KG
11366
v.518

Fundamental Stars.
Observations and Reductions

[illegible] 2 pp. each

B6

From Sept. 25 1881 to Oct. 27 1887

1881 Book VI Kraus -

+22 34
μ Geminorum 6 15 49
Sept. 25
" 28
Oct. 5

42 6
μ Urs Maj - 10 15 16
Oct. 13
Sept. 25
Oct. 3
" 5
" 6
" 8
" 9
" 10

51 31
γ Draconis 17 53 52
Sept. 26
" 29
Oct. 6
" 21
" 26
" 27

59 37
δ Cass - 1 18 9
Sept. 30
Oct. 4

33 32
ε Cygni 20 41 27
Oct. 1
" 3
" 26
" 27

39 9
η Herculis 16 38 51
Oct. 3
" 6
" 7

28 19
β Gem 7 38 5
Oct. 3
" 4
" 5
" 9
" 10
" 18
" 20

45 52
α Aurigae 5 7 59
Oct. 5
" 16

61 47 ,1
η Drac. 16 22 23
Oct. 7

θ Urs. Maj - 9 24 36
Sept. 25
Oct. 3
" 6
" 12
" 25
" 26
" 27

56 36
ε Urs. Maj 12 48 48
Oct. 12
" 26
Sept. 26
" 27
" 29
L.C. " 30
Oct. 1
" 6
" 10

27 43
β Cygni 19 25 58
Sept. 26
Oct. 3
" 5
" 25

39 53
γ Cygni 20 18 1
Oct. 1
" 3
" 25
" 26

29 45
ζ Cygni 21 7 56
Oct. 1
" 3
" 13
" 26
" 27

+70 3
β Cephei 21 27 11
Oct. 3
" 9
L.C. " 10
" 13
" 27

60 5
γ Cass. 0 49 38
Oct. 4

β Tauri 5 18 50
Oct. 5
" 16

57
β Urs. Maj 10 54 41
Oct. 9
" 10
" 13
" 25

ε Leonis 9 39 8
Sept. 25
Oct. 3
" 4
" 6
" 12

52 24
β Draconis 17 27 45
Sept. 26
" 29
Oct. 6
" 26

38 46
α Lyrae 18 32 57
Sept. 29
Oct. 6
" 11
" 13
" 26
" 27

44 52
α Cygni 20 37 26
Oct. 1
" 3
" 26
" 27

+62 5
α Cephei 21 15 48
Oct. 1
" 3
" 13
" 26
" 27

32 9
α² Gem. 7 27 3
Oct. 3
" 4
" 5
" 9
" 10
" 13
" 18

87 13
51 Cephei 6 44 42
Oct. 4
" 5
" 6
" 10
" 13

93 23
δ Urs Mi 18 10 21
Oct. 5
" 6

62 23
α Urs. Maj 10 56 23
Oct. 9
" 10
" 13
" 20
" 25
" 26
L. C.

B_2	1881	Mar. 20	γ Aquilae	Delta imcomplete	19h	40m	30s
"	"	" 21	α Oph	No mean	17h	29m	19s
"	"	" "	ζ Cygni	" "	21h	7m	47s
"	"	" 22	α Can. Maj.	1st delta not worked	6h	39m	49s
"	"	" 23	β Orionis	No mean	5h	8m	44s
"	"	" "	α Cephei	" "	21h	15m	41s
"	"	" "	β Aquarii	" "	21h	25m	11s
"	"	" 24	β Orionis	" "	5h	8m	44s
"	"	" "	γ Cassiopea	" "	0h	49m	25s
"	"	" "	β Aquilae	" "	19h	49m	22s
B_3	"	" 28	β Tauri	" "	5h	13m	29.s
"	"	Apr. 1	μ Gem.	Corrections not applied.	6h	15m	39.s
"	"	" 2	θ Ursa Maj.	No Mean	9h	24m	46s
"	"	" 4	ε Can. Maj	" "	6h	53m	52s
"	"	" 4/5	Sun	" "	0h	59m	8s
"	"	" 5/6	Sun	Delta not worked	1h	2m	48s
"	"	" 7	θ Aquilae	No mean Wire missing in last group Evidently the third	20h	5m	4s
"	"	" 8	α Hydrae	No Mean	9h	21m	38s
"	"	" 17	α Cygni	" "	20h	37m	18s
"	"	" "	α Cephei	Third delta not worked	21h	15m	41s
"	"	" 18	α Ursa Maj.	Minute of second delta	10h	56m	15s
"	"	" 18	$α^2$ Capricorni	No mean.	20h	11m	20s
"	"	" 20	α Hydrae	" "	9h	21m	38s
"	"	" "	β Aquilae	" "	19h	49m	22s
"	"	" "	$α^2$ Capricorni	" "	20h	11m	20s
"	"	" "	β Cephei	" "	21h	27m	6s
B_4	"	" 21	α Hydrae	" "	9h	21m	46s
"	"	" 24	ε Cygni	" "	20h	41m	19s
"	"	" 24/25	Sun	" "	2h	13m	11s
"	"	May 2	β Cephei	Deltas not worked	21h	27m	6s
"	"	" "	α Pegasi	No Mean	0h	7m	0s
"	"	" 3	α Cephei	" "	21h	15m	41s
"	"	" 4	α Urs. Maj.	" "	10h	56m	25s
"	"	" 10	Mercury	" "	2h	45m	48s
"	"	" 10/11	Sun	" "	3h	14m	39.s
"	"	" 12/13	"	" "	3h	22m	30s
"	"	" 13	η Urs. Maj.	" "	13h	42m	46s
"	"	" 24	γ Urs. Maj.	" "	11h	47m	35s
"	"	June 15	δ Cass.	" "	1h	17m	55s
"	"	June 23	" "	" "	"	"	"
"	"	" 27/28	Sun	" "	6h	30m	46s
"	"	" 29/30	"	" "	6h	39m	3s
"	"	July 1/2	"	" "	6h	47m	19s

1881 Book VI Found Continued 2

45 8
λ Urs. Maj. - 11 3 0 Oct. 9
" 10
" 13
" 18
" 25

32 59
ι Aurigae 4 49 19 Oct. 11

β Ophiuchi L.C. 9 27 11 Oct. 25
" 26

21 10
δ Leonis 11 7 49 Oct 9
" 13
" 18
" 20

η Drac L.C 4 22 23 Oct 16

66 8
9 Camel 4 42 14 Oct. 11
" 16

ζ Urs Maj 11 47 35 Oct. 20
" 25
" 26

787

106

u Geminor

h m s
6 15 49
° '
+22 34

1881

Sept. 25

0.09228

h m s
b 15 31.44 +22.34 53.75 15 24.5
+20.10 53.80 33.70 35.934 26893 26.1
17.89 53.82 35.93 35.93 53.786 27.5
15.65 53.75 38.20 29.4
17967 40.40 13.41 53.81 1385 31.0
2967 385
44.95 8.94 53.89 15 27.70
47.25 6.71 53.96 16170
49.38 4.47 53.85 53.70
+26.13
15 27.70
53.843
53.829

107

γ Gemino

h m s
6 30 54
° '
+16 30

1.17609 0.09228
9.98174
1.15783

6 30 36.37 30 21.3
38.57 40.708 22.8
40.70 40.71 24.2
42.90 25.8
20354 45.00 1217 27.6
354 217
49.28 30 24.34
51.50 +33.58
53.50
55.70 57.907
57.88 57.91 31 26.4
0.15 57.93 28.0
2.25 29.5
4.30 31.2
52116 6.60 1479 32.8
7116 479
10.80 31 29.58
13.00 15.156 −31.66
15.20 15.16
17.28 11587
7578 19.50 30 24.34
2578 30 57.920 31 29.58
+ 33.58
− 31.66
65.24
1.81451
1.15783
2.97234
1.88576
8.91342
4411

564

α Can. Maj

h m s
6 39 57
° '
−16 33

1.17609 8.09228
9.98162
1.15771

6 39 38.60 39 37.8
40.80 42.900 39.1
42.90 42.90 41.0
45.00 42.3
21450 47.20 2034 43.7
1450 34
51.48 39 40.68
53.68 +19.43
55.80
57.95 0.109
0.12 0.11 40 28.0
2.20 0.12 30.4
4.35 32.0
6.60 33.8
54098 8.80 1594 35.2
098 94
13.00 40 31.88
15.20 17.352 −31.77
17.38 17.35
19.50 12025
8676 21.68 39 40.68
3676 40 0.115 40 31.88
+ 19.43
− 31.77
51.20
6 39 56.89 1.70907
1.15771
2.86678
1.78554
8.91876
44428

B 37 50.60 ·
R 37 50.72 ·

37 50.66 ·

B 41 57.90
B 43 14.80
R 43 14.75

43 14.77 ·
76.87

B 44 14.15 ·
B 45 15.32 ·
R 45 15.05

45 15.18 ·
6103

16 33 9.4

1881

146
α Leonis
h m s
10 2 4
° ′
+12 33
Sept. 25

1.17609 0.09228
9.98950
1.16559

h	m	s		m	s
10	1	47.37		1	35.0
		49.37	51.518		36.9
		51.50	51.52		38.4
		53.55			40.0
	25759	55.80		1918	41.5
		759			418
		59.80		1	38.16
		2.00			+ 30.22
		4.15			
		6.27	8.349		
		8.32	8.35	2	37.2
		10.48	8.41		39.0
		12.50			40.7
		14.70			42.0
	7512	16.90		2022	43.3
		7512			22
		21.19		2	40.44
		23.20	25.314		− 32.06
		25.23	2531		
		27.40	13683		
	12657	29.55		1	38.36
		2657	2 8.380	2	40.44

51.508
25.314
8.411
8.347
8.379

+ 30.02
− 32.06
62.08
1.79795
1.16559
2.96854
1.86888
8.91034
4392

10 2 4.32

B 39 12.40.
B 40 26.38.
R 40 26.30.

40 26.34.
73.94

12 32 40.2

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c
γ Leonis
h m s
10 13 27
° ′
+20 26

1.17609 0.09228
9.97178
1.14787

h	m	s		m	s
10	13	9.30		13	4.7
		11.30	13.666		5.8
		13.66	13.67		7.0
		15.96			8.5
	6833	18.11		365	10.5
		1833			365
		22.50		13	7.30
		24.55			+ 23.99
		26.80			
		29.00	31264		
		31.20	3126	14	4.1
		33.50	31.32		6.3
		35.70			9.7
		37.95			11.0
	28138	40.18		441	13.0
		1138			441
		44.47		14	8.82
		46.75	48.976		− 37.53
		49.10	48.98		
		51.16	6265		
	24488	53.40		13	7.30
		4488	13 31.290	14	8.82

13.666
48.976
31.321
31.265
31.293

+ 23.99
− 37.53
61.52
1.78902
1.14787
2.93689
1.84880
8.91191
4402

+5.56	21.56	15107	16.00
2.75	21.53	21.581	18.78
0.00	21.60		21.60
2.77	21.53		24.30
5.56	21.56		27.12
8.37	21.63		30.00
11.14	21.66		32.80
16.68	21.67	10809	38.35
19.46	21.54	21.618	41.00
22.25	21.55		43.80
25.03	21.65		46.68
27.90	21.68	21931	49.48
			1931

21.600
21.597

10 13 26.90

B 45 50.82.
B 47 1.42.

47 1.42.
70.60

20 26 19.1

149
μ Urs. Maj.
h m s
10 15 16
° ′
+42 6
Sept. 25

0.09228

10 15 —
—
—
—
—
—
—
—
—
—

43862
4386

m	s
15	56.8
	58.8
	1.3
	3.7
63	5.7
	63
16	1.26
	− 39.66
16	16.5
	17.2
	18.0
	18.5
892	19.0
	392
16	17.84
	− 56.24
16	126
16	17.84

B 8 4.78.
B 8 19.08.
R 8 19.45.

8 19.26.

173

ε Urs. Maj.

	h m s				
	12. 48 48				0.09226
	° ′				
	+56 36				
	Sept. 26				
12	48	16.50		47	53.4
		20.15	24.064		56.4
		23.60	24.00		58.2
		28.00			0.8
	12002	31.57		2928	4.0
		2002			428
		39.10		47	58.56
		42.68			+55.43
		46.50			
		50.19	53.974		
		54.00	53.97	48	26.8
		57.75	54.01		29.4
		1.50			32.0
		5.20			35.0
	48577	8.85		1605	37.3
		3577			105
		16.50		48	32.10
		20.20	24.020		+21.89
		24.00	24.02		
		27.77	10802		
	12010	31.63		49	38.0
		2010	48 53.990		41.0
		24.064			44.5
		24.020			46.8
		54.010		2211	50.8
		53.974			211
		53.992		49	44.22
					−50.23

5856

B 36 26.85 ·
B 36 50.42 ·
B 37 39.00 ·

598

η Ophiuchi

	h m s				
	17 3 27				
	° ′				
	−15 34			1.17609	0.09228
				9.98377	
				1.15986	
17	3	18.30		3	1.4
		20.50	22.622		3.3
		22.56	2.262		5.1
		24.80			6.9
	11311	26.95		253	8.6
		1311			253
		31.20		3	5.06
		33.30			+34.68
		35.47			
		37.60	39.739		
		39.73	39.74	4	10.2
		41.85	39.75		11.8
		44.00			13.3
		46.15			15.2
	35765	48.35		670	16.5
		8765			170
		52.58		4	13.40
		54.75	56.896		−33.66
		56.95	56.89		
		59.00	79.51		
	28448	1.20		3	5.06
		3448	3 39.745	4	13.40
		22.628		+	34.68
		56.896		−	33.66
		39.762			68.34
		39.739			1.83467
		39.750			1.15986
					2.99453
					1.90493
					8.91040
					4 39 4

B 45 26.82 ·
B 46 47.08 ·
R 46 47.25 ·

46 47.16 ·
80.34

237

α Herculis

	h m s				
	17 9 16				
	° ′				
	+14 32			1.17609	0.09228
				9.98588	
				1.16197	
17	8	58.60		8	41.0
		0.75	2.886		42.5
		2.90	2.89		44.1
		5.00			46.0
	1443	7.18		2210	47.4
		1443			210
		11.38		8	44.20
		13.50			+35.72
		15.70			
		17.85	19.926		
		19.90	19.92	9	49.1
		22.00	19.93		51.3
		24.20			52.6
		26.30			54.2
	17933	28.50		2640	56.2
		8933			140
		32.75		9	52.80
		34.85	36.976		−32.88
		37.00	36.97		
		39.00	39.86		
	18488	41.28		8	44.20
		3488	9 19.925	9	52.80
		2.886		+	35.72
		36.976		−	32.88
		19.931			68.60
		19.926			1.83632
		19.930			1.16197
					2.99829
					1.89927
					8.90058
17	9	15.87			4 33.7

B 40 1.50 ·
B 41 23.80 ·
R 41 23.80 ·

41 23.80 ·
79.30

14 31 48.4

240

β Draconis

h m s
17 27 45
° '
+52 24

1881

Sept. 26

0.09228

h m s
17 27 17.65
21.00 24434
24.42 2443
27.83
12217 31.27
2217
38.00
41.40
44.82
48.18 51.574
51.50 51.57
55.00 51.53
58.40
1.87
463417 5.00
1417
11.85
15.25 18.630
18.60 1863
21.95 10306
9315 25.50
4315 27 51.550
24.434
18.630
51.532
51.574
51.553

24434
18.630
51.532
51.574
51.553

17 27 45.64

m s
26 51.8
56.0
57.4
59.9
2861 2.0
361
26 57.22
+54.33
27 53.5
56.4
59.0
1.2
2940 3.9
440
27 58.80
−7.25
26 57.22
27 58.80
+ 54.33
− 7.25
61.58

B 48 45.18 ·
B 49 31.98 ·

52 23 42.6

241

α Ophiuchi

h m s
17 29 27
° '
+12 39

1.17609 0.09228
9.98933
1.16542

17 29 10.33
12.47 14510
14.45 1451
16.60
7255 18.70
2255
23.00
25.00
27.20
29.27 31.402
31.40 3140
33.55 31.42
35.65
37.75
28262 39.80
1262
44.00
46.20 48.332
48.36 4833
50.50 6284
24166 52.60
4166 29 31.410
14510
48.332
31.421
31.402
31.411

17 29 27.33

29 5.5
7.1
9.0
10.7
443 12.0
443
29 8.86
+22.55
29 57.5
59.1
0.6
2.4
36 4.0
36
30 0.72
−29.31
29 8.86
30 0.72
+ 22.55
− 29.31
51.86
1.71483
1.16542
2.88025
1.79511
8.91486
44156

B 32 58.98 ·
B 34 1.42 ·
R 34 1.32 ·

34 1.37 ·
62.39

12 39 4.7

252

γ Draconis

h m s
17 53 52
° '
+51 31

1.17609 0.09228
9.79399
0.97008

17 53 24.47
27.78 31122
31.10 3112
34.48
15561 37.76
561
44.30
47.70
51.00
54.35 57.633
57.60 5763
1.00 57.68
4.25
7.55
51870 10.95
6870
17.50
20.95 24.240
24.25 2424
27.58 11536
12120 30.92
2120 53 57.655
31.122
24.320
57.721
57.633
57.677

17 53 52.02

52 56.7
59.2
1.6
4.1
78 6.2
78
53 1.56
+ 56.09
54 37.0
39.5
42.0
44.5
2098 46.8
98
54 41.96
− 44.31
53 1.56
54 41.96
+ 56.09
− 44.31
100.40
2.00173
0.97008
2.97181
1.88857
8.91676
44310

B 41 50.88 ·
B 43 8.20 ·
R 43 8.30 ·

43 8.25 ·
77.37

51 30 33.1

28

270

ζ Aquilae

h m s
19 00 00
° ′
+13 42

0.09228

18 59 42.55
44.65 46.810
46.85 4683
49.00
23415 51.00
3405
55.18
57.40
59.50
1.50 3698
3.70 3.70
5.80 3.78
8.00
10.00
3328 12.20
3328
16.50
18.55 20740
20.80 2074
22.85 12757
10370 25.00
370 0 3.740
46.930
20.740
3.835
3.731
3.783

59 48.5
50.3
52.5 52.28
54.2
2614 55.9
114
59 5228
+11.46
19 0 32.4
34.4
36.5
38.3
1811 39.5
311
0 3622
−32.48

59 52.28
0 36.22
+ 11.46
− 32.48
43.94

275

β Cygni

h m s
19 25 58
° ′
+27 43

1.17609 0.09228
9.94707
1.12316

19 25 39.50
41.80 44.160
44.20 44.16
46.48
22080 48.82
2080
53.53
55.85
58.15
0.50 2.823
2.82 2.82
5.16 2.83
7.40
9.80
2541 12.20
2541
16.90
19.20 21.510
21.40 21.51
23.85 12567
10755 26.20
755 26 2.825
44.164
21.510
2.835
2.768
2.801

25 26.1
28.2
30.0
31.7
1492 33.2
492
25 2984
+32.98
26 33.6
35.4
37.0
38.7
1857 41.0
357
26 3714
−34.32

25 29.84
26 37.14
+ 32.98
− 34.32
67.30
1.82802
1.12316
2.951[illegible]8
1.86528
8.91410
44127

277

γ (?)
α Aquilae

h m s
19 40 40
° ′
+10 20

1.17609 0.09228
9.99290
1.16899

19 40 22.50
24.58 26734
26.72 26.73
28.87
13367 31.00
3367
35.16
37.27
39.39
41.85 43.522
43.50 4352
45.60 43.54
47.72
49.85
39170 51.96
3170
56.20
58.30 0.348
0.34 0.35
2.40 8708
174 4.50
174 40 43.530
26.734
0.348
43.541
43.522
43.531

19 40 39.66

40 13.5
15.0
16.7
18.0
830 19.8
330
40 1660
+ 26.93
41 14.9
16.6
17.7
19.0
890 20.8
390
41 1780
− 34.27

40 ~~1.66~~ 16.60
41 1.780
+ ~~41.87~~ 26.93
− 34.27
~~76.14~~ 61.20
~~1.88161~~ 1.78675
1.16899
~~3.05060~~ 2.95574
1.87134
~~8.82074~~ 8.91560
44225

B 30 42.25·
B 31 34.35·
R 31 34.35·

31 34.35·

B 29 6.15·
B 30 19.48·
R 30 19.48·

30 19.48·
7333

B 52 3.45·
B 53 17.72·
R 53 17.90·

53 17.81·
7436

10 19 50.3

91

γ Orionis

h m s
5 18 48
° ′
+6 15

0.09228

1881

Sept. 26

h m s
5 18 31.55
33.80 35780
35.73 35.78
37.82
17890 40.00
2890
44.00
46.00
48.22
50.38 52.380
52.36 52.38
54.50 52.38
56.55
58.68
47142 0.73
2142
4.90
6.90 8.970
8.95 8.97
11.00 10.475
4485 13.10
4485 18 52.380
35.780
8.974
52.375
52.269
52.322

m s
18 36.0
38.0
39.6
41.0
1973 42.7
473
18 39.46
+12.92
19 18.5
20.0
21.7
23.2
1079 24.5
79
19 21.58
- 29.20
18 39.46
19 21.58
+ 12.92
- 29.20
42.12

93

δ Orionis

h m s
5 25 59
° ′
-0 23

0:09228

5 25 42.20
44.20 46.276
46.35 46.28
48.25
23138 50.38
3138
54.38
56.57
58.40
0.53 2.647
2.58 2.65
4.78 2.75
6.80
8.88
2382 10.90
2382
15.00
17.14 19.226
19.29 19.23
21.30 12551
9613 23.40
4613 26 2.700
46.276
19.206
2.741
2.647
2.694

25 38.4
40.10
42.5
43.7
2099 45.2
99
25 41.98
+20.72
25 41.98
+ 20.72

556

α Leporis

h m s
5 27 32
° ′
-17 54

0.09228

5 27 13.42
15.55 17.734
17.70 17.73
20.00
8867 22.00
3867
26.40
28.50
30.75
32.90 35.050
35.00 35.05
37.18 35.06
39.40
41.55
31545 43.77
4545
48.00
50.20 52.390
52.40 52.39
54.57 7012
26195 56.78
1195 27 35.055
17.734
52.390
35.062
35.050
35.056

27 3.3
4.8
7.1
8.5
337 10.0
337
27 6.74
+28.31
27 6.74
+ 28.31

2177.
43.54

3920
43.55

B 57 28.55.
B 58 20.00.
R 58 20.02.

~~58 20.01~~.

B 34 50.88.

B 5 4.48.

