.11559
9.99830
0.11389

0 1.70 — 59 57.0
3.10 5.180 — 58.6
5.25 5.18 — 0.2
7.25 — 1.7
25.90 9.40 — 3017 4.2
25.90 — 17
13.80 — 0 0.34
15.55 — + 21.34
17.53
19.50 21.689
21.67 21.69
23.50
25.80
27.70
19520 30.11
19520
33.85
36.00 19.080
38.30 38.16
40.30
42.35 — 0 0.34

0 21.68

R 30 38.27
R 30 38.75

271

S Seccomis

h m s
19 12 31
° ′
+67 27

12 43.4
48.5
53.6
59.5
5.0
10.1
16.4
20.5
24 26.4
42.4
13 47.1

M 1 40.15
M 1 51.70
M 2 31.65
M 2 58.30

0.11559 0.11559
9.58375
9.69934

11 52.6 — 12 16.7
55.4 — 19.4
59.2 — 25.4
3.4 — 29.3
2984 7.8 — 1234 33.6
2984 — 1234
11 59.68 — 12 24.68
+1 5.03 — +0 40.03
13 32.2 — 14 30.4
33.0 — 36.0
43.0 — 36.7
47.2 — 43.3
2133 57.9 — 1966 49.2
21.38 — 1966
13 42.66 — 14 39.32
−0 37.95 — −1 34.61
11 59.68 — 12 24.68
13 42.66 — 14 39.32

275

β Cygni

h m s
19 25 50
° ′
+27 42

0.11559
9.94714
0.06273

25 58.40
1.73 4.100
4.17 4.10
6.48
32050 8.72
2050
13.38
15.60
18.05
20.35
22.70 22.700
25.07 22.71
27.40
29.70
20428 32.10
2 42.8
36.55
39.00 41.390
41.35 41.32
43.60 45 42
20660 46.10
20660 26 22.705

M 45 21.00 45 21.00
M 46 31.85
R 46 31.87
R 46 31.82 46 31.85
70.85

0.11559
1.17609
9.94714
1.12323
25 50.1
52.3
54.0
56.1
2706 58.1
2706
25 64.12
+ 28.58
26 52.0
54.6
56.8
57.7
2804 0.1
2804
26 56.08
− 33.38
25 54.12
26 56.08
+ 28.58
− 33.38
61.96
1.79211
1.12323
2.91534
1.85034
8.93500
4 55.15

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277

γ Aquilae

h m s
19 40 80
° ′
+10 19

1.17609 0.11559
9.99292 9.99292
1.16901 0.10851

40 41.60
4363 45.24
45.75 45.72
47.74
22862 49.80
22862
54.07
56.20
58.30
0.40 2.449
2.42 245
4.55 2.42
6.58
8.72
56204 10.80
2204
15.00
12.05 19.120
19.17 19.12
21.20 12484
9560 3336
9560 41 2.435

40 36.0
38.0
40.0
41.8
1991 43.3
1991
40 39.82
+ 22.62
41 33.0
34.9
36.6
38.5
1830 40.0
1830
41 3660
- 34.16
40 39.82
41 36.60
+ 22.62
- 34.16
56.78
1.764 20
1.16901
2.92321
1.85830
8.93509
4 55 19

19 40 32.68

280

α Aquilae

h m s
19 44 53
° ′
+8 23

1.17609 0.11559
9.99292
1.16901 0.10851

45 4.00
6.05 8.110
8.05 8.11
10.23
4035 12.22
4035
16.40
18.60
20.60
22.70 24.772
24.75 24.77
26.80 24.78
28.90
31.00
22295 33.20
22295
37.30
39.30 41.450
41.45 41.45
43.55 49.56
20725 45.65
20725 45.775

44 53.6
55.0
56.7
58.5
2841 0.3
2841
44 56.82
+ 27.96
45 50.7
52.6
54.3
56.8
2736 58.2
2736
45 54.72
- 29.94
44 56.82
45 54.72
+ 27.96
- 29.94
57.90
1.76268
1.17124
2.93392
1.87344
8.93952
4 58 20

19 44 54.65

283

β Aquilae

h m s
19 49 22
° ′
+6 6

1.17609 0.11559
9.99515 9.99515
1.17124 0.11074

49 33.38
35.70 37.676
37.57 37.67
39.73
1883 41.80
1883
45.80
47.85
50.08
52.08 54.112
54.10 5412
56.05 54.18
58.27
0.26
4870 2.30
4870
6.56
8.64 1 0.70
10.70 10.70
12.70 10837
5350 14.80
5360 49 54.150

49 33.8
35.9
37.0
39.0
1858 40.1
1858
49 37.16
+ 16.99
50 27.9
30.1
31.6
33.6
1587 35.5
1587
50 3 1.74
- 37.59
49 37.16
50 31.74
+ 16.99
- 37.59
54.58
1.73703
1.17362
2.91065
1.85685
8.94620
5 2 56

19 49 24.04

M 8 10.90 · 8 10.90
M 9 23.30
R 9 22.97
R 9 22.90 · 9 23.06
72.16

M 54 10.35 · 54 10.35
M 55 25.27
R 55 24.82
R 55 25.10 · 55 25.06
74.71

M 20 58.10 · 20 58.10
M 22 9.87
R 22 10.22
R 22 9.97 · 22 10.02
71.92

10 19 1.4

8 33 51.6

6 6 12.7

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287

θ Aquilae

h m s
20 5 4.
- 1 11

1877 April 21

		0.11559	0.11559
		9.99991	
		0.11550	
5 14.30		5 15.1	
16.90	18900	16.4	
18.85	1890	18.2	
20.85		20.0	
9450 23.00		920 22.3	
9450		920	
27.20		5 18.40	
29.28		+ 17.06	
31.30			
33.40	35484		
35.48	35.48		
37.60	35.43		
39.67			
41.70			
31536 43.73			
31936			
47.80			
49.80	51956		
51.95	5196		
54.03	7086		
25980 56.12		5 18.40	
978	5 35.455	+ 1706	

303

ζ Cygni

h m s
21 7 47.
+29 44

		1.17609	0.11559
		9.93869	9.93869
		1.11478	0.05428
7 54.97		7 56.5	
57.50	59818	58.6	
59.85	59.82	0.2	
2.20		2.5	
29909 4.57		3020 4.2	
29909		2.0	
9.30		8 0.40	
11.65		+0 1836	
14.04			
16.38	18772		
18.80	18.77	8 540	
21.18	18.76	52.0	
23.57		57.9	
25.82		0.1	
16895 28.27		2905 2.5	
16895		2905	
32.97		8 58.10	
35.33	37710	- 3934	
37.66	3771		
40.04	15753		
16855 42.55		8 0.40	
16853	8 16766	8 58.10	
		+ 17.96	
		- 39.74	
		57.70	
		1.76118	
		1.11478	
		2.87596	
		1.81325	
		8.93729	
		4 56.49	

307

β Aquarii

h m s
21 25 11
0 ′
- 6 6

		1.17609	0.11559
		9.99753	9.99753
		1.17362	0.11312
25 21.90		25 16.0	
24.00	26050	17.6	
26.05	26.05	19.2	
28.10		21.0	
13025 30.20		968 23.0	
13025		968	
34.35		25 19.36	
36.47		+ 2324	
38.50			
40.50	42633		
42.68	42.63	26 12.7	
44.70	42.58	14.7	
46.70		16.3	
48.80		18.0	
38370 50.90		817 20.0	
38370		817	
53.00		26 16.34	
57.00	59120	- 33.74	
59.00	59.12		
1.25	8517		
29560 3.35		25 19.36	
29560	25 42.605	26 16.34	
		+ 23.24	
		- 33.74	
		56.98	
		1.75542	
		1.17362	
		2.92934	
		1.86854	
		8.93960	
		4 58.23	

M 37 49.30.

M 44 1.27. 1111 1.27
M 45 6.40.
R 45 6.30.
R 45 6.25. 45 6.32
65.05

M 32 48.52. 32 48.52
M 34 2.25.
R 34 2.77.
R 34 2.40. 34 2.417
7395

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309

ε Pegasi

h m s
21 38 14
δ ′
+9 19

1.17609 0.11559
9.99423 9.99423
1.17032 0.10982

38 24.95
27.16 29.196
29.20 29.19
31.29
14598 38.38
14598
37.55
39.65
41.77
43.90 45.921
45.95 45.92
47.97 45.91
50.04
52.18
41329 54.28
41329
58.43
0.60 2.640
2.65 2.64
4.72 9.183
31320 6.80
1320 38 45.915

38 21.0
23.0
25.4
26.6
1243 28.3
1243
38 24.86
39 18.0
20.0
21.9
23.6
1085 25.0
1085
39 21.70
− 35.78
38 24.86
+ 21.06
− 35.78
56.84
1.75465
1.17032
2.92497
1.86587
8.94090
4 59 17

311

α Aquarii

h m s
21 59 34
° ′
−0 37

59 44.72
46.30 4.8814
48.30 48.81
50.85
52.90
24407
24407
57.00
59.03
1.13
3.20 5.280
5.28 5.28
7.37 5.29
9.38
11.50
58752 13.66
4752
17.70
19.80 21.780
21.75 21.78
23.30 13059
10890 25.85
10890 0 5.285

59 38.5
40.3
42.3
44.0
2113 45.8
2113
59 42.26
+ 23.02
0 35.5
37.0
39.3
40.7
1957 43.0
1957
0 39.14
− 33.86
59 42.26
+ 23.02
− 33.86
56.88
1.75496
1.17604
2.93100
1.87029
8.93929
4 58 11

31 59 35.38

0.11557

1.17609 0.11559
9.99995 9.99995
1.17604 0.11554

α Andron.

h m s
0 2 8
° ′
+28 26

2 15.50
17.75 2.0170
20.35 20.17
22.45
10085 24.80
10085
28.55
31.87
34.23
36.60 38.941
39.03 3894
41.32 38.93
43.60
45.93
35047 48.37
35047
53.00
55.40 57.690
57.65 57.69
0.10 4786
28845 2.30
28845 2 38.935

2 7.0
8.6
10.5
12.5
534 14.8
534
2 10.68
+ 28.26
3 15.5
17.8
19.6
21.3
979 23.1
979
3 19.58
− 40.64
2 10.68
+ 28.26
− 40.64
68.90
1.83822
1.12033
2.95855
1.89642
8.93787
4 57 13

0 2 8.48

1.17609 0.11559 g
9.94424 0.11559
1.12033 9.94424
0.05983

M 7 59.85 . 7 59.85
M 9 13.47 .
R 9 13.15 .
R 9 13.22 . 9 13.28
73.43

M 21 16.57 . 21 16.54
M 22 30.45 .
R 22 30.82 .
R 22 30.75 . 22 30.75
74.18

M 2 11.02 . 2 11.02 .
M 3 29.47 .
R 3 30.10 .
R 3 29.80 . 3 29.80
78.78

0 54 23.8

28 25 22.1

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S

Sun

h m s
1 59 59

+12 14

1879 April 21-22

0.11559
9.99002
0.10561

0.11559

58 58.58			0 12.1		1 9.20			0 28.0				8 44.3			
1.00	3.190		13.9		11.40	13.574		29.9			57.040	46.0			
3.26	3.19		16.5		13.60	13.57		32.3			57.00	48.0			
5.31			18.6		15.83			34.4			58.10	50.0			
31595 7.40			812 20.2	6787	17.87			1608 36.2		28520 1.20		2401 51.8			
1595			812		6787			1608		28520		2401			
11.50			0 16.24		22.00			0 32.16		5.27		8 48.02			
13.72			− 56.24		24.10			+ 58.31		7.33		+ 25.66			
15.70					26.06					9.40					
18.03	20.031				28.26	30.422				11.50	13.628				
20.15	20.03				30.38	30.42				13.55	13.63				
22.18	19.96				32.55	30.52				15.30	13.72				
24.20					34.65					17.87					
26.30					36.80					19.87					
18028 28.50				27380	39.00					12265 22.06					
18028					27380					12265					
32.60					43.28					26.28					
34.60	37.540				45.32	47.480				28.28	30.400				
36.60	36.74				47.50	47.48				30.30	30.40				
38.90	3993				49.55	6105				32.44	14744				
18370 41.00			0 16.24	23740	51.75			0 32.16		15200 34.70		8 48.02			
18770	59 19.995		− 56.24		23740	1 30.470		+ 58.31		15200	9 13.675	+ 25.66			

M 57 36.67

M 29 52.97

87

β Orionis

h m s
5 8 43

−8 21

April 22

0.11559
9.99537
0.11096

0.11559

R 47 10.12
R 47 10.27
47 10.19

58 44.19

8 20 36.0

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1879phae. proj. 1502.

90

β Lupi

h m s
δ -18 39
σ
+28 30

0.11559
9.94396
0.05949

0.11559

18 46.50		18 42.2
48.32	51240	43.8
57.30	51.24	46.2
63.60		45.3
25620 55.98		2305 50.0
25620		2305
0.63		18 46.10
3.00		+ 23.92
5.30		
7.66	10.034	
10.00	10.03	
12.45	10.03	
14.65		
17.12		
9031 19.47		
9031		
24.25		
26.50	28820	
28.90	28.82	
31.00	14006	
14410 33.45		18 46.10
14410	19 10.015	+ 23.92

5 18 39.79

R 57 17.97
R 57 17.85
57 17.91

28 80 18.9

α

γ Orionis

h m s
δ +24 38

0.11559
9.99974
0.11533

0.11559

34 49.15		35 0.2
51.20	53350	2.5
53.38	53.50	4.2
55.42		5.4
32675 57.60		194 7.1
26675		194
1.70		35 3.88
3.71		+ 5.98
5.84		
7.70	9.830	
9.75	9.83	
11.85	9.88	
13.94		
16.00		
62847 17.98		
8847		
22.03		
24.20	26252	
26.18	2625	
28.38	13975	
13126 30.47		35 3.88
13126	359.855	+ 5.98

R 27 44.05
R 27 44.32
27 44.18

102

α Orionis

h m s
δ +7 23

0.11559
9.99638
0.11197

0.11559

48 47.50		48 39.7
49.30	51.54	41.8
51.62	51.94	43.5
53.57		45.1
25970 55.71		2171 47.0
25970		2171
57.85		48 43.42
1.93		+ 24.79
3.92		
6.00	8.097	
8.00	8.10	
10.15	8.32	
12.26		
14.32		
61287 16.44		
7287		
20.50		
22.65	24704	
24.77	24.70	
26.88	13664	
12352 28.92		48 43.42
12352	49 8.210	+ 24.79

5 48 38.47

R 4 7.12
R 4 6.92
4 7.02

7 22 58.6

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106 — μ Geminor — 0.11559

h m s
6 15 38
° ′
+22 34

1879 April 22

1.17609 0.11559
9.96541 9.96541
1.14150 0.08100

15 47.55		15 37.5	
49.78	52000	39.0	
52.00	52.00	40.7	
54.25		42.8	
26000 56.42		2047 44.7	
26000		2047	
0.95		15 4094	
3.10		+ 2892	
5.48			
7.72	9.873		
9.90	9.87	16 40.7	
12.00	9.86	43.1	
14.30		44.9	
16.63		46.6	
8886 18.78		2237 48.4	
8886		2237	
23.25		16 4474	
25.57	27734	− 3488	
27.70	27.73		
29.90	13973		
13867 32.25		15 40.94	
13867	16 9.865	16 44.74	

+ 28.92
− 34.88
63.80
1.80482
1.14150
2.94632
1.88756
8.94124
4 59 31

M 52 52.92 . 52 52.92
M 54 10.07
R 54 10.17
R 54 10.10 . 54 10.11
77.19

107 — γ Geminor — 0.11559

h m s
6 30 43
+16 30

1.17609 0.11559
9.98174 9.98174
1.15783 0.09733

30 53.10		30 44.6	
55.29	57430	46.3	
57.40	57.43	48.4	
59.56		50.0	
28715 1.80		2409 51.6	
28715		2409	
6.05		30 4818	
8.20		+ 2646	
10.30			
12.47	14.658		
14.64	14.66	31 43.5	
16.78	14.63	45.3	
19.00		47.0	
21.20		49.0	
13192 23.28		2358 51.0	
13192		2358	
27.52		31 4716	
29.70	31834	− 3252	
31.80	31.83		
33.95	14926		
15917 36.20		30 48.18	
15917	31 14.645	31 47.16	