			96				97				d		
			ι Orionis				ε Orionis				ζ Orionis		
			h m s 5 24 40 ° ' -5 59		0.09228		h m s 5 30 14 ° ' -1 17		0.09228		h m s 5 34 39 ° ' -2 0		0.0922
	5	29 22.85	+20.70 43.60	29 13.0		—		30 5.0	5	34 31.60	+20.65 52.25	34 18.0	
21773	+18.67 43.67	25.00	26950	14.5		—		6.7	18.57 52.27	26120 33.70	35.720	19.7	
43.546	16.61 43.51	26.90	26.95	16.0		—		8.0	16.53 52.13	52.24 35.60	35.72	21.1	
	14.50 43.50	29.00		17.5		—		9.7	14.46 52.16	37.70		22.7	
	12.45 43.45	13475 31.00		800 19.0		—		411 11.7	12.34 52.34	17860 40.00		1059 24.4	
		3475		300				411		2860		59	
39203	8.30 43.68	35.28		29 16.00	+8.26 17.51	30 9.25		30 8.22	8.26 52.26	47029 44.00		34 21.18	
43.559	6.22 43.62	37.30		+27.55	6.14 17.59	15771 11.40		+9.30	6.14 52.38	52.254 46.19		+31.07	
	4.15 43.57	39.42			4.12 17.47	17.523 13.35			4.12 52.27	48.15			
	+2.05 43.55	41.50	43.562		+2.04 17.54	15.50	17528		+2.04 52.28	50.24	52.259		
	-0.00 43.50	43.50	4356		-0.00 17.50	17.50	17.53	30 52.5	-0.00 52.24	52.24	52.26		
	2.07 43.63	45.70			2.06 17.54	19.60		54.5	2.06 52.26	54.32			
	4.15 43.53	47.68			4.13 17.52	21.65		55.5	4.13 52.24	56.37			
	6.22 43.56	49.78			6.14 17.51	23.70		56.7	6.14 52.18	58.37			
	8.31 43.58	39206 51.90			6.27 17.53	15775 25.80		2770 57.8	8.27 52.18	47033 0.45			
		3206				6775		270		2033			
	43.553	—			12.38 17.49	8754 29.87		30 55.40	52.247	—			
	43.554	—			14.45 17.48	17.508 31.93	34034	-37.88	52.247	—			
		—			16.51 17.49	34.00	34.03			—			
		—			18.58 17.54	36.17				—			
		—		29 16.00	-20.70 17.50	17017 38.20		3.0 8.22		—		34 21.18	
						2017		32° 55.40					
					17.516								
					17.518								

B 10 31.48 ·

B 28 30.82 ·
B 29 27.42 ·
R 29 27.48 ·

B 11 41.70 ·

29 27.45

146

α Leonis

h	m	s
10	2	4
	°	′
	+12	33

0.09228

1881

Sept. 26

S

Sun.

h	m	s
12	17	12
	°	′
	−1	53

0.09228

Sept. 26/27

	h	m	s		m	s
	10					
+8.46	8.23	1	59.77			
6.34	8.24	74.31	1.90			
4.22	8.22	8.257	4.00			
+2.04	8.27		6.18	8262		
−0.00	8.30		8.30	826	2	34.8
2.11	8.29		10.40			36.8
4.23	8.27		12.50			38.4
6.34	8.22		14.56			40.0
8.47	8.27	7436	16.75		1915	41.5
			7436			415
12.68	8.32	41.73	21.00		2	38.30
14.79	8.39	8.346	23.18	25270	−	30.01
16.91	8.39		25.30	2527		
19.03	8.34		27.37			
−21.21	8.29	12635	29.50			
			2635		2	38.30

8.301
8.289
10 2 4.34

12	15	52.22		17	7.0	18	0.70		17	27.0
		54.20	56340		8.3		2.70	4856		29.0
		56.40	5634		9.7		5.00	4.86		30.7
		58.38			11.1		7.00			31.9
	28170	0.50		487	12.6	2428	8.88		1520	33.4
		3170			487		2428			20
		4.60		17	9.74		13.10		17	3040
		6.82			−56.82		15.22			+51.00
		9.00					17.35			
		10.95	12936				19.30	21.400		
		12.90	1294				21.37	2140		
		15.00	12.91				23.50	21.40		
		17.00					25.48			
		19.15					27.58			
	11642	21.00				19260	29.70			
		2642					[illegible]260			
		25.33					33.85			
		27.40	29.492				35.90	37.944		
		29.57	29.49				37.95	3794		
		31.50	14583				39.87	4280		
	14746	33.66		17	9.74	18972	42.15		17	3040
		4746	16 12.925				3972	18 2140		
					−56.82				+	51.00

B 40 24.62 ·
R 40 24.78 ·

40 24.70 ·

12 32 40.0

B 47 57.82
B

B 20 28.92

		173				91				93		
		ε Urs. Maj				γ Orionis				δ Orionis		
		h m s				h m s				h m s		
		12 48 48				5 18 48				5 25 59		
		° ′		0.09228		° ′		0.09228		° ′		0.09228
		+56 36				+6 15				−0 23		
	1881											
		Sept. 27				Sept. 28						
12	48 16.43		47 46.0	5	18 —			5	25 42.11		25 26.0	
	20.00	23820	48.7		—				44.18	46288	28.0	
	23.75	2382	52.0		—				46.30	46.29	29.9	
	27.52		54.1		—				48.40		61.4	
	11910 61.40		2571 56.3		—			23144	50.45		1488 33.5	
	1910		71						3144		488	
	38.95		47 51.42		—				54.65		25 29.76	
	42.88		+62.54		—				56.65		+33.68	
	46.45				—				58.60			
	50.25	54041			—				0.80	2.840		
	54.10	5404	49 41.2		—		19 19.2		2.90	2.84		
	57.80	53.88	43.0	−2.07 52.43	204.85 54.50		21.4		4.90	2.84		
	1.69		46.0	4.15 52.40	52.462 56.55		23.4		6.90			
	5.25		49.8	6.23 52.35	58.58		25.5		9.00			
	48637 9.00		2340 54.0	8.31 52.67	0.98		1166 27.1	2556	11.16			
	3637		340				166		2556			
	16.40		49 46.80	12.45 52.55	262.41 5.00		19 23.32		15.29			
	20.20	23.952	−52.84	14.53 52.47	52.482 7.00	9.100	−30.85		17.37	19.402		
	23.96	2395		16.61 52.44	9.05	9.10			19.40	1940		
	27.80	10777		18.68 52.52	11.20				21.45	12569		
	11976 31.40		49 59.0	−20.82 52.43	4550 13.25			9701	23.50		25 29.76	
	1976	48 53.960	1.0		4550		19 23.32		4701	26 2.840		
	23.820		4.0						46.288		+ 33.08	
	23.952		6.4	52.472					19.402			
	53.886		196 9.2	52.473					2.845			
	54.041		196						2.829			
	53.963		50 392						2.837			
			−69.46									

B	36 23.02·			B	58 20.85·			B	34 34.50·
B	37 41.90·			B	58 20.95-				
B	37 52.32·								
	37 47.11				58 20.90·				
	84.09								

		556				96				97			
		α Leporis				ι Orionis				ε Orionis			
		h m s				h m s				h m s			
		5 27 32				5 29 40				5 30 14			
		° ′		0.09228		° ′		0.09228 :		° ′		0.09228	
		−17 54				−5 59				−1 17			
	1881	Sept. 28											
h	m s		m s										
5	27 13.60		26 58.5	5 29	23.00	+20.75 43.75	29 3.6	5	30 —		30 21.0		
	15.70	17.850	0.8	+18.67 43.67	218.18 25.00	27.040	5.9		—		23.0		+18.77
	17.75	17.85	2.4	16.61 43.61	43.636 27.00	27.04	7.7		—		25.3		16.70
	20.00		3.8	14.50 43.50	29.00		9.3		—		27.1		14.61
	8925 22.20		106 5.1	12.45 43.65	13520 31.20		371 10.6		—		1248 28.4		12.52
	3925		106		3520		371				248		
	26.58		27 2.12	8.30 43.65	393.28 35.35		29 7.42	+8.26 17.66	159.21 9.40		30 24.96		8.35
	28.76		+33.08	6.22 43.60	43.648 37.38		−36.26	6.19 17.64	17.69 11.45		−7.26		6.26
	30.78			4.15 43.55	39.40			4.12 17.77	13.65				4.17
	33.00	35.224		+2.05 43.65	41.60	43701		+2.04 17.64	15.60	17694			+2.06
34.85	35.30	3522	27 34.8	−0.00 43.68	43.68	4370		−0.00 17.75	17.75	1769	30 56.0		−0.00
	37.57	35.19	36.5	2.07 43.73	45.80			2.06 17.62	19.68		57.3		2.08
	39.75		38.0	4.15 43.85	48.00			4.13 17.59	21.72		58.5		4.17
	41.50		39.1	6.22 43.78	50.00			6.19 17.81	24.00		59.5		6.26
	31702 43.78		1892 40.8	8.31 43.79	39331 52.10			8.27 17.78	5925 26.00		2920 0.7		8.36
	4702		392		3331				6925		420		
	48.19		27 37.84		—			12.38 17.77	88.30 30.15		30 5840		
	50.37	52528	−2.64		—			14.45 17.75	17.72 32.20	34244	−40.70		
	52.45	5253		43.667	—			16.51 17.71	34.25	3424			
	54.75	7038		43.676	—			18.58 17.69	36.27				
	26264 56.88		27 2.12		—		29 7.42	−20.70 17.65	17122 38.35		30 24.96		
	1264	27 35.205	27 37.84						2122		30 58.40		
	17.850		+ 33.08										
	52.528		− 2.64					17.705					52.40
	35.189		35.72					17.701					52.3
	35.225				43.701				17.694				
	35.207												

B 9 54.65.
B 10 36.72.

B 10 20.00.

B 28 –
B 29 29.65.
R 29 29.70.

29 29.67.

d		100
ζ Orionis	α Columbae	κ Orionis
h m s 5 34 39 ° ′ −2 0	h m s 5 35 23 ° ′ −34 8	h m s 5 42 10 ° ′ −9 43
0.09225	0.09228	1.17609 9.99372 1.16981 0.09228

	5	34	31.75	+20.65 52.40	34	20.0
+16.77	52.37	262.13	33.60	35.776		21.8
16.70	52.55	52.426	35.85	3578		23.8
14.61	52.51		37.90			25.7
12.52	52.30	17888	39.78		1188	27.5
			2888			188
8.35	52.35	471.37	44.00		34	23.76
6.26	52.36	52.374	46.10			+28.63
4.17	52.17		48.00			
+2.06	52.40		50.34	52378		
−0.00	52.36		52.36	5238		
2.08	52.42		54.50			
4.17	52.38		56.55			
6.26	52.44		58.70			
8.36	52.49	47140	0.85			
			2140			

34 23.76

52.400
52.393

52378

B 11 43.20·

5	35	20.50
		23.35
		25.75
		30.75
		33.20
		35.60

A Rouly

5	41	52.55		41	36.5
		54.60	56.710		37.8
		56.60	5671		39.9
		58.80			41.5
	28355	1.00		1988	43.1
		3355			488
		5.00		41	39.76
		7.17			+33.66
		9.26			
		11.40	13386		
		13.33	1339	42	45.0
		15.50	13.46		46.5
		17.56			48.0
		19.50			49.2
	12047	21.75		2400	51.3
		3047			400
		26.00		42	48.00
		28.00	30.220		−34.58
		30.30	30.22		
		32.35	14693		
	15110	34.45		41	39.76
		110	42 13.425	42	48.00
		56.710		+	33.66
		30.220		−	34.58
		13.465			68.24
		13.386			1.83414
		13.425			1.16981
					3.00395
					1.91924
					8.91529
					44213

B 38 40.92·
B 40 3.85·
R 40 4.05·

40 3.95 –
83.03

102

α Orionis

h m s
5 48 47
° ′
+ 7 23

1.17609 0.09228
9.99638
1.17247

1881

Sept. 28

h	m	s		m	s
5	48	30.32		48	16.2
		32.30	34.524		18.0
		34.55	34.53		19.9
		36.63			21.4
	17265	38.85		985	23.0
		2262			485
		42.80		48	19.70
		45.00			+31.50
		47.00			
		49.25	51.206		
		51.20	5120	49	23.0
		53.25	51.21		24.7
		55.30			26.4
		57.47			28.1
	46085	59.58		1318	29.6
		1085			318
		3.70		49	26.36
		5.80	7.900		−35.16
		8.00	7.90		
		10.00	10243		
	3950	12.00		48	19.70
		3950	48 51.205	49	26.36
		34530		+	31.50
		7.900		−	35.16
		51.215			66.66
		51.205			1.82387
		51.210			1.17247
					2.99634
					1.91249
					8.91615
5	48	47.51			44247

256

δ Urs. Min. S.C.

h m s
18 10 21
° ′
+ 93 23

0.09228

6	6	23.15	3	9.0
		24.50		
		28.00	4	0.7
			5	17.4

Reject

A —, 1

106

μ Geminorum

h m s
6 15 49
° ′
+ 22 34

1.17609 0.09228
9.96541
1.14150

h	m	s		m	s
6	15	31.50		15	9.4
		33.80	36.040		11.0
		36.00	36.04		12.7
		38.35			14.7
	18020	40.55		648	17.0
		3020			148
		44.85		15	1296
		47.12			+40.91
		49.33			
		51.60	53.830		
		53.80	5383	16	21.1
		56.00	53.91		23.4
		58.30			25.3
		0.60			27.2
	48447	2.87		1260	29.0
		3447			260
		7.15		16	2520
		9.50	11.780		−31.33
		11.90	11.78		
		14.00	10782		
	5890	16.35		15	12.96
		890	15 53.870	16	25.20
		36.040		+	40.91
		11.780		−	31.33
		53.910			72.24
		53.830			1.85678
		53.870			1.14150
					3.00028
					1.97498
					8.91470
					44150

B 47 35.02 ·
B 49 55.72 ·
R 49 55.82 ·

49 55.77 ·
80.75

7 23 4.5

B 51 45.02 ·
B 51 39.45 ·
B 51 32.90 ·

B 37 33.22 ·
B 38 55.50 ·
R 38 55.38 ·

38 55.44 ·
82.22

S

Sun

h m s
12 24 32
° '
−2 39

Sept. $\frac{28}{29}$

0.09228

173

ε Urs. Maj.

h m s
12 48 48
° '
+56 36

Sept. 29

0.08661

12	23 5.85		24 29.7	25 14.10		24 50.3	12	48 —		47 44.4
	7.80	9.780	31.0	16.30	18.296	52.5		—		48.0
	9.60	9.78	33.6	18.30	18.30	54.0		—		50.4
	11.70		36.3	20.38		55.5		—		53.4
	4890 13.95		1688 38.2	9151 22.40		2693 57.0		—		2527 56.5
	4890		188	4148		193				27
	18.00		24 3376	26.45		24 5386	+15.00 53.78	161.31 38.78		47 5054
	20.10		−67.35	28.65		+ 31.02	+11.25 53.82	53.736 42.57		+63.26
	22.18			30.62				—		
	24.28	26.428		32.78	34.883			—		
	26.51	26.43		35.00	3488			—		
	28.60	26.40		36.95	34.88		−3.74 53.71	57.45		
	30.65			39.00				—		
	32.70			41.20				—		
	23786 34.78			31395 43.30				—		
	5786			4395						
	36.80			47.40				—		
	40.90	43.020		49.50	51460			—		
	43.00	43.02		51.45	5146			—		
	45.15	5280		53.40	6976			—		
	21510 47.25		24 3376	25730 55.55		24 5386	−37.62 5388	5388 31.40		47 5054
	1510	23 26.415		730	25 34.880					
	9.780		− 67.35			+ 31.02				
	43.020						53.808			
	26.400						53.797			
	26.429									
	26.414									

B 34 52.75

B 7 22.62

B 36 23.25 -

240

β Draconis

h m s
17 27 45
+52 24

0.08661

1881
Sept. 29

h m s   m s
17 27 17.70   27 5.0
20.88 24.316   7.8
24.30 24.31   10.2
27.70   12.9
12158 31.00   513 15.4
2158   13
38.00   27 10.26
41.00   + 41.11
44.60
47.70 51372
51.40 51.37
55.00 51.37
58.25
1.55
46235 4.85
1235
11.70
14.95 18440
18.55 18.44
22.00 10275
9220 25.00   27 10.26
4220 27 51.370
24.316   + 41.11
18.440
51.378
51.372
51.375

17 27 45.54

R 48 59.70.

52 23 42.5

252

γ Draconis

h m s
17 53 52
° ′
+51 31

0.08661

17 53 24.84   53 17.0
27.83 31002   19.3
30.90 31.00   21.7
34.36   23.8
15501 37.58   1085 26.7
501   85
44.26   53 21.70
47.40   + 35.81
50.95
54.12 57514
57.50 57.51
1.00 57.52
4.00
7.40
51763 11.00
6763
17.45
20.55 24040
24.00 24.04
27.50 11504
12020 30.70   53 21.70
2020 53 57.515
31.002   + 35.81
24.040
57.521
57.514
57.517

17 53 51.92

R 42 7.58.
R 42 7.50.

42 7.54.

51 30 33.0

256

δ Urs. Min

h m s
18 10 21
° ′
+86 37

0.08661

18 9 8.40
15.50
30.85
42.00
54.80
10 7.00
19.45
28.25
40.47
53.50
11 2.60
15.60
29.40

ARouly

257

η Serpentis

h m s
18 15 13
° ′
−2 56

0.08661

18	14	55.48		14	46.5
		57.55	59.620		47.8
		59.60	59.62		49.8
		1.77			51.0
	29810	3.70		2480	52.9
		4810			480
		7.85		14	49.60
		9.85			+ 26.56
		12.00			
		14.00	16.120		
		16.18	16.12		
		18.20	16.21		
		20.30			
		22.40			
	14508	24.30			
		5508			
		28.42			
		30.50	32.800		
		32.70	32.80		
		35.00	15242		
	16400 {	37.38 }		14	49.60
		1400	15 16.165		
		59.620		+	26.56
		32.800			
		16.210			
		16.120			
		16.165			

R 6 59.92
R 6 59.32

6 59.62

260

α Lyrae

h m s
18 32 57
° ′
+38 41

0.08661

18	32	35.45		32	13.8
		38.00	40.690		15.7
		40.60	40.69		17.2
		43.40			19.0
	20345	46.00		876	21.9
		345			376
		51.20		32	17.52
		53.90			+ 44.29
		56.40			
		59.15	1.800		
		1.95	1.80		
		4.40	1.82		
		7.00			
		9.75			
	1620	12.45			
		1620			
		17.45			
		20.20	22.946		
		23.03	22.95		
		25.70	12.364		
	11473 {	28.35 }		32	17.52
		1473	33 1.810		
		40.690		+	44.29
		23.146			
		1.918			
		1.800			
		1.859			

18 32 56.82

R 31 24.65
R 31 24.32

31 24.48

38 40 49.3

S

Sun.

h m s
12. 28 9
° '
−3 3

1881

Sept. 29/30

0.08666

212

α Serpentis

h m s
15 38 27
° '
+6 48

1.17609 0.08666
9.99693
1.17302

Sept. 30

h m s
12. 26 —
—
+17.36 4.36 13.06 47.00
15.19 4.34 4.353 49.15
13.01 4.36 51.35
8.67 3.97 2646 55.30
6.51 4.06 2.923 57.55
4.33 3.93 59.60
+2.15 3.80 1.65
−0.08 4.00 4.00
—
4.34 3.41 7.75
6.67 3.29 9.80
—
13.01 2.99 13.69 16.00
15.18 2.82 2738 18.00 20,100
17.35 2.65 20.00 2010
19.52 2.68 22.20
21.75 2.55 00 50 24.30
050

3.128
3.547

m s

m s
28 51.40
53.50 55,550
55.50 5555
57.65
27775 59.70
2775
3.88
6.00
7.90
10.00 12,100
12.00 1210
14.20
16.20
18.30
10890 20.42
1890
24.60
26.80
28.80
30.90
33.00

m s
28 25.0
26.6
29.0
30.9
1440 32.5
440
28 28.80

28 28.80

15 38 9.70
11.90 13,910
13.95 1391
16.00
6955 18.00
1955
22.30
24.30
26.38
28.50 30,601
30.60 3060
32.70 30.54
34.75
36.85
27541 39.00
541
~~42.90~~
45.00 47,174
47.32 47.17
49.30 6108
23587 51.35
3587 38 30,570
13.910
47.174
30.542
30.598
30.570

15 38 26.71

37 58.5
0.0
1.7
2.8
75 4.5
7.5
38 1.50
+ 29.87
38 55.0
56.5
58.1
59.9
2910 1.5
410
38 58.20
− 27.63
38 1.50
38 58.20
+ 29.07
− 27.63
56.70
1.75358
1.17302
2.92660
1.84004
8.91344
4 41 2

B 58 34.60

B 23 40.50
B 24 49.68
R 24 49.70

24 49.69
69.19

6 48 3.7

173

ε Urs. Maj. S.e.

h m s
12 48 48
° '
+123 24

0.08661

Sept. 30

10 48 11.78
15.45 19.198
19.00 19.19
22.98
9599 26.78
4599
34.18
37.85
41.93
45.37 49.253
49.18 49.25 49 32.4
53.00 49.21 35.0
56.65 40.2
0.75 43.5
44328 4.37 1975 46.4
8328 475
11.65 49 39.50
15.55 19.230 − 50.27
19.20 19.23
23.00 9842
9615 26.75
4615 48 49.230 49 39.50
19.198
19.230 − 50.27
49.214
49.253
49.233

B 54 12.20
B 54 12.10

54 12.15

20

H Cassiop.

h m s
1 18 9
° '
+59 37

0.08661

1 17 35.30
39.10 43.436
43.45 4344
47.38
21718 51.95
1718
0.00
3.70
7.70
11.35 15.867
15.60 1587 19 8.4
19.90 16.04 12.5
24.00 16.0
28.20 19.7
14280 32.35 796 23.0
5280 296
40.48 19 15.92
44.52 48626 −59.97
48.55 4863
52.78 15207
24313 56.80
4313 18 15.955 19 15.92
43.436
48.626 − 59.97
16.031
15.867
15.949

B 36 35.48
B 36 35.58

36 35.53

S

Sun.

h m s
12 31 47
° '
−3 26

0.08661

1881

Sept. 30
Oct. 1

173

ε Urs. Maj.

h m s
12 48 48
° '
+56 36

0.08661

Oct. 1

	h	m	s		m	s	m	s	m	s							
	12	30	20.25		31	14.8			32	3.3		12	48	16.80			
			22.35	24430		16.5				4.8				20.53	24200		
			24.40	2443		18.5				6.6				24.28	2420		
			26.55			20.6				8.3				27.80			
12215			28.60		929	22.5			333	10.3		12100		31.59			
			2215			429				333				2100			
			32.60		31	1858			32	666				38.80			
			34.78			−37.64								42.87			
			36.86											46.65			
			38.90	40964										50.32	54151		
			40.86	4096										54.32	5415	49	29.2
			43.00	40.92										58.00	54.20		32.3
			45.18											1.76			34.1
			47.20											5.86			36.6
36868			49.30									48736		9.28		1719	39.7
			868											3736			219
			53.42											16.60		49	3438
			55.60	57600										20.35	24210		−40.21
			57.65	5740										24.40	2421		
			59.63	8183										28.00	10841		
28700			1.70		31	1858			32	6.66		12105		31.70			
			3800	30 40.940										2105	48 54.175	49	34.38
					−	37.64								24.200			
														24.210		−	40.21
														54.205			
														54.151			
														54.178			

B 53 1.22

B 21 54.12

B 37 34.55 ·
B 37 34.45 ·

37 34.50 ·

603
υ Sagittarii
h m s
18 47 57
° '
−26 26

0.08661

270
ζ Aquilae
h m s
19 00 00
° '
+13 42

0.08661

283
β Aquilae
h m s
19 49 32
° '
+6 7

0.08661

18 47 — 47 58.4 — 19 0 7.0 19 49 15.00 +20.76 35.76 49 13.0
59.8 — 8.5 +18.67 35.67 178.47 17.00 19.090 14.0
+18.45 0.37 1.06 41.92 1.6 — 10.5 16.61 35.86 35.644 19.25 19.09 16.0
16.14 0.32 353 44.18 3.8 — 11.7 14.53 35.53 21.00 18.2
13.82 0.37 46.55 90 5.4 — 510 13.3 12.45 35.65 9545 23.20 812 20.0
90 1.0 4545 312
9.22 0.22 2.81 51.00 ~~50~~48 1.80 — 0 10.20 8.30 35.87 71.63 27.57 49 16.24
6.91 1.36 312 53.45 +58.58 — −6.43 +6.23 35.76 35.816 29.53 +19.48
4.60 0.45 55.85 19 0 —
+2.28 0.28 58.00 0.317 19 0 1.65 +2.10 3.75 —
−0.00 0.35 0.35 0.32 3.65 −0.00 3.65 0 35.0 — 50 2.6
2.30 0.30 2.60 5.95 2.12 3.83 22.60 37.0 — 4.7
4.61 0.39 5.00 8.00 4.25 3.75 3.766 39.0 — 6.0
6.91 0.29 7.20 10.20 6.37 3.83 40.4 — 7.5
9.23 0.17 285 9.40 12.30 8.51 3.79 1940 42.6 — 301 9.3
285 440 301
— 16.40 12.74 3.66 0 38.80 — 50 6.02
— 18.75 14.86 3.89 7.55 −35.03 −14.52 35.68 142.81 50.20 −30.30
— — 3.775 16.60 35.75 35.702 52.35
— — 18.68 35.74 54.42
— 48 1.80 — 0 10.20 20.82 35.64 56.46 49 16.24
0 38.80 50 6.02

3.32
3.22
3.771
3.769
35.737
35.719
0.316
19 49 31.66

B 37 9.02 ·
R 37 9.25 ·

37 9.13 ·

B 31 2.70 ·
B 31 36.62 ·
R 31 36.72 ·

31 36.67 ·

B 4 57.78
B 5 58.02
R 5 58.02

5 58.02
60.24

6 6 59.6

287

θ Aquilae

h m s
20 5 14
° '
−1 10

0.08661

1881

Oct 1

h m s
20 5 56.80
58.90
1.00
3.00
500 5.80
500
9.40
11.45
13.35
15.40
17.45
19.50
21.55
23.60
15740 25.70
6740
30.00
32.00
34.00
36.00
17000 38.00
2000
1.000
34.000
17.500
17.489
17.495

1,000
1.00
17.489
17.49
17.50
34.000
34.00
15500
6 17.495

m s
5 6.0
7.2
8.7
10.0
436 11.7
436
5 8.72
+68.77
5 48.3
50.4
52.0
53.7
2598 55.4
98
5 51.96
+25.53
5 8.72
5 51.96
+ 68.77
+ 25.53
94.30

607

α² Capricorni

h m s
20 11 31
° '
−12 54

0.08661

20 11 13.70
15.75
17.66
19.90
8895 21.94
3895
26.20
28.35
30.40
32.03
34.60
36.75
38.90
41.00
31175 43.00
4175
47.30
49.40
51.50
53.75
25775 55.80
775
17.790
51.550
34.670
34.638
34.634

17.790
17.79
34.639
34.64
34.67
51.550
51.55
6934
11 34.655

11 24.9
26.7
27.9
29.9
1408 31.4
408
11 28.16
+6.49
12 1.2
3.0
4.5
6.2
224 7.5
224
12 4.48
−29.83
11 28.16
12 4.48
+ 6.49
− 29.83
36.32

20 11 31.16

0.08661

289

γ Cygni

h m s
20 18 1
° '
+39 53

1.17609 0.08661
9.88499
1.06108

20 17 38.80
41.40
44.15
46.90
22070 49.45
2070
55.00
57.70
0.38
3.12
5.78
8.42
11.15
13.80
5192 16.54
5192
21.90
24.55
27.28
29.90
13638 32.75
3638
44.140
27.276
5.708
5.~~991~~769
5.~~850~~738

44.140
44.14
5.769
5.77
5.71
27.276
27.28
13142
18 5.740

17 23.0
25.1
27.4
29.4
1362 31.3
362
17 27.24
+38.50
18 47.0
50.2
51.9
53.9
2592 56.2
92
18 51.84
−46.10
17 27.24
18 51.84
+ 38.50
− 46.10
84.60
1.92737
1.06108
2.98845
1.90037
8.91192
4403

B 22 0.40.
B 22 54.05.
R 22 53.88.

22 53.96.

B 5 59.65.
B 6 41.92.
R 6 42.10.

6 42.01.

12 54 27.3

B 19 14.90.
B 20 34.28.
R 20 33.90.
B 20 34.05.

.08.
20 34.~~11~~

79.50

294
α Cygni
h m s
20 37 26
° '
+44 52
1.17609 0.08661
9.85049
1.02658

20 37 2.00
5.00 7.840
7.77 784
10.70
3920 13.73
3920
19.50
22.44
25.30
28.32 31.168
31.20 3117
34.04 31.19
37.00
39.91
28051 42.80
1051
48.70
51.65 54540
54.60 5454
57.35 6238
27270 0.50
2270 37 31.180
7.840
54.540
31.190
31.168
31.179

20 37 25.66

36 39.7
42.7
45.1
47.3
2238 49.0
238
36 4476
+ 46.42
37 56.0
58.7
1.0
3.0
36 4.9
36
38 0.72
− 29.54
36 4476
38 0.72
+ 46.42
− 29.54
75.96
1.88058
1.02658
2.90716
1.82295
8.91579
44233

298
ε Cygni
h m s
20 41 27
° '
+33 32
1.17609 0.08661
9.92094
1.~~7~~09703

20 41 7.50
9.75 12290
12.30 1229
14.70
6145 17.20
1145
22.20
24.60
27.27
29.62 32.088
32.00 32.09
34.60 32.14
37.00
39.50
28879 42.00
1879
47.00
49.50 51.986
51.98 5199
54.50 6428
25993 56.95
993 41 32.115
12.290
51.986
32.138
32.088
32.113

40 55.0
57.2
58.9
0.9
2943 2.3
443
40 58.86
+ 33.25
42 3.4
5.3
7.3
9.6
369 11.3
369
42 7.38
− 35.27
40 58.86
42 7.38
+ 33.25
− 35.27
68.52
1.83582
1.~~7~~09703
~~3~~2.~~8~~93285
1.84273
8.~~8~~90988
43844

303
ζ Cygni
h m s
21 7 56
° '
+29 45
0.08661

21 7 37.15
39.45 41.770
41.77 41.77
44.00
20885 46.48
885
51.25
53.65
56.00
58.38 0.756
0.82 0.76
3.00 0.78
5.45
7.95
680 10.30
680
15.00
17.45 19.800
19.80 1980
22.25 12157
9900 24.50
4900 8 0.770
41.770
19.800
0.785
0.756
0.770

7 37.8
39.9
41.2
43.0
2065 44.6
65
7 41.30
+ 19.47
8 29.4
31.8
33.4
35.0
1666 37.0
166
8 33.32
− 32.55
7 41.30
8 33.32
+ 19.47
32.55
52.02

B 20 28.10
B 21 34.62
R 21 34.62

21 34.62
66.52

44 51 53.1

B 40 14.90
B 41 24.55
R 41 24.48

41 24.52
69.62

B 27 33.02
B 28 28.25
R 28 28.60

28 28.42

306 α Cephei

h m s
21 15 48
° '
+62 5

0.08661

232 η Herculis

h m s
16 38 57
° '
+39 9

1.17609 0.08661
9.88958
1.06567

269 λ Aquilae

h m s
19 00 00
° '
−5 3

0.08661

1881 Oct. 1

Oct. 3

h	m	s		m	s
21	15	10.65		14	33.4
		15.00	19.440		36.2
		19.40	19.44		39.4
		23.88			42.2
	9720	28.27		1965	45.3
		4720			465
		37.00		141	39.30
		41.60			+75.44
		46.00			
		50.08	54.789		
		54.70	5479	15	55.0
		59.30	54.69		57.2
		3.57			59.9
		8.15			2.6
	49310	12.40		3011	6.4
		4310			11
		21.00		16	0.22
		25.50	29.950		−5.48
		30.00	29.95		
		34.40	10939		
	14975	38.85		16	46.4
		4975	15 54.740		49.4
		19.440			54.0
		29.950			57.3
		54.695		2688	1.7
		54.789			188
		54.742		16	53.76
					−60.98
21	15	47.76			

16	38	29.18		38	22.8		
		31.80	34.510		25.2		
		34.50	3451		27.0		
		37.20			28.9		
	17255	39.87		1351	31.2		
		2255			351		
		45.13		38	27.02	+8.27	3.48
		47.75		+	28.73	6.21	3.58
		50.40				4.14	3.57
		53.20	55.753			+2.05	3.60
		53.90	55.75	39	32.0	1.00	3.50
		58.45	55.76		34.2	2.07	3.49
		1.00			35.8	4.14	3.46
		3.65			37.8	6.21	3.49
	50178	6.30		1800	40.2	8.30	3.50
		5178			300		
		11.75		39	36.00	12.43	3.52
		14.35	17.020		−40.25	14.50	3.50
		17.00	17.02			16.57	3.43
		19.65	11153			18.65	3.52
	8510	22.35		38	27.02	−20.78	3.45
		3510	38 55.755	39	36.00		
		34.510		+	28.73		
		17.020		−	40.25	3.501	
		55.765			68.98	3.506	
		55.753			1.83872		
		55.759			1.06567		
					2.90439		
					1.81117		
					8.90678		
					43646		

18 59	—			59	58.2
	—				59.8
	—				1.8
	—				3.0
	—			72	4.4
					72
31.67	55.19			0	1.44
3.518	57.37				+2.07
	59.43				
	1.55	3522			
	3.50	352	19	0	33.2
	5.56				35.0
	7.60				36.5
	9.70				38.4
3170	11.80			1833	40.2
	3170				333
17.42	15.95			0	3.666
3.484	18.00	20.070			−33.15
	20.00	20.07			
	22.17				
10035	24.23			0	1.44
	035			0	36.66

B 7 6.92·
B 6 54.60·
B 25.18·

B 3 20.38·
B 4 25.05·
R 4 25.18·

4 25.12·
64.74

B 15 17.60·
B ? 59.90·
R · 59.88·

59.89·

62 5 26.4

275

β Cygni

h m s
19 25 58

° '
+27 43

1.17609 0.08661
9.94707
1.12316

19	25	39.88		25	21.3
		42.00	44.476		23.2
		44.50	44.48		25.0
		46.80			26.6
	22238	49.20		1242	28.1
		2238			242
		53.90		25	24.84
		56.10			+38.31
		58.46			
		0.84	3.169		
		3.27	3.17	26	31.2
		5.70	3.14		32.9
		7.80			34.4
		10.15			36.2
	2852	12.30		1725	37.8
		2852			225
		17.18		26	34.50
		19.50	21.800		−31.35
		21.85	21.80		
		24.00	12628		
	10900	26.47		25	24.84
		10900	26 3.155	26	34.50
		44.476		+	38.31
		21.800		−	31.35
		3.138			69.66
		3.169			1.84298
		3.153			1.12316
					2.96614
					1.87950
					8.91386
					4 40 58

277

γ Aquilae

h m s
19 40 40

° '
+10 20

1.17609 0.08661
9.99290
1.16899

19	40	22.90		40	7.2
		25.00	27.156		8.9
		27.14	27.16		10.5
		29.34			12.0
	13578	31.40		524	13.8
		3578			24
		35.53		40	10.48
		37.57			+33.43
		39.68			
		41.80	43.880		
		43.90	43.88	41	9.7
		45.90	43.95		11.2
		48.00			12.8
		50.22			14.5
	39492	52.32		645	16.3
		3492			145
		56.57		41	12.90
		58.64	0.742		−28.99
		0.70	0.74		
		2.80	8790		
	371	5.00		40	10.48
		371	40 43.915	41	12.90
		27.156		+	33.43
		0.742		−	28.99
		43.949			62.42
		43.880			1.79432
		43.915			1.16899
					2.96331
					1.87483
					8.91152
19	40	39.57			4 39 47

280

α Aquilae

h m s
19 45 2

° '
+8 34

1.17609 0.08661
9.99513
1.17122

19	44	45.60		44	36.0
		47.68	49.772		38.0
		49.75	49.77		39.5
		51.88			40.8
	24886	53.95		1969	42.6
		4886			469
		58.13		44	39.38
		0.25			+27.08
		2.30			
		4.45	6.478		
		6.50	6.48	45	35.4
		8.50	6.45		37.2
		10.60			38.8
		12.70			40.4
	5830	14.87		1945	42.7
		5830			445
		19.00		45	38.90
		21.00	23.126		−32.44
		23.20	23.13		
		25.15	13290		
	11563	27.28		44	39.38
		1563	45 6.465	45	38.90
		49.772		+	27.08
		23.086		−	32.44
		6.429			59.89
		6.478			1.77735
		6.453			1.17122
					2.94857
					1.85637
					8.90780
19	45	2.15			4 37 25

B 28 59.35 ·
B 30 15.22 ·
R 30 15.02 ·

30 15.12 ·
75.77

B 51 55.25 ·
B 53 10.10 ·
R 53 10.32 ·

53 10.21 ·
74.96

16 19 50.4

B 38 8.18 ·
B 39 19.92 ·
R 39 20.12 ·

39 20.02 ·
71.84

8 33 41.3

		283		
		β Aquilae		
		h m s 19 49 32		
		° ' +6 7	1.17609 9.99752	0.08661
	1881	Oct. 3	1.17361	
h	m s		m s	
	49 15.18		49 3.8	
	17.15	19.244	5.5	
	19.29	1924	7.3	
	21.27		9.2	
	9622 23.33		362 10.4	
	4622		362	
	27.50		49 724	
	29.65		+28.65	
	31.67			
	33.85	35.892		
	36.00	3589	50 3.6	
	38.00	35.89	5.5	
	40.10		7.0	
	42.00		8.7	
	32303 44.26		352 10.4	
	5303		352	
	48.40		50 7.04	
	50.47	52.554	−31.15	
	52.55	5255		
	54.60	7179		
	26277 56.75		49 7.24	
	1277	49 35.890	50 7.04	
	19.244		+ 28.65	
	52.554		− 31.15	
	35.899		59.80	
	35.792		1.77670	
	35.846		1.17361	
			2.95031	
			1.86812	
			8.91781	
19	48 31.63		44351	
	B 4 43.50			
	B 5 57.20			
	R 5 57.42			
	5 57.31			
	73.81			
6	6 59.6			

		287		
		θ Aquilae		
		h m s 20 5 14		
		° ' −1 10	1.17609 9.99991	0.08661
			1.17600	
20	4 57.18		4 46.0	
	59.16	1.276	47.6	
	1.28	128	49.2	
	3.32		50.5	
	638 5.44		2451 51.8	
	6.38		451	
	9.48		4 49.02	
	11.60		+28.73	
	13.58			
	15.65	17.732		
	17.70	17.73	5 49.2	
	19.78	17.77	51.1	
	21.88		52.7	
	23.92		54.0	
	15959 26.00		2627 55.7	
	6959		127	
	30.18		5 52.54	
	32.15	34.260	−34.79	
	34.20	3426		
	36.32	3554		
	17130 38.45		4 49.02	
	2130	5 17.750	5 52.54	
	1.276		+ 28.73	
	34.256		− 34.79	
	17.766		6352	
	17.732		1.80291	
	17.799		1.17600	
			2.97891	
			1.90536	
			8.92645	
			44932	
	B 21 32.85			
	B 22 53.30			
	R 22 53.25			
	22 53.27			
	80.42			

		607		
		α² Capricorni		
		h m s 20 11 31		
		° ' −12 54	1.17609 9.98890	0.08661
			1.16499	
20	11 13.77		11 1.2	
	15.96	18.032	2.6	
	18.00	18.03	4.2	
	20.15		5.9	
	9016 22.28		213 7.4	
	4016		213	
	26.60		11 426	
	28.60		+30.64	
	30.70			
	32.80	34.944		
	34.90	3494	12 6.5	
	37.00	34.96	8.2	
	39.17		10.5	
	41.23		12.0	
	31450 43.50		512 14.0	
	4450		12	
	47.60		12 1024	
	49.78	51.896	−35.29	
	51.90	5189		
	54.00	6942		
	25948 56.20		11 4.26	
	948	11 34.950	12 10.24	
	18.032		+ 30.69	
	51.896		− 35.29	
	34.964		65.98	
	34.944		1.81941	
	34.954		1.16499	
			2.98440	
			1.89790	
			8.91350	
20	11 31.13		4414	
	B 5 29.18			
	B 6 48.12			
	R 6 48.35			
	6 48.23			
	79.05			
12	54 27.3			

289

γ Cygni

h m s
20 18 1
° '
+ 39 53

1.17609 0.08661
9.88499
1.06108

20	17	39.00		17	19.5
		41.75	44.412		21.5
		44.43	44.41		23.7
		47.00			26.0
	22206	49.88		1187	28.0
		2206			187
		55.20		17	23.74
		57.87			+ 42.24
		0.58			
		3.36	5.976		
		6.00	5.98	18	42.7
		8.60	5.99		44.7
		11.40			46.8
		14.00			48.8
	5378	16.77		2340	51.0
		5378			340
		22.20		18	4680
		24.95	27.570		− 40.82
		27.50	2757		
		30.20	13198		
	13785	33.00		17	2374
		3785	18 5.985	18	46.80
		44.400		+	42.24
		27.570		−	40.82
		5.985			83.06
		5.975			1.91939
		5.980			1.06108
					2.98047
					1.89170
					8.91123
					4 3936

B 39 10.60
B 40 28.65
R 40 28.42

40 28.53
77.93

294

α Cygni

h m s
20 37 26
° '
+44 52

1.17609 0.08661
9.85049
1.02658

20	37	2.30		36	38.7
		5.17	8.050		41.4
		8.00	8.05		43.7
		10.98			46.0
	4025	13.80		2178	48.0
		4025			178
		19.75		36	4356
		22.55			+ 47.69
		25.35			
		28.40	31.190		
		31.30	3118	38	6.2
		34.10	31.32		8.8
		37.16			11.4
		40.00			13.6
	28061	43.00		560	16.0
		1161			60
		48.86		38	1120
		51.65	54.600		−39.95
		54.54	5460		
		57.45	6265		
	27300	0.50		36	4356
		2300	37 31.250	38	11.20
		8.050		+	47.69
		54.600		−	39.95
		31.325			87.64
		31.290			1.94270
		31.307			1.02658
					2.96928
					1.88395
					8.91467
20	37	25.61			4 4149

B 20 26.95
B 21 43.55
R 21 43.45

21 43.50
7655

44 51 53.4

298

ε Cygni

h m s
20 41 27
° '
+33 32

1.17609 0.08661
9.92094
1.09703

20	41	7.57		40	44.5
		10.00	12.506		46.3
		12.48	12.51		47.5
		15.00			49.8
	6253	17.48		2401	52.0
		1253			401
		22.35		40	4802
		24.90			+ 44.30
		27.40			
		29.80	32304		
		31.28	32.30	42	3.7
		34.80	32.34		5.4
		37.26			7.2
		39.70			9.4
	29074	42.25		369	11.2
		2074			369
		47.27		42	738
		49.65	52164		−35.06
		52.20	52.16		
		54.55	6467		
	26082	57.15		40	48.02
		1082	41 32320	42	7.38
		12.506		+	44.30
		52.164		−	35.06
		32.335			79.36
		32.304			1.89960
		32.320			1.09703
					2.99663
					1.91073
					8.91410
					4 4127

B 40 3.02
B 41 24.40
R 41 24.48

41 24.44
81.42

		303				306.				307		
		ζ Cygni				α Cephei				β Aquarii		
		h m s				h m s				h m s		
		21 7 36		0.08661		21 15 48		0.08661		21 25 22		0.08661
		° '				° '				° '		
		+29 45				+62 5				−6 5		
	1881.	Oct. 3										
h	m s		m s									
21	7 37.30		7 47.4	21	15 10.80		14 32.4	21	25 5.18		24 45.2	
	39.68	42.050	49.6		15.28	19670	34.3		7.00	9.140	47.3	
	42.00	4205	51.1		19.55	1967	39.4		9.18	9.14	49.0	
	44.40		52.7		24.17		42.5		11.00		50.8	
	21025 46.87		2552 54.4		9835 28.55		1945 45.9		4570 13.34		2446 52.3	
	1025		52		48.35		445		4570		446	
	51.50		7 51.04		37.20		14 3890		17.40		24 4892	
	53.85		+ 9.98		41.70		+76.00		19.60		+36.85	
	56.25				46.00				21.60			
	58.60	1.008			50.45	54.918			23.75	25.786		
	1.00	1.01	8 32.3		54.92	5491	15 56.5		25.80	2578		
	3.40	1.04	35.0		59.48	54.90	0.0		27.82	25.76		
	5.76		36.8		3.80		4.2		30.00			
	8.18		38.4		8.22		7.2		32.10			
	907 10.53		1830 40.5		49427 12.50		182 10.3		23207 34.00			
	907		330		4427		182		5207			
	15.40		8 36.60		21.25		16 3.64		38.16			
	17.67	20.044	−35.58		25.65	30.140	−8.74		40.24	42.380		
	20.00	2004			30.27	3014			42.38	4238		
	22.35	12209			34.53	10981			44.52	5152		
	10022 24.80		7 51.04		15070 39.00		16 53.0		21190 46.60		24 4892	
	4022	8 1.025	8 36.60		070	15 54.905	56.7		1190	25 25.770	+ 36.85	
	42.050		+ 9.98		19.670		0.2		9.140			
	20.044		− 35.58		30.140		3.2		42.380			
	1.047		45.56		54.905		7.8		25.760			
	1.008				54.919		09		25.786			
	1.028				54.912		17 0.18		25.773			
							−65.28					
				21	15 47.70							

B 27 42.82'
B 28 30.80'
R 28 30.85'

28 30.82'

B 7 6.10'
B 7 56.08'
B ~~8~~7 27.48'

8 ~~11.78~~
65.68

62 5 26.8

B 16 23.82'

308

β Cephei

h m s
21 27 11
° '
+70 3

0.08661

21 26 19.16
25.10 31.192
31.30 31.19
37.23
15596 43.17
596
55.35
1.35
7.53
13.47 19.597
19.60 19.50
25.85 19.48
31.68
37.86
17637 43.68
8637
55.00
1.86 7.782
7.75 7.78
14.00 15897
3891 20.30
3891 27 19.540
31.192
7.782
19.486
19.597
19.542

26 16.8
22.4
26.4 2668
31.8
1334 36.0
334
26 2668
+52.86
27 20.5
26.4
32.0
35.2
38.3
1934 41.0
134
27 3268
−13.14
28 26.0
32.0
37.2
40.6
1812 45.4
312
28 3624
−76.60

B 10 13.55
B 10 40.80
B 10 37.80

566

ε Can. Maj.

h m s
6 53 59
° '
−28 49

1.17609
9.94259
1.11868

0.08661

6 53 39.48
44.76 44086
44.17 44.09
46.32
22043 48.70
2043
53.50
55.77
58.20
0.55 2.892
2.95 2.89
5.28 2.93
7.60
9.90
2603 12.28
2603
17.00
19.40 21.770
21.73 21.77
24.22 12586
10885 26.150
885 54 2.910
44.086
21.770
2.928
2.892
2.910

53 23.0
24.5
27.0
29.3
1353 31.5
353
53 2706
+35.85
54 36.0
37.9
38.9
40.2
1950 42.0
450
54 3900
−36.09
53 2706
54 39.00
+ 35.85
− 36.09
71.94
1.85697
1.11868
2.97565
1.88053
8.90488
43534

B 58 8.58
B 59 24.38
R 59 24.68

59 24.53
7595

568

ζ Can. Maj.

h m s
7 3 36
° '
−26 12

1.17609
9.95292
1.12901

0.08661

7 3 16.37
18.60 20.956
21.03 2096
23.30
10478 25.48
478
30.00
32.33
34.60
36.85 39.194
39.15 39.19
41.46 39.33
43.79
46.17
35275 48.40
8275
52.80
55.35 57.700
57.97 57.70
0.10 7866
28850 2.28
3850 3 39.260
20.956
57.700
39.328
39.161
39.245

3 11.6
13.8
15.8
16.9
770 18.9
270
3 1540
+23.86
4 12.7
14.9
17.9
19.3
857 20.9
357
4 1714
−37.88
3 1540
4 17.14
+ 23.86
− 37.88
61.74
1.79057
1.12901
2.91958
1.83161
8.91203
4407

B 22 21.02
B 23 28.82
R 23 28.95

23 28.88
6786

118

β Can. Min

h m s
7 20 48
° '
+8 31

1.17609 0.08661
9.99518
1.17127

1881

Oct. 3

h	m	s		m	s
7	20	28.80		20	15.0
		30.90	32.960		17.5
		32.97	3296		19.2
		35.00			20.5
	16480	37.13		940	21.8
		1480			440
		41.05		20	1880
		43.28			+30.86
		45.38			
		47.57	49.663		
		49.70	49.66	21	19.1
		51.82	49.66		20.8
		53.87			22.6
		56.00			24.3
	44697	58.00		1126	25.8
		8697			126
		2.18		21	2252
		4.27	6.354		-32.86
		6.85	635		
		8.40	9931		
	3177	10.57		20	1880
		3177	20 49.660	21	22.52
		32.960		+	30.86
		6.354		−	32.86
		49.657			63.72
		49.663			1.80428
		49.660			1.17127
					2.97555
					1.88891
					8.91336
					4 40 58

B 40 8,55 .
B 41 26.05 .
R 41 25.90 .