+ 26.46
− 32.52
58.98
1.77070
1.15783
2.92853
1.87064
8.94211
5 0 7

M 57 12.92 57 12.92
M 58 27.02
R 58 27.47
R 58 27.00 . 58 27.16
74.24

118 — β Can Minor — 0.11559

h m s
7 20 35
° ′
+ 8 32

1.17
9.99609 0.11559
9.99516 9.99517
1.17125 0.11076

20 45.80		20 38.5	
47.85	49960	40.3	
50.00	49.96	42.0	
52.02		44.0	
24980 54.13		2108 46.0	
24980		2108	
58.18		20 4216	
0.30		+ 2443	
2.40			
4.37	6.566		
6.57	6.57	21 36.0	
8.75	6.67	37.6	
10.70		39.5	
12.72		41.0	
5909 14.90		1978 43.7	
5909		1978	
19.00		29 3956	
21.15	23268	− 3297	
23.24	23.27		
25.39	13323		
11634 27.56		20 42.16	
11634	21 6.590	21 39.56	

+ 24.43
− 32.97
57.40
1.75891
1.17125
2.93016
1.87070
8.94054
4 59 2

M 55 18.70 . 55 18.70
M 56 32.80
R 56 33.15
R 56 32.90 . 56 32.95
74.25

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119

α Geminor 0.11559

h m s
7 26 52

+ 32 9	0.11559	1.17609
	9.92771	9.92771
	0.04330	1.10380

27 0.60 — 26 55.5
3.10 5470 — 57.6
5.60 5.47 — 0.1
7.85 — 2.4
2735 10.30 — 2996 4.0
2735 — 2996
15.15 — 26 59.2
17.65 — + 25.00
20.00 —
22.50 2.4904 —
2485 24.90 — 27 47.6
27.33 24.94 — 49.9
29.80 — 51.9
32.26 — 53.9
22414 34.60 — 2600 56.7
22414 — 2600
39.49 — 27 52.00
42.00 4445 — 27.08
44.53 44.41 —
46.86 49.88 —
22223 48.35 — 26 59.92
22223 27 24.920 27 52.00
+ 25.00
− 27.08
52.08
7 26 54.89 1.71664
1.10380
2.82047
1.76395
8.94348
5 1 3

M 18 28.97 . 18 28.97
M 19 27.02 .
R 19 27.02 .
R 19 27.07 . 19 27.04
58.07

32 9 12.2

120

α Can. Min. 0.11559

h m s
7 32 58

+ 5 82	0.11559	1.17609
	9.99797	9.99797
	0.11356	1.17406

33 8.60 — 33 0.5
10.60 12690 — 2.0
12.70 12.69 — 3.7
14.77 — 5.5
6345 16.78 — 194 7.7
6345 — 194
20.98 — 33 8.88
23.00 — + 25.66
25.17 —
27.27 29301 —
2935 29.30 — 34 3.6
31.35 29.78 — 5.3
33.40 — 7.1
35.52 — 8.9
26371 37.51 — 358 10.9
26371 — 358
41.70 — 34 7.16
43.80 45870 — 37.62
45.85 45.87 —
47.98 58.56 —
22935 50.02 — 33 3.88
22935 33 29.540 34 7.16
+ 25.66
− 37.62
6 3.28
7 32 59.64 1.80124
1.17406
2.47533
1.91413
8.93880
4 57 50

M 55 6.37 . 55 6.37
M 56 26.27 .
R 56 28.47 .
R 56 28.55 . 56 28.43
82.06

5 31 56.8

122

β Geminor

h m s
7 37 55

+ 28 19	0.11559	1.17609 0.11559
	9.94465	9.94465
	0.06024	1.12074

38 3.30 — 37 53.0
5.63 7988 — 54.8
8.05 7.99 — 56.7
10.35 — 58.4
3994 12.61 — 2833 0.4
3994 — 2833
17.40 — 37 56.66
19.68 — + 30.06
22.04 —
24.37 26718 —
2665 26.71 — 38 26.72
27.00 26.73 — 59.3
31.48 — 1.3
33.75 — 3.6
24042 36.05 — 3072 5.7
24042 — 72
40.50 — 39 1.44
43.10 45468 — 3472
45.48 45.47 —
47.77 5346 —
22734 50.19 — 37 56.66
22734 38 26.720 38 1.44
+ 30.06
− 25.28 34.72
65.34 64.78
1.74304 1.88144
1.12074
2.86378
1.86581
9.00203 8.93363
4 54 20

M 8 27.45 . 8 27.45
M 9 40.95 .
R 9 40.75 .
R 9 40.90 . 9 40.87
73.42

28 19 8.2

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138

α Hydrae 0.11559

h m s
9 21 38
−8 8

1879 April 22

21 49.17		21 39.3			
51.30	53.330	40.6			
53.30	53.33	42.0			
56.40		43.8			
26665 57.48		2111 45.4			
26665		2111			
1.60		21 4222			
3.66		+ 27.73			
5.77					
7.78	9.940				
10.05	9.94	22 37.5			
12.07	9.96	39.5			
14.14		41.5			
16.15		43.4			
8946 18.20		2075 45.6			
8946		2075			
22.30		22 4450			
24.50	26.604	− 31.55			
26.65	26.60				
28.77	13993				
13302 30.30		21 4222			
13302	22 9.950	22 41.50			
		+ 27.73			
		− 31.55			
		59.28			
9 21 40.55		1.47291			
		1.17170			
		2.94461			
		1.88700			
		8.94239			
		6 0 18			

142

ε Leonis

h m s
9 38 69

1.17609	0.11559	39 8.90		38 58.3	
9.99561	9.99561	11.10	13.428	0.2	
1.17170	0.11120	13.37	13.43	2.3	
		15.74		4.0	
		6714 18.03		3110 6.2	
		6714		110	
		22.40		39 2.20	
		24.70		+ 29.29	
		26.97			
		29.35	31.497		
		31.47	3149	40 6.0	
		33.70	31.49	8.8	
		36.00		10.7	
		38.28		12.3	
		28347 40.60		522 14.4	
		28347		522	
		45.00		40 1044	
		47.30	49.552	− 38.95	
		49.56	49.55		
		57.90	6298		
		24776 54.00		39 2.20	
		24776	39 31.450	40 10.44	
				+ 29.29	
				− 38.95	
				68.21	
				1.83404	
				1.13569	
				2.96973	
				1.90811	
				8.93838	
				4 57.33	

146

α Leonis

h m s
10 1 58

2 6.90	6.78	1 59.5			
8.90	11010	1.1			
10.95	11.01	2.9			
13.00		4.6			
5505 16.30		3144 6.3			
5505		144			
19.45		2 2.88			
21.65		+ 25.04			
23.80					
25.80	27.933				
2790	2793	2 54.2			
30.05	27.92	55.3			
32.15		56.5			
34.25		57.9			
25140 36.36		2829 59.0			
25140		2829			
40.63		2 5.658			
42.75	44.830	− 28.66			
44.80	44.83				
46.95	5584				
22415 49.10		2 2.88			
22415	2 27.925	2 56.58			
	−.006	+ 25.04			
	27.919	− 28.66			
		53.70			
10 1 58.53		1.72997			
		1.16559			
		2.89556			
		1.89474			
		8.93918			
		4 58.6			

M 34 53.60	34 53.60	M 7 41.30	7 41.30	M 53 56.32	53 56.32
M 36 10.57		M 9 2.42		M 55 4.77	
R 36 10.80		R 9 2.05		R 55 4.42	
R 36 10.70	36 10.69	R 9 2.22	9 2.23	R 55 4.67	55 4.67
	77.09		80.93		68.35

8 8 20.7

12 38 18.2

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148

S Leonis

0.11537

h m s
10 9 56
° '
+24 1

1.17609 0.11559
9.96067 9.96067
1.13676 0.07626

10 7.77
10.00 12264
12.25 12.26
14.50
6132 16.80
6132
21.48
23.60
25.91
28.02 30839
30.30 30.34
32.60 30.39
34.74
37.00
27305 39.40
27305
43.80
46.03 48.326
48.35 48.52
50.60 6078
24263 52.85
24163 10 30.365

10 3.0
4.7
6.7
8.5
336 10.7
336
10 6.72
+ 23.64
11 1.5
3.9
6.0
7.9
289 9.6
289
11 5.78
-35.42

10 672
11 5.78
+ 23.64
- 35.42
59.06
1.77129
1.13676
2.90805
1.84522
8.93717
4 56 44

13 28.68
30.86
33.10 16532
35.28 8306
37.40
41.86
44.04
46.30
48.40 50637
50.58 50664
52.90
55.00
57.13
45573 59.52
45573
3.80
6.02 8.242
8.28 8.24
10.46
4121 12.65
4121 13.50.64

10 18 20 67

20 27 2.1

M 26 29.27 . 26 29.27
M 27 39.22 .
R 27 39.37 .
R 27 3929
70.02

M 0 26.70 . 0 26.70
M 1 33.12 .
R 1 33.35 .
R 1 33.32 . 1 33.26
66.56

C

Y Leonis pr.

0.11559

h m s
10 18 18
° '
+20 27

0.11559 1.17609
9.97173 9.97173
0.08732 1.14782

13 24.5
26.6 795
27.4 26.50
26.50
+ 2414
14 18.5
20.6
22.3
24.2
1121 26.5
1121
14 2242
- 31.78

41 42.90
45.28
47.10
49.20
51.25
53.62
55.40
57.60
46232 0.00
46232
51.365

M 12 3 11.60 Plate wrong #

f

Comparison Star f (123)

h m s
10 41 19
° '
+1 15

0.11559
9.99990
0.11549

42 8.8
10.5
12.6
14.4
622 16.2
622
42 12.44
- 21.07

42 12.44

0.11559

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156

S Loomis

h m s
11 7 40
° '
+21 11

1879 April 22

1.17609 0.11559
9.96962 9.96962
1.14571 0.08521

7 57.15
53.28 55524
55.46 55.52
57.76
27762 59.97
27762
4.40
6.50
8.75
10.98 13170
13.10 13.18
15.40 13.22
17.60
19.80
11853 22.00
11853
24.50
28.70
30.83 3092
33.10 14644
15460 35.47
15460 8 13.200
30920

11 7 43.87

7 42.2
44.2
46.0
47.7
2298 49.7
2298
7 45.96
+ 27.24
8 46.00
47.8
50.0
52.3
2506 54.5
2506
8 50.12
- 36.92
7 45.96
8 50.12
+ 27.24
- 36.92
64.16
1.80326
1.814571
2.952927
1.893913
8.940968
4 59 19

M 16 23.52 16 23.52
M 17 41.90
R 17 41.87
R 17 41.77 17 41.85
78.33

164

B Loomis

0.11559

h m s
11 42 53
° '
+ 15 16

1.17609 0.11559
9.98443 9.98443
1.16052 0.10002

43 4.65
6.80 8.970
8.90 897
11.20
2925 2.2
4485 13.80
4485
17.45
19.70
21.70
23.88 26033
26.00 26.03
28.24 26.03
30.30
32.40
23430 34.63
23430
38.80
40.90 43294
43.05 43.09
45.35 52.06
21647 47.47
21647 43 26.030

42 55.0
56.7
58.3
0.3
2925 2.2
2925
42 58.50
+ 27.53
43 53.6
55.4
57.4
59.4
2875 1.7
2875
43 57.50
- 3.147
42 58.56
43 57.50
+ 27.58
- 31.42
59.00
1.77085
1.16052
2.93137
1.87093
8.93956
4 5822

M 12 31.42 12 31.42
M 13 48.87
R 13 48.57
R 13 48.70 13 48.71
741.29

81 10 57.6

582

E Corvi

0.11559

h m s
12 3 54
° '
-21 54

1.17609 0.11559
9.96432 9.96732
1.14341 0.08291

4 3.93
6.08 8.326
8.30 83.2
10.60
4163 12.80
4163
17.30
19.48
21.69
23.87 26154
26.15 26.15
27.37 26.12
30.63
32.90
28539 35.07
23539
39.50
41.70 43920
43.85 43.92
46.18 52.24
21960 48.37
21960 4 26.135

3 54.1
56.0
57.7
59.7
2891 1.6
2891
3 57.82
+ 28.32
4 52.8
54.6
57.3
59.5
2859 1.7
2859
4 57.18
- 31.04
59.36
1.77349
1.14341
2.91690
1.86759
8.93569
5 64

M 22 50.75 22 50.75
M 24 4.02
R 24 4.15
R 24 3.97 24 4.47
73.72

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172

γ Virginis

h m s
12 35 32
° ′
−0 47

1.17609 0.11559
9.99996 9.99996 + 11 37
1.17605 0.11555

35 43.80		35 41.5			
45.80	47.890	42.9			
47.85	47.89	44.5			
49.90		46.1			
23945 52.00		2232 48.2			
239.45		22.32			
51.00		35 44.64			
58.23		+ 19.70			
0.20					
2.30	4.348				
4.34	4.34	36 32.3			
6.40	4.34	34.0			
8.50		35.5			
10.55		37.4			
57909 12.57		1783 39.1			
3909		1783			
1663		36 35.66			
18.75	20.794	− 31.32			
20.70	20.79				
22.84	12.868				
10397 24.98		35 44.64			
10397	36 4.340	36 35.66			
		+ 19.70			
		− 31.32			
		51.02			
18 35 34.79		1.70774			
		1.17605			
		2.88379			
		1.82536			
		8.94157			
		4 59 44			

M 14 27.35 . 14 27.35
M 15 35.22 .
R 15 34.97 .
R 15 34.82 . 15 34.24
66.89

0 47 26.7

176

ε Virginis

h m s
12 56 9
° ′
+ 11 37

1.17609 0.11559
9.99101 9.99101
1.16710 0.10660

56 21.00		56 15.2			
23.10	2.5240	16.8			
25.25	25.24	18.8			
27.35		20.6			
12620 29.50		935 22.1			
1262.0		93.5			
33.65		56 18.70			
35.75		+ 23.34			
37.87					
39.94	4.2031				
42.00	42.03	57 11.5			
44.15	42.06	13.7			
46.22		16.0			
48.30		18.0			
37828 50.40		787 19.5			
3782.8		78.7			
54.70		57 15.74			
56.70	5.8880	− 33.70			
58.80	58.88				
1.00	8.412				
29440 3.10		56 18.70			
29440	56 42.045	57 15.74			
		+ 23.34			
		− 33.70			
		57.04			
		1.75618			
		1.16710			
		2.92328			
		1.86404			
		8.94076			
		4 59 11			

M 50 56.07 . 50 56.07
M 57 9.30 .
R 57 9.32 .
R 57 8.95 . 52 9.19
73.12

587

α Virginis

h m s
13 18 49
° ′
−10 32

1.17609 0.11559
9.99262 9.99262
1.16871 0.10821

19 0.70		18 53.6			
2.70	4.784	55.5			
4.70	4.78	57.3			
6.82		59.0			
2392 9.00		2865 1.1			
239.2		286.5			
13.10		18 57.30			
15.30		+ 24.26			
17.50					
19.50	21.574				
21.60	21.54	19 21.6			
23.70	21.54	53.5			
25.70		55.5			
27.87		57.6			
19417 29.90		2777 59.5			
19417		277.7			
34.05		19 55.54			
36.22	38.306	− 33.98			
38.30	38.30				
40.40	43.08				
19153 42.56		18 57.30			
19153	19 21.555	19 55.54			
		+ 24.26			
		− 33.98			
		58.24			
13 18 52.34		1.76522			
		1.16871			
		2.93393			
		1.86823			
		8.93430			
		4 54 47			

M 58 34.30 . 58 34.30
M 59 48.35 .
R 59 48.05 .
R 59 48.00 . 59 48.13
73.83

10 32 5.2

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S 90

Sun — c = 46747

h m s
2 8 45
° '
+12 34

1879 April 22-23

0.11559
9.98947
0.10506

0.11559

β Tauri

h m s
5 18 39
° '
+28 30

April 23

0.11559
9.94390
0.05949

0.11559

2 43.40		3 50.0	4 54.00		4 17.3	
45.50	47640	51.8	55.95	58140	19.4	
47.65	47.64	53.7	58.00	58.14	21.2	
49.75		55.5	0.30		23.0	
23820 51.90		2688 57.8	29070 2.45		1055 24.6	
23820		2688	29070		1055	
56.00		3 5376	6.73		4 2110	
58.15		— 4920	8.92		+ 5406	
0.25			11.00			
2.42	4538		13.00	15211		
4.52	457		15.15	15.21		
6.70	4.54		17.30	15.12		
8.90			19.40			
10.80			21.65			
58084 13.10			13690 23.75			
4084			13690			
17.20			28.00			
19.30	21432		30.00	32110		
21.40	2143		32.00	32.11		
23.60	12907		34.20	15025		
10716 25.66		3 53.76	16055 36.35		4 21.10	−23.50 4.45
10716	3 . 4.555	— 49.20	16055	5 15.165	+ 54.06	