41 25.98 .
77.43

119

α² Geminor

h m s
7 27 3
° '
+32 9

1.17609 0.08661
9.92771
1.10380

h	m	s		m	s
7	26	45.20		26	31.3
		47.58	50040		33.2
		50.02	50.04		34.9
		52.42			36.8
	25020	54.98		1743	38.1
		020			243
		59.80		26	3486
		2.18			+34.69
		4.70			
		7.14	9.560		
		9.65	9.56	27	42.3
		11.95	9.55		44.1
		14.40			46.0
		16.90			48.0
	8604	19.32		2302	49.8
		8604			302
		24.19		27	4604
		26.60	29.064		−36.49
		29.10	29.06		
		31.43	13910		
	14532	34.00		26	3486
		4532	27 9.555	27	46.04
		50.040		+	34.69
		29.064		−	3649
		9.552			71.18
		9.560			1.85236
		9.556			1.10380
					2.95616
					1.86469
					8.90853
7	27	3.90			4 37 53

B 3 33.70 .
B 4 46.82 .
R 4 47.05 .

4 46.93 .
73.23

32 8 39.6

120

α Can. Min

h m s
7 33 7
° '
+5 32

1.17609 0.08661
9.99797
1.17406

h	m	s		m	s
7	32	51.20		32	38.6
		53.29	55.348		40.3
		55.30	6535		41.0
		57.40			43.4
	27674	59.55		2082	44.9
		2674			82
		3.65		32	4164
		5.67			+30.28
		7.73			
		9.85	11.911		
		11.90	1191	33	45.3
		13.95	11.93		47.3
		16.00			49.1
		18.17			50.6
	10720	20.28		2443	52.0
		1720			443
		24.30		33	4886
		26.37	28.510		−36.94
		28.50	2851		
		30.60	14386		
	14255	32.78		32	4164
		4255	33 11.920	33	48.86
		55.348		+	30.28
		28.510		−	36.94
		11.929			67.22
		11.911			1.82750
		11.920			1.17406
					3.00156
					1.91376
					8.91220
7	33	7.47			4 40 14

B 40 0.22 .
B 41? 22.30 .
R 41 . 22.12 .

41? 22.21 .
81.99

5 31 39.5

61

122

β Geminor

h m s
7 38 5
° '
+28 19

1.17609 0.08661
9.94465
1.12074

7 37 47.39
49.60 52022
52.00 5202
54.34
26011 56.78
10.11
1.42
3.70
6.15
8.40 10.804
10.85 1080
13.19 10.82
15.53
17.82
9724 20.18
724
24.85
27.23 29.620
29.72 2962
32.00 14164
14810 34.30
4810 38 10810
52.022
29.620
10.821
10.804
10.813

37 42.2
43.7
45.6
47.7
2282 49.0
282
37 45.64
+25.17
38 42.0
43.5
45.1
47.2
2270 49.2
270
38 45.40
−34.59
37 45.64
38 45.40
+ 25.17
− 34.59
59.76
1.77641
1.12074
2.89715
1.80794
8.91079
4.3979

7 38 5.63

B 53 46.58
B 54 50.72
R 54 50.95

54 50.84
64.26

28 18 31.3

570

15 Argus

h m s
8 2 31
° '
−23 58

1.17609 0.08661
9.96084
1.13693

8 2 12.00
14.25 16530
16.60 1653
18.80
8265 21.00
3265
25.30
27.68
30.00
32.22 34.512
34.47 3453
36.85 34.59
39.15
41.34
31081 43.60
4061
48.10
50.38 52654
52.62 5265
54.97 6918
26327 57.20
1327 ~~3~~2 34.56
16.530
52.654
34.592
34.512
34.554

9

1 57.8
59.2
1.2
2.2
36 3.2
36
2 0.72
+33.84
3 13.0
15.4
17.1
18.5
848 20.8
348
3 16.96
−42.40
2 0.72
3 16.96
+ ~~33.84~~ 3384
+ 17.60 42.40
~~111.44~~ 76.24
~~2.04704~~ 1.88218
1.13693
~~3.18397~~ 3.01911
1.93146
~~8.74749~~ 8.91235
44019

B 7 55.22
B 9 20.60
R 9 20.65

9 20.62
85.40

138

α Hydrae

h m s
9 21 47
° '
−8 9

0.08661

9 21 30.20
32.15 34276
34.25 3428
36.30
17138 38.48
2138
42.55
44.58
46.78
48.85 50901
50.97 5090
53.00 50.92
55.00
57.12
45811 59.26
811
3.00
5.54 7568
7.54 757
9.66 10185
3784 11.80
3784 21 50910
34.276
7.568
50.922
50.901
50.910

9 21 46.81

21 20.1
21.8
23.7
25.2
1178 27.0
178
21 23.56
+27.35
22 23.3
25.0
26.6
28.2
1328 29.7
328
22 26.56
−35.65
21 23.56
22 26.56
+ 27.35
− 35.65
63.00

B 20 24.2
B 21 19.00
R 21 19.10

21 19.05

8 8 44.1

140

θ Urs. Maj

h m s
9 24 56
° '
+52 13

0.08661

1881 Oct. 3

h	m	s		m	s
9	24	29.20		24	29.5
		32.62	35.994		31.6
		36.00	35.99		33.8
		39.60			37.0
17997		42.55		1717	39.8
		2997			217
		49.35		24	34.34
		52.62			+28.54
		56.18			
		59.40	2.826		
		2.80	2.82	25	31.0
		6.23	2.94		33.8
		9.55			36.2
		13.00			39.0
2543		16.30		1811	41.1
		2543			311
		23.10		25	36.22
		26.50	29.900		−33.34
		30.00	29.90		
		33.35	12589		
14950		36.55		24	3434
		4950	25 2.880	25	36.22
		35.994		+	28.54
		29.900		−	33.34
		2.947			61.85
		2.825			
		2.886			
9	24	56.30			

B 0 4.78·
B 54 R? 51.48

52 12 41.6

142

ε Leonis

h m s
9 39 8
° '
+24 19

1.17609 0.08661
9.95965
1.13574

h	m	s		m	s
9	38	50.80		38	35.9
		53.00	55298		37.7
		55.25	55.30		39.3
		57.57			40.9
27649		59.87		1965	42.7
		2649			465
		4.33		38	39.30
		6.66			+34.14
		8.90			
		11.12	13.433		
		13.43	13.43	39	43.0
		15.78	13.45		44.5
		17.88			46.0
		20.23			47.6
12090		22.57		2305	49.4
		3090			305
		27.00		39	46.10
		29.29	31.602		−32.66
		31.57	3160		
		33.90	14690		
15801		36.25		38	3930
		801	39 13.440	39	46.10
		55.298		+	34.14
		31.602		−	3266
		13.450			66.80
		13.433			1.82478
		13.441			1.13574
					2.96052
					1.87338
					8.91286
					44039

B 53 3.42·
B 54 18.18·
R 54 18.08·

54 18.13·
74.71

146

α Leonis

h m s
10 2 4
° '
+12 33

1.17609 0.08661
9.98950
1.16559

h	m	s		m	s
10	1	48.00		1	32.3
		50.15	52250		34.4
		52.28	52.25		36.5
		54.40			38.3
26125		56.42		1813	39.8
		1125			313
		0.68		1	3626
		2.74			+32.88
		5.00			
		7.00	9.141		
		9.20	9.14	2	35.6
		11.25	9.15		37.0
		13.28			38.6
		15.50			40.1
8227		17.62		1933	42.0
		8227			433
		21.80		2	3866
		23.87	26060		−29.52
		26.10	26.06		
		28.18	13831		
13030		30.35		1	3626
		3030	2 9.145	2	38.66
		52.250		+	32.88
		26.060		−	29.52
		9.155			62.40
		9.141			1.79518
		9.148			1.16559
					2.96077
					1.88138
					8.92061
10	2	4.47			44541

B 39 8.38·
B 40 24.48·
R 40 24.48·

40 24.48·
76.10

12 32 39.2

		148				C				149		
		ζ Leonis				γ' Leonis				μ Urs. Maj.		
		h m s				h m s				h m s		
		10 10 6				10 13 27				10 15 16		
		° '	1.17609	0.08661		° '	1.17609	0.08661		° '		0.08661
		+24 0	9.96073			+20 26	9.97178			+42 6		
			1.13682				1.14787					
10	9 49.10		9 31.7	10	13 10.10		13 6.4	10	15 —		15 18.2	
	51.30	53.626	33.2		12.30	14520	8.6		—		20.5	
	53.60	5362	34.5		14.60	14.52	11.0		—		21.7	
	55.95		36.3		16.75		13.2		—		24.2	
	26813 58.18		1735 37.8		7260 18.85		536 14.4		—		1108 26.2	
	1813		235		2260		36				108	
	2.73		9 3470		23.27		13 10.72	+11.13 22.28	20139 11.15		15 2216	
	5.00		+37.03		25.50		+21.37	8.37 22.37	22.377 14.00		+ 0.21	
	7.24				27.73			5.56 22.41	16.85			
	9.46	11.764			29.95	32.092		+2.75 22.40	19.65	22.380		
	11.90	11.76	10 42.5		32.00	3209	13 59.7	-0.00 22.35	22.35	2238	16 3.3	
	14.00	11.70	44.3		34.28	32.10	1.4	2.77 22.38	25.15		6.8	
	16.28		46.5		36.46		3.2	5.56 22.44	28.00		9.7	
	18.50		48.2		38.67		5.0	8.37 22.33	30.70		11.8	
	10588 20.77		2312 49.7		28883 40.97		163 7.0	11.14 22.43	20142 33.57		453 13.7	
	1588		312		1883		163		2142		453	
	25.27		10 46.24		45.20		14 3.26	16.68 22.32	111.75 39.00		16 9.06	
	27.47	29.784	-34.51		47.44	49.680	-31.17	19.48 22.29	22.35 41.77	44618	-46.69	
	29.78	29.78			49.71	49.68		22.25 22.40	44.65	4462		
	32.00	14340			51.90	6420		25.03 22.34	47.37			
	14892 34.40		9 34.70		24840 54.15		13 10.72	27.90 22.40	2309 50.30		15 22.16	
	4892	10 11.730	10 46.24		4840	13 32.095	14 3.26		2309		16 9.06	
	53.616		+ 37.03		14520		+ 21.37					
	29.784		- 34.51		49.680		- 28.73	22.363				
	11.700		71.54		32.100		50.10	22.367				
	11.765		1.85455		32.092		1.69984					
	11.732		1.13682		32.096		1.14787					
			2.99137				2.84771					
			1.90352				1.78283					
			8.91215				8.93512					
			4 40 12	10	13 27.06		4 55 20					
B	11 42.10 ·			B	45 55.25 ·			B	7 30.78 ·			
B	13 2.05 ·			B	46 55.90 ·			B	8 13.22 ·			
R	13 2.30 ·							R	8 13.70 ·			
	13 2.18 ·				46 55.90				8 13.46 ·			
	80.08				60.65							
				20	26 17.8							

13
γ Cass.
h m s
0 49 38
° '
+60 5

0.08661

20
δ Cass.
h m s
1 18 9
° '
+39 37

0.08661

107
γ Gem.
h m s
6 30 54
° '
+16 30

0.08661

1881
Oct. 4

h m s
0

m s
50 36.5
39.7
42.6
45.3
2126 48.5
126
50 42.52
+3.71
50 42.52

24.81 46.09
28.44 46.21
33.04 46.21
37.22 46.33
41.48 46.32

50 10.90
231.16 15.15
46.232 19.30
23.55
9670 27.80
4670

19.340
19.34

1 17 36.00
39.75
44.05
48.00
22020 52.40
2020
0.80
4.20
8.20
12.70
16.55
20.85
24.90
29.00
15020 33.00
6020
41.35
45.00
49.25
53.15
24610 57.35
4610
44.040
49.220
16.630
16.679
16.654

44.040
44.04
16.689
16.69
16.63
49.220
49.22
15326
18 16.660

19 14.0
17.6
21.1
25.5
1086 30.4
86
19 21.72
65.06
19 2.172
— 45.06

6 30 38.10
40.20
42.40
44.28
21134 46.36
1134
50.80
53.00
54.90
57.00
59.20
1.20
3.66
5.90
53366 8.00
8366
12.00
14.40
16.60
18.60
8245 20.85
8245
42.268
16.490
59.379
59.295
59.377

42.268
42.29
59.296
59.29
59.38
16490
1649
11876
30 59.335

31 27.0
30.8
33.5
35.6
1642 37.3
142
31 32.84
− 33.51
31 32.84
— 33.51

B 9 9.20
B 9 8.95

9 9.07

B 36 39.62

R 42 14.80
R 42 14.85

42 14.82

564

α Can Maj

h m s
6 39 57
° ′
−16 33

0.08661

6	39	40.20		39	24.6
		42.40	44.516		26.8
		44.70	44.51		28.4
		46.50			30.9
	22258	48.78		1435	32.8
		22 58			4.35
		53.05		39	28.70
		55.15			−32.93
		57.40			
		59.45	1.606		
		1.50	1.68		
		3.70	1.66		
		6.00			
		8.00			
	1445	10.20			
		1445			
		14.55			
		16.78	1.8826		
		18.80	1.882		
		21.00	12333		
	9413	23.00		39	28.70
		4413	40 1.635		
				+	32.93

6 39 57.15

R 43 49.62 ·

6 33 9.8

111

51 Cephei

h m s
6 44 42
° ′
+87 13

0.08661

6	44	42.40		42	39.6
		45.35			
		46.80		46	17.5
		53.05			
		56.30		48	0.0
	45	0.40			
		9.10		49	24.0
		11.60			
		15.80			
		24.35			
		26.65			
		30.85			
		37.80			
		39.60			
		44.57			
		52.89			
		54.92			
		58.36			
	46	6.40			
		9.00			
		12.25			

R 1 36.68 ·
R 1 49.15 ·
R 1 55.30 ·
R 1 58.92 ·

566

ε Can Maj.

h m s
6 53 59
° ′
−28 49

0.08661

6	53	39.80		53	28.6
		42.18	44.560		30.1
		44.50	44.56		32.0
		47.00			33.6
	22280	49.32		1595	35.2
		2280			95
		54.00		53	31.90
		56.25			+ 31.48
		58.50			
		1.00	3.361		
330		3.20	3.36		
		5.85	3.41		
		8.00			
		10.50			
	3025	12.95			
		3025			
		17.45			
		19.90	22.260		
		22.40	22.26		
		24.65	12682		
	11130	26.90		53	31.90
		1130	54 3.385		
		44.560		+	31.48
		22.260			
		3.410			
		3.361			
		3.385			

R 57 59.28 ·
R 57 58.28 ·

57 58.78 ·

1881

Oct. 4

568 δ Can. Maj.

h m s
7 3 36

° ′
−26 12

0.08661

h m	s		m	s	
7 3	16.90		3	16.0	
	19.15	21.390		17.4	
	21.40	21.39		18.4	
	23.60			20.0	
10695	25.90		940	22.2	
	695			440	
	30.45		3	18.80	
	32.90			−20.95	
	35.15				
	37.50	39.772			
	39.85	39.77			
	42.05	39.74			
	44.40				
	46.65				
35795	49.00				
	8795				
	53.50				
	55.90	58.100			
	58.15	58.10			
	0.35	7949			
29050	2.60		3	18.80	
	4050	3 39.755			
	21.390		+	20.95	
	58.100				
	39.745				
	39.772				
	39.757				

R 22 11.58.
R 22 11.68.

22 11.63.

118 β Can. Min.

h m s
7 20 48

° ′
+8 31

0.08661

7 20	29.20				
	31.25	33.370			
	33.45	33.37			
	35.40				
16685	37.55				
	1685				
	41.65				
	43.88				
	46.00				
	47.95	50.053			
	50.00	50.05	21	17.3	
	52.05	50.04		18.7	
	54.20			20.6	
	56.30			22.3	
45048	58.45		1027	23.8	
	048			27	
	2.60		21	20.54	
	4.65	6.830		−30.50	
	7.00	6.83			
	8.90	10020			
3415	11.00				
	3415	20 50.045	21	20.54	
	33.370				
	6.830		−	30.50	
	50.100				
	50.053				
	50.076				

R 41 18.62.
R 41 18.00.

41 18.31.

119 α² Gem.

h m s
7 27 3

° ′
+32 9

0.08661

7 26	45.50				
	47.90	50420			
	50.45	50.42			
	52.80				
25210	55.45				
	210				
	0.20				
	2.57				
	5.00				
	7.58	9.939			
	10.00	9.94	27	39.5	
	12.35	9.94		41.5	
	14.80			43.8	
	17.25			46.0	
8945	19.70		2184	47.6	
	8945			184	
	24.55		27	43.68	
	27.00	29.456		−33.74	
	29.45	29.46			
	31.80	13988			
14728	34.48				
	4728	27 9.940	27	43.68	
			−	33.74	

7 27 3.93

R 4 42.05.
R 4 42.50.

4 42.27.

32 8 39.6

120

α Can. Min.

h m s
7 33 7
° ′ 1.17609 0.08661
+5 32 9.99797
1.17406

7	32	51.77		32	40.3
		53.65	55.734		42.3
		55.70	5573		44.0
		57.75			45.9
	27867	59.80		2197	47.2
		2867			197
		3.90		32	43.94
		6.05			+28.36
		8.18			
		10.20	12.311		
		12.25	12.31	33	40.0
		14.50	12.30		42.0
		16.55			43.4
		18.57			44.7
	11080	20.80		2163	46.2
		2080			163
		24.77		33	43.26
		27.00	28.874		−30.96
		28.85	2887		
		30.75	14460		
	14437	33.00		32	43.94
		4437	33 12.305	33	43.26
		55.734		+	28.36
		28.874		−	30.96
		12.304			59.32
		12.311			1.77320
		12.308			1.17406
					2.94726
					1.86082
					8.91356
7	33	7.50			4416

B 39 57.82
B 41 10.20
R 41 10.62

41 10.42
72.58

5 31 39.4

122

β Geminor.

h m s
7 38 5
° ′ 1.17609 0.08661
+28 19 9.94465
1.14074
2

7	37	47.97		37	26.0	
		50.00	52470		27.9	
		52.45	5247		29.1	
		54.73			31.2	
	26235	57.20		1472	33.0	
		1235			472	
		1.70		37	29.44	
		4.00			+41.72	
		6.40				
		8.65	11.111			
		11.20	1111	38	40.0	
		13.50	11.21		41.9	
		15.80			43.5	
		18.25			44.9	
	10000	20.50		2168	46.5	
		1000			168	
		25.18		38	43.36	
		27.50	29.956		−32.20	
		30.00	2996			
		32.40	14243			
	14978	34.70		37	29.44	
		4978	38 11.160	38	43.36	
		52.470		+	41.72	
		29.956		−	32.20	
		11.213			73.92	
		11.111			1.86876	
		11.162			1.14074	
					3.00950	
				2.98	1.90331	
					~~8.89381~~	8.91381
7	38	5.67			~~42839~~	4 41.16

B 53 26.58
B 54 46.50
R 54 46.75

54 46.62
80.04

28 18 31.2

570

15 Argus

h m s
8 2 31
° ′ 1.17609 0.08661
−23 58 9.96084
1.13693

8	2	12.55		2	3.8
		14.95	17.130		6.0
		17.10	1713		7.6
		19.35			9.3
	8565	21.60		376	10.9
		3565			376
		26.15		2	7.52
		28.30			+27.63
		30.72			
		32.95	35.164		
		35.18	3516	3	10.2
		37.30	35.15		11.5
		39.72			12.8
		41.98			14.0
	31648	44.18		638	15.3
		4648			138
		48.70		3	12.76
		50.95	53.170		−37.61
		53.00	53.17		
		55.50	7030		
	26585	57.70		2	7.52
		1585	2 35.155	3	12.76
		17.130		+	27.63
		53.170		−	37.61
		35.155			65.24
		35.165			1.81451
		35.160			1.13693
					2.95144
					1.85932
					8.90788
					4 37 28

B 7 50.55
B 9 2.88

9 2.88
72.33

1881

Oct. 4

138

α Hydrae

h m s
9 21 47
° '
−8 9

0.08661

142

ε Leonis

h m s
9 39 8
° '
+24 19

1.17609
9.95965
1.13574

0.08661

146

α Leonis

h m s
10 2 4
° '
+12 33

0.08661

h m s
9 21 30.70
32.60
34.80
37.00
17400 38.90
2400
43.15
45.30
47.40
49.40
51.60
53.50
55.85
57.75
46355 59.60
1355
4.00
6.00
8.10
10.20
4068 12.38
4068
34.800
8.136
51.468
51.506
51.487

34.800
3480

51.506
51.50
51.47

8.136
8.14
10294

21 51.485

m s
22 20.5
22.0
24.3
26.3
1214 28.3
214

22 24.28
−32.80

22 24.28
− 32.80

9 21 46.83

9 38 51.60
53.70
56.00
58.35
28015 0.50
3015
5.00
7.30
9.60
12.00
14.15
16.40
18.60
21.00
12725 23.20
3725
27.80
29.85
32.20
34.50
16110 36.75
1110
56.030
32.220
14.125
14.138
14.131

56.030
56.03

14139
1414
14.12

32220
3222
14825

39 14.130

38 31.0
32.5
34.2
36.3
1720 38.0
220

38 34.40
+34.73

39 44.0
45.8
47.8
49.3
2377 50.8
377

39 47.54
−33.41

38 34.40

39 47.54
+ 39.73
− 33.41
73.14
1.86415
1.13574
2.99989
1.90757
8.90768
4.3720

10

−8.47	9.93	2	9.93	18.40
12.68	9.87		49.68	22.55
14.79	9.96		9.936	24.75
16.41	10.09			27.00
19.03	9.97			29.00
21.21	9.79		13430	31.00
				3430

26860
2686

9.933
9.935

10 2 4.50

2 36.0
37.5
39.5
41.2
1972 43.0
472

2 39.44
−29.51

2 39.44

B 21 9.32.
B 21 9.15.

21 9.23.

8 8 44.2

B 52 56.22.
B 54 17.05.

54 17.05.
8 0.83

B 40 22.60.
R 40 22.75.

40 22.67.

12 32 39.1

S

Sun.

h m s
12 46 19
° ′
−4 59

1881

Oct. 4/5

0.08661

269

λ Aquilae

h m s
19 00 00
° ′
−5 3

Oct. 5

0.08661

h	m	s		m	s	m	s		m	s						
12	44	53.80		46	6.4	47	3.00		46	30.9	18	59	43.75		59	31.0
		55.90	57.910		8.2		5.10	7.070		33.0			45.80	47.930		32.7
		58.00	57.91		10.3		7.00	7.07		34.7			47.90	47.93		35.3
		59.85			11.8		9.00			36.0			50.00			37.0
	28955	2.00		501	13.4	3535	11.25		1726	38.0		23965	52.20		1753	39.3
		3955			01		3535			226			3965			253
		6.30		46	10.02		15.55		46	34.52			56.38		59	35.06
		8.35			− 55.47		17.60			+49.24			58.20			+ 29.47
		10.50					19.55						0.35			
		12.45	14.556				21.70	23.783					2.40	4.514		
		14.40	14.56				23.75	23.78					4.50	4.51		
		16.70	14.54				25.90	23.75					6.60	4.56		
		18.70					28.00						8.60			
		20.60					30.00						10.70			
	13100	23.00				21405	32.00					4063	12.80			
		4100					3405						4063			
		26.90					36.30						17.00			
		29.10	31.170				38.20	40.440					19.18	21.188		
		31.20	31.17				40.40	40.44					21.16	21.19		
		33.20	14.908				42.50	4751					23.20	12912		
	15585	35.45		46	10022	0220	44.80		46	3452		10594	25.40		59	35.06
		585	45 14.550	−	55.47		220	47 23.785	+	49.24			594	0 4.535	+	29.47
													47.930			
													21.188			
													4.559			
													4.514			
													4.531			

B 53 51.72·

B 26 23.95·

R 14 42.05·

R 14 42.15·

14 42.10·

1881

275

β Cygni

h m s
19 25 58 1.17609 0.08661
° ′
+27 43 9.94707
Oct. 5 1.12316

h m	s		m s
19 25	40.66		25 30.5
	43.00	45.432	32.3
	45.40	4543	34.4
	47.90		35.9
22716	50.20		1712 38.1
	2716		212
	54.75		25 3424
	57.00		+ 29.87
	59.50		
	1.87	4.120	
	4.16	412	26 36.1
	6.45	4.10	38.8
	8.80		41.0
	11.20		43.0
3708	13.35		2037 44.8
	3708		37
	18.20		26 4074
	20.38	22.776	− 36.63
	22.80	22.78	
	25.00	12821	
11388	27.50		25 3424
	1388	26 4.110	26 40.74
	45.432		+ 29.87
	22.676		− 36.63
	4.054		66.50
	4.120		1.82282
	4.087		1.12316
			2.94598
			1.85278
			8.90680
			43647

B 29 9.55
B 30 20.80
R 30 20.80

30 20.80
71.25

277

γ Aquilae

h m s
19 40 40 1.17609 0.08661
° ′
+10 20 9.99290
1.16899

19 40	23.95		40 8.3
	26.00	28.112	10.0
	28.15	28.11	12.3
	30.18		14.3
14056	32.28		611 16.2
	4056		111
	36.30		40 1222
	38.45		+ 32.67
	40.60		
	42.90	44.867	
	44.98	4487	41 17.2
	47.00	44.91	19.0
	49.00		20.5
	51.20		22.2
40380	53.37		1025 23.6
	4380		25
	57.50		41 2050
	59.55	1706	− 35.61
	1.75	1.71	
	3.78	8982	
853	5.95		40 1222
	853	40 44.890	41 20.50
	28.112		+ 32.67
	1.706		− 35.61
	44.909		68.28
	44.867		1.83429
	44.888		1.16899
			3.00328
			1.90940
			8.90612
19 40	39.51		43621

B 51 54.48
B 53 15.35
R 53 15.95

53 15.65
81.17

10 19 50.4

280

α Aquilae

h m s
19 45 2 1.17609 0.08661
° ′
+8 34 9.99513
1.17122

19 44	46.50		44 35.6
	48.60	50736	37.3
	50.75	5074	38.9
	52.88		40.2
25368	54.95		1938 41.8
	368		438
	59.00		44 3876
	1.29		+ 28.68
	3.20		
	5.50	7.470	
	7.47	747	45 38.0
	9.57	7.41	39.6
	11.65		41.0
	13.70		42.4
6723	15.85		2050 44.0
	6723		50
	20.00		45 4100
	22.00	24.086	− 33.56
	24.00	24.09	
	26.18	13483	
12043	28.25		44 38.76
	2043	45 7.440	45 41.00
	50.736		+ 28.68
	24.086		− 33.56
	7.411		6224
	7.471		1.79407
	7.441		1.17122
			2.96529
			1.87245
			8.90716
19 45	2.11		4370

B 38 4.98
B 39 19.38
R 39 19.68

39 19.53
74.55

8 33 41.3

		283				84				86		
		β Aquilae				β Eridani				α Aurigae		
		h m s				h m s				h m s		
		19 49 32				5 2 3				5 7 59		
61		° '	1.17609	0.08661		° '		0.08661		° '		0.08661
		+6 7	9.99752			−5 14				~~+48~~ 52		
			1.17361							+45		
19 49	16.00		49 1.3	5	—		2 5.2	5	7 36.80	+31.38 8.18	7 18.6	
	18.20	20.236	2.7		—		6.5	+28.22 7.92	38.05 39.70	42.510	20.4	
	20.18	2024	4.6		—		7.6	25.11 7.68	7.61 42.57	4251	22.9	
	22.40		6.0		—		8.6	21.57 7.25	45.28		25.4	
10118	24.40		224 7.8		—		379 10.0	18.82 7.82	21255 48.20		1147 27.4	
	118		224				379		1255		147	
	28.70		49 448	+8.29 8.89	2 0.60		2 7.58	12.55 6.94	56.62 54.39		7 22.94	
	30.67		+32.37	6.22 8.92	80.57 2.70		+ 1.25	9.41 6.88	6.291 57.47		+43.35	
	32.70			4.14 9.04	8.952 4.90			6.27 6.67	0.40			
	34.70	36.850		+2.05 9.00	6.95	8.956		+3.10 6.48	3.38	6296		
	37.00	3685	50 8.0	−000 9.10	9.10	8.96	2 41.4	−000 6.36	6.36	6.29		
	38.88	36.86	9.8	2.07 8.90	10.97		43.2	3.13 6.05	9.18			
	41.00		11.4	4.14 8.86	13.00		45.2	6.27 5.91	12.18			
	43.00		13.5	6.22 8.78	15.00		46.8	9.41 5.39	14.80			
33165	45.00		577 15.0	8.30 9.08	8060 17.38		2250 48.4	+12.56 5.94	5666 18.50			
	6165		77		8060		250		5666			
	49.35		50 11.54	12.43 8.97	44.15 21.40		2 45.00		—			
	51.28	53.570	− 34.69	14.50 8.85	8.83 23.35	25.420	− 36.17		—			
	53.47	5349		16.58 8.98	25.56	2542			—			
	55.70	7373		18.65 8.85	27.50				—			
26748	57.75		49 4.48	−20.79 8.50	12710 29.29		2 7.58		—		7 22.94	
	1755	49 36.855	50 11.54		2710		2 45.00					
	20.236		+ 32.37									
	53.510		− 34.69	8.891				7.450				
	36.873		.67.06	8.908				6.762				
	36.850		1.82646					5	7 5967			
	36.861		1.17361									
			3.00007									
			1.91307									
			8.91300									
19 49	31.60		4 4045									
B	4 38.45 ·				B 26 8.18 ·				B 20 3.88 ·			
B	62 0.18 ·				B 26 53.90 ·							
R	6' 0.45 ·				R 26 54.32 ·							
	62 0.31 ·				26 54.11 ·							
	81.86											
6 6	59.6							45	52 26.6			

1881phae.proj.1522.

87

β Orionis

h m s
5 8 52
° ′
−8 20

1.17609 0.08661
9.99539
1.17148

1881

Oct. 5

h m s
5 8 37.19
39.00
40.92
43.35
20594 45.48
594
49.60
51.57
53.80
55.96
58.00
59.83
2.00
4.20
52152 6.56
7152
10.40
12.55
14.60
16.70
7325 19.00
2325
41.188
14.650
57.919
57.937
57.928

41.188
41.19
57.947
5795
57.92
14.650
1465
11584
8 57.935

m s
8 35.0
36.2
38.4
39.8
1909 41.5
409
8 38.18
+19.75
9 27.1
29.0
30.7
32.1
1526 33.7
26
9 30.52
−32.59
8 38.18
9 30.52
+ 19.75
− 32.59
52.34
1.71883
1.17148
2.89031
1.81538
8.92507
44837

5 8 52.88

B 31 32.08
B 32 37.35
R 32 37.55

32 37.45
65.37

8 20 12.8

90

β Tauri

h m s
5 18 60
° ′
+28 30

1.17609 0.08661
9.94390
1.11999

5 18 33.26
35.76
37.98
40.58
19026 42.68
4026
47.30
49.80
52.00
54.50
56.90
59.20
1.54
4.00
51160 6.36
6160
10.75
13.30
15.75
18.13
7833 20.40
2833
38.052
15.666
56.859
56.844
56.851

38.052
38.05
56.844
56.84
56.85
15.666
1566
11371
18 56.845

18 24.4
26.0
28.0
29.5
1389 31.0
389
18 27.78
+29.06
19 33.3
35.7
37.3
39.6
1871 41.2
371
19 37.42
−40.58
18 27.78
19 37.42
+ 29.06
− 40.58
69.64
1.84286
1.11999
2.96285
1.86558
8.90273
43413

5 18 50.91

B 41 56.18
B 43 9.50
R 43 9.62

43 9.56
73.38

28 30 18.6

93

δ Orionis

h m s
5 25 59
° ′
−0 23

0.08661

5 25 44.00
45.88
47.95
50.02
24015 52.30
4015
56.34
58.45
0.60
2.58
4.58
6.70
8.70
10.80
4175 13.00
4175
17.00
19.00
21.00
23.20
10555 25.35
555
48.030
21.110
4.570
4.639
4.604

48.030
48.03
4.639
4.64
4.57
21.110
21.11
12914
26 4.605

25 32.9
35.0
36.9
38.0
1828 40.0
328
25 36.56
+ 28.04
25 36.56
+ − 28.04

B 34 40.08

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		556				96				97		
		α Leporis				ι Orionis				ε Orionis		
		h m s				h m s				h m s		
		5 27 82				5 29 40				5 30 14		
		° ′				° ′				° ′		
		−17 54		0.08661		−5 59		0.08661		−1 17		0.08661
5	27 15.55		27 10.5	5	29 24.58	+20.75 45.33	29 7.0	5	30 —		30 12.2	
	17.60	19800	12.5	+18.67 45.41	227.04 26.74	28812	9.5		—		13.8	
	19.97	1980	14.3	16.61 45.48	45.408 28.87	2881	11.0		—		14.8	
	21.88		16.0	14.50 45.37	30.87		12.9		—		16.7	
9900	24.00		713 18.0	12.45 ·45.45	4406 33.00		552 14.8		—		765 19.0	
	4900		213		4406		52				265	
	28.43		27 14.26	8.30 45.40	409.61 37.10		29 11.04	+8.26 19.61	175.45 11.35		30 15.30	
	30.70		+22.87	6.22 45.52	45.512 39.30		+34.43	6.19 19.47	19.497 13.28		+4.19	
	33.14			4.15 45.55	41.40			4.12 19.42	15.30			
	35.00	37.158		+2.05 45.51	43.46	45.504		+2.04 19.37	17.33	19.501		
	37.10	3716		−0.00 45.48	45.48	45.50		−0.00 19.50	· 19.50	1950	30 52.9	
	39.47	37.10		2.07 45.53	47.60			2.06 19.49	21.55		54.7	
	41.40			4.15 45.60	49.75			4.13 19.67	23.80		56.5	
	43.48			6.22 45.58	51.70			6.19 19.51	25.70		58.1	
33442	45.70			8.31 45.44	0954 53.75			8.27 19.43	7551 27.70		2819 59.7	
	6442				4954		2		8551		319	
	50.18				—			12.38 19.50	97.38 31.88		30 56.38	
	52.10	54.410			—			14.46 19.45	19.476 33.90	36000	−36.89	
	54.35	5441		45.460	—			16.57 19.49	36.00	36.00		
	56.52	7421		45.475	—			18.58 19.37	37.95			
27205	58.90		27 14.26		—		29 11.04	−20.70 19.57	18000 40.27		30 15.30	
	2205	27 37.130							3000		30 56.38	
	19.800		+ 22.87									
	54.410							19.486				
	37.105							19.489				
	37.158											
	37.131											

B 5 4.90.

B 10 21.02.

B 28 33.10.
B 29 23.12.
R 19 23.45.

29 23.28.

b   100   102

1881 Oct. 5

α Columbae

h m s
5 35 23
° ′
−34 8

1.17609 0.08661
9.91789
1.09398

κ Orionis

h m s
5 42 10
° ′
−9 43

1.17609 0.08661
9.99359
1.16968

α Orionis

h m s
5 48 47
° ′
+7 23

1.17609 0.08661
9.99638
1.17247

α Columbae

h m s
5 35 2.58
5.12 7.640
7.65 7.64
10.00
3820 12.55
3820
17.88
20.07
22.78
25.28 27.653
27.57 27.65
30.60 27.57
32.50
35.00
24888 37.60
6888
42.50
44.95 47.510
47.50 47.51
50.00 55 15
23755 52.60
3755 35 27.610
7.640
47.510
27.575
27.651
27.614

m s
34 53.4
54.8
56.2
58.5
2841 1.2
341
34 5682
+30.79
36 3.0
4.3
5.9
7.2
288 8.4
288
36 5.76
−38.15
34 5682
36 5.76
+ 30.79
− 38.15
68.94
1.83847
1.09398
2.93245
1.83097
8.89852
4 3134

B 16 23.15
B 17 30.82
R 17 31.00

17 30.91
67.76

κ Orionis

5 41 54.23
56.28 58.386
58.34 58.39
0.48
29193 2.60
4193
6.85
9.00
11.00
13.15 15.173
15.18 15.17
17.20 15.13
19.40
21.33
13656 23.45
4656
27.58
29.72 31.870
31.87 31.87
33.90 15026
15935 36.28
935 42 15.150

41 42.2
44.4
46.5
48.2
2315 50.2
315
41 4630
+28.85
42 42.5
44.2
45.5
47.0
2278 48.6
278
42 45.56
−30.41
41 4630
42 45.56
+ 28.85
− 30.41
59.26
1.77276
1.16968
2.94244
1.84911
8.90667
4 3642

B 53 43.98
B 54 54.58
R 54 54.68

54 54.63
70.65

α Orionis

5 48 32.20
34.37 36364
36.25 36.36
38.40
18182 40.60
3182
44.47
46.78
48.85
50.90 52976
53.00 52.97
55.00 52.99
57.20
59.20
47678 1.88
2678
5.45
7.60 9.626
9.60 9.62
11.58 10598
4813 13.90
4813 48 52.980
36.364
9.626
52.995
52.975
52.985

5 48 47.72

48 17.2
19.2
20.4
21.8
1020 23.4
20
48 2040
+32.58
49 23.2
25.7
27.9
29.3
1375 31.4
375
49 27.50
−34.52
48 20.40
49 27.50
+ 32.58
− 34.52
67.10
1.82672
1.17247
2.99919
1.91887
8.91968
4454

B 48 31.82
B 49 54.62
R 49 54.95

49 54.78
82.96

7 23 43

256

δ Urs. Min. Sec.

h m s
18 10 21
° '
+93 23

0.08661

6	7	34.10	93627	10.95	10	46.18	6	59.2
		36.20	45.80	13.18		52.90		
		38.80	1.52	21.28		56.00	17	56.4
		43.88	12.03	23.20		59.00		
		46.68	24.11	24.45	11	3.40	18	39.7
24980		50.14	35.06	31.80		7.00		
		59.20	47.09	34.00		9.55	19	24.3
	8	1.40	57.88	36.30		16.20		
		3.95	10.93	43.28		19.30		
		10.00	22.58	45.45		22.60		
		12.20	34.03	48.40		28.40		
		13.90	45.71	56.38		30.20		
		21.45	58.79	59.00		32.70		
		23.88	~~10~~ 8.92	1.00		40.80		
		27.00	22.08	6.20		42.30		
		32.00	33.37	8.90		45.00		
		35.28	44.70	11.75		52.00		
		37.90	55.57	19.70		54.60		
		44.75	6.65	21.80		57.65		
		46.90	19.37	24.75	12	2.90		
		49.48	30.97	31.20		6.15		
		55.20	42.70	33.30		8.30		
		57.60	54.82	35.60		12.80		
	9	0.85	5.78	42.35		16.75		
		8.65	16.18	44.18		19.00		

7 59.89
8 58.79
9 57.87
10 55.93
11 53.99
9 57.29 Mean

106

μ Gem.

h m s
6 15 49
° '
+22 34

					1.17609
					9.96541
					1.14150

0.08661

6	15	33.40		15	21.0
		35.56	37.788		23.3
		37.77	37.79		25.8
		39.85			27.5
	18894	42.36		1268	29.2
		3894			268
		46.75		15	25.36
		49.00			+30.31
		51.23			
		53.40	55.679		
		55.60	55.68	16	26.0
		57.90	55.67		27.8
		0.28			29.4
		2.40			31.9
	50111	4.55		1486	33.5
		5111			486
		9.00		16	29.72
		11.28	13.552		−34.05
		13.58	13.55		
		15.90	11.134		
	6776	18.00		15	25.36
		1776	15 55.675	16	29.72
		37.788		+	30.31
		13.552		−	34.05
		55.670			64.36
		55.679			1.80862
		55.674			1.14150
					2.95012
					1.86243
					8.91231
					44018

107

γ Geminor.

h m s
6 30 54
° '
+16 30

					1.17609
					9.98174
					1.15783

0.08661

6	30	38.20		30	25.0
		40.37	42.550		27.7
		42.48	42.55		29.5
		44.70			31.2
	21275	47.00		1464	33.0
		1275			464
		51.20		30	29.28
		53.38			+ 30.50
		55.38			
		57.55	59.789		
		59.67	59.79	31	32.5
		1.98	59.77		34.6
		4.20			36.3
		6.29			38.0
	53810	8.45		1811	39.7
		8810			311
		12.67		31	36.22
		14.88	16.994		−36.44
		17.02	16.99		
		19.00	11.954		
	8497	21.40		30	29.28
		3497	30 59.780	31	36.22
		42.550		+	30.50
		16.994		−	36.44
		59.772			66.94
		59.789			1.82543
		59.780			1.15783
					2.98326
					1.89938
					8.91612
					44245

B 51 5.50 ·
B 50 47.65 ·
B 50 45.32 ·

B 37 45.80 ·
B 38 57.95 ·
R 38 58.35 ·

38 58.65 ·
7285

B 42 0.48 ·
B 43 19.62 ·
R 43 19.98 ·

43 19.80 ·
79.32

564

α Can. Maj.

h m s
6 39 57
° '
−16 33

0.08661

1881

Oct. 5

h m	s		m	s
6 39	40.40		39	35.0
	42.55	44.910		37.8
	44.80	44.91		40.0
	47.00			42.0
22455	49.80		1983	43.5
	2455			483
	53.60		39	39.66
	55.90			+22.54
	58.00			
	0.00	2.248		
	2.28	225	40	36.0
	4.50	2.16		39.0
	6.48			40.8
	8.60			43.5
2023	10.87		2045	45.2
	2023			45
	15.18		40	40.90
	17.32	19.422		−38.70
	19.48	19.42		
	21.48	12433		
9711	23.65		39	39.66
	4711	40 2.205	40	40.90
			+	22.54
			−	38.70
				61.24

6 39 57.18

111

51 Cephei. L.O.

h m s
6 44 42
° '
+87 13

0.08661

6	42	36.50	42	3.3
	43	19.00		
	44	7.60	43	6.4
		43.40		
	45	28.10	44	20.5
	46	7.80		
		49.30	45	54.1
	47	31.80		
	48	16.50	46	56.5

566

ε Can. Maj.

h m s
6 53 59
° '
−28 49

0.08661

6 53	40.85		53	53.0
	42.80	45.184		54.0
	45.20	4518		56.1
	47.27			57.3
22592	49.80		2788	58.4
	2592			288
	54.60		53	55.76
	56.95			+8.27
	59.37			
	1.60	4.048		
	3.93	405	54	35.0
	6.35	4.02		37.2
	8.80			39.2
	11.15			41.0
3643	13.68		1948	42.4
	3643			448
	18.00		54	38.96
	20.50	22.860		−34.93
	22.90	2286		
	25.30	12804		
11430	27.60		53	55.76
	1430	54 4.035	54	38.96
	45.184		+	8.27
	22.860		−	34.93
	4.022			43.20
	4.048			
	4.035			

B 44 32.32.
B 45 13.92.

B 0 36.30.
B 0 39.70.
B 0 44.60.
B 0 49.48.
B 0 52.98.

B 58 23.08.
B 59 10.10.
R 59 10.10.

59 10.10.