	19 46.2
	48.0
	49.8
	51.8
	2498 54.0
	2498
	19 49.96
19 32.95	
	19 49.96

5 18 39.78

M 37 27.02 · M 9 56.87 ·
A

M 58 30.10
R 58 30.37
R 58 30.52 . 58 30.33

8 20 35.9

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93

ι Orionis

h m s
5 25 00
−0 23

0.11559
9.99996
0.11558

0.11558

25 58.0
1.18 3206
3.25 3.20
5.30
31603 7.30
1603
11.40
13.42
15.40
17.60 19642
19.63 19.64
21.67 19.69
23.82
25.89
17678 27.95
17678
32.00
34.27 36176
36.00 36.18
38.23 3938
18088 40.38
18088 26. 19665

26 2.4
4.1
5.7
7.5
289 9.2
289
26 5.78
+ 13.88
26 4.862
− 28.96
26 5.78
26 48.62
+ 13.88
− 28.96

M 50 31.70
M 51 27.97

d

δ Orionis

h m s
5 34 39
0 ,
−2 0

34 48.77
51.00 52914
52.90 5291
54.90
26457 57.00
26457
1.18
3.20
5.35
7.40 9.436
9.45 9.44
11.50 9.42
13.60
15.55
8492 17.69
8492
31.75
33.93 25940
35.90 2594
38.02 13885
12970 40.10
12970 35 9.430

M 27 21.17 27 21.17
M 28 33.90.
R 28 33.90.
R 28 33.85 28 33.88
72.71

0.11559

34 41.3
43.2
45.1
47.0
2257 49.1
2257
34 45.14
+ 24.29
35 38.2
39.8
41.3
42.9
2071 44.9
2071
35 4.142
− 31.99
34 45.14
35 41.42
+ 24.29
− 31.99
56.28
1.75035
1.17583
2.92618
1.86159
6.93541
4 55 32

100

κ Orionis

h m s
5 42 1
0 ,
−9 43

42 10.00
12.00 14260
14.40 14.26
16.40
7130 18.50
7130
22.68
24.70
26.85
28.95 30983
30.95 3098
33.00 31.00
35.17
37.20
27885 39.45
27885
43.47
45.67 47752
47.80 4775
49.92 6201
23876 51.90
23876 42 30.997

M 9 25.05 9 25.05
M 10 38.75.
R 10 38.60.
R 10 38.62 10 38.64
73.59

1.17609 0.11559
9.99974 9.99974
1.17583 0.11533

1.17609 0.11559
9.99372 9.99372
1.16981 0.10931

42 1.6
3.2
5.1
7.0
256 8.7
256
42 5.12
+ 23.88
42 58.8
1.2
2.7
4.3
3133 6.3
133
43 2.66
− 31.66
42 32.66
+ 25.88
− ~~28.34~~ 31.66
~~54.22~~ 57.54
~~1.73411~~ 1.76345 1.75987
1.16981 1.16981 1.16981
2.90597 2.93326 2.92978
1.86682 1.86682
~~8.96288~~ 8.92956 8.93704
4 51 36 4 56 39

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α Orionis

0.11559

h m s
5 48 37
° '
+ 7 23

1.17609 1.11559
9.99638 9.99638
1.17247 1.11197

1879 April 23

48 46.90
48.95 51.100
57.17 51.10
53.20
25550 55.25
25550
57.40
1.55
3.60
5.68 7.756
7.80 57.76 7.72
9.82
11.95
14.00
6980 16.00
6980
20.16
22.20 24.342
24.40 2434
26.43 135 44
12171 27.82
12171 49 7.740

48 38.4
40.7
42.5
44.3
2125 46.6
2125
48 4250
+ 25.24
49 35.8
37.6
39.2
40.7
1960 42.7
1960
49 3920
− 31.46
48 42.50
49 39.20
+ 25.24
− 31.46
56.70
1.75358
1.17247
2.92605
1.86356
8.93751
4 56 58

5 48 38.46

138

ζ Hydrae

0.11559

h h s
9 21 28
° '
− 8 8

1.17609 0.11559
9.99561 9.99561
1.17170 0.11120

21 48.20
50.90 52.940
53.00 52.94
55.00
26470 57.00
26470
1.20
3.36
5.50
7.60 9.606
9.64 9.61 9.58
11.70
13.80
15.85
8645 17.90
8645
22.05
24.10 26.270
26.25 26.22
28.25 13.916
13110 30.48
13110 22 9.595

21 41.4
43.4
45.2
47.0
2260 49.0
2260
21 45.20
+ 24.40
22 39.0
41.3
43.0
45.0
2155 47.2
2155
22 43.10
+ 24.80 .40
− 33.70 .50
57.90 57.90
1.76268
1.17170
2.93438
1.87766
8.94328
5 0 55

9 21 40.54

142

ε Leonis

0.11559

h m s
9 38 59
° '
+ 24 20

1.17609 0.11559
9.99561 9.99561
1.17170 0.11120

39 8.55
10.90 13.090
13.00 13.09
15.46
6545 17.54
6545
22.07
24.37
26.67
28.90 31.180
31.10 31.18
33.41 31.19
35.71
38.00
28062 40.26
28062
44.70
47.00 49.290
49.28 49.29
51.57 6238
24645 53.80
24645 39 31.185

39 1.5
3.3
5.6
7.4
276 9.8
276
39 55.2
+ 25.66
40 1.9
3.5
5.3
7.0
268 9.1
268
40 5.36
− 34.18
40 5.36
+ 25.66
− 34.18
59.84
1.77699
1.13569
2.91268
1.84997
8.93729
4 56 49

M 4 5.70 4 5.70
M 5 18.77
R 5 18.92
R 5 18.52 5 18.74
73.04

M 34 56.52 34 56.50
M 36 11.90
R 36 12.02
R 36 12.00 36 11.97
75.45

M 7 45.17 7 45.17
M 8 55.87
R 8 56.00
R 8 56.02 8 55.96
70.79

7 22 58.6

8 8 20.7

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146

ζ Leonis

h m s
10 1 56
+12 23

2	6.52	
	8.58	10.714
	10.66	10.71
	12.86	
5357	14.95	
	5357	
	19.27	
	21.30	
	23.40	
	26.48	27.614
	27.68	27.61
	29.70	27.62
	31.80	
	33.90	
24853	36.00	
	24853	
	40.25	
	42.40	44.530
	44.47	44.53
	46.66	55.24
22265	48.87	
	22265	2 27.615

10 1 58.12

0.11559

1.17609	0.11559	
9.99950	9.99895	
1.16559	0.10506	
2	0.4	
	2.0	
	4.0	
	5.8	
199	7.7	
	199	
2	3.98	
+	23.64	
2	57.0	
	59.0	
	1.5	
	3.3	
3065	5.7	
	65	
3	1.30	13.53 − 10.05
−	33.68	15.81 4.99
		18.07 10.01
		20.33 10.07
2	3.98	22.66 9.84
3	1.30	
+	23.64	
−	33.68	9.996
	57.32	10.092
1.75831		
1.16559		
2.92390		
1.86034		
8.93644		
4 56 14		

148

γ Leonis

h m s
10 9 37
+ 2 41

	—	
	—	
	—	
	—	
	—	
	—	
	—	
	—	
	—	
	—	
	—	
	—	
	—	
10	43.60	
50.06	45.30	48.096
10.012	48.08	
	50.40	
24048	52.60	
	24048	

0.11559
9.96067
0.07626

10	53.5	
	55.5	
	57.3	
	59.2	
2868	1.3	
	2868	
10	57.36	

10 57.36

M 27 29.42 .
R 27 28.85 .
R 27 29.35 . 27 29.21

C γ Leonis

0.11559 0.11559

h m s
10 13 18
+ 2 0 27

13	28.23	
	30.47	32.730
	32.75	32.73
	35.00	
16365	37.20	
	16365	
	41.65	
	43.83	
	46.06	
	48.20	50.421
	50.40	50.42
	52.55	50.34
	54.85	
	57.00	
45379	59.26	
	45379	
	3.60	
	5.83	7.966
	7.97	7.96
	10.05	10.069
3983	12.38	
	3983	13 50.380

10 18 20.66

13	46.5	
	48.6	
	50.0	
	51.8	
2506	53.7	
	2506	
13	5012	
+	0.26	
14	17.8	
	20.0	
	22.1	
	24.2	
1099	25.9	
	1099	
14	21.98	
−	31.60	
13	5012	
14	21.98	
+	0.26	
−	31.60	

M 53 57.37 . 53 57.37
M 55 9.95 .
R 55 9.92 .
R 55 9.75 . 55 9.87
72.50

M 27 29.42 .
R 27 28.85 .
R 27 29.35 . 27 29.21

M 0 52.10 . 0 52.10 .
M 1 31.55 .
R 1 31.12 .
R 1 31.30 . 1 31.32

12 33 18.2

20 27 22

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See min on shut.
164

f ⊕

Comparison Star of (123) — δ Leonis 0.11559 — β Leonis 0.11559

1879 April 23

Comparison Star of (123)		δ Leonis		β Leonis	
h m s		h m s		h m s	
10 41 19	0.11559 0.11559	11 7 40	0.11559 1.17609	11 42 53	0.11559 1.17609
+1 15	9.99990	+21 11	9.96962 9.96962	+15 15	9.98443 9.98443
	0.11549		0.08521 1.14571		0.10002 1.16052

				7 50.90		7 45.8		44 4.42		43 55.8	
				53.00	55302	47.9		6.50	8.684	1.8	
				55.25	55.30	49.9		8.75	8.68	4.0	
				57.56		52.0		10.80		5.8	
			27651	59.80	2494	53.8	34342	12.85	3193	7.9	
				27651		2494		4342		193	
				4.08		7 49.88		17.17		44 38.6	
				6.40		+ 23.06		19.30		+ 21.88	
4.12 49.42	41 45.30			8.55	12,952			21.48			
2.04 49.52	346.66 47.48			10.78	~~14063~~			23.60	2 5.729		
-0.01 49.67	49.423 49.67		42 2.3	12.92	12.95	8 41.2		25.80	25.73	45 0.1	
2.06 49.44	51.50		4.4	15.00	12.92	43.8		27.80	25.76	2.1	
4.13 49.57	53.70		6.6	17.40		46.6		30.00		4.4	
6.19 49.41	55.60		8.8	19.57		47.4		32.05		6.1	
8.27 49.63	57.90	330	10.9	11657 21.87		2270 49.0	23156	34.30	208	8.1	
			330	11657		2270		23156		208	
12.38 49.50	247.23 1.88		42 6.60	26.18		8 45.40		38.60		45 41.6	
14.45 49.51	49.446 3.96	59.78	− 17.11	28.35	30546	− 32.46		40.67	42844	− 38.42	
16.54 49.46	6.00	5.98		30.60	3054			42.80	42.84		
18.58 49.47	8.05			32.70	148584			44.95	5152		
20.71 49.29	2989 10.00			15273 35.00			21422	47.20		44 38.6	
	2989		42 6.60	15273	8 12.935	7 49.880		21422	44 25.745	45 4.16	
49.484						8 45.40				+ 21.88	
49.491						+ 23.06				− 38.42	
						− 32.46				60.30	
				11 7 43.87		55.52		11 42 56.17		1.78032	
						1.74445				1.16052	
						1.14571				2.94084	
						2.89016				1.87506	
						1.82789				8.93422	
						8.93773				4 54 44	
						4 57 7					

M 15 43.32

M	16 28.02	16 28.02	
M	17 35.27		
R	17 35.20		
R	17 35.42	17 35.30	67.28

M	12 40.90	12 40.90	
M	13 56.10		
R	55.82		
R	55.77	13 55.90	75.00

21 11 0.0

15 14 40.1

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172

χ Virginis pr.

h m s
12 25 32

0.11559 1.17609 0.11559
9.99996 9.99996
0.11555 1.17605

35 43.40
45.28 47422
47.40 47.42
49.45
23711 57.58
23711

52.68
57.70
59.88
1.90 3910
3.90 391
6.05 388
8.10
10.04
87519 12.04
3519
16.10
18.37 20336
20.31 20.34
22.46 12776
10173 24.50
10168 36 3.895

12 25 84.79

35 35.5
37.7
39.5
41.4
1971 43.0
1971

35 3942
+ 2448

36 32.5
34.7
36.3
38.0
1812 39.7
1812

36 3624
- 32.34

35 3942
36 36.24
+ 24.48
- 32.34
56.82
1.754450
1.17605
2.93055
1.87251
8.94196
5 0 0

176

ε Virginis

h m s
12 56 9

0.11559 1.17609 0.11559
+11 27 9.99101 9.99101
0.10660 1.16710

52 20.80
23.00 24960
25.00 2496
27.00
124.80 29.00
12480

33.33
35.48
37.55
39.62 41.748
41.80 41.75
43.93 41.76
45.92
48.05
37573 50.05
37573
54.28
56.44 58566
58.53 58.57
0.70 8353
29283 2.88
29283

56 23.78

56 19.9
21.8
23.8
25.7
1189 27.7
1189

56 2378
+ 1798

56 16.0
17.7
19.2
20.7
969 23.3
969

57 1938
- 37.62

56 23.78
57 19.38
+ 17.98
- 37.62
55.60
1.745507
1.16710
2.91217
1.82979
8.93762
4572

56 41.755

587

ζ Virginis

h m s
18 18 49.

0.11559 1.17609 0.11559
-10 38 2 9.99262 9.99262
0.10821 1.16871

19 0.50
2.60 4610
4.65 4.61
6.70
2305 8.60
2305

12.95
15.00
17.10
19.17 21.297
21.30 2129
23.35 21.38
25.50
27.50
19167 29.50
19167

34.00
36.06 38.140
38.10 38.14
40.20 4275
19070 42.34
19070 19 21.335

18 18 5224

18 57.0
59.0
1.0
3.9
3049 5.0
49

19 098
+ 20.36

19 54.2
56.8
58.6
0.5
2923 2.2
2923

19 5846
- 37.12

18 098
19 58.46
+ 20.36
- 37.12
57.48
1.759452
1.16871
2.92823
1.86988
8.94165
4 5948

M 14 14.60 · 14 14.60
M 15 29.25 ·
R 15 29.12 ·
R 15 29.12 · 15 29.16
74.56

0 47 26.7

M 51 2.02 · 51 2.02
M 52 13.00 ·
R 52 12.65 ·
R 52 12.70 · 52 12.78
70.76

M 58 3630 · 58 36.30 ·
M 59 50.70 ·
R 59 50.35 ·
R 59 50.17 · 59 50.41
74.11

18 38.52

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277

β Aquilae

h m s
19 40 3
+10.19

1879 April 23

0.11559 0.11559
9.99292
0.10851

40 41.60		40 33.0	
42.90	45100	35.5	
45.50	45.10	37.1	
47.10		38.8	
22550 49.80		1851 40.7	
22550		1851	
53.50		40 37.02	
55.50		+ 24.86	
57.65			
59.70	18510		
1.90	18.58		
3.98	1.91		
6.07			
8.00			
55666 10.36			
1666			
14.70			
16.80	18720		
18.70	1872		
20.70	12382		
9360 22.90		40 37.02	
9360	41 1.880	+ 24.86	

19 40 39.84

R 8 8.07
R 8 7.90 . 8 7.98

10 19 1.6

280

ζ Aquilae

h m s
19 44 53
+ 8 33

0.11559
9.99515
0.11074

45 33.30		44 57.5	
5.20	7.440	59.3	
7.40	7.44	0.9	
9.65		3.5	
3720 11.65		3060 4.8	
3720		60	
15.90		45 1.20	
17.90		+ 22.91	
20.00			
22.00	24100		
24.00	24.10		
26.20	24.12		
28.22			
30.30			
21690 32.38			
21690			
36.60			
38.70	40806		
40.88	4081		
42.88	48.25		
20403 44.97		45 1.40	
20403		45 24.110	+ 22.71