16 33 9.8

568
x
S Can. Maj.

h m s
7 3 86
° '
−26 12

1.17609 0.08661
9.95292
1.12901

7 3 17.45
19.45 21.940
22.00 2194
24.15
10970 26.65
970
31.20
33.35
35.80
37.80 40.331
40.35 4033
42.75 40.40
45.00
47.18
36298 49.55
298
54.40
56.70 58.860
58.87 5886
0.98 8080
29430 3.35
4430 3 40.365
21.940
58.860
40.400
40.331
40.365

3 2.4
4.2
5.8
7.6
295 9.5
295
3 590
+34.46
4 12.3
13.5
15.0
16.5
756 18.3
256
4 15.12
−34.76
3 5.90
4 15 ~~17~~.12
+ 3446
− 3~~6~~76 4
69 ~~71~~.22
~~1.85260~~ 1.84023
1.12901
~~2.98161~~ 2.96924
1.87064
~~8.88903~~ 8.90140
~~42544~~ 43322

118
x
β Can. Min.

h m s
7 20 48
° '
+8 81

1.17609 0.08661
9.99518
1.17127

7 20 29.85
31.80 33.960
33.95 3396
36.00
16980 38.20
1980
42.30
44.35
46.50
48.60 50.692
50.78 5069
52.87 50.62
54.87
56.96
45623 59.00
623
3.00
5.20 7.280
7.30 728
9.40 10124
3640 11.50
3640 20 50.655
33860
7280
50.570
50.690
50.630

20 23.4
25.0
26.5
28.0
1322 29.3
322
20 2644
+24.21
21 22.2
23.6
25.5
27.5
1281 29.3
281
21 2562
−34.97
20 26.44
21 25.62
+ 24.21
− 34.97
59.18
1.77217
1.17127
2.94344
1.85364
8.91020
43857

119
α² Gemin.

h m s
7 27 3
° '
+32 9

1.17609 0.08661
9.92771
1.10380

7 26 46.00
48.60 50.980
50.85 5098
53.45
25490 56.00
490
1.00
3.18
5.66
8.00 10504
10.50 10.50
12.88 10.51
15.32
17.77
9454 20.23
454
25.10
27.72 30.040
30.00 30.04
32.48 14102
15020 34.90
4020 27 10.505

7 27 3.97

26 50.4
52.4
54.5
56.3
2715 57.9
215
26 5430
+ 16.20
27 39.5
41.4
43.1
45.7
2170 47.3
170
27 43.40
− 32.90
26 54.30
27 43.40
+ 16.20
− 32.90
49.10
1.69108
1.10380
2.79488
1.71575
8.92087
44551

B 21 58.18
B 23 12.32
R 23 12.52

23 12.42
74.24

B 40 13.95
B 41 25.20
R 41 25.48

41 25.34
71.39

B 3 50.65
B 4 42.60
R 4 42.65

4 42.62
51.97

32 8 39.5

120
×
α Can. Min.

h m s
7 33 7
° '
+5 32

1.17609 0.08661
9.99797
1.17406

1881
Oct. 5

h m s
7 32 52.29
54.25 56.382
56.37 56.38
58.50
28191 0.50
3191
4.55
6.58
8.60
10.68 12.842
12.85 1284
14.95 1293
17.02
19.15
11558 21.20
2558
25.30
27.40 29496
29.48 29.49
31.60 14587
14748 33.70
4748 33 12.885
56382
29.496
12.939
12.876
12.907

m s
32 38.5
39.7
41.0
42.9
2062 44.1
62
32 4124
+31.64
33 43.5
45.2
46.5
48.5
2340 50.3
340
33 4680
−33.92
32 4124
33 46.80
+ 31.64
− 33.92
65.56
1.81664
1.17406
2.99070
1.90466
8.91396
4 4122

7 33 7.53

B 39 56.58
B 41? 16.85
R 41 16.90

41 16.87
80.29

5 31 39.4

122
×
β Geminor.

h m s
7 38 5
° '
+28 19

1.17609 0.08661
9.94465
1.12074

7 37 48.28
50.57 52960
53.00 52.96
55.35
26480 57.60
1480
2.24
4.77
6.92
9.40 11692
11.70 11.69
14.00 11.72
16.37
18.73
10523 21.10
1523
25.77
28.16 30492
30.48 30.49
32.80 14345
15246 35.25
4246 38 11.705
52.960
30492
11.726
11.692
11.709

37 35.1
37.0
38.9
40.5
1937 42.2
437
37 3874
+32.96
38 42.0
43.6
45.1
46.7
2257 48.3
257
38 4514
−33.44
37 3874
38 45.14
+ 32.96
− 33.44
66.40
1.82217
1.12074
2.94291
1.84665
8.90374
4 3451

7 38 5.70

B 53 38.60
B 54 48.78
R 54 48.92

54 48.85
70.25

28 18 31.1

8 2

−15.80 35.70 142.55 57.50
18.07 35.58 35.637 53.65
20.33 35.67 56.00
−22.65 35.60 58.25

B 9 5.85

570

15 Argus.

h m s
8 2 31
° '
−23 58

0.08661

3 11.8
13.0
14.5
16.0
723 17.0
223
3 14.46
−38.82

3 14.46

CX

j' Leonis

h m s
10 13 27
° ′
+20 26
1.17609 0.08661
9.97178
1.14787

149

μ Urs. Maj.

h m s
10 15 16
° ′
+42 6
1.17609 0.08661
9.87039
1.04648

10	13	11.00		12	55.5	10	14	55.38		14	49.8
		13.05	15.400		57.0			58.18	0.948		52.0
		15.50	1540		58.4			0.98	0.95		54.1
		17.55			0.3			3.70			56.3
	7700	19.90		2932	2.0		474	6.50		2615	59.3
		2700			432			474			215
		24.22		12	5864			12.00		14	5410
		26.43			+34.35			14.90			+ 29.08
		28.57						17.60			
		30.85	32.994					20.40	23.150		
	29695	33.00	32.99	14	4.5			23.20	23.15	15	57.9
		35.23	32.99		6.1			25.90	23.22		0.4
		37.30			7.9			28.70			1.9
		39.57			9.8			31.35			4.2
		41.78		396	11.3		20835	34.30		109	6.5
		2695			396			2835			109
		46.18		14	792			39.80		16	218
		48.30	50.596		−34.93			42.70	45.480		− 34.00
		50.60	50.59					45.40	4548		
		52.90	0599					48.30	4643		
	25298	55.00		12	5864		22740	51.20		14	5230
		298	13 32.990	14	7.92			2740	15 23.185	16	2.18
		15.500		+	34.35			0.948		+	30.88
		50.596		−	34.93			45.480		−	39.00
		33.049			69.28			23.214			69.88
		32.994			1.83998			23.158			1.84435
		33.022			1.14787			23.186			1.04648
					2.98785						2.89083
					1.90108						1.78132
					8.91323						8.89049
10	13	27.10			44053						42637

B 45 40.95·
B 47 0.58·

47 0.58·
79.63

20 26 17.5

B 7 7.58·
B 8 7.90·
R 8 8.15·

8 8.02·
6044

S

Sun

h m s
12 49 59
° ′
−5 22

0.08661

1881

Oct. 5/6

h	m	s		m	s	m	s		m	s
12	48	33.00		50	3.2	50	42.18		50	20.6
		35.00	37.080		4.8		44.18	46392		23.0
		37.00	37.08		6.4		46.48	46.39		25.0
		39.15			8.15		48.52			26.4
	18540	41.25		329	10.0	23196	50.60		1230	28.0
		8540			329		3196			230
		45.30		50	658		54.50		50	2460
		47.38			−72.88		56.67			+38.39
		49.62					58.88			
		51.65	53.683				1.00	2983		
		53.70	5368				3.00	298		
		55.70	53.72				5.20	3.01		
		57.85					7.18			
		59.95					9.02			
	48315	2.00				2683	11.40			
		3315					2685			
		6.15					15.40			
		8.30	10.356				17.60	19.640		
		10.38	10.36				19.70	19.64		
		12.35	10744				21.70	12603		
	5178	14.60		50	6.58	9820	23.80		50	2460
		178	48 53.700				4820	51 2.995		
				−	72.88				+	38.39

B 17 17.05

B 49 49.80

232 ×

η Herculis

h m s
16 38 51
° ′
+39 9

1.17609
9.88958
1.06567

0.08661

Oct 6

h	m	s		m	s
16	38	29.90		38	16.5
		32.65	35286		18.4
		35.28	35.29		20.0
		38.00			22.3
	17646	40.60		1014	24.2
		2643			14
		45.90		38	2028
		48.50			+36.29
		51.30			
		53.90	56559		
		56.60	56.56	39	32.5
		59.25	56.59		35.0
		1.80			37.2
		4.50			39.3
	509~~0~~03	7.28		1860	42.0
		5903			360
		12.55		39	3720
		15.20	17.900		−40.63
		17.85	17.90		
		20.60	11319		
	8950	23.30		38	20.08
		3950	38 56.575	39	37.20
		35.286		+	36.49
		17.900		−	40.63
		56.593			77.12
		56.559			1.88717
		56.576			1.06567
					2.95284
					1.85944
					8.90660
					43639

B 3 15.75 .
B 4 28.10 .

4 28.10 .
72.35

661

598
×

η Ophiuchi

h m s
17 3 27
° ′
−15 34
1.17609 0.08661
9.98377
1.15986

17 3 19.78
21.82 23.956
23.90 2396
26.00
11978 28.28
1978
32.08
34.80
36.95
39.00 41.157
41.00 41.16
43.30 41.17
45.50
47.50
37041 49.78
1041
54.00
56.30 58.380
58.40 58.38
0.55 8234
29190 2.65
4190 3 41.165
23.956
58.380
41.168
41.157
41.162

3 14.3
16.0
17.2
18.8
874 21.1
374
3 17.48
+23.68
4 15.7
17.0
18.3
20.7
936 21.9
436
4 18.72
−37.56
3 17.48
4 18.72
+ 23.68
− 37.56
61.24
1.78704
1.15986
2.94690
1.84997
8.90307
4 34 ~~29~~ 25

B 45 35.08 ·
B 46 45.90 ·
R 46 45.85 ·
46 45.87 ·
70.79

237
×

α Herculis

h m s
17 9 16
° ′
+14 32
1.17609 0.08661
9.98588
1.16197

17 8 59.90
2.00 4.156
4.18 4.16
6.28
2078 8.42
2078
12.64
14.80
16.96
19.00 21.178
21.20 21.18
23.30 21.20
25.40
27.57
19060 29.73
1060
33.97
36.03 38.244
38.25 38.24
40.40 4240
19122 42.57
4122 9 21.190
4.156
38.244
21.200
21.177
21.189

8 44.6
46.0
47.6
49.4
2385 50.9
385
8 47.70
+33.49
9 58.0
59.5
1.2
2.8
59 4.4
59
10 1.18
−39.99
8 47.70
10 1.18
+ 33.49
− 39.99
73.48
1.86617
1.16197
3.02814
1.93837
8.91023
4 38.56

17 9 15.70

B 40 5.42 ·
B 41 31.98 ·
R 41 32.40 ·
41 32.19 ·
86.77

14 31 47.9

240
×

β Draconis

h m s
17 27 45
° ′
+52 24
0.08661

17 27 18.47
21.87 25.254
25.30 2525
28.68
12627 31.95
2627
38.76
42.13
45.55
48.90 52.299
52.30 52.30
55.60 52.36
59.00
2.55
47069 5.90
2069
12.70
16.10 19.466
19.38 19.47
22.90 10472
9733 26.25
4733 27 52.330
25.254
19.266
52.260
52.299
52.280

26 52.0
55.0
57.0
59.4
2855 2.1
355
26 57.10
+55.23
26 57.10
+ 55.23

17 27 45.30

B 48 47.52 ·

52 23 41.8

1881

241

α Ophiuchi

h m s
17 29 27
+12° 39'

1.17609 0.08661 ·
9.98933
1.16542

Oct. 6

h	m	s		m	s
17	29	11.46		28	51.0
		13.53	15.722		58.8
		15.75	1572		0.3
		17.87			2.1
	7861	20.00		20	3.8
		2861			20
		24.15		29	0.40
		26.36			+32.26
		28.46			
		30.58	32678		
		32.70	3268	30	0.3
		34.85	3265		2.0
		37.00			3.5
		39.00			5.2
	29410	41.00		177	6.7
		2410			177
		45.30		30	354
		47.40	49.580		-30.88
		49.60	49.58		
		51.70	6530		
	24790	53.90		29	0.40
		4790	29 32.665	30	3.54
		15.722		+	32.26
		49.580		−	30.88
		32.651			63.14
		32.678			1.80050
		32.664			1.16542
					2.96592
					1.88576
					8.91984
17	29	27.15			44511

B 32 47.48 ·
B 34 5.50 ·
R 34 3.20 ·

34 4.35
76.87

12 39 4.3

252

γ Draconis

h m s
17 53 52
+51° 31'

1.17609 0.08661
9.79399
0.97008

h	m	s		m	s
17	53	25.28		53	1.5
		28.52	31.890		4.0
		31.90	31.89		6.3
		35.25			9.1
	15945	38.50		322	11.3
		945			322
		45.15		53	6.44
		49.50			+52.07
		51.80			
		55.00	58.506		
		58.40	58.50	54	27.7
		1.65	58.52		30.6
		5.00			33.0
		8.30			35.6
	52655	11.75		1647	37.8
		7655			147
		18.48		54	3294
		21.82	25.150		−34.43
		25.15	2615		
		28.45	11704		
	12575	31.85		53	6.44
		2575	53 58.510	54	32.94
		31.890		+	52.07
		25.150		−	34.43
		58.520			86.50
		58.505			1.93702
		58.512			0.97008
					2.90710
					1.81935
					8.91225
17	53	51.68			44016

B 41 58.40 ·
B 43 4.35 ·
R 43 4.40 ·

43 4.37 ·
65.97

51 30 32.6

256

δ Urs. Min.

h m s
18 10 21
+86° 37'

0.08661

h	m	s		
18	8	28.30	2	31.5
		40.55		
		52.40	3	50.8
	9	3.70		
		16.00	4	35.2
		26.70		
		38.65	5	11.9
		47.40		
	10	1.45	5	50.0
		13.50		
		25.00	6	26.3
		36.85		
		48.50		
		59.75		
	11	11.15		
		23.25		
		34.85		
		46.20		
		58.85		
	12	9.80		
		21.60		
		33.20		
		44.60		
		56.25		
	13	8.0		

B 36 20.72 ·
B 36 28.35 ·
B 36 32.48 ·
B 36 35.28 ·
B 36 39.02 ·
B 36 42.12 ·

257X

η Serpentis

h m s
18 15 13
° '
-2 56

0.08661

18 14 56.80
58.90
0.87
2.95
450 4.98
450
9.10
11.25
13.30
15.32
17.40
19.48
21.55
23.70
15687 25.77
6687
29.80
31.80
34.00
36.00
16960 38.00
1960
0.900
33.920
17.410
17.430
17.420

0.900
0.90
17.430
17.43
17.41
33.920
33.92
34.82
15 17.420

14 39.6
41.5
42.9
44.5
2145 46.0
145
14 4290
+34.32
15 23.0
24.7
25.8
26.9
1289 28.5
289
15 2578
-8.36
14 4290
15 25.78
+ 34.52
- 8.36
42.88

260X

α Lyrae

h m s
18 32 57
° '
+38 41

18 32 36.35
39.00
41.75
44.50
20860 47.00
860
52.20
54.90
57.55
0.25
2.88
5.55
8.15
10.75
2568 13.45
2568
18.75
21.30
24.00
26.70
12013 29.38
2013
41.720
24.026
2.873
2.854
2.864

18 32 56.63

41.720
41.72
2.853
2.85
2.87
24.026
24.02
12574
33 2.860

1.17609
9.89244
1.06853

32 21.7
23.6
25.6
27.0
1275 29.6
275
32 25.50
+37.36
32 38.2
40.9
42.9
45.0
2142 47.2
142
33 4284
-39.98
32 2550
33 42.84
+ 37.36
- 39.98
77.34
1.88840
1.06853
2.95693
1.86261
8.90568
4364

0.08661

111

51 Cephei Lo.c.

h m s
6 44 42
° '
+87 47

18 41 33.77
47.79
42 3.00
16.33
30.20
44.60
59.65
43 13.50
27.75
41.00
55.95
44 10.40
25.00
37.75
52.45
45 7.10
20.60
35.25
48.80
46 3.15
18.20
31.80
44.95
47 0.05
14.45

36 17.0
37 15.2
38 1.0
39 0.4
40 6.4

0.08661

B 6 52.88·
B 7 45.80·
R 7 46.05·

7 45.92·

B 31 34.85·
B 32 47.68·
R 32 47.78·

32 47.73·
72.88

38 40 49.3

B 28 7.02·
B 28 1.08·
B 27 57.05·
B 27 52.95·
B 27 57.92·

1881phae.proj.1522.

1881

Oct. 6

603

σ α Sagittarii

h m s
18 47 57
° '
−26 26

1.17609
9.95201
1.12813

0.08661

h m	s		m s
18 47	38.50		47 38.9
	40.85	43.150	40.2
	43.20	43.16	41.5
	45.45		43.5
21578	47.75		2103 46.2
	1575		103
	52.37		47 4206
	54.74		+ 19.54
	57.00		
	59.27	1.593	
	1.60	159	48 33.9
	3.88	161	36.0
	6.20		37.4
	8.48		39.0
1434	10.80		1868 40.5
	1434		368
	15.40		48 3736
	17.75	20.074	−35.76
	20.00	20.07	
	22.45	12323	
10037	24.77		47 4206
	037	48 1.600	48 37.36
	43.140		+ 19.54
	20.074		− 35.76
	1.607		55.30
	1.594		1.74273
	1.600		1.12813
			2.87086
			1.78290
			8.91204
			4.407

270

ζ Aquilae

h m s
19 00 00
° '
+13 42

0.08661

18 59	43.75		59 45.3
	45.90	48.020	47.2
	48.00	48.02	49.2
	50.20		50.8
24010	52.25		2450 52.5
	4010		450
	56.40		59 49.00
	58.50		+ 15.96
	0.68		
	2.78	4.928	
	5.00	493	19 0 32.5
	7.00	499	34.7
	9.18		36.7
	11.33		38.3
44435	13.48		1817 39.5
	4435		317
	17.85		0 3634
	19.80	21.970	−31.38
	22.00	21.97	
	24.00	12999	
10985	26.20		59 49.00
	985	0 4.960	0 36.34
	48.020		+ 15.96
	21.970		− 31.38
	4.955		47.34
	4.928		
	4.941		

0.08661

138

α Hydrae

h m s
9 21 47
° '
−8 9

0.08661

9 21	30.80		21 19.0
	32.95	35.010	20.9
	35.00	35.01	22.8
	37.00		24.0
17505	39.30		1124 25.7
	2505		124
	43.50		21 2248
	45.65		+ 29.28
	47.65		
	49.65	51.791	
	51.75	5179	22 22.0
	53.90	51.74	23.4
	55.95		25.2
	58.00		26.5
46612	0.17		1251 28.0
	1612		251
	4.30		22 2502
	6.40	8.480	−33.26
	8.45	8.48	
	10.50	10349	
4240	12.75		21 22.48
	4240	21 51.765	22 25.02
			+ 29.28
			− 33.26
			62.54

9 21 46.88

B 36 40.35 ·
B 37 41.02 ·
R 37 41.00 ·

37 41.01
60.66

B 30 36.25 ·
B 31 32.22 ·
R 31 31.85 ·

31 32.03

B 19 58.90 ·
B 20 14.90 ·
R 20 14.80 ·

20 14.85

8 8 44.3

140
×
θ Urs. Maj.
h m s
9 24 56
° '
+52 13

0.08661

9 24 29.75
33.03
36.48
39.97
18243 43.20
3243
50.00
53.30
56.75
0.00
3.45
6.70
10.30
13.47
3082 16.85
3082
23.65
27.00
30.36
33.88
15204 37.15
204
36.486
30.408
3.447
3.424
3.435

9 24 56.41

36486
3649
3424
342
3.45
30408
30.41
12690
25 3.435

24 37.8
41.0
42.5
45.7
2152 48.2
152
24 4304
+ 20.39
25 48.6
52.2
55.0
57.6
2748 1.4
248
25 5496
−51.53
24 43.04
25 54.96
+ 20.39
− 51.53
71.92

B 0 14.55·
B 1 7.32·

52 12 40.9

142
×
ε Leonis
h m s
9 39 8
° '
+24 19

1.17609 0.08661
9.95965
1.13574

9 38 51.55
53.90
56.00
58.35
28037 0.57
3037
5.00
7.28
9.60
11.90
14.18
16.37
18.70
20.90
12713 23.20
3713
27.80
30.00
32.34
34.58
16152 36.80
1152
56.074
32.304
14.189
14.126
14.157

56.074
56.07
14.126
1412
14.18
32304
32.30
14837
39 14.150

38 46.0
47.8
49.0
51.0
2468 53.0
468
38 4936
+ 24.79
39 44.2
46.5
47.8
49.7
2397 51.5
397
39 4794
−33.79
38 49.36
39 47.94
+ 24.79
− 33.79
58.58
1.76775
1.13574
2.90349
1.80963
8.90614
4 3622

B 53 15.12·
B 54 19.58·
R 54 19.68·

54 19.63·
64.51

146
×
α Leonis
h m s
10 2 4
° '
+12 33

1.17609 0.08661
9.98950
1.16559

10 1 48.80
50.92
53.00
55.18
26517 57.27
1517
1.40
3.50
5.75
7.80
10.00
12.00
14.10
16.20
8915 18.40
8915
22.60
24.78
26.85
28.97
13420 31.00
3420
53.034
26.840
9.937
9.905
9.921

10 2 4.54

53034
53.03
9.906
9.91
9.94
26840
2684
13987
2 9.925

1 34.4
36.1
38.2
39.7
1894 41.0
394
1 37.88
+32.04
2 36.8
38.0
39.3
40.8
1973 42.4
473
2 39.46
−29.54
1 37.88
2 39.46
+ 32.04
− 29.54
61.58
1.78944
1.16559
2.95503
1.87186
8.91683
44813

B 39 11.15·
B 40 25.52·
R 40·25.68·

40 25.60
74.45

12 32 8.8

148

ζ Leonis

h m s
10 10 6
° '
+24 0

1881
Oct. 6

h	m	s		m	s
10	9	49.78		9	59.9
		52.00	54.330		2.0
		54.30	5433		3.8
		56.67			5.2
	27165	58.90		179	7.0
		2165			179
		3.48		10	358
		5.75			+8.86
		8.00			
		10.18	12.457		
		12.45	1246	10	43.2
		14.60	12.43		45.0
		16.95			46.4
		19.23			49.0
	11211	21.47		2342	50.6
		2211			342
		26.00		10	46.84
		28.20	30.530		−34.40
		30.55	3053		
		32.80	14486		
	15265	35.10		10	3.58
		*265	10 12.445	10	46.84
		54.330		+	8.86
		30530		−	34.40
		12.430			43.26
		12.457			
		12.443			

B 12 16.20 ·
B 13 3.65 .
R 13 4.05 .

13 3.85 ·

0.08661

C

γ'

γ Leonis

h m s
10 13 27
° '
+20 26

10	13	10.75		13	15.7
		12.90	15130		17.7
		15.12	15.13		18.9
		17.38			20.8
	7565	19.50		952	22.1
		2565			952
		23.97		13	19.04
		26.18			+13.73
		28.35			
		30.60	32792		
		32.88	3279		
		34.95	32.76		
		37.20			
		39.40			
	29513	41.60			
		2513			
		45.98			
		48.20	50390		
		50.32	50.39		
		52.60	6552		
	25195	54.85		13	19.04
		195	13 32.775		·
		15.130		+	13.73
		50.390			
		32.760			
		32.791			
		32.775			

10 13 27.13

B 46 5.32 ·

20 26 17.3

0.08661

149

μ Urs. Maj

h m s
10 15 16
° '
+42 6

0.08661

10	14	54.67		15	4.6
		57.87	0.708		6.7
		0.75	0.71		8.3
		3.65			10.8
	354	6.30		431	12.7
		354			431
		12.00		15	8.62
		14.68			+14.36
		17.50			
		20.20	22.996		
		22.95	2299	15	51.0
		25.77	22.98		59.8
		28.58			2.0
		31.28			4.2
	20696	34.00		92	6.2
		2696			92
		39.57		16	1.84
		42.50	45.236		−38.86
		45.26	45.24		
		48.00	4595		
	22618	50.85		15	8.62
		2618	15 22.985	16	1.84
		0.708		+	14.36
		45236		−	38.86
		22.977			3.22
		22.995			
		22.986			

B 7 20.55 ·
B 8 5.65 ·
R 8 8.50 ·

			173							S							
			×														
			ε Urs. Maj.							Sun.							
			h m s							h m s							
			12 48 48							12 53 38							
			° '							° '							
			+56 36			0.08661				−5 45					0.08661		
			Oct. 6						1881	Oct. 6/7							
12	48	17.77		47	52.0		12	54	12.78		53	26.4	54	21.55		53	47.0
		21.29	24.978		53.8				14.16	16.166		28.4		23.55	25.720		49.7
		24.85	24.98		56.3				16.00	16.17		30.3		25.80	25.72		51.0
		28.50			58.5				18.19			31.5		27.70			52.7
	12489	32.48		2818	1.2			8083	20.30		1496	33.0	12860	30.00		2547	54.3
		2489			318				3083			496		2860			47
		39.90		47	5636				24.50		53	29.92		34.00		53	5094
		43.85			+ 59.65				26.60			−57.07		36.00			+51.41
		47.36							28.70					38.28			
		51.60	55.038						30.80	32.852				40.38	42.366		
		55.00	55.04	48	43.1				32.80	32.85				42.38	42.37		
		58.90	54.98		46.3				34.95	32.86				44.45	42.34		
		2.48			49.5				37.00					46.57			
		6.40			52.0				39.00					48.63			
	49534	9.85		2451	54.2			29567	41.32				38129	50.60			
		4534			451				2567					2129			
		17.55		48	4902				45.40					54.80			
		21.20	24.966		+ 5.99				47.40	49.560				57.00	58.960		
		24.90	24.97						49.47	49.56				59.00	58.96		
		28.78	10995						51.60	6573				1.00	8468		
	12483	32.40		47	5636			24780	53.93		53	29.92	29480	3.00		53	5094
		2483	48 55.010	48	49.22				4780	52 32.855				4480	54 42.355		
		24.978		+	58.65						−	57.07				+	51.41
		24.966		+	5.99												
		54.972			64.64												
		55.039															
		55.005															
B	36	31.12·						39	56.22·				12	33.32·			
B	37	7.12·															

212

α Serpentis

h m s
15 38 27
° '
+6 48

1881

Oct. 7

h m s
15 38 —

+8.31	31.94	286.96	23.63	
6.23	32.03	31.884	25.80	
4.15	31.99		27.84	
2.06	31.90		29.84	31.888
-0.00	31.86		31.86	31.89
2.07	31.83		33.90	
4.16	31.72		35.88	
6.23	31.72		37.95	
8.32	31.97	28699	40.29	
		1.699		
12.47	31.90	159.18	44.37	
14.54	31.76	31.836	46.30	48.474
16.63	31.67		48.50	4847
18.70	31.80		50.50	
-20.85	31.82	4237	52.70	
		4237		

31.860
31.867 15 38 26.63

594

δ Scorpii

h m s
15 53 21
° '
-22 17

0.08661

m s
15 53 —

39	0.9					
	2.6	-2.22	25.28	101.20	27.50	
	4.0	4.46	25.34	25.30	29.80	
	5.5	6.64	25.31		32.00	
200	7.0	8.93	25.27		34.20	
	200					
39	4.00	13.38	25.32	126.38	38.70	
	-32.12	15.61	25.39	25.276	41.00	43.130
		17.84	25.16		43.00	43.13
		20.07	25.33		45.40	
		-22.37	25.18	21565	47.55	
					1565	
39	4.00					

25.288
25.287

53	22.5
	34.7
	36.2
	37.5
1802	39.3
	302
53	36.04
	-10.75
54	0.4
	1.8
	3.3
	4.9
173	6.9
	173
54	346
	-38.17
53	36.04
54	3.46

0.08661

222

ρ Ophiuchi

h m s
16 8 9
° '
-3 23

16	7	53.55	
		55.55	57.620
		57.62	5762
		59.62	
	28810	1.76	
		3810	
		5.90	
		8.00	
		10.00	
		12.17	14.130
		14.00	1413
		16.15	14.17
		18.27	
		20.33	
	12717	22.35	
		3717	
		26.55	
		28.65	30.724
		30.77	3072
		32.75	14834
	15362	34.90	
		362	8 14.150

57.620
30.724
14.172
14.130
14.151

1.17609 0.08661
9.99924
1.17533

7	35.7
	37.7
	39.6
	41.2
1970	42.8
	470
7	39.40
	+34.75
8	44.5
	46.4
	47.8
	50.0
2406	51.9
	406
8	48.12
	-33.97

7 39.40
8 48.12
+ 34.75
- 33.97
68.72
1.83708
1.17533
3.01241
1.93110
8.91869
44426

R 24 56.40 ·
R 24 56.22 ·

24 56.31

6 48 3.2

B 28 15.65 ·
B 28 45.32 ·
R 28 44.95 ·

28 45.13 ·

B 34 33.22 '
B 35 58.55 ·

35 58.55 ·
85.33

			X	596							226						597			
				α Scorpii							η Draco.						ζ Ophiuchi			
				h m s							h m s						h m s			
				16 22 10							16 22 23						16 30 39			
				° ′			0.08661				° ′			0.08661						0.08661
				−26 10							+61 47						−10 20			
	16	21	—		22	10.8		16	22	—		22			16	30 —		30		
			—			12.4				—						—				
+18.40	14.07	42.29	55.67			13.8				—						—				
16.10	14.10	14.096	58.00			15.9				—						—				
13.79	14.12		0.33		703	17.4				—						—				
						203														
9.20	14.20	128.04	5.00		22	14.06				—						—				
6.90	14.40	14.232	7.50			+ 0.14				—						—				
4.59	14.24		9.65							—						—				
+ 2.27	14.27		12.00	14.237						—				264.03	4403	+20874.95				
− 0.20	14.30		14.30	14.24						—		22	59.4	44.006	4400	−00044.00		31	12.7	
2.24	14.31		16.60							—			3.0		4391	−20946.00			14.3	
4.60	14.18		18.78							—			7.1		4402	42048.22			16.2	
6.90	14.10		21.00				−13.09	29.71	59.48	42.80			9.9		4401	62950.30			18.0	
− 9.21	14.04	12813	23.30				17.48	29.77	29.74	47.25		341	14.7		4406	84052.46		811	19.9	
			3813		2								341						311	
			—				26.18	29.82	148.44	56.00		23	6.82	220.07	4407	125856.65		31	16.22	
			—				30.53	29.85	29.888	0.40	4.830		− 36.97	44.014	4400	146858.68	0.806		−32.22	
			—				34.92	29.83		4.75	4.83				4402	16780.80	0.81			
			—				39.28	29.97		9.25					4402	18882.90				
			—		22	14.06	−43.78	29.97	2415	13.75					4396	403 5.00				
										2415		23	6.82			2104 403		31	16.22	
14.164							29.799							44.01						
14.198							29.846							44.00						
			14.237																	
	16	22	9.84																	
		B 20 43.35·							B 26 32.12·							B ~~2~~31 55.85·				
									B 26 52.72·							R 3~~2~~1 55.70·				
									26 32.42							~~2~~31 55.78·				
	26	10	4.5																	

1881

Oct. 7

+ 232

η Herculis

h m s
16 38 57

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+39 9

1.17609 0.08661
9.88958
1.06567

h m s
16 38 30.00 | m s 38 7.0
32.58 35.260 | 9.4
35.25 3526 | 11.2
37.87 | 13.4
17630 40.60 | 564 15.4
2630 | 64
45.96 | 38 11.28
48.48 | +45.24
51.25
53.85 56.488
56.47 56.49 | 39 32.0
59.10 56.55 | 34.0
1.78 | 35.9
4.40 | 38.1
50839 7.10 | 1803 40.3
5839 | 303
12.48 | 39 36.060
15.14 17.848 | − 39.54
17.80 1785
20.57 11311
8924 23.25 | 38 11.28
3924 | 38 56.520 | 39 36.06
35.260 | + 45.24
17.848 | − 39.54
56.554 | 84.78
56.488 | 1.92829
56.521 | 1.06567
2.99396
1.90531
8.91135
43941

B 3 7.30
B 4 27.65
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4 27.71
80.41

× 598

η Ophiuchi

h m s
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1.17609 0.08661
9.98377
1.15986

17 3 19.53 | 3 1.0
21.65 23.790 | 2.5
23.85 2379 | 4.2
25.92 | 6.3
11895 28.00 | 218 7.8
1895 | 218
32.35 | 3 4.36
34.48 | +36.56
36.60
38.78 40.914
40.92 4091 | 4 12.4
43.00 40.93 | 14.1
45.20 | 15.5
47.35 | 17.3
36823 49.55 | 782 18.9
823 | 282
53.80 | 4 15.64
55.90 58.080 | −34.72
58.00 58.08
0.25 8187
29040 2.45 | 3 4.36
4040 | 3 40.920 | 4 15.64
23.780 | + 36.56
58.080 | − 34.72
40.930 | 71.28
40.915 | 1.85297
40.922 | 1.15986
3.01283
1.92174
8.90891
4387

B 45 22.15
B 46 45.48
R 46 45.85

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83.57

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ι Herculis

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1.17609 0.08661
9.98588
1.16197

17 8 59.74 | 8 45.2
1.80 3.968 | 47.2
4.00 3.97 | 48.5
6.00 | 50.0
1984 8.30 | 2425 51.6
1984 | 425
12.50 | 8 48.50
14.67 | + 32.53
16.78
18.90 21.028
21.00 21.03 | 9 51.3
23.15 21.04 | 53.0
25.20 | 54.8
27.45 | 56.7
18925 29.60 | 2739 58.1
925 | 239
33.80 | 9 54.78
36.00 38.110 | −33.75
38.15 38.11
40.20 4208
19055 42.40 | 8 48.50
4055 | 9 21.035 | 9 54.78
3.968 | + 32.53
38.110 | − 33.75
21.039 | 66.28
21.027 | 1.82138
21.033 | 1.16197
2.98335
1.89131
8.90796
43731

17 9 15.68

B 40 7.10
B 41 25.12
R 41 24.80

41 24.96
77.86

14 31 47.9

S 149

Sun u Urs. Maj

h m s h m s
12 57 18 10 15 16
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-6 8 0.08661 +42 6 0.08661

1881

Oct. 7/8

12 58 4.4 58 13.87 5 10 ~~5560~~
6.3 16.30 5840
8.3 18.00 15 1.00
10.0 20.00 3.80
410 12.0 22.38 6.65
410
58 8.20 830 13.87 2217 177.60 12.15
623 16.00 2223 22.20 15.00
415 18.00 2215 17.80
+205 20.00 2205 20.60 23.328
-000 22.38 2238 23.36 2333 15 58.6
-207 24.38 2231 26.00 0.7
28.84 3.0
623 25.30 2207 31.70 5.6
831 30.55 2224 20995 34.50 154 7.5
2995 154
1245 34.55 2210 110.93 40.00 16 3.08
1452 36.60 38800 2208 22.186 42.72 45.580
1660 38.85 3880 2225 45.60 45.58
1868 41.00 2232 48.38
58 8.20 19400 43.00 2218 22790 51.20
2082 4400 2790 15 1 23.331 ~~15~~ 16 3.08

22.193
22.194

B 2 49.58

R 8 10.35
R 8 10.08

8 10.21

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1881

Oct. 8/9

0.08661

h	m	s		m	s	m	s	
12	59	32.28		13 0	31.5	1	42.14	
		34.42	36.508		33.2		44.14	46292
		36.52	3651		35.8		46.28	4629
		38.62			37.6		48.40	
	18254	40.70		1775	39.4	23146	50.50	
		3254			275		3146	
		44.87		0	3550		54.48	
		47.00			−42.29		56.58	
		49.00					58.60	
		51.16	53254				0.70	2820
		53.33	5325				2.77	2.82
		55.30	53.18				5.00	2.88
		57.40					7.00	
		59.55					9.10	
	47929	1.68				2538	11.15	
		2929					2538	
		5.70					15.30	
		7.90	9.860				17.37	19.476
		9.90	9.86				19.55	19.48
		11.80	10637				21.48	12577
	4930	14.00		0	3550	9738	23.68	
		4930	59 53215				4738	2 2850
				−	42.29			

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x
ε Can. Maj

h m s
6 53 59
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−28 49

Oct. 9

1.17609 0.08661
9.94259
1.11868

h	m	s		m	s
6	53	40.90		53	29.0
		43.25	45670		31.7
		45.65	4567		33.8
		48.15			36.1
	22835	50.40		1688	38.2
		2835			178
		55.00		53	3376
		57.35			+30.77
		59.78			
		2.02	4517		
		4.60	452	54	38.7
		6.90	4541		41.5
		9.35			43.2
		11.80			44.8
	4065	13.85		2154	47.2
		4065			154
		18.78		54	43.08
		21.00	23410		−38.55
		23.35	2341		
		25.77	12908		
	11705	28.15		53	33.76
		1705	54 4.530	54	43.08
		45.670		+	30.77
		23.410		−	38.55
		4.540			69.32
		4.517			1.84086
		4.528			1.11868
					2.95954
					1.86629
					8.90675
					43645

R 25 21.72

B 58 8.65·
B 59 22.15·

59 22.15·
73.50

568
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h m s
7 3 36
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1.17609 0.08661
9.95292
1.12901

7 3 17.87
20.26 22480
22.60 2248
24.73
11240 26.94
1240
31.58
34.00
36.29
38.48 40816
40.85 40.82
43.18 40.87
45.25
47.73
36734 49.98
734
54.66
56.85 59.272
59.15 5927
1.70 8175
29636 4.00
4636 3 40.845
22.480
59.272
40.876
40.816
40.846

3 4.9
7.0
9.8
11.2
458 12.9
458
3 9.16
+31.68
4 4.3
5.7
7.0
9.2
372 11.0
372
4 7.44
−26.60
3 9.16
4 7.44
+ 31.68
− 26.60
58.28
1.76552
1.12901
2.89453
1.80868
8.91415
441.29

× 118
β Cam. Min.

h m s
7. 20 48
° ′
+8 31

7 20 30.30
32.27 34.434
34.45 3443
36.50
17217 38.65
2217
42.68
44.70
46.95
48.97 51.059
51.20 51.06
53.15 51.12
55.22
57.28
45953 59.38
953
3.50
5.73 7.816
7.95 7.81
9.90 10224
3908 12.00
3908 20 51.090
34.434
7.816
521.125
51.059
51.092

0.08661

20 28.7
29.8
31.1
33.0
1573 34.7
73
20 31.46
+19.63
21 33.0
34.0
35.0
20 31.46
+ 19.63

1 119
α₂ Gem.

h m s
7 27 3
° ′
+32 9

7 26 46.85
49.13 51560
51.57 5156
53.85
25780 56.40
780
1.25
3.73
6.17
8.65
11.00
13.45
15.90
18.28
~~2083~~
25.60
28.20 30580
30.60 3058
33.00
15290 35.50
290 27 11.050

7 27 4.10

26 29.1
31.0
32.9
34.2
1635 36.3
135
26 32.70
27 21.0
22.3
24.8
26.9
1237 28.7
237
27 24.74
26 32.70
27 24.74

0.08661

B 22 8.28·
B 23 12.65·

23 12.65·
64.37

B 10 22.12·
B 11 38.08·

11 38.08·
75.96

B 3 30.92·
B 4 53.58·

4 53.58·
82.66

32 8 39.2

		120 +				× 122				570		
		α Can. Min.				β Gem.				15 Argus		
		h m s				h m s				h m s		
		7 33 7.				7 38 5				8 2 31		
		° ′		0.08661		° ′		0.08661		° ′		0.08661
		+5 32				+28 19				−23 58		
1881												
		Oct. 9										
h	m s		m s									
7	32 52.43		32 35.5	7	37 48.90			8 2	—			
	54.57	56.690	40.0		57.18	53.436			—			
	56.70	56.69	42.4		58.25	53.44			—			
	58.77		44.3		55.70				—			
	28345 0.98		2082 46.0		26718 58.15				—			
	33.45		82		17.18							
	5.00		32 41.64		3.00				—			
	7.15		+31.68		5.27				—			
	9.22				7.73				—			
	11.30	13.361			9.95	12.267			—			
	13.30	13.36			12.22	12.27	38 43.7		—		3 4.0	
	15.50	13.28			14.58	12.20	45.5	145.09 3619	−225 38.44		5.7	
	17.50				16.80		47.6	36.27 3633	452 40.85		7.5	
	19.60				19.30		49.9	3623	677 43.00		8.9	
	12025 21.68				11040 21.55		2381 51.4	3634	904 45.38		361 10.0	
	3025				2040		381				361	
	25.60				26.30		38 47.62	180.83 3611	1355 49.66		3 7.22	
	27.85	29.870			28.50	30.970	−35.39	36.16 3610	1580 51.90	54.244	−31.01	
	29.80	29.87			30.90	30.97		3629	1807 54.36	54.24		
	32.00	14656			33.40	14441		3618	2032 56.50			
	14935 34.10		32 41.64		15485 35.75			3615 27122	58.80			
	4935	33 13.320			485	38 12.235	38 47.62		2263 2122		3 7.22	
	56.690		+ 31.68		53.436							
	29.870				30.970		− 35.39	36.219				
	13.280				12.030			36.213				
	13.361				12.267							
	13.320				12.148							
7	33 7.65			7	38 5.83							
R	39 59.20 ·				54 53.52 ·				B 9 3.25 ·			
R	39 59.28 ·				54 53.55 ·							
	39 59.24 ·				54 53.53 ·							
5	31 39.1			28	18 30.8							

308

× β Cephei L.C.

h m s
21 27 11
° ′
+109 57

0.08661

146

× α Leonis

h m s
10 2 4
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+12 33

0.08661

148

× γ Leonis

h m s
10 10 6
° ′
+24 0

1.17609	0.08661
9.96073	
1.13682	

9	26	10.70			
		17.25	23,050		
		22.95	23.05		
		29.20			
11525		35.15			
		1525			
		47.55			
		53.50			
		59.50			
		5.68	11.661		
		11.90	1166	29	2.2
		17.50	11.46		6.2
		23.56			13.2
		29.76			16.4
10495		36.00		588	20.8
		1495			88
		47.98		29	11.76
		54.20	59.866		−120.20
		59.50	59.87		
		5.45	14292		
29933		12.20			
		4933	27 11.560	29	11.76
		23.050			− 120.20
		59.866			
		11.458			
		11.661			
		11.559			

10	1	49.36		1	58.9
		51.40	53.514		0.4
		53.45	53.51		1.9
		55.58			3.8
26757		57.78		104	5.4
		1757			104
		2.17		2	2.08
		4.20			+ 8.38
		6.30			
		8.32	10499		
		10.47	10.50	2	45.7
		12.60	10.42		47.4
		14.68			49.3
		16.80			51.1
9449		18.95		2461	52.6
		449			461
		23.00		2	49.22
		25.22	27330		− 38.76
		27.35	2733		
		29.48	14084		
13665		31.60		2	2.08
		3665	2 10.460	2	49.22
		53.514		+	8.38
		27.330		−	38.76
		10.422			47.14
		10.499			
		10.460			

10 2 4.61

10	9	50.38		9	31.3
		52.70	54.942		33.8
		54.95	54.94		34.9
		57.20			36.9
27471		59.48		1753	38.4
		2471			253
		3.98		9	35.06
		6.20			+ 37.92
		8.47			
		10.80	12.982		
		13.00	1298	10	42.8
		15.19	12.98		44.6
		17.48			46.3
		19.72			48.0
11684		22.00		2319	50.2
		2684			31.9
		26.47		10	46.38
		28.79	31.012		−33.40
		31.00	31.01		
		33.30	14595		
15506		35.50		9	35.06
		506	10 12.980	10	46.38
		54.942		+	37.92
		31.012		−	33.40
		12.977			71.32
		12.982			1.85321
		12.980			1.13682
					2.99003
					1.89873
					8.90870
					43759

B 17 28.65·
B 17 28.58·

17 28.61·

B 39 40.12·
B 40 36.10·
R 40 36.28·

40 36.19·

12 32 38.5

B 11 43.62 -
B 13 2.78 -
R 13 2.85·

13 2.82·
79.20

	·	× C				149				× 153		
		j Leonis				μ Urs. Maj.				β Urs. Maj.		
		h m s 10 13 27				h m s 10 15 16				h m s 10 54 41		
		° ′ +20 26	1.17609 9.97178	0.08661		° ′ +42 6		0.08661		° ′ +57 1		0.08661
	1881	Oct. 9	1.14787									
h	m s		m s									
10	13 11.30		12 57.5	10	15 —		15 44.6	10	54 10.75		53 33.9	
	13.48	15.676	59.0		—		47.0		14.55	18.330	37.3	
	15.70	1567	0.8		—		49.5		18.35	1833	40.5	
	17.90		2.7		—		52.0		22.00		43.4	
	7838 20.00		45 4.5		—		2466 53.5		9165 26.00		2008 45.7	
	7838		46				466		4165		08	
	24.50		13 09.0		—		15 49.32		33.70		53 40.16	
	26.70		+ 32.41		—		− 25.64		37.40		+ 68.63	
	28.85				—			41.34	~~41.00~~			
	31.10	33.328		141.46 23.55	+275 20.80			44.50	~~45.30~~	48.858		
	33.47	3333	14 1.6	23.577 2360	−000 23.60		16 3.0		48.90	4886	54 41.3	
	35.50	33.30	3.4	2358	−277 26.35		4.8		52.80	48.72	44.5	
	37.73		5.0	2362	536 29.18		6.6		56.40		47.7	
	39.95		7.0	2345	837 31.82		9.2		0.22		50.5	
	29995 42.15		260 9.0	2366	1114 34.80		351 11.5		43972 4.00		2370 53.0	
	2995		260				351		7972		370	
	46.50		14 5.20	118.47 2357	1668 40.25		16 7.02		11.50		54 47.40	
	48.75	50940	−31.89	23.644 2374	1946 43.20	45.958	+43.39		15.24	19.118	+ 1.39	
	51.00	5094		2375	2225 46.00	45.96			19.15	19.12		
	53.15	6661		2371	2563 48.74				23.00	9745		
	25470 55.30		13 0.90	2370	22979 51.60		15 49.32		9559 26.70		53 40.16	
	470	13 33.315	14 5.20		27.90 2979		16 7.02		4559	54 48.790	54 47.40	
	15.676		+ 32.41						18.330		+ 68.63	
	50.940		− 31.89	23.635					19.118		+ 51.39	
	33.308		64.30	23.630					48.724		70.02	
	33.328		1.79827									
	33.318		1.14787 2.94614 1.86243 8.91629 4.4252									
10	13 27.19											

B 45 44.15 ·
B 46 57.00 ·

B 7 57.22 ·
B 8 12.85 ·
R 8 13.02 ·

B 11 44.05 ·
B 12 30.08 ·

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154 ×

α Urs. Maj.

h m s
10 56 23
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+62 23

0.08661

10 55 47.88 — 55′ 50.6
52.32 56.784 — 54.2
56.70 5678 — 57.0
1.35 — 0.5
28392 5.67 — 2870 4.7
3392 — 370
14.55 — 55 5740
18.95 — +34.98
23.40
27.98 32.377
32.44 32.38 — 57 8.4
36.60 32.39 — 10.2
41.27 — 14.5
45.70 — 17.7
29139 50.50 — 21.4
2139 — 25.0
59.00 — 372
3.50 8000 — 57 1744
8.00 8.00 — −45.06
12.50 18478
4000 17.00 — 57 45.3
4000 56 32.385 — 50.0
56.784 — 52.9
8.000 — 56.3
32.392 — 2646 0.1
32.377 — 146
32.384 — 57 5292
−80.54

10 56 23.85

B 49 54.82
B 50 41.08
R? 50′ 59.40

62 23 6.6

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+45 8

0.08661

11 2 37.90 — 2 42.0
40.90 43790 — 44.2
43.80 4379 — 46.1
46.60 — 48.5
21895 49.75 — 2311 50.3
1895 — 311
55.60 — 2 4622
58.50 — +20.99
1.50
4.30 7236
7.22 723 — 3 39.5
10.00 7.19 — 41.6
13.00 — 43.5
16.00 — 45.6
6512 19.00 — 2179 47.7
6512 — 179
24.75 — 3 4358
27.63 30600 — −36.37
30.67 3060
33.40 13439
15300 36.55 — 2 46.22
300 3 7.210 — 3 43.58
43.790 — + 20.99
30.600 — − 36.37
7.195 — 57.36
7.236
7.215

B 4 31.28
B 5? 23.08
R 5′ 20.65

× 156

δ Leonis

h m s
11 7 49
° ′
+21 10

0.08661

1.17609 0.08661
9.96966
1.14575

11 7 32.98 — 7 13.8
35.20 37.372 — 15.4
37.35 3737 — 17.2
39.55 — 19.1
18686 41.78 — 862 20.7
3686 — 362
46.30 — 7 1724
48.44 — +37.85
50.65
52.85 55.103
55.15 55.10 — 8 23.2
57.27 55.09 — 24.9
59.48 — 26.0
1.75 — 28.2
49593 4.04 — 1321 29.8
4593 — 321
8.40 — 8 2642
10.60 12.812 — −31.33
12.78 12.81
15.00 11018
6406 17.28 — 7 1724
1406 7 55.095 — 8 26.42
37.372 — + 37.85
12.812 — − 31.33
55.092 — 69.18
55.103 — 1.83998
55.097 — 1.14575
2.98573
1.89785
8.91212
44011

11 7 49.12

B 1 41.95
B 13 ~~894~~895.10
R 13 0.88

3 0.99
7904

21 10 14.0

1881phae.proj.1522.