19 44 54.71

R 54 16.94
R 54 17.02 . 54 16.98

8 32 51.8

283 Ex Aust.

β Aquilae

h m s
19 49 22
+ 6 6

0.11559 0.11559
9.99753
0.11312

49 32.70			
34.80	36860		
37.00	3686		
38.85			
18430 40.95			
18430			
45.20			
47.28			
49.32			
51.50	53544		
53.60	53.54	50 27.7	
55.67	53.48	28.7	
57.70		30.5	
59.73		32.0	
48190 1.80		1522 33.3	
48190		1522	
6.00		50 30.44	
8.05	10100	− 36.93	
10.05	10.10		
12.20	10696		
5050 14.20			
5050	49 53.510	50 30.44	
		− 36.93	

19 49 24.16

R 22 8.30 .
R 22 8.25 . 22 8.27

6 6 12.9

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287

θ Aquilae

h m s
20 5 4

0.11559 0.11559
9.99991
0.11550

5 14.35		5 12.9		11 30.30		37.77	17.97	27 18.8		27 7.6	28 57.8				
16.35	18494	17.0		32.50		37.84	13.44	24.4	28.84	11.6	0.7				
18.50	18.49	18.9		34.64		37.86	8.96	28.9		15.6	3.9				
20.60		21.2		36.80		37.88	4.48	33.4		18.6	7.4				
9247 22.67		935 23.5		38.85		37.70	000	1442 37.7		765 23.1	3224 12.6				
9247		935						1442		765	12.4				
26.60		5 18.70		43.26				28 (44.8		27 15.30	29 4.48				
28.60		+ 16.22		45.28				49.8)							
30.78				47.30											
32.80	34883			49.60	51.66		37.810								
34.95	34.88			51.80	51.67	12 7.7									
36.96	34.95			53.80		9.7									
38.97				55.85		11.8									
41.18				58.00		13.7									
31395 43.12				46499 0.10		586 15.7									
31395				46499		586									
47.20				1.25		12 11.72									
49.30	51410			6.50	8.610										
57.30	51.41			8.70	8.61										
53.50	69.90			10.85											
25705 53.75		5 18.70		4305 12.76						27 15.30	29 4.48				
25705	5 34.915	+ 16.22		4305	11 51.638	12 11.72									

20 11 22.98

R 37 49.00
R 37 48.92 37 48.96

R 22 22.52
R 22 22.47 22 22.49

12 55 66

607

ζ² Capricorni

h m s
20 11 20

-0.11559 0.1559
-9.98887
0.10446

R - 12.67
R 54 18.10
R 54 18.02 54 18.06

291

θ Cephei

h m s
20 27 03

+62 26 0.11559 0.11559
9.66319
9.77878

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303

γ Cygni

h m s
21 7 47
+29 44

1879 April 23

0.11559 0.11559
9.93869
0.05428

7 54.55
56.85 59.94
59.27 59.29
1.75
29647 4.05
29647

7 44.8
46.7
48.7
50.7
2438 52.9
2438

8.30
11.20
13.50
15.96 18.296
18.30 18.29

20.60 18.32
23.00
25.45
16466 27.85
16466

32.60
34.90 37.346
37.32 37.35
39.73 15.64
18673 42.18
18673

7 4876
+ 29.54

8 18.305 + 29.54

714.57 42.09
12.45 42.15

8.30 42.10
6.23 42.13
4.19 42.14
2.05 42.09
-0.20 42.18

2.07 41.93
4.19 42.06
6.23 42.02
8.31 42.04

12.45 42.05
14.54 42.21
16.66 42.10
18.67 42.18
20.82 42.08

42.105
42.094

307

β Aquarii

h m s
21 25 11
- 6 6

0.11559
9.99753
0.11312

25 —
—
—
84.24 27.55
42.12 29.70

37865 33.80
42.072 35.90
38.00
40.00 42.076
42.18 42.08

44.00
46.20
48.25
37868 50.35
37868

21.02 54.50
42.124 56.70 58.730
58.70 58.73
0.85
9365 2.90
29365

0.11559

25 57.4
59.3
1.4
3.4
3061 4.6
61

26 1.22

26 1.22
— 19.13

309

ε Pegasi

h m s
21 38 14
+ 9 19

0.11559
9.99423
0.10982

0.11559

38 24.50
26.55 28.720
28.65 28.72
30.90
14360 33.00
14360

37.07
39.12
41.30 400
43.33 45.720
45.40 45.40

47.40 45.39
49.55
51.70
40860 53.90
40860

57.90
59.95 2060
2.00 2.06
4.20 9078
31030 6.25
1030

38 45.395

39 13.3
15.4
17.3
19.2
864 21.2
864

39 17.28
— 31.88

39 17.28
— 31.88

R 43 48.82
R 43 48.75 43 48.78

R 33 41.37
R 33 41.17 33 41.27

R 9 7.80
R 9 7.80 9 7.80

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311

α Aquarii

21h 57m 34s
−0° 54′

Sheet not numbered

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α Pegasi

22h 58m 44s
+14° 33′

R 20 15.75
R 15.32
mean 20 15.54

R 54 0.17
R 0.10
0.14

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S

Sun C = 46.747

h m s
2 7 30
0 ′
+12 54

0.11559
9.98890
0.10449

0.11559

1879 April 23-24

6 28.05			7 35.4	8 39.00			8 6.2		8 52.40			8 43.8	
30.42	32470		37.9	41.20	43390		8.0		54.38	56466		45.6	
32.55	32.47		40.4	43.37	43.39		10.0		56.38	56.47		47.0	
34.55			42.7	45.58			12.0		58.57			49.4	
16235 36.78			2010 44.6	21695 47.80			502 14.0		28233 0.60			2369 51.1	
162.35			2010	21695			502		28233			2369	
40.83			7 4020	51.90			8 10.04		4.76			8 47.38	
43.00			− 50.76	54.03			+ 50.34		7.04			+ 25.81	
45.00				56.25					9.25				
47.22	49459			58.27	0422				11.22	13219			
49.50	49.63			0.30	042				13.18	13.22			
51.85	49.42			2.60	0.34				15.22	13.16			
53.88				4.75					17.31				
55.86				6.80					19.53				
44513 58.00				54380 8.70					11897 21.46				
445.13				3.80					11.897				
2.00				13.00					25.60				
4.15	6.356			15.37	17396				27.75	29.844			
6.35	6.36			17.40	17.29				29.70	29.84			
8.48	9883			19.43	12068				32.00	14631			
3178 10.80			7 40.20	8698 21.78			8 10.04		14922 34.17			8 47.38	
3178	6 49.440		− 50.76	6698	9 0.380		+ 50.34		14922	9 13.190		+ 25.81	

M 17 35.22 ′

M 49 10.17 ′

87

B Orionis

h m s
5 8 43
0 ′
−8 21

0.11559
9.99534
0.11096

0.11559

April 24

5 8 44.17

R 47 10.07 ′
R 47 9.97 ′
R 47 10.25 47 10.97

8 20.858

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90 — β Tauri

93 — ν Orionis

a — ξ Orionis

h m s					h m s					h m s									
5 18 39					5 25 50					5 34 39									
° ′	0.11559			0.11559	° ′		0.11559		0.11559	° ′	0.11559							1.17609	0.11559
+28 30	9.94390				−0 23		9.99995			−2 0	9.99974							1.17583	
	0.05949						0.11554				0.11533								
18 46.03			18 48.8		25 59.28			56? 0.2		34 48.70			34 49.0						
48.50	50766		51.1		1.18	9280		2.0		50.84	52842		50.5						
50.80	50.77		52.7		3.27	328		4.2		52.87	52.84		52.4						
53.00			54.7		5.27			6.0		54.90			54.0						
25383 55.50			2639 56.6		31640 7.40			204 8.0		26421 56.90			2622 56.3						
25383			2639		1640			204		26421			2622						
0.12			18 52.78		11.40			20 408		0.95			34 52.44						
2.46			+ 16.70		13.40			+ 1562		3.20			+ 16.89						
4.80					15.60					5.20									
7.00	9453				17.60	19700				7.26	9336								
9.40	945				19.77	19.70		26? 44.4		9.36	9.34		35 43.2						
11.80	9.52				21.70	19.70		46.0		11.37	9.32		45.6						
14.20					23.80			47.9		13.50			47.4						
16.50					26.00			49.9		15.50			49.4						
8508 18.80					17731 28.03			2402 52.0		8402 17.63			2371 51.5						
8508					17730			2402		8402			2371						
23.62					32.00			48.04		21.70			35 47.42						
25.80	28270				34.05	36130		− 28.34		23.66	25814		− 38.09						
28.33	28.27				36.20	36.13				26.34	25.81								
30.60	13964				38.10	3941				27.87	13865								
14135 33.50			18 52.78		18065 40.30			56 4.08		12907 30.50			34 52.44						
14135	19 9.485		+ 16.70		18065	26 19.700		26 48.04		12907	35 9.330		35 47.42						
								+ 15.62					+ 16.89						
								− 28.34					− 38.09						
								43.96					54.98						
													1.740 20						
													1.17583						
													2.91603						
													1.85065						
													8.93462						
													4 55 0						
5 18 39.77																			
R 57 25.30					M 50 30.02					M 27 31.17	27 31.17								
R 57 25.45	57 28.37				M 51 27.67					M 28 42.52									
										R 28 41.82									
										R 28 41.87	28 42.07								
											70.90								
28 80 19.0																			

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100

K Orionis

h m s
5 42 1
° '
−9 43

0.11558 0.11559
9.99372
0.10930

1879 April 24

42 9.92
11.90 14220
14.04 14.22
16.40
7110 18.14
7110
22.89
24.98
26.87
28.92 31.020
3085 3102
33.10 30.96
35.10
37.15
27918 39.32
27918
43.60
45.57 47.710
47.70 47.71
49.80 6193
23855 51.86
23855 42 30.990

42 21.0
23.2
24.7
26.4
1238 28.5
1238
42 2476
+ 6.23
43 1.9
4.0
6.0
7.9
293 9.5
293
43 586
− 34.87
42 24.76
43 5.86
+ 6.23
− 34.87
41.10

102

ζ Orionis

0.11539

h m s
5 48 37
° '
+9 23

0.11559 1.17609
9.99638 9.99638
0.11197 1.17247

48 46.82
48.92 50980
51.00 50.98
53.00
55.16
25490
25490
58.36
1.40
3.50
5.54 7.660
7.62 7.66
9.75 7.61
11.90
13.97
6089 15.90
6894
20.05
22.20 24254
24.29 24.25
26.33 13523
12127 28.40
12127
5 48 38.45

48 38.5
40.0
42.4
44.0
2109 46.0
2109
48 42.18
+ 25.46
49 33.7
37.7
39.8
41.3
1979 43.4
1979
49 39.58
− 31.94
48 42.18
49 39.58
+ 25.46
− 31.94
57.40
1.75891
1.172-417
2.93038
1.86759
8.93621
4565

106

μ Geminor

0.11559

h m s
6 15 38
° '
+22 34

0.11559 1.17609
9.96541 9.96541
0.08100 1.04150

15 47.00
49.35 51,536
51.60 51.54
53.73
56.00
25768
25768
0.50
2.70
4.90
7.20 9.416
9.43 942
11.70 9.40
13.86
16.05
8474 18.40
8474
22.87
24.95 27264
27.22 27.26
29.48 13880
13632 31.58
13632
16 9.410

15 43.7
45.3
47.4
48.8
2360 50.8
2360
15 47.20
+ 22.21
16 39.5
41.6
43.5
45.4
2174 47.4
2174
16 4348
− 34.07
15 47.20
16 43.48
+ 22.21
− 34.07
56.28
1.75035
1.14150
2.89185
1.83078
8.93893
4 57.56

M 9 49.77 9 49.77
M 10 43.60
R 10 43.07
R 10 42.85 10 42.97

M 4 6.32 4 6.32
M 5 20.12
R 5 20.20
R 5 19.80 5 20.04
73.72

M 53 1.62 53 1.62
M 54 9.40
R 54 9.22
R 54 9.42 54 9.35
67.73

7 22 587

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1879phae.proj.11502.

107

γ Geminor

0.11559

h m s
6 30 46
° ′
+16 30

1.17609	0.11559	
9.98174	9.98174	
1.15783	0.09733	

30 52.62		30 44.0	
54.33	56980	45.9	
56.95	5698	47.4	
59.20		48.8	
28490 1.30		2370 50.9	
28490		2370	
5.52		30 47.40	
7.70		+ 26.74	
9.90			
11.93	14152		
14.10	14.15	31 45.0	
16.29	14.12	46.6	
18.57		49.0	
20.64		50.5	
12737 22.78		2440 52.9	
12737		2440	
22.00		31 48.80	
29.00	31276	− 34.66	
31.28	31.27		
33.50	14825		
15638 35.60		30 47.40	
15638	31 14.135	31 48.80	
		+ 26.74	
		− 34.66	
		61.40	
		1.78814	
		1.15783	
		2.94600	
		1.88767	
		8.94167	
		4.59 48	

M 57 13.35 . 57 13.35
M 58 30.42 .
R 58 30.67 .
R 58 30.60 . 58 30.56
77.21

118

β Can. Min.

0.11559

h m s
7 20 85
° ′
+8 32

0.11559	1.17609	
9.99517	9.99516	
0.11076	1.17125	

20 45.28		20 39.6	
47.40	49446	41.3	
49.40	49.25	42.6	
51.55		44.3	
24623 53.60		21137 45.9	
24723		2137	
51.50		20 42.74	
53.96		+ 23.36	
2.00			
4.00	6147		
6.00	6.35	21 36.9	
8.25	6.06	37.4	
10.37		39.5	
12.45		41.0	
59532 14.50		1966 42.8	
5532		1966	
18.70		21 39.32	
20.50	22668	− 33.22	
22.57	2287		
24.97	13212		
11434 27.00		20 42.74	
11434	21 6.105	21 39.32	
		+ 23.36	
		− 33.22	
		56.58	
		1.75266	
		1.17125	
		2.92391	
		1.86439	
		8.94048	
		4 58 59	

M 55 19.77 . 55 19.77
M 56 32.95 .
R 56 32.77 .
R 56 33.12 . 56 32.95
73.18

119

ζ Geminor

h m s
7 26 52
° ′
+32 9

0.11559	1.17609	0.11559
9.92771	9.92741	
0.04330	1.10380	

27 0.10		26 53.0	
2.55	4986	54.9	
4.98	498	56.6	
7.40		58.9	
2493 9.80		2839 0.5	
2493		2839	
14.72		26 56.78	
17.00		+ 27.66	
19.60			
22.03	24434		
24.45	24.43	27 56.4	
26.87	24.45	58.5	
29.39		0.7	
31.75		2.8	
21991 34.10		3036 5.2	
21991		36	
38.57		28 0.72	
41.45	43930	− 36.28	
43.90	43.93		
46.43	4891		
21965 48.90		26 56.78	
21965	27 24.4460	28 0.72	
		+ 27.66	
		− 36.28	
		63.94	
		1.80577	
		1.10380	
		2.90957	
		1.84665	
		8.93708	
		4 36 40	

7 26 58.86

M 18 26.60 . 18 26.60.
M 19 36.92 .
R 19 36.87 .
R 19 36.75 . 19 36.85
70.25

32 9.22

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120

ℓ Can. Min. 0.11559

h m s
7 32 58
° ′
+5 32

1.17609 0.11559
9.99797 9.99797
1.17406 0.11356

1879 April 24

33 8.10
10.19 12220
12.23 12.22
14.27
6110 16.41
6110
20.57
22.65
24.69
26.73 28796
28.77 28.79
30.90 28.80
32.90
34.98
25916 37.10
25916
41.20
43.28 45360
45.45 45385
47.47 5760
22690 49.50
22690 33 28.795

33 1.5
3.4
4.9
6.7
250 8.5
250
33 500
+ 23.80
33 32.6
1.7
3.5
5.1
3172 7.3
172
34 344
- 34.64

33 5.00

34 3.44
+ 23.80
- 34.64
58.444
1.766 71
1.17406
2.940 77
1.88110
8.94033
4 58.53

7 82 59.61

5 31 56.8

282

E Draconis L.C.

h m s
19 48 34
° ′
+110 2

0.11559 0.11559
9.97289
0.08848

48 36.8
42.5
48.5
54.7
0.8
6.8
12.2
18.0
24.8
61
49 0.68

47 32.1 48 11.2
36.3 16.7
40.8 20.4
45.1 25.3
2041 49.8 1043 30.7
2041 1043
47 4082 48 2086
+1 19.86 +0 39.82

49 7.3 49 42.3
12.9 49.5
18.4 54.0
24.0 58.0
918 29.2 2701 5.3
918 2701
49 18.36 49 54.02
-0 17.68 -0 53.34

30 30.8 48 20.86
49 54.02

125

O Ues. Maj. 0.11559

h m s
8 20 12
° ′
+61 7

0.11559
9.65394
19.77956

20 28.9
33.2
37.5
41.9
46.0
50.4
54.7
59.0
4149 3.3
4149
20 4616

19 45.2 20 76
47.7 10.9
52.2 14.0
54.7 17.8
2628 58.0 22.0
2568 733.23
19 51.36 20 11446
+0 54.74 +0 3164

21 9.2 21 50.9
13.0 54.9
17.1 58.2
20.0 1.7
840 24.7 2666.7
840 2224
21 1680 21 58.48
-0 30.70 -1 12.38

20 1466
21 58.52

M 58 7.77 · 55 7.77
M 56 23.95
R 56 23.92
R 56 23.60 · 56 23.82
7605

M 28 35.57
M 28 15.92
M 27 46.62
M 27 34.40
M 27 19.70

M 20 39.42
M 20 53.82
M 21 33.27
M 21 58.47

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138 α Hydrae

h m s
9 21 38

	0.11559	1.17609	0.11559
−8 8	9.99561	9.99561	
	0.11120	1.17170	

21	48.70		21	38.6	
	50.76	52850		41.2	
	52.84	52.85		43.0	
	54.95			44.9	
26425	57.00		2145	46.8	
	26425			2145	
	1.18		21	4290	
	3.27		+	26.60	
	5.35				
	7.40	9.511			
	9.47	9.51	22	38.9	
	11.58	9.48		41.9	
	13.70			43.5	
	15.77			45.1	
8560	17.88		2176	47.2	
	8560			2176	
	32.00		22	4352	
	24.05		−	34.02	
	26.05	26.11			
	28.20	13896			
13058	30.28		21	4290	
	13058	229.4895	22	43.52	
	26116		+	26.60	
			−	34.02	
				60.62	
			1	78262	
			1	17170	
			2	95432	
			1	89823	
			8	94391	
			5	1 21	

9 21 40.52

M 34 53.57 34 53.57
M 36 12.45
R 36 12.70
R 36 12.90 36 12.68
79.11

8 8 20.7

142 ε Leonis

h m s
9 38 59

	0.11559	1.17609	0.11559
+ 24	20	9.95960	
		0.07519	

39	8.48		39	14.4	
	10.50	13028		16.7	
	12.97	13.03		18.8	
	15.34			20.4	
6514	17.55		926	22.3	
	6514			946	
	22.03		39	1892	
	24.35		+	12.14	
	26.40				
	28.77	31034			
	31.00	31.04	40	0.8	
	33.30	31.08		2.9	
	35.55			4.4	
	37.90			6.2	
27931	40.00		231	8.8	
	27931			231	
	4458		40	462	
	46.85	48116	−	33.56	
	49.00	49.12			
	51.40	6215			
24558	53.75		39	18.52	
	24558	39 31.060	40	4.62	
			+	12.54	
			−	33.56	
				46.10	

M 8 0.90
M 8 55.40
R 8 55.45
R 8 55.30 8 55.38
54.48

146 α Leonis

h m s
10 1 56

	0.11559	1.17609	0.11559
+12 33	9.98950	9.98950	
	0.10509	1.16559	

2	6.45		2	1.5	
	8.55	10.640		3.4	
	10.65	1064		5.3	
	12.75			6.9	
5320	14.80		260	8.9	
	5320			260	
	19.00		2	520	
	21.00		+	2230	
	23.30				
	25.30	27483			
	27.50	27.48	3	0.9	
	29.68	27.52		3.0	
	31.75			4.9	
	33.80			7.0	
24735	36.02		244	8.6	
	24736			244	
	4020		3	4.88	
	42.30	44.41	−	37.38	
	44.35	44.41			
	46.48	5505			
22205	48.72		2	520	
22205	~~46.61~~	2 27.500	3	4.88	
	46.61		+	22.30	
			−	37.38	
				59.68	
			1	77383	
			1	16559	
			2	94142	
			1	88315	
			8	94173	
			4	59 51	

10 1 58.10

M 53 58.97 53 58.97
M 55 15.32
R 55 15.50
R 55 15.30 55 15.37
76.40

12 33 18.2

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148

γ Leonis

h m s
10 9 57
° ′
+24 1

1879 April 24

0.11559

1.17609 0.11559
9.96067 9.96067
1.13676 0.07626

10 7.39
9.68 11.868
11.83 11.87
14.04
5934 16.40
59.34
20.38
23.00
25.38
27.60 29.876
29.90 29.88
3205 29.92
34.50
36.70
26888 38.90
26888
43.40
45.63 47.966
48.05 47.97
50.25 59.84
23983 52.50
23983 1029.900

10 1.3
3.4
4.9
7.7
272 9.9
272
10 5.44
+ 24.46

11 3.4
5.2
7.3
9.4
365 11.2
365
11 7.30
− 37.40

10 5.44
11 7.30
+ 24.46
− 37.40
61.86
1.791441
1.13676
2.92817
1.86457
8.93640
4 86 13

M 26 28.40 .26 28.40
M 27 41.62
R 27 41.65
R 27 41.55 .27 41.61
73.21

C

γ Leonis pr.

h m s
10 13 18
° ′
+20 27

April 24

13 28.30
3060 32.720
32.68 3280 3272
3490
3700
16360
16360
4148
48.70
4593
48.22 50.321
50.20 5032
52.56 50.11
54.80
5690
45289 59.00
45289
3.47
570 7848
7.80 7.85
1000 10057
3924 12.27
3924 13 50.215
− .006
50.209

10 18 20.64

13 24.0
25.8
27.8
29.8
1393 31.9
1393
13 27.86
+ 22.35

14 21.7
23.9
26.0
27.7
1290 29.7
1290
14 25.80
− 35.59

13 27.86
14 25.80
+ 22.36
− 35.58
57.94
1.76298
1.14782
2.91080
1.85107
8.94027
4 58.81

M 0 26.17 .0 26.17
M 1 37.27
R 1 37.20
R 1 36.95 .1 37.14
70.97

1.17609 0.11559
9.97173 9.97173
1.14782 0.08732

0.11559

20 27 2.3

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1

α Androm c = 46,747

h m s
0 2 8
+ ° ′
+28 25

1879 April 26

Short note numbered

S

Sun c = 46,740

h m s
2 18 49
+ ° ′
+13 53

0.11559
9.98712
0.10271

9.11559

April 26-27

17	46.00			19	0.4	19	57.30			19	14.8
	48.05	50320			2.3		59.39	1594			16.3
	50.37	50.32			4.0		1.68	1.59			18.4
	52.58				5.7		3.70				21.3
25160	54.60			199	7.5	30797	5.90			928	22.0
	25160				199		797				918
	58.80			19	398		10.15			19	1836
	1.00				5669		12.30			+1	00.31
	3.10						14.50				
	5.00	7283					16.60	18.661			
	7.35	7.285					18.78	18.66			
	9.25	7.30					20.78	18.68			
	11.60						22.90				
	13.80						24.94				
60555	15.65					16795	27.00				
	65556						16795				
	19.98						31.50				
	22.20	24294					33.80	35782			
	24.29	24.29					35.78	35.78			
	26.40	13461					37.88	3737			
12147	28.60			19	398	17891	39.95			19	18.56
	12147	18	7.290		56.69		17891	20	18.670	+1	0.11

N

M 19 30.07

M 51 45.02

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146

α Leonis

h m s
10 1 56
+12 33

1879 April 27

Ch J

164

β Leonis

h m s
11 42 53
+15 15

0.11559 0.11559
9.98443
0.10002

Ex min									
44	3.55		43 53.8	+22.26	25.28	3 30.7		2 55.7	
	5.68	7.846	55.4	20.82	25.12	126.19 5.10	7.436	5.78	
	7.85	7.85	57.4	17.81	25.26	25.238 7.45	7.44	0.7	
	10.05		58.9	15.38	25.28	9.70		1.9	
3923	12.10		2862 07	13.35	25.28	3718 11.93		2998 44	
	39.23		2862			3718		2998	
	16.47		43 57.24	8.60	25.30	177.35 16.40		2 59.96	
	18.65		+ 27.70	6.67	25.17	25.336 18.50		+ 25.32	
	20.82			4.49	25.29	20.85			
	22.80	24.949		2.20	25.15	22.95			
	24.90	24.95		−0.00	25.60	25.40			
	27.02	24.92		2.22	25.38	27.70			
	29.10			4.44	25.26	29.70			
	31.33			4.47		—			
22454	33.47			2.20		—			
	22454								
	37.77					—			
	39.90	4.994				—			
	42.00	4.98				—			
	44.03	4.984				—			
20997	46.30		43 57.24			—		2 59.96	
	20997	44 24.935	+ 27.70						

25.287
25.278

11 42 56.14

R 54 2.60.
R 54 2.72.

R 12 35.47.
R 12 35.60. 12 35.53

15 14 40.6

M 22 57.92.
R 22 58.25. 22 58.08

582

ε Corvi

h m s
12 3 54
−21 5.7

0.11559 0.11559
9.96732
0.08291

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Sun

h m s
2 26 24
+14 30

1879 April 28-29

Lh J

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138

1879 April 30

α Hydrae 0.11559

h m s
9 21 38
−8 8

1.17609 0.11559
9.99561 9.99561
1.17170 0.11120

21 47.58
49.70 51.776
51.80 51.78
53.85
25888 55.95
25888
6.00
2.10
4.20
6.30 8.348
8.30 8.35
10.43 8.41
12.50
14.60
7513 16.70
7513
20.86
22.90 25.046
25.00 25.05
27.15 13.683
12523 29.30
12523 22 8.380

9 21 40.43

21 43.8
45.0
47.0
49.0
2356 50.8
2356
21 47.12
+ 21.26
22 37.0
38.7
40.9
42.5
2038 44.7
2038
22 40.76
− 32.38
21 47.12
22 40.76
+ 21.26
− 32.38
53.64
1.729449
1.17170
2.90119
1.84055
8.93936
4 58 13

M 35 4.50
M 36 13.77
69.27

8 8 20.6

140

δ Ursæ Maj. 0.11559

h m s
9 24 45
+52 14

0.11559 1.17609
9.78707 9.78707
9.90266 0.96316

24 44.42
47.80 51.156
51.00 51.16
54.58
25578 57.98
25578
4.68
8.04
11.34
14.72 18.097
18.85 18.10
21.48 18.08
24.78
28.24
16287 31.57
16287
38.20
41.67 45.004
45.00
48.35 51.61.6
22502 51.80
22502 24 5 18.090

24 33.0
35.4
38.4
41.7
1922 43.7
1922
24 38.44
+ 39.65
25 3.73
0.2
2.9
5.5
3155 9.6
155
26 3.10
− 45.01
24 38.44
26 3.10
+ 39.65?
− 45.01
84.66?
1.92768
0.96316
2.89084
1.83200
8.94116
4 59 27

M 14 11.70 14 11.70
M 15 19.97
R 15 19.55
R 15 19.35 15 19.62
67.92

142

ε Leonis 0.11559

h m s
9 38 59
+24 20

0.11559 1.17609
9.99560 9.99560
0.07519 1.13569

39 7.42 11.920
9.75 11.90
11.90 11.91
14.10
5957 16.43
5960
21.95
23.25
25.50
27.80 30.006
30.00 30.01
32.20 29.98
34.50
36.85
27005 39.00
27005
41.30
45.80 48.060
48.00 48.06
50.30 5997
24030 52.60
24030 39 29.995

39 2.0
3.7
5.6
7.8
281 9.4
281
39 5.62
+ 24.38
39 5.62
− 29.92
39 5.62
39 59.92
+ 24.38
− 29.92
54.30
1.73480
1.13569
2.87049
1.80611
8.93562
4 58 13 45541

M 7 47.54 7 47.57
M 8 51.42
R 8 51.60
R 8 51.67 8 51.56
63.99

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1879phae.proj.11502.

146

α Leonis 0.11559

h m s
10 1 56
° ′
+12 33

0.11559 1.17609
9.98956 9.98950
0.10509 1.16559

148

β Leonis 0.11559

h m s
10 9 07
° ′
+24 1

0.11559 1.17609
9.96067 9.96064
0.07626 1.13676

c

γ Leonis

h m s
10 18 18
° ′
+20 2

0.11559 1.17609 0.11559
9.97173 9.97173
0.08732 1.14782

2	5.50			2	2.3	10	6.30			9	58.7	13	27.8		13	16.3	
	7.50	9.640			4.0		8.48	10.792			0.8		59.5	31.606		17.6	
	9.60	9.64			5.8		10.78	10.79			2.8		31.60	31.61		19.3	
	11.45				7.0		13.10				4.4		33.80			20.9	
4820	13.85			281	9.0	5396	15.30			3126	5.9	15803	36.00		966	22.5	
	4820				281.		5396				12.16		15803			966	
	18.00			2	5.62		19.80			10	2.52		40.30		13	19.32	
	20.00			+	20.90		22.00			+	26.29		42.57		+	29.88	
	22.20						24.30						44.78				
	24.34	26.454					26.50	28.800					46.95	49.202			
	26.50	26.45		2	8.44		28.82	28.80		10	57.7		47.01	49.20	14	1.70	
	28.57				5.62		31.00	28.82			1.5		51.40	49.20		1.88	
	30.75				5.79		33.33				3.7		53.78			2.04	
	32.78				5.96		35.60				5.7		53.90			2.29	
23809	34.35			2898	4.7	25920	37.85			3182	7.4	441282	58.02		1041	25.0	
	23809				2898		25920				182		44282			1041	
	39.10			2	5.96		42.30			11	3.64		2.30		14	20.82	
	41.25	43.410		−	31.44		44.60	46.860		−	34.83		4.70	6.764	−	31.62	
	43.40	43.40					46.88	46.86					6.80	6.80			
	45.50	53.04					49.10	57.65					9.00	9.841			
21702	47.77			2	5.62	23430	51.42			10	2.52	3402	11.02		13	19.32	
	21705	2	26.52	2	57.66		23430	10	28.810	11	3.64		3382	13	49.200	14	20.82
				+	20.90					+	26.29					+	29.88
				−	31.44					−	34.83					−	31.62
					52.34						61.12						61.50
	10	138	88	1.	71883					1.	78618	10	18	20.57		1.	78888
				1.	16559					1.	13676					1.	14782
				2.	88442					2.	92294					2.	93670
				1.	82151					1.	86451					1.	87823
				8.	93709					8.	94157					8.	94153
				4	56.41					4	59.44					4	59.43

M	54	2.67	54	2.67	M	26	25.92	26	25.92	M	0	17.75	0	17.75			
M	55	8.90			M	27	39.35			M	1	33.27					
R	55	9.02			R	27	39.10			R	1	33.32					
R	55	9.00	55	8.97	R	27	38.90	27	39.12	R	1	33.30	1	33.30			
				66.30					73.20					75.55			

12 38 18.6

20 37 23.7

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153

β Ors. Maj.

h m s
10 57 32
+57 2
1879 April 30

0.11559
9.73572
9.85131

0.11559

54 27.80 54 27.2
31.70 35382 30.2
35.38 3538 33.2
39.20 36.3
17691 42.83 1667 39.8
17691 1667
50.50 54 33.34
54.23 + 3228
58.03
1.90 5671
5.75 567 54 58.7
9.60 5.58 2.7
13.23 6.4
17.50 8.8
54104 20.80 3301 12.5
5104 301
23.40 55 6.02
32.02 35774 − 0.40
35.95 35.797
39.80 1317.5
17887 43.50 54 33.34
17887 55 5.625 55 6.02
+ 32.28
− 0.40

154

α Ors. Maj.

0.11559

h m s
10 56 15
+62 24

0.11559
9.66586
9.78145

1.17609
9.66586
0.84195

56 5.17 56 5.3
9.55 13984 2.9
14.00 1398 6.4
18.34 10.0
6992 22.86 3331 14.5
6992 331
31.70 56 662 462
36.00 + 42.88
40.53
45.00 49476
49.50 49.48 57 52.7
53.93 49.52 55.7
58.50 57.2
2.90 4.3
44528 7.30 3310 9.1
44528 1.0
16.30 020
20.55 25064 − 10.70
25.00 25.06
29.47 9904
12532 34.00 56 6.62
12532 56 49.500 58 0.20
+ 42.88
− 1 10.70
113.58
2.055 31
0.84195
2.89726
1.83670
8.93944
4 58 17

10 56 19.9

62 24 14.4

155

Ψ Ors. Maj.

h m s
11 2 57
+45 9

0.11559
9.84835
9.96394

0.11539

2 54.84 2 55.8
57.79 0702 58.5
0.70 0.70 1.1
3.60 4.0
30351 6.58 3053 5.9
3.67 51
12.33 3 1.02
15.20 + 23.04
18.20
21.10 24037
24.00 24.04 3 56.6
27.50 24.07 2.5
29.90 5.4
32.30 7.9
21633 35.70 32.58 10.4
21633 2.58
41.60 4 5.16
44.50 47436 − 41.10
47.48 47444
50.34 48114
23718 53.26 3 1.06
23718 3 24.055 4 5.16
+ 23.00
− 41.10

M 26 20.40
M 26 43.72

M 3 57.77
M 5 6.67
R 5 6.27
R 5 6.35
5 6.43
68.64

M 18 47.47 18 47.47
M 19 46.22
R 19 46.30
R 19 46.65 19 46.39
58.92

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156

S Louis

h m s
11 7 40

r : 0.11559 1.17609 0.11559
+21 119.96962 9.96962
0.08521 1.14571

7 48.65		7 41.9
57.80	55210	43.8
53.95	54.01	45.8
56.22		47.9
27005 58.40		2295 50.1
27605		2295
2.75		7 45.90
5.00		+ 25.76
7.22		
9.43	11639	
11.78	11.64	8 48.1
13.91	11.68	49.7
16.00		51.7
18.20		53.7
10475 20.47		2596 55.4
10475		2596
24.95		8 51.92
27.10	29360	- 40.26
29.30	29.36	
31.57	14337	
14680 33.88		7 45.90
14680	8 11.660	8 51.92
		+ 25.76
		- 40.26
		66.02
11 7 48.29		1.81968
		1.14571
		2.96539
		1.90736
		8.94197
		5 01

M 16 25.60 . 16 25.60
M 17 46.47 .
R 17 46.35 .
R 17 46.35 . 17 46.39
80.79

21 11 08

164

B Louis

h m s
11 42 53

0.11559 1.17609 0.11559
+15 15 99843 9.98443
0.10002 1.16052

43 3.18		42 57.2
5.36	7444	59.4
7.45	7.44	1.4
9.55		3.4
3722 11.65		3070 5.6
3722		70
15.90		43 1.40
18.10		+ 23.08
20.18		
22.35	24461	
24.42	2446	43 52.8
26.65	24.51	55.2
28.70		57.7
30.90		59.5
22015 32.95		2840 0.8
22015		2840
37.28		43 56.80
39.48	41580	- 32.32
41.56	4158	
4370	4902	
20790 46.88		43 1.40
20790	43 24.485	43 56.80
		+ 23.08
		- ~~15.80~~ 32.32
		~~11.88~~ 55.40
		+6.2201 1.74351
		1.16052
		2.78253 2.90403
		1.84615
		~~0.6362~~ 8.94212
		5 07

M 12 40.40 . 12 40.40
M 13 50.52 .
R 13 50.77 .
R 13 50.42 . 13 50.57
70.17

15 14 41.0

1

a Androm

0.11559

h m s
0 2 8

0.11559 1.17609
+28 25 99442 9.94429
0.05983 1.12033

2 13.57		2 5.2
16.28	18550	6.9
18.50	18.55	8.9
2085		11.0
9275 23.25		454 13.4
9276		464
27.88		2 9.08
30.20		+ 28.20
32.60		
34.92	37269	
37.26	3727	3 4.8
39.69	37.28	6.8
41.98		9.2
44.30		11.0
33542 46.60		453 13.5
33542		453
51.40		3 9.06
53.70	56026	- 31.78
56.05	56.02	
58.35	7457	
28013 0.63		2 9.08
28013	2 37.275	3 9.06
		+ 28.20
		- 31.78
		59.98
0 2 8.69		1.77801
		1.12033
		2.89834
		1.83816
		8.93982
		4 58.32

M 2 11.62 . 2 11.62 .
M 3 20.42 .
R 20.60 .
R 20.50 . 3 20.51
68.89

28 25 28.0

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3 | S

γ Pegasi | Sun c = 46.740

h m s | h m s
0 7 .. | 2 34 0
+14 21 | +15 ..

0.11559 0.11559 | 0.11559 0.11559
9.98591 | 9.98471
0.10150 | 0.10030

1879 April 30 | May 1

			1 —				32 56.92		34 30.1	35 8.80		+21.38	30.18	150.62
			—				59.00	1.236	32.7	10.90	·13026	19.23	30.13	30.124
			—				1.26	1.24	36.0	12.95		17.11	30.05	
+14.93	29.45	58.84	14.52				3.43		38.6	15.10		14.96	30.06	
12.79	29.39	29.42	16.60			30618	5.57		1787 41.4	6513 17.38		12.82	30.20	
							618		1787	6513				
8.53	29.48	26.502	20.90				9.87		34 35.74	21.70		8.65	30.25	90.78
6.34	29.34	29.446	23.00				11.97		−1 17.42	23.85		6.41	30.26	30.26
4.26	29.26		25.00				14.00			26.00		4.27	30.27	
2.11	29.48		27.37	29.453			16.20	18.333		—				
−0.00	29.46		29.46	29.45	8 6.1		18.30	18.33		—				
2.11	29.64		31.75		7.8		20.46	18.31		—				
4.26	29.49		33.75		9.5		22.60			—				
6.39	29.46		35.85		11.0		24.80			—				
8.54	29.46	6508	38.00		472 12.8	16500	26.80			—				
			26508		472		16500							
12.79	29.41	147.18	42.20		8 ~~8.0~~		31.00			—				
14.92	29.48	25.436	44.40	46340	9.44		33.20	35.380		—				
17.05	29.45		46.50	46.50	− 40.00		35.40	35.38		—				
19.18	29.42		48.60				37.60	3662		—				
21.38	29.49	23250	50.80			17690	39.70		34 35.74	—				
			23170		8 9.44		17690	33 18.320	−1 17.42					

29.434
29.440

0 7 1.21

30.192
30.175

M 57 57.47·
R 57 57.85·
R 57 57.85 · 57 57.72·

M 5 36.90·

14 30 42.2

1879phae.proj.1502.

306

α Cephei L.C.

h m s
21 15 41
° ′
+117 66

0.11559 0.11559
9.94620
0.06179

15 49.4
53.7
58.2
2.6
6.9 7.03
11.5
16.0
20.1
24.9
243.3

14 55.4 15 31.6
5.8 34.8
8.8 37.7
11.7 41.2
3419 16.2 1903 46.0
19 13
15 38 15 38.26
+ 58.65 + 28.77

16 24.0 17 1.0
27.0 4.3
30.7 7.5
33.7 10.5
1534 38.0 368 13.5
1534 368
16 30.68 17 7.36
− 2.365 −1 0.33

15 8.38 15 38.06
16 30.68 17 7.36

21 15 41.63

M 36 45.60
M 36 26.15
M 35 54.35
M 35 33.20

62 4 82

138

α Hydrae

h m s
9 21 38
° ′
−8 8

0.11539 0.11559
9.99561
0.11120

21 47.20 21 38.0
49.34 51.398 39.9
51.40 51.39 41.6
53.48 43.2
25699 55.57 2076 44.9
25699 2076
59.70 21 41.52
1.84 + 26.48
3.90
5.90 7.983
8.03 7.98 22 33.8
10.02 8.01 35.7
12.00 37.0
14.20 39.3
61185 16.26 1870 41.2
7185 1870
20.46 22 37.40
22.50 2.4630 − 29.40
24.57 24.63
26.77 13.602
12315 28.85 21 41.52
12315 22 7.995 22 37.40
+ 26.48
− 29.40

9 21 40.42

M 34 55.15
M 36 7.65

D 8 20.6

140

α Urs. Maj. 0.11559

h m s
9 24 45
° ′
+52 14

0.11559 1.17609
9.78707 9.78767
9.90266 0.96316

24 44.15 24 34.2
47.50 50.840 37.9
50.75 50.84 40.9
54.20 43.3
25420 57.60 2027 46.4
25420 2027
4.32 24 40.54
7.66 + 37.18
11.00
1442 17.646
17.83 17.65 25 58.3
21.00 17.79 0.7
24.45 3.4
27.88 7.0
15881 31.25 3199 10.5
15881 199
38.00 2 46.398
41.40 44.750 − 46.24
44.70 44.80 44.75
48.06 19.559
22375 51.60 24 40.514
22375 25 17.720 75 3.98
−.005 + 37.18
17.715 − 13.74 D 6.26
50.92 83.44
1.70659
D 96316
2.67005
1.82334
15329 8.93881
4 57 51

M 14 13.47 14 13.47
M 15 20.32
R 15 19.75
R 15 20.07 15 20.05
66.58

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142

E Leonis

h m s
9 38 59
+24° 20'

1879 May 1

		1.17609	0.11559	0.11559
		9.95966	9.95960	
		1.13569	0.07519	
39	7.50	39	0.2	
	9.30	11526	2.2	
	11.50	11.52	4.2	
	13.50		6.0	
5763	16.03	206	8.0	
	5763		206	
	20.67	39	4.12	
	22.89	+	25.54	
	25.15			
	27.37	29.667		
	29.66	29.67	39	59.3
	31.93	29.66		1.3
	34.18			3.3
	36.45			5.5
26700	38.70		3169	7.5
	26700			169
	43.28		40	33.8
	45.50	47796	−	33.72
	47.85	47.79		
	50.00	5931		
23898	52.35		39	4.14
	23898	39 29.665	40	3.38
			+	25.52
			−	33.72
				59.24
				1.77262
				1.13569
				2.90831
				1.84751
				8.93920
				4 58.7

M 7 45.20 · 7 45.20
M 8 55.07 ·
R 8 55.40 ·
R 8 55.12 · 8 55.59
70.39

146

α Leonis

h m s
10 1 56
+12° 33'

		1.17609	0.11559	0.11559
		9.98950	9.98950	
		1.16559	0.10509	
2	5.00		2	0.2
	7.50	9.200		2.0
	9.25	920		3.9
	11.35			5.5
4600	13.40		190	7.4
	4600			190
	17.70		2	3.80
	19.80		+	22.28
	21.90			
	24.00	26080		
	26.00	26.09	2	57.8
	28.17	26.08		59.6
	30.30			1.5
	32.37			3.1
23481	34.57		3068	4.8
	23481			68
	38.76		3	1.36
	40.90	42970	−	35.28
	42.90	42.97		
	45.00	52.17		
21485	47.30		2	3.80
	21485	2 26.085	3	1.36
			+	22.28
			−	35.28
				57.56
				1.76012
				1.86559
				2.92571
				1.86297
				8.93726
				4 56.48

M 53 59.00 · 53 59.00
M 55 11.97 ·
R 55 11.95 ·
R 55 11.90 · 55 11.94
72.94

148

S Leonis

h m s
10 9 57
+24° 1'

		1.17609	0.11559	0.11559
		9.96067	9.96067	
		1.13676	0.07626	
10	5.50		9	55.0
	8.22	10410		57.0
	10.45	10.41		58.4
	12.63			59.9
5205	14.85		2917	1.4
	5205			2917
	19.46		9	58.34
	21.77		+	30.14
	23.88			
	26.25	28494		
	28.47	28.49	11	0.1
	30.74	28.48		2.0
	32.91			4.0
	35.33			5.7
25645	37.55		195	7.7
	25645			195
	42.05		11	3.90
	4428	46536	−	35.42
	46.48	46.54		
	48.87	5695		
23268	51.00		9	58.34
	23268	10 28.485	11	3.90
			+	30.14
			−	35.42
				65.56
				1.81644
				1.13676
				2.95340
				1.89398
				8.94058
				4 59.4

M 26 21.02 · 26 21.02
M 27 39.15 ·
R 27 39.55 ·
R 27 39.37 · 27 39.36
78.34

12 38 16.4

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γ Leonis — 0.11559 — α Ursæ Maj. — 0.11559 — Comparison Star of (123)

γ Leonis				α Ursæ Maj.				Comparison Star of (123)			
h m s				h m s				h m s			
10 18 18.				10 15 4.				10 41 19.			
+20° 27′				+42° 6′				+1° 15′			
1.17609	0.11559			1.17609	1.17609	0.11559		0.11559	1.17609	0.11559	
9.97173	9.97173			9.48439	9.87039	9.87039		9.99990	9.99990		
1.04782	0.08732			1.16248	1.04648	9.98598		0.11549	1.17599		
13 26.50				13 18.7				15 11.15			
28.97	31224			20.9				13.90	16680		
31.18	31.22			23.0				16.70	1668		
33.42				24.8				19.45			
15612 35.65				1138 26.4				8340 22.20			
15612				1138				8340			
40.00				13 2276				27.80			
42.20				+ 2608				30.67			
44.43								33.30			
46.64	48843							36.05	38862		
48.87	48.84			14 15.3				38.84	3886		
51.00	48.83			17.5				41.57	38.88		
53.28				19.3				44.43			
55.40				20.9				47.20			
43959 57.77				956 22.6				34976 50.00			
43959				9.56				34976			
2.00				14 1912				53.60			
4.28	6452			− 30.28				56.30	1082		
6.46	645							1.00	1.08		
8.60	9767							3.88	7776		
3226 10.92	13			13 2276				30541 6.73			
3226	26	48835		14 19.12				541	15 38.870		
				+ 26.08							
				− 30.28							
				56.36							
10 18 20.56				1.75094							
				1.14782							
				2.89879							
				1.83872							
				1.06007							
				8.93993							
				4 58 37							
15 7.2				41 27.30				41 34.8			
9.8				29.24	31492			26.8			
12.2				31.70	31.49			28.5			
15.2				33.62				30.5			
619 17.5				15746 35.60				11134 32.8			
619				15746				1434			
15 1238				39.81				41 28.68			
+ 2649				42.00				+ 19.34			
				44.00							
				45.92	48036						
16 14.0				47.92	48.04			42 18.6			
16.3				50.18	48.00			20.8			
18.7				52.00				24.0			
21.3				54.20				26.4			
947 24.4				48232 56.80				1183 28.6			
947				43232				1183			
16 18.64				0.20				42 23.66			
− 40.07				2.42	4510			− 35.64			
				4.45	451						
				6.78	9600						
				2255 8.70				41 28.68			
				2255	41 48.020			42 23.66			
				4510				+ 19.34			
								− 35.64			
								54.98			
16 18.94								1.73941			
+ 26.49								1.17599			
− 40.07								2.91540			
66.56								1.85333			
1.82321								8.93793			
1.16348	1.04648							4 57 15			
2.98669	2.86969										
1.80963											
8.82294	8.93994										
4 58 37											

M 0 21.77	0 21.77			M 21 28.27	21 28.27			M 14 58.52	14 58.52		
M 1 30.75				M 22 33.04				M 16 9.95			
	0 30.75			R 22 32.87				R 16 10.12			
	68.98			R 22 32.40	22 32.78			R 16 9.50	16 9.86		
					6451				71.34		

20 27 28

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153

β Urs. Maj.

h m s
10 57 22
+ 37 2

1879 May 1

54 27.40
31.45 35076
35.00 35.07
38.75
17538 42.78
17538

50.30
54.15
57.80
1.70 5441
5.47 5441
9.20 5.38
13.50
16.75
58897 20.60
4897

28.03
31.80 35696
35.75 3569
39.50 13076
17848 43.30
17848 55 5.410

0.11559
9.935772
9.885131

54 31.8
34.0
37.9
41.0
1896 44.9
1896

54 37.92
+ 27.49

54 50.9
54.5
57.2
59.7
2856 3.3
2856

54 57.12
+ 27.49
+ 8.29

54 37.92

M 26 24.97
M 26 38.30

0.11559

54 4.75
9.32 13768
13.87 13.77
18.05
6884 22.35
6884

31.60
35.87
40.70
44.30 49408
48.60 49.41
54.00 49.40
58.30
2.60
44467 7.20
44467
16.18
20.60 25042
25.00 25.04
29.48 9881
12522 33.95
12521

56 49.405

10 56 19.8

62 24 14.2

0.11559

56 8.5
12.9
17.0
20.7
833 24.2
833

56 16.66
+ 32.74

57 30.3
41.5
46.0
49.2
2292 54.2
2292

57 45.84
− 56.44

56 16.66

M 4 5.85 · 4 5.85
M 4 58.62 ·
R 4 58.62 ·
R 4 58.47 · 4 58.57
52.72

154

α Urs. Maj.

h m s
10 56 15
+ 62 24

0.11559
9.66586
9.78145

0.11559

56 54.60
57.45 0430
0.40 0.43
3.38
30215 6.32
2.15

12.00
15.00
17.90
20.80 23761
23.70 23.76
26.70 23.84
32.60
32.53
21385 35.62
21385

41.30
44.45 47256
47.48 4726
50.05 4769
23628 53.00
23628

3 23.800

M 18 35.55 · 18 35.55
M 19 56.20 ·
R 19 56.02 ·
R 19 56.25 · 19 56.47
80.92

153

Ψ Urs. Maj.

0.11559

h m s
11 2 57
+ 45 9

0.11559 1.17609
9.84835 9.84836
9.96394 1.02443

2 42.8
44.9
47.1
50.0
2371 52.3
2371

2 47.42
+ 36.38

4 10.8
13.2
16.1
18.3
794 21.0
794

4 15.88
− 52.08

2 47.42 ~~2 47.42~~

4 15.88
+ 36.38
− 52.08
88.46
1.946675
1.02443
2.97118
1.90806
8.93688
4 56.32

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156

S Leonis

h m s
11 7 40

	0.11559	1.17609	0.11559
+21 11	9.96962	9.96962	
	0.08521	1.14571	

7	49.45	7	38.7
	51.57	53812	40.6
	53.75	53.81	42.4
	56.00		44.4
26906	58.26	2122	46.1
	260.06		2122
	2.60	7	42.44
	4.80	+	29.00
	7.00		
	9.10	11.417	
	11.45	11.42	8 39.8
	13.60	11.47	41.4
	15.90		43.8
	18.00		45.7
10275	20.30	2184	47.7
	10275		2184
	24.75		8 43.68
	26.87	29.144	− 32.24
	29.17	29.13	
	31.36	14294	
14566	3351		7 42.44
	14572	8 11.445	8 43.68
			+ 29.00
			− 32.24
			61.24
11	37 43.88		1.78702
			1.14571
			2.93275
			1.87749
			8.94474
			51.55

M 16 20.45 · 16 20.45
M 17 36.05 ·
R 17 35.70 ·
R 17 35.85 · 17 35.87
7.42

21 11 09

164

β Leonis

h m s
11 42 53

	0 ′	0.11559	1.17609 0.11559
+15	13	9.98443	9.98443
		0.10002	1.16052

43	2.84		42 54.0
	5.00	7.152	55.8
	7.18	7.15	57.4
	9.30		59.2
3576	11.44		2877 1.3
	3576		2877
	15.80		42 57.54
	17.95		+ 26.72
	20.05		
	22.05	24.268	
	24.20	24.27	43 42.0
	26.33	24.26	49.0
	28.53		50.7
	30.70		52.6
21841	32.90		2540 54.7
	21841		2540
	37.00		43 50.80
	39.20	41.364	− 26.54
	41.47	41.38	
	43.55	48.53	
20692	45.70		42 57.54
	20692	43 24.265	43 50.80
			+ 26.72
			− 26.54
			53.26
11	42 56.10		1.72640
			1.16052
			2.88692
			1.82437
			8.94045
			2 58.58

M 12 35.15 · 12 35.15
M 13 42.25 ·
R 13 42.42 ·
R 13 42.37 · 13 42.35
67.20

13 14 41.1

582

ε Corvi

h m s
12 8 54

	° ′		1.17609 0.11559
−21	56		9.96437 9.96737
			1.14346 0.08296

4	2.14		3 58.5
	4.32	6562	58.4
	6.55	6.56	0.8
	8.70		3.5
3281	11.00		3041 4.9
	3281		41
	15.45		4 0.82
	17.65		+ 2350
	19.90		
	22.00	24.328	
	24.30	24.33	4 58.9
	26.55	24.32	1.0
	28.70		2.6
	31.00		4.2
21895	33.30		3137 7.0
	21895		137
	37.70		5 27.4
	39.90	42.080	− 38.42
	42.01	42.08	
	44.30	4864	
21040	46.60		4 0.82
	21040	4 24.325	5 2.74
			+ 23.50
			− 38.42
			61.92
			1.79183
			1.14346
			2.93529
			1.87961
			8.94432
			51.38

M 22 59.42 · 22 59.42
M 24 14.87 ·
R 24 15.20 ·
R 24 15.55 · 24 15.21
75.79

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172

γ Virginis pr. 0.11559

h m s
12 35 31
0 ′
-0 47

1879 May 1

35 41.86
43.90 45.952
45.97 45.95
47.98
22976 50.05
22976

54.27
56.38
58.38
0.40 2,442
2.40 2,444
4.47 2.42
6.53
8.55
56198 10.60
2198
14.80
16.83
18.86 1889
20.97 12484
6446 23.00
9446 36 2,430
18.892

12 35 34.79

35 33.1
34.8
36.4
38.3
1826 40.0
1826
35 36.52
+ 25.91
36 30.3
31.8
33.5
35.2
1678 37.0
1678
36 33.56
− 31.13
35 36.52
36 33.56
+ 25.91
− 31.13
57.04
1.75618
1.17605
2.93223
1.75506
8.94283
5 0 36

1.17609 0.11559
9.99996 9.99996
1.17605 0.11555

173

ε Ursae Maj. 0.11559

h m s
12 48 42
° ′
+56 37

48 38.40
42.25 46024
46.20 46.02
49.85
23012 53.42
23012
1.00
5.00
8.60
12.20 16,038
15.90 16.04
17.85 16.00
23.55
27.24
14434 31.00
14434
38.50
42.30 45990
46.00 45.99
49.65 19201
22995 53.50
22995 49 16.020

1.17609 0.11559
9.74055 9.74055
0.91662 9.85614

48 26.0
28.8
33.0
35.5
1620 38.7
1620
48 32.40
+ 43.62
49 52.0
2.4
6.4
8.9
3305 13.8
305
50 6.10
− 50.08
48 32.40
50 6.10
+ 43.62
− 50.08
93.70

176

ε Virginis 0.11559

h m s
12 56 9
° ′
+11 37

56 19.29
21.40 23514
23.51 23.51
25.63
1757 27.74
1757
31.90
34.00
36.10
38.05 40262
40.35 4026
42.38 40.34
44.43
46.55
36236 48.70
36236
52.87
55.00 57180
57.18 57.18
59.37 8069
28590 1.48
28590 56 40.300

1.17609 0.11559
9.99101 9.99101
1.16710 0.10660

56 9.8
11.8
13.5
15.1
668 16.6
668
56 13.36
+ 26.94
57 10.7
13.1
14.8
16.7
741 18.8
741
57 1482
− 34.52
56 13.36
57 14.82
+ 26.94
− 34.52
61.46
1.78859
1.16710
2.95569
1.89465
8.93896
4 57.57

M 14 13.95 · 14 13.95
M 15 28.95 ·
R 15 29.12 ·
R 15 28.80 · 15 28.96
75.01

M 51 9.70 · 51 9.70
M 52 16.07 ·
R 52 16.47 ·
R 52 16.15 · 52 1623
66.53

M 50 50.70 · 50 50.70
M 52 9.25 ·
R 52 9.15 ·
R 52 9.07 · 52 9.16
78.46

0 47 26.6

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587 α Virginis

h m s
13 18 49
° ′
−10 22

0.11559 1.17609 0.11559
9.99262 9.99262
0.10821 1.16871

18 58.97
1.18 3184
3.20 3.18
5.10
31592 7.47
1592
11.57
13.50
15.74
17.77 19891
19.77 19.89
21.88 19.88
24.32
26.30
17902 28.27
17902
32.40
34.50 36570
36.60 36.57
38.50 36.75
18285 40.85
18285 19 19.885

18 54.3
57.8
59.3
0.6
2931 2.1
31
19 0.62
+ 19.26
19 55.6
57.3
58.7
0.5
2941 2.0
2941
19 58.82
− 38.94
18 58.62
19 58.82
+ 2126
− 38.94
60.20
1.77960
1.16871
2.94831
1.88326
8.93495
4 55 14

18 18 52.26

280 α Aquilae

h m s
19 44 53
° ′
+8 33

0.11559 0.11559
9.99515
0.11074

45 2.00
4.00 6200
6.25 6.20
8.32
3100 10.43
3100
14.53
16.76
18.35
20.35 22883
22.88 22.88
24.88 22.89
27.00
29.00
20595 31.20
20595
35.40
37.33 39.586
39.70 39.58
41.70 4578
19793 43.80
19793 45 22.885

44 56.0
57.6
59.3
1.0
2974 3.5
2974
44 59.48
+ 23.40
44 59.48
+ 23.40

R 54 18.77
R 54 18.57 54 18.67

19 44 54.95

283 β Aquilae

h m s
19 49 22
° ′
+6 6

0.11559 0.11559
9.99753
0.11312

49 —
—
—
—
—
—
+8.30 52.46 386.27 44.16
6.23 52.28 523.24 46.05
4.15 52.30 48.15
2.05 52.30 50.25
—
—
−4.15 52.37 56.52
6.23 52.27 58.50
8.31 52.29 0.60
12.45 52.27 261.54 4.72
14.52 52.28 52.308 6.80 8.780
16.60 52.30 9 00 8.78
18.68 52.32 11 10
2081 52.17 4390 12.98
4390
52.316
52.318

R 22 10.75
R 22 10.87 22 10.81

19 49 24.84

50 35.0
26.8
28.8 29.10
31.2
1455 33.7
1455
50 29.10
− 36.78
50 29.10

M 58 38.32 58 38.32
M 59 54.92
R 59 54.57
R 59 54.77 59 54.75
7643

10 32 5.4

8 32 530

6 6 14.0

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287 θ Aquilae
h m s
20 5 4.
° '
− 1 11
0.11559
9.99991
0.11550

1879 May 1

5 —

5 26.5	+21.18	50.51	11 29.33	
28.5	19.05	50.45	252.37 31.40	33530
30.6	16.95	50.53	50.474 33.57	33.53
32.5	14.83	50.48	35.65	
1525 34.4	12.70	50.40	16765 37.70	
1525			16765	
5 30.50	8.47	50.37	202.11 41.90	
+ 3.31	6.35	50.57	50.527 44.22	
	4.23	50.60	46.37	
	2.64	50.57	48.48	
6 10.1			—	
11.6			—	
13.1			—	

+8.28	33.86	25.60	
6.19	33.79	27.60	
4.13	33.93	29.81	
2.04	34.04	32.00	
−0.10	33.95	33.95	
2.06	33.99	36.05	
		—	
		—	
8.26	33.94	42.30	
12.38	33.89	46.27	
14.43	33.81	48.24	50342
16.57	33.84	50.40	5034
18.58	33.72	52.30	
20.70	33.805 171	54.50	
		1 2517	

5 30.50

33.807
33.807

50.500
50.498

20 11 32.73

607 ι^2 Capricorni
h m s
20 11 20
° '
−12 55
0.11559
0.11559
9.98887
0.10446

11 52.8	
56.1	
59.8	
3.4	
2984 6.3	
2984	
11 59.68	
− 9.18	
11 59.68	

294 α Cygni
h m s
20 37 18
° '
+44 51
0.11559
1.17609 0.11559
9.85062 9.85062
1.02671 9.96621

37 19.72		37 7.7	
22.60	25.584	9.0	
25.15	25.58	11.3	
28.50		14.6	
12792 31.35		593 16.7	
12792		593	
37.17		37 1.186	
39.90		+ 36.90	
42.90			
45.87	48.732		
48.78	48.73	37 27.3	
51.60	48.78	30.3	
54.50		32.3	
57.50		34.5	
43859 0.47		1622 37.8	
43859		1622	
6.20		37 32.44	
9.00	11.990	+ 16.32	
12.01	11.99		
14.95	9757		
5995 17.80			
5995	37 48.755	37 1186	
		37 32.44	
		+ 36.90	
		+ 16.32	
		53.2	

20 37 19.59

M 37 7.07 37 7.07
M 38 59.15
R 38 59.45
R 38 59.15 38 59.25

M 22 4.90
M 22 4.95
R 22 4.57 22 4.81

12 55 5.5

M 37 7.87 37 7.87
M 38 22.20
R 38 22.25
R 38 21.82 38 22.09

44 50 41.9

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298

ε Cygni

h m s
20 41 19.
+ 83 31

0.11559
9.92102
0.03661

1.17609
9.92102
1.09711

41 24.27
27.00 29.370
29.38 29.37
31.30
14685 34.40
14685

39.20
41.30
44.30
46.82 49.184
49.29 49.18
51.70 49.16
54.05
56.50
44266 58.01
44266

4.03
6.50 8.950
9.00 8.95
11.37 8.32
4475 13.85
4475 41 49.170
8.950

M 56 56.82 56 56.82
M 58 2.07
R 58 2.15
R 58 2.50 58 2.21
65.42

41 24.7
27.5
29.7
32.0
1486 34.7
1486

41 29.72
+ 19.45

42 3.10
− 41.93

41 29.72
42 31.10
+ 19.45
− 41.93
61.38
1.78803
1.09711
2.88514
1.81571
8.93057
4 52 14

303

γ Cygni

h m s
21 7 47.
+ 29 44

0.11559
9.93869
0.05428

0.11559

7 53.47
55.85 58.176
58.20 58.18
0.50
29088 2.86
29088

7.62
10.00
12.40
14.90 17.199
17.27 17.19
19.60 17.18
21.98
24.34
15479 26.68
15479

31.40
33.83
36.15 36.17
38.50 15435
18083 40.95

8 17.185

7 44.2
46.4
48.8
50.5
2420 52.1
2420

7 48.40
+ 28.78

8 52.0
53.9
55.4
55.8
2821 1.0
2821

8 56.42
− 39.24

7 48.60
8 56.42
+ 28.78
− 39.24

M 43 49.25 43 49.25
M 44 6.40
R 44 6.10
R 44 6.17 44 6.22

306

α Cephei

h m s
21 15 41
+ 62 4

0.11559
9.67066
9.78625

0.11559

15 54.2
58.7
3.0
7.4 11.81
11.9
16.0
20.6
25.0
6463 29.5
1063
2 1 15 41.63

8 56.42
− 39.24

M 24 1.47
M 24 14.35
M 24 52.47
M 25 11.67
R 25 11.52 25 11.59

62 4 8.2

15 16.5 15 36.6
20.1 40.2
24.3 44.0
28.0 47.7
1206 31.7 2205 52.0
1206
2205

15 24.12
+ 47.69

15 44.10
+ 27.71

16 39.8 17 11.8
44.0 14.9
47.8 19.0
62.0 22.5
2393 55.7 946 26.4
2393
946

16 47.86
− 36.05

17 18.92
− 1 7.11

15 24.12 15 44.10
16 47.86 17 18.92

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307

β Aquarii

h m s
21 25 11
−6 6

1879 May 1

0.11559 0.11559
9.99753
0.11312

25	20.25		25	11.8	
	22.23	24352		13.6	
	24.40	2435		15.8	
	26.48			16.9	
12176	28.40		766	18.5	
	12176			766	
	32.67		25	1532	
	34.67		+	2556	
	36.69				
	38.64	40860			
	40.88	4086			
	42.94	40.90			
	45.10				
	47.00				
36774	49.25				
	36774				
	5323				
	55.35	57446			
	57.50	57.45			
	59.55	8180			
28723	1.60		25	15.32	
	28723	25 40.88	+	25.56	

M 32 44.60

309

ε Pegasi

h m s
21 38 14
+9 19

May 1

38	33.25		38	14.4	
	25.48	27524		16.1	
	27.52	27.52		18.7	
	29.57			20.2	
13762	31.80		919	22.5	
	13762			919	
	38.90		38	1838	
	37.97		+	2584	
	40.05				
	42.07	44219			
	44.20	44.22	39	16.0	
	46.20	44.22		18.4	
	48.43			20.7	
	50.50			22.6	
39797	52.65		1018	24.2	
	39797			1018	
	56.75		39	2036	
	58.88	0926	−	3614	
	1.00	093			
	3.00	8845			
30463	5.01		38	18.38	
	463	38 44.220	39	20.36	
			+	25.84	
			−	36.14	
				61.98	
			1.79225		
			1.17032		
			2.96257		
			1.89774		
			8.93517		
			4 55 22		

M 7 53.35 . 7 53.35
M 9 12.35 .
R 9 12.45 .
R 9 12.30 . 9 12.37
79.62

0.11559

311

α Aquarii

h m s
21 59 34
−0 34

May 1

59	42.97		59	34.8	
	45.00	47118		36.6	
	47.16	47.12		38.4	
	49.28			40.0	
23559	51.18		1923	42.6	
	23559			1923	
	55.40		59	3846	
	57.36		+	2514	
	59.52				
	1.50	3601			
	3.50	360	0	33.6	
	5.66	3.61		35.4	
	7.70			37.0	
	9.87			38.8	
57241	11.90		1853	40.5	
	3241			1853	
	16.00		0	3706	
	18.00	20098	−	3346	
	20.05	20.10			
	22.14	6722			
10049	24.30		59	38.46	
	10049	0 3.605	0	37.06	
			+	25.14	
			−	33.46	
				58.60	
			1.76790		
			1.17604		
			2.94394		
			1.88321		
			8.93927		
			4 58 10		

M 21 13.72 . 21 13.72
M 22 30.17 .
R 22 30.07 .
R 22 30.17 . 22 30.14
76.42

8 59 35.64

0 54 22.4

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1

α Andromedae

h m s
0 2 8
+28 26

May 1

2 13.80		2 2.8		7 8.13	7 4.5
16.20	18560	4.8		10.18 12314	6.2
18.60	18456	7.2		12.20 12.31	8.4
20.90		9.3		14.36	9.7
9280 23.30		351 11.5		6157 16.70	402 11.4
9280		351		6157	402
27.95		2 702		20.87	7 804
30.23		+ 30.26		23.00	+ 21.36
32.60				25.18	
3487	37282			27.23 29423	
37.20	3728	3 5.4		29.40 2942	
39.60	37.28	7.5		31.50 29.38	
42.00		9.5		33.72	
44.32		12.0		35.85	
33554 46.71		489 14.5		26481 38.06	
33554		489		26481	
51.35		3 978		42.27	
53.70	5606	− 32.50		44.30 46462	
56.00	56.00			46.50 4646	
58.28	7456			48.55 5877	
28003 0.70		2 7.02		23231 50.68	7 8.044
28003	2 37.280	3 9.78		23231 7 29.400	+ 21.36
		+ 30.26			
		− 32.50			
		62.76			
0 2 8.75		1.79768		0 7 1.23	
		1.12033			
		2.91801			
		1.85156			
		8.93355			
		4 5417			

M 2 9.95	2 9.95	M 56 38.82	
M 3 21.02			
R 3 21.02			
R 3 20.95	3 20.00		
	41.05		

2825 22.0

14 30 42.2

0.11559 γ Pegasi

h m s
0 7 0
+14 31

0.11559
9.94424
0.05983

May 1

0.11559 0.11557
9.94424
0.05983

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S

Sun C = 46.740

h m s
2 37 50
+15 25 (°, ')

0.11559 0.11559
9.98409
0.09968

1879 May 1-2

	36 45.65		37 53.6	38 57.85		38 14.2
	48.00	50220	55.9	59.80	2096	15.8
	50.38	50.22	57.5	2.03	2.09	17.4
	52.42		59.2	4.40		19.0
25110	54.65		2871 0.9	31048 6.40		868 20.4
	25110		2871	1048		868
	58.85		37 57.42	10.80		38 17.36
	0.85		−0 50.09	12.85		+0 2.01
	3.00			15.00		
	5.18	7.323		17.20	19.363	
	7.39	7.32		19.48	19.36	
	9.44	7.34		21.50	19.38	
	11.55			23.65		
	13.73			25.79		
60591	15.92			17427 28.00		
	6591			17427		
	20.00			32.28		
	22.27	24456		34.48	36670	
	24.48	2446		36.78	3667	
	26.65	13468		38.86	3846	
12228	28.88		37 57.42	18335 40.95		38 17.36
	12228	36 7.330	−0 50.09	18335	38 19.370	+ 2.01

S

Sun C = 46.740

h m s
2 49 21
+16 17 (°, ')

0.11559 0.11559
9.98222
0.09781

May 4-5

	48 15.96		49 23.8	50	—		49 51.6
	17.96	20218	25.4		—		53.2
	20.19	20.22	27.6	149.66	32.64	17.21 49.85	55.0
	22.40		29.5	49.887	34.88	15.05 49.93	56.8
10109	24.58		1377 31.4		37.00	12.90 49.90	2748 58.2
	10109		1377				2748
	28.80		49 27.54	450.76	41.47	8.60 50.07	49 54.96
	31.00		− 50.13	50.084	43.69	6.45 50.13	+ 55.06
	33.00				45.90	4.29 50.19	
	35.22	37418			47.94	2.13 50.01 50.079	
	37.37	37.42			50.00	−0.50 50.00 50.08	
	39.60	37.40			52.19	2.05 50.14	
	41.80				54.40	4.31 50.09	
	43.97				56.47	6.45 50.02	
33676	46.00			45071	58.65	8.60 50.05	
	33676				45071		
	50.38			249.89	2.87	12.90 49.93	
	52.42	54584		49.978	5.27	15.05 50.22 7290	
	54.57	54.58			7.27	17.20 7.29 50.07	
	56.68	7480			9.44	19.20 49.64	
27292	58.87		49 27.54	3645	11.60	21.57 50.03	49 54.96
	27292	48 37.410	− 50.13		3645		
						49.983	
						50.017	

M 46 1.37 · M 19 18.77 · M 54 36.67 · M 26 4.22 ·

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87

β Orionis

h m s
5 8 43

° ′
−8 21

0.01559
9.99537
0.11096

0.11559

May 6

8 50.00
52.20 54310
54.40 54.31
58.40
27155 57.65
27155
2.82
4.93
6.75
8.98 11.040
10.98 11.04 9 41.0
13.00 11.04 42.8
15.20 44.7
17.30 46.0
9936 19.40 2227 48.2
9936 2227
23.60 9 44.54
25.68 27776 − 33.50
27.70 27.78
2990 14209
13888 32.00
13888 9 11.040 9 44.54
− 33.50

5 8 44.09

R 48 28.47
R 48 28.40 48 28.43

δ 20 34.5

306

α Cephei L.C.

h m s
21 15 41

° ′
+117 56

0.11557
9.94620
0.06179

0.11557

15 49.3
53.5
58.1
2.5 681
6.9
11.0
15.6
19.9
6013 24.5
6813

21 15 41.86

14 52.3 15 20.0
54.9 23.3
59.3 27.7
3.2 32.5
2963 6.6 11400 36.5
2963 1400
14 59.26 15 28.00
+1 7.55 + 3881

16 35.5 17 4.5
37.9 8.6
42.4 12.4
46.8 15.1
2128 50.2 595 18.9
2128 595
16 42.56 17 11.90
− 35.75 −1 509

14 59.26 15 28.00
16 42.56 17 11.90

M 36 47.52
M 36 28.90
M 35 41.42
M 35 24.77

6248.4

138

α Hydrae

0.11557

h m s
9 21 38

° ′
−8 8

1.17609 0.11959
9.99561 9.99561
1.17170 0.11120

21 46.50
48.50 50646
50.63 5065
52.80
25323 54.80
25323
56.00
1.00
3.25
5.40 7.349
7.30 7.35
9.42 7.30
11.60
13.54
60614 15.63
6614
19.80
21.82 23956
23.98 2396
26.00 13461
11978 28.17
11978 22 7.325

21 36.7
38.6
40.5
42.3
2021 44.0
2021
21 4042
+ 2690

22 37.3
38.9
40.4
42.3
2029 44.0
2029
22 4058
− 33.26

21 4042
22 4058
+ 26.90
− 33.26
60.16
1.78003
1.17170
2.95173
1.89354
8.94181
4.59544

9 21 40.87

M 34 57.92 34 57.92
M 36 16.45
R 36 15.92 36 16.18
78.26

δ 8 20.4

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140

θ Urs. Maj.

h m s
9 24 45
° ′
+ 52 14

1879 May 5

0.11559
9.78707
9.90266

0.11559

24 —
—
—
53.47 23.60 17.07
56.80 20.21 17.01
3.40 13.38 16.78
6.93 10.11 17.04
10.40 6.75 17.15
13.70 3.38 17.05
17.00 18940 17.037
20.38 3.36 17.62
23.80 6.77 17.06
27.12 10.11 17.01
15326 30.53 13.50 17.03
15246
37.25 20.21 17.09
40.66 23.58 17.08
44.00 24.41.06 17.04
47.57 30.33 17.24
22078 50.80 33.80 17.00

17.044
17.038

25 8.0
10.8
34.08 12.7
17.04 15.0
654 18.9
654
25 1308
153.12 3.96
17.013

25 42.7
44.7
48.3
51.8
2424 54.9
2424
25 4848
85.40 3144
17.08

25 1308
25 48.48

M 14 41.57
M 14 9.37

308

β Cephei L. C.

h m s
21 27 35
° ′
109 58

0.11559
9.97308
0.08867

0.11559

27 —
—
—
604 23.0 2904
000 29.0 29.00
603 35.2 29.17
1208 41.2 29.12
1814 47.3 29.16
2420 53.5 29.30

27 2913

27 33.7
39.8
43.9
49.8
2232 56.0
2232
27 4464

28 59.3

27 4464
28 27.74

28 18.4
23.0
27.6
32.4
1387 37.3
1387
28 2774

M 32 3.35
M 32 45.40
M 32 31.72

516

11 Cephei L. C.

h m s
21 40 9
° ′
+ 109 15

0.11559
9.97501
0.09060

0.11559

40 6.8
13.0
19.0
25.5 ~~3290~~ 3179
31.6
38.0
44.4
50.8
57.0
2861

38 57.4
2.4
6.9
13.4
3391 19.0
391
39 782
+ 1 2397

40 54.9
59.7
6.5
12.4
3309 17.4
309
41 618
− 3439

39 7.82
41 6.18

39 36.0
40.3
46.5
51.2
2906 56.6
2306
39 4612
+ 4567

42 4.5
5.3
6.3

39 58.12

M 16 13.10
M 15 55.37
M 15 19.95
M 14 56.22

2
4235
22895
21168
10

M 53
M 55
R 55
R 55

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146 | 148 | c

α Leonis — 0.11559

h m s
10 1 56
+12° 33'

0.11559 1.17609
9.98950 9.98950
0.10509 1.16559

2 4.30 | 1 55.2
6.35 8.470 | 57.0
8.40 8.47 | 58.9
10.60 | 0.6
4235 12.70 | 2940 2.3
4235 | 2940
16.92 | 1 58.80
19.00 | + 26.62
21.17
23.33 25489
25.45 25.44 | 2 52.4
27.65 25.40 | 52.9
29.75 | 54.7
31.80 | 56.6
22895 33.88 | 2744 58.8
22895 | 2744
38.16 | 2 54.88
40.20 42336 | − 29.46
42.30 4234
44.40 56.81
21168 46.62 | 1 58.80
21168 2 25.420 | 2 54.88
+ 2662
− 29.46
56.08
1.74881
1.16559
2.91440
1.85570
8.94130
4 59.33

10 1 58.97

M 53 55.52 · 53 55.52
M 55 7.27 ·
R 55 7.37 ·
R 55 7.10 · 55 7.25
71.73

12 33 18.8

G Leonis — 0.11559

h m s
10 9 57
+24° 1'

1.17609 0.11559
9.96067 9.96067
1.13676 0.07626

10 5.33 | 9 57.9
7.47 9.746 | 59.9
9.70 9.75 | 1.3
11.95 | 2.8
4873 14.28 | 3067 4.8
4873 | 67
18.77 | 10 1.34
21.00 | + 26.47
23.38
25.50 27820
27.88 27.82 | 10 55.9
30.03 27.80 | 57.9
32.36 | 59.7
34.62 | 2.4
25038 36.84 | 3006 4.7
25038 | 06
41.40 | 11 0.12
43.60 45860 | − 32.31
45.87 45.86
48.05 5561
22930 50.38 | 10 1.34
22930 10 27.810 | 11 0.12
+ 26.47
− 32.31
58.78
1.76923
1.13676
2.90299
1.83746
8.93447
4 54.54

M 26 28.55 · 26 28.55
M 27 37.30 ·
R 27 37.35 ·
R 27 37.35 · 27 37.33
68.78

γ Leonis — 0.11559

h m s
10 13 18
+20° 27'

1.17609 0.11559
9.97173 9.97173
1.14782 0.08732

13 26.05 | 13 17.3
28.30 30.532 | 19.4
30.53 30.53 | 21.0
32.80 | 22.5
15266 34.98 | 10.42 24.0
15266 | 1042
39.40 | 13 2.082
41.60 | + 27.32
43.80
45.96 48160
48.18 48.16 | 14 18.2
50.30 48.16 | 20.5
52.55 | 22.2
54.70 | 24.9
43344 56.95 | 1126 26.8
43344 | 1126
1.40 | 14 2252
3.55 5.782 | − 34.36
5.78 5.78
8.00 9631
2891 10.18 | 13 2084
2891 13 48.157 | 14 22.51
+ 27.32
− 34.35
61.67
1.79007
1.14782
2.93789
1.87984
8.94195
5 0 0

10 13 20.51

M 0 22.07 ·
M 1 37.90 ·
75.83

20 26 62.0

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1879phae.proj.1502.

149

11 Ars. Maj.

h m s			
10 15 7		0.11559	0.11559
° ′		9.87039	
+42 6		9.98598	

1879 May 5

15 —			15 38.5						
—			40.4						
42.26 38.21	114.59	15.95	43.0						
19.47 38.10	38.196	18.63	45.5						
16.68 38.28		21.60	2153 47.9						
			2153						
11.12 38.10	343.59	26.98	15 4306						
8.34 38.24	38.210	29.90	− 485						
5.56 38.20		32.64							
2.75 38.25		35.50	38214						
−0.00 38.20		38.20	38.21						
2.77 38.19		40.96	19.4						
5.56 38.24		43.80	21.9						
8.34 38.26		46.60	24.2						
11.14 38.28	4393	49.35	1099 27.1						
	34393		1099						
16.68 38.22	191.08	54.90	16 2108						
19.46 38.24	38.216	57.70	− 4377						
22.20 38.25		0.55	0.47						
25.03 38.17		3.20							
27.80 38.18	0235	6.00	15 43.06						
	235		16 21.98						

38.207
38.209

38.92

f 8

Comparison Star of (123)

h m s			
10 41 19		0.11559	0.11559
° ′		9.99990	
+1 15		0.11549	

May 5

41 —									
—									
—									
—									
—									
				14.12	46.97	330.84	42.32		
				2.04	47.42	47.263	45.38		
				−0.00	47.50		47.50	42 9.2	
				2.06	47.39		49.45	12.4	
				4.13	47.39		51.42	14.1	
				6.19	47.29		53.48	16.8	
				8.27	47.01		55.28	700 18.5	
								700	
				12.38	47.42	236.72	59.90	42 14.00	
				14.46	47.35	47.204	1.90	3.76	− 26.78
				16.54	47.29		3.78	3.76	
				18.58	47.22		5.30		
				20.71	47.43	1878	8.90		
							1878	42 14.00	

47.237
47.238

B Ars. Maj.

0.11559

h m s			
10 54 32		1.17609	0.11559
° ′		9.73572	9.73572
+37 2		0.91181	9.85131

May 5

54 26.72			54 8.0		
30.35	34276		9.2		
34.28	34.28		10.5		
38.00					
17138 42.03					
17138					
49.40					
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57.00					
1.00	4659				
4.70	4.66		55 23.1		
8.47	4.60		26.3		
12.20			29.3		
16.00			33.3		
58193 19.78			1484 36.4		
4193			1484		
27.50			55 29.68		
31.00	34920		− 25.05		
34.90	3492				
38.70	6920				
17460 42.50					
17460	55 4.630		55 29.68		
			− 25.05		

M 21 0.37 · 21 0.37 ·
M 22 37.54 ·
R 22 37.27 ·
R 22 37.40 22 37.41
97.04

M 15 1.20 ·

M 26 4.05 ·
M 27 4.32 ·

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