S

Sun

h m s
13 4 39
° '
−6 52

1881

Oct. 9/10

0.08661

h m	s		m	s					
13 3	13.27		4	19.8	5	22.90		4	47.9
	15.27	17.380		21.2		25.00	27.084		50.0
	17.40	17.38		23.0		27.12	27.08		51.5
	19.40			24.4		29.15			53.0
8690	21.56		1144	26.0	3542	31.25		2574	55.0
	3690			144		3542			7.4
	25.65		4	22.88		35.40		4	51.48
	27.80			−48.80		37.50			+52.30
	29.90					39.65			
	32.00	34.089				41.65	43.772		
	34.15	34.09				43.78	43.77		
	36.20	34.08				45.90	43.79		
	38.35					47.97			
	40.30					50.00			
30680	42.45				33395	52.10			
	3680					3395			
	46.60					56.36			
	48.70	50.796				58.46	0.508		
	50.80	50.79				0.50	0.51		
	52.88	6817				2.55	8759		
25398	55.00		4	22.88	254	4.67		4	51.48
	398	3 34.085				254	5 43.780		
			−	48.80				+	52.30

212
X

α Serpentis

h m s
15 38 27
° '
+6 48

Oct. 10

1.17609 0.08661
9.99693
1.17302

15	38	11.55		37	59.3
		13.65	15.750		1.2
		15.70	15.75		2.1
		17.85			4.2
	7875	20.00		132	5.8
		2875			132
		24.00		38	2.64
		26.15			+25.72
		28.20			
		30.27	32.367		
		32.40	32.37	39	1.3
		34.43	32.36		3.0
		36.53			5.2
		38.57			7.0
	29130	40.75		250	8.5
		2130			250
		44.80		39	5.00
		46.93	48.966		−32.64
		48.90	48.97		
		51.00	6472		
	24483	53.20		38	2.64
		4483	38 32.365	39	5.00
		15.750		+	29.72
		48.966		−	32.64
		32.358			62.36
		32.367		1.79491	
		32.362		1.17302	
				2.96793	
				1.88041	
				8.91248	
15	38	26.61		4 4024	

B 48 12.90

B 20 59.92

B 23 41.40·
B 24 57.32·
R 24 57.35·

24 57.33·
75.93

6 48 3.0

596 × α Scorpii	111 57 Cephei L.l.	118 × β Can. Min.
h m s 16 22 10	h m s 6 44 42	h m s 7 20 48
° ′ −26 10	° ′ +87 13	° ′ +8 31

0.08661

0.08661

1.17609 0.08661
9.99518
1.17127

16 —
—
—
—
—
—

1463 690 22 7.73
1459 459 117.61 10.00
1474 227 14.701 12.47
1470 −000 14.70
1471 −229 17.00
1480 460 19.40
1465 690 21.55
1479 921 24.00
5
1459 1379 72.92 25.38
1453 1609 14.584 30.62 32990
1460 1840 33.00 3299
1459 2069 35.28
1461 16495 37.67
2206 1495

14.642
14.656
16 22 9.81

2 17.4
18.8
21.0
22.2
1029 23.5
29
2 2058
−5.92
22 51.8
54.5
56.7
59.2
2840 1.8
340
22 5680
−42.14

2 20.58
22 56.80

6 43 18.25
36.75
49.30
44 3.65
17.15
29.00
—
45 3.20
13.45
27.78
45.30
55.00
46 12.30
23.55
40.30
52.00
47 7.90
21.50
35.40

47 47.7
49 11.0
50 28.5
52 1.2

7 20 30.47
3240
32.30 34490
34.58 34.49
36.50
17245 38.60
2245
42.80
44.90
47.05
49.15 51233
51.29 5123
53.36 51.22
55.45
57.50
46110 59.60
1110
3.82
5.86 7.956
7.95 7.96
10.00 10245
3978 12.15
3978 20 51.225
34.490
7.956
51.223
51.233
51.228

20 17.2
19.0
20.5
22.8
1045 25.0
45
20 2090
+30.32
21 17.9
19.6
21.7
23.0
1069 24.7
69
21 2138
−30.16
20 2090
21 21.38
+ 30.32
− 30.16
60.48
1.78161
1.17127
2.95288
1.85649
8.90361
4 3446

B 20 45.45
B 21 26.28
R 21 26.42

21 26.35

26 10 19.4

B 0 56.70
B 1 8.00
B 1 5.18
B 1 9.32

B 40 9.52
B 41 21.28
R 41 21.48

41 21.38
71.86

1881

Oct. 10

119

α² Gem.

h m s
7 27 3
° '
+32 9

	h	m	s		m	s
	7	26	—		27	10.0
			—			12.0
			—			13.9
21.49	10.97	1707	53.90			15.3
10.995	11.02	1462	56.40		685	17.3
						185
99.64	11.20	975	1.45		27	13.70
11.071	10.91	731	3.60			− 2.67
	10.87	487	6.00			
	10.96	241	8.55	11.074		
	11.20	−060	11.20	11.07	27	47.2
	11.07	−243	13.50			49.4
	11.24	487	16.11			51.5
	11.13	731	18.44			54.0
	11.06	9967	20.82		2577	55.5
		976	967			77
55.17	10.86	1462	25.48		27	51.54
11.034	10.94	1706	28.00	30.552		− 40.51
	11.18	1950	30.68	30.55		
	11.06	2194	33.00			
	11.15	15276	35.60		27	13.70
		2445	276		27	51.54

11.039
11.050
7 27 4.14

0.08661

120

α Can. Min.

7 33 7
° '
+5 32

1.17609
9.99797
1.17406

0.08667

7	32	52.80		32	44.0
		54.90	56940		45.8
		57.00	56.94		47.4
		59.00			48.7
	28470	1.00		2364	50.5
		3470			364
		5.00		32	47.28
		7.05			+26.16
		9.30			
		11.35	13.383		
		13.31	13.39	33	44.5
		15.40	13.59 4		46.6
		17.55			48.5
		19.60			50.2
	12046	21.90		2415	51.7
		3045			415
		25.85		33	48.30
		27.88	30.042		34.86
		30.00	30.04		
		32.20	14.98 6		
	15121	34.28		32	47.28
		021	33 13.~~490~~ 440	33	48.30
		56.940		+	26.16
		30.042		−	34.72
		13.491			60.88

1.78447
1.17406
2.95853
1.86941
8.91088
4.3923

7 33 7.68

122

β Gem.

h m s
7 38 5
° '
+28 19

0.08661

7	37	48.90			
		51.23	53.550		
		53.57	53.55		
		55.95			
	26775	58.10			
		1775			
		2.80			
		5.28			
		7.62			
		9.89	12.229		
		12.00	12.23	38	43.2
		14.60	12.30		45.3
		17.00			47.2
		19.30			48.7
	11006	21.57		2344	50.0
		2006			344
		26.25		38	46.88
		28.78	31056		+34.62
		31.00	31.06		
		33.45	14461		
	15528	35.80			
		528	38 12.265	38	46.88
		53.550			
		31.056		+	34.62
		12.303			
		12.227			

7 38 5.86

B 4 14.30·
B 4 51.90·
R 4 51.98·

4 51.94·

32 8 39.1

B 40 3.78·
B 41 17.80·
R 41 17.82·

41 17.81·
74.03

5 31 39.0

B 53 29.22·
B 54 50.52·
R 54 51.22·

54 50.87·
81.65

28 18 30.7

308

β Cephei Le.

h m s
21 27 11
° '
+109 57

0.08665

9 26 —
—
—
—
—
—

99.10 12.43 1813 54.30
12.388 1239 1209 0.30
1233 603 6.30
1247 -001 12.48
1248 -598 18.38
1248 1207 24.55
1227 1813 30.40
1228 2417 36.42
24.88 1235 3625 48.60
12.44 1259 4232 54.85
—
—
—
12.414
12.398
21 27 10.38

28 56.2
55.9
4.0
9.3
244 16.0
244
29 4.88
− 112.48
24 4

146
×
α Leonis

h m s
10 2 4
° '
+12 33

10 1 49.50
51.53 53670
53.65 5367
55.87
26835 57.80
1835
2.15
4.00
6.45
8.57 10598
10.63 1060
12.78 10.63
14.90
16.90
9538 19.00
538
23.37
25.30 27590
27.65 2759
29.76 14126
13795 31.87
3795 2 10.615
53670
27590
10.630
10.653
10.641
10 2 4.63

1.17609 0.08661
9.98950
1.16559

1 33.4
36.0
37.4
38.7
1857 40.2
357
1 3714
+33.47
2 39.6
41.2
43.3
45.2
2163 47.0
163
2 4326
−32.65
1 37.14
2 43.26
+ 33.47
− 32.65
66.12
1.82039
1.16559
2.98598
1.89625
8.91027
43859

148
×
γ Leonis.

h m s
10 10 6
° '
+24 0

10 9 50.65
52.85 55160
55.00 5516
57.50
27580 59.80
2580
4.25
6.40
8.70
11.00 13.196
13.25 1319
15.50 13.22
17.76
19.90
11876 22.00
2876
26.75
29.00 31280
31.20 31.28
33.55 14644
15640 35.90
640 10 13.205
55160
31.280
13.220
13.196
13.208

1.17609 0.08661
9.96073
1.13682

9 40.2
42.0
43.7
45.4
2183 47.0
183
9 4366
+ 29.54
10 46.5
47.8
49.2
50.7
2465 52.3
465
10 49.30
−36.10
9 4366
10 49.30
+ 29.54
− 36.10
65.64
1.81717
1.13682
2.95399
1.86670
8.91271
4 4033

B 17 41.98·
B 17 41.85·

17 41.91·

70 2 52.4

B 39 8.28·
B 40 26.95·
R 40 27.12·

40 27.03·
78.75

12 32 38.4

B 11 52.10·
B 13 5.35·
R 13 6.00·

13 5.67·
73.57

c
x
j' Leonis
h m s
10 13 27
° '
+20 26

1,17609 a 0.08661
9.97178
1.14787

1881
Oct. 10

149
μ Urs. Maj.
h m s
10 15 16
° '
+42 6

0.08661

x 153
β Urs. Maj.
h m s
10 54 41
° '
+57 1

0.08661

h	m s		m s								
10	13 11.47		12 47.0	10 15	—		15 34.0	10	54 11.00		53 41.9
	13.85	15.944	49.3		—		35.3		14.90	18.580	44.9
	15.90	15.94	51.0		—		37.8		18.50	18.58	48.3
	18.00		52.9		—		40.6		22.60		50.5
	7972 20.50		2546 54.4		—		1911 43.4		9290 25.90		52.2
	2972		46				411		4290		54.8
	24.60		12 50.92	213.44 2359	1113 12.46		15 38.22		33.95		26
	26.60		+42.56	23.721 2361	837 15.24		− 14.51		37.40		
	29.00			2378	556 18.22				41.60		
	31.29	33.453		2875	275 21.00	23.724			45.45	49.100	
	33.60	33.45	14 3.3	2370	−000 23.70	2372	16 3.0		49.20	49.10	54 45.9
	35.75	33.52	6.0	2377	−277 26.54		5.5		52.95	48.93	49.5
	37.96		8.3	2382	536 29.38		8.0		56.75		54.7
	40.00		9.7	2373	837 32.10		10.2		0.50		57.0
	30108 42.28		387 11.4	2374	21352 34.58		385 11.8		44190 4.10		2965 59.4
	3108		387		1114 3.352		385		8190		1'65
	46.70		14 7.74	118.43 2370	1668 40.38		16 7.70		11.50		54 53.30
	48.78	51.116	−34.26	23.686 2364	1946 43.10	45.950	−43.99		15.50	19.276	− 4.29
	51.20	51.11		2367	2225 45.92	45.95			19.38	19.28	
	53.30	6705		2377	2503 48.80				23.00	9786	
	25558 55.60		12 50.92	2365	22975 51.55		15 38.22		9638 27.00		53
	558	13 33.485	14 7.74		27902975		16 7.70		4638	54 49.015	54 59.30
	15.944		+ 42.56						18.580		29
	51.116		− 34.26	23.703					19.276		− 10.29
	33.530		76.82	23.708					48.928		
	33.453		1.88547						49.100		
	33.491		1.14787						49.011		
			3.03334								
			1.94581								
			8.91247								
10	13 27.22		4 4024								

B 45 31.65·
B 46 59.92·

B 47 48.68·
B 48 14.30·
R 48 14.65·

B 11 51.82·
B 12 36.30·

46 59.92·
88.27

48 14.47·

20 26 16.7

154		155		173	
X		X ψ			
α Urs. Maj.		χ Urs. Maj.		ε Urs. Maj	
h m s 10 56 23		h m s 11 8 0		h m s 12 48 48	
° ' +62 23	0.08661	° ' +45 8	1.17609 9.84847 1.02456	0.08661	° ' +56 36	0.08661

10	55	48.00		55	46.5
		52.55	56904		51.3
		56.87	56.90		54.7
		1.35			57.5
	28452	5.75		2700	0.0
		3452			200
		14.55		55	54.00
		19.00			+38.49
		23.47			
		28.25	32.424		
		32.58	3242	56	57.0
		36.92	32.57		0.8
		41.15			5.5
		45.90			8.7
	29182	50.00		240	12.0
		2182			240
		59.25		57	4.80
		3.75			−32.31
		8.20	8.25		
		12.80	'18515		
	4127	17.27		57	23.5
			56 32.495		28.3
		56.904			31.5
		8.254			35.4
		32.579		1581	39.4
		32.424			81
		32.501		57	3162
					−59.13
10	56	23.88			

11	2	38.35		2	25.0		12	48	—			
		41.28	44.096		27.0				—			
		43.95	44.09		29.1				—			
		46.95			31.3				—			
	22048	49.95		1457	33.3	55.50	5550	2250	33.00			
		2048			457							
		55.78		2	29.14	500.65	55.70	1500	40.70			
		58.70			+38.31	55.67	5560	1125	44.35			
		1.56					5549	749	48.00			
		4.45	7.438				55.71	371	52.00	55634		
		7.43	744	3	49.3		5545	−000	55.45	55.63	49	47.9
		10.38	7.46		51.4		5581	−374	59.55			50.3
		13.32			53.3		5560	750	3.00			53.2
		16.17			55.4		5563	1125	6.88			55.7
	6694	19.15		2678	58.4		55.76	50071	10.78		2655	58.4
		6694			178			1502 5071				155
		24.85		3	53.56	277.66	5567	2250	18.17		49	53.10
		28.00	30846		−46.11	56.532	5592	2625	22.17	25558		−57.51
		30.80	30.84				5521	3001	25.22	25.56		
		33.88	13493				5548	3375	29.23			
	15423	36.70		2	29.14		55.38	12779	33.00			
		423	3 7.450	3	53.56			37.62 2779			49	53.10
		44.096		+	38.31							
		30.846		−	46.11	56.549						
		7.471			84.42	55.592						
		7.438			1.92645							
		7.454			1.02456							
					2.95101							
					1.85866							
					8.90765							
					4.3719							

B 49 55.82 ·	B 4 18.25 ·	B 37 52.85 ·
B 50 36.70 ·	B 5 30.40 ·	B 37 52.95 ·
B 50 51.02 ·	R 5 30.55 ·	
	5 30.47 ·	37 52.90 ·
	72.22	

62 23 6.3

S

Sun.

h m s
18 8 21
° ′
−7 16

0.08661

1881 Oct. 10/11

h m s
13 6 54.43
56.00 58.470
58.32 58.47
0.90
29235 2.70
4235
7.00
8.90
10.97
12.80 15.109
15.23 15.11
17.40 15.12
19.38
21.40
13598 22.90
4598
27.68
29.85 31.766
31.80 3177
33.50 15024
15883 36.00
883 7 15.115

m s
8 14.5
16.5
18.0
19.5
895 21.0
395
8 17.90
−62.79
8 17.90
− 62.79

m s
9 4.60
6.67
9.00
11.30
12.98
16.83
16.85
19.28
21.20
23.45 25.453
25.47 25.45
27.60
29.73
31.50
22908 34.00
4908
37.80
40.00 42.144
42.27 42.14
44.30
21072 46.35
1072

m s
8 41.0
43.0
44.5
46.0
2215 47.0
215
8 44.30
8 44.30

× 257

η Serpentis

h m s
18 15 13
° ′
−2 56

1.17609 0.08661
9.99943
1.17552

Oct. 11

18 14 57.28
59.40 1422
1.35 142
3.48
711 5.60
711
9.72
11.68
13.88
16.00 17.964
17.95 1796
19.90 18.016
22.00
24.25
16168 26.30
7168
30.40
32.52 34.610
34.68 3461
36.70 3603
17305 38.45
2305 15 17.985
1.122
34.610
18.016
17.964
17.990

14 49.5
51.1
52.4
53.8
2620 55.2
120
14 52.40
+25.58
15 51.1
52.8
54.1
55.3
2699 56.8
201
15 54.02
−36.04
14 52.40
15 53.98
+ 25.58
− 36.00
61.58
1.78944
1.17552
2.96496
1.87169
8.90673
43644

B 11 4.72

B 43 51.82

B 7 2.38
B 8 16.70
R 8 16.90

8 16.80
7442

X 260

α Lyrae

h m s
18 32 57
° '
+38 41

1.17609 0.08661
9.89244
1.06853

18 32 36.90
39.25 42040
42.00 42.04
44.65
21020 47.40
1020
52.80
55.00
58.00
0.57 3.194
3.23 3.19
5.70 3.26
8.37
11.20
2875 13.88
2875
18.90
21.80 24490
24.50 24.49
27.45 12653
12245 29.80
2245 33 3.225
42.040
24.490
3.265
3.194
3.229

32 23.7
25.6
27.5
29.3
1376 31.6
377
32 27.54
+35.68
33 38.0
40.6
44.1
45.6
2151 46.8
151
33 43.02
−39.80
32 27.52
33 43.02
+ 35.70
− 39.80
75.50
1.87795
1.06853
2.94648
1.85866
8.91218
44013

18 32 56.50

B 31 36.70 ·
B 32 48.90 ·
R 32 48.95 ·

32 48.92 ·
72.22

38 40 49.9

X 603

σ Sagittarii

h m s
18 47 57
° '
−26 26

1.17609 0.08661
9.95204
1.12813

18 47 39.00
41.27 43620
43.65 43.80
45.93
21900 48.25
1810
52.85
55.20
57.40
59.60 2102
2.20 210
4.40 2.19
6.70
9.20
1892 11.37
1892
15.84
18.28 20578
20.50 2058
22.97 12438
10289 25.30
289 48 2.145
43.620
20.566
2.093
2.102
2.097

47 26.2
27.6
30.0
31.4
1480 32.8
480
47 29.60
+32.54
48 34.9
36.3
38.5
39.6
1908 41.5
408
48 38.16
−36.02
47 29.60
48 38.16
+ 32.54
− 36.02
69856
~~1.84236~~ 1.83607
1.12813 2.96420
~~2.97049~~
1.86941 8.90521
~~8.89892~~ ~~08384~~
~~43149~~ 43546

B 36 20.65 ·
B 37 34.72 ·
R 37 34.65 ·

37 34.68 ·
74.03

X 269

λ Aquilae

h m s
19 00 00
° '
−5 3

1.17609 0.08661
9.99831
1.17440

18 59 44.25
46.40 48.480
48.55 48.48
50.58
24240 52.62
4240
56.71
58.70
1.00
2.95 5051
5.00 505
7.00 5.08
9.36
11.38
4546 13.30
4546
17.50
19.65 21.690
21.60 2169
23.80 13017
10845 25.90
845 0 5.065
48.480
21.690
5.085
5.052
5.068

59 31.0
32.6
34.1
35.7
1706 37.2
206
59 34.12
+30.94
19 0 32.2
33.8
35.7
37.4
1785 39.4
285
0 35.70
−30.64
59 34.12
0 35.70
+ 30.94
− 30.64
61.58
1.78944
1.17440
2.96384
1.88485
8.92101
44557

B 14 37.90 ·
B 15 55.52 ·
R 15 53.70 ·

15 54.61 ·
76.71

Difficult to read - 226

X 73

p ~~22~~

η Draconis Loc.

h m s
16 22 23
° '
+118 13

d. 0.08661

α Tauri

h m s
4 29 10
° '
+16 16

1.17609
9.98226
1.15835

0.08661

Lipmans Star-

h m s
4 37 28
° '
+51 48

0.08661

1881

Oct. 11

h m s
4

m s

4 28 54.80
56.88
59.18
1.38
29558 3.34
4558
7.63
9.80
12.00
14.00
16.30
18.50
20.60
22.70
14650 24.97
5650
29.22
31.22
33.50
35.68
16762 38.00
1762

59.116
59.17
16.278
1628
16.31
33.524
3352
15263
29 16.295

59.116
33.524
16.820
16.278
16.299

4 19 10.27

28 43.5
46.0
47.7
49.0
2365 50.3
365
28 47.30
+ 28.99
29 50.8
53.9
55.8
57.5
2770 59.0
270
29 55.40
-39.11
28 47.30

29 55.40
+ 28.99
- 39.11
68.10
1.83315
1.16835
2.99150
2.00728
9.01578
5.5514

4 37 17.92
20.70
25.28
28.60
12455 32.05
2455
39.00
41.75
44.36
48.75
51.83
55.50
58.27
1.90
46536 5.00
1636
11.37
14.45
17.60
21.90
8997 24.65
3997

24910
2491
51.818
51.71
51.45
17.894
1799
10290
37 51.580

38 34.5
36.0
37.9
39.5
1895 41.6
395
38 37.90
-46.32

38 37.90
- 46.32

B 3 48.38.
B 3 31.00.

B 55 41.68.
B 57 1.0.55.
R 57 ~~7~~.20
57 .20.
0.87.
57.23.37
101.69

16 16 18.2

B 25 26.88.

X 76

9 Camelop.

h m s
4 42 14
° ′
+66 08

0.08661

4	41	39.40		42	2.4
		44.60	50.080		5.6
		50.00	50.08		8.1
		55.50			12.2
	25040	0.90		463	18.0
		040			463
		10.70		42	9.26
		15.00			+22.80
		20.18			
		25.95	31.084		
		30.70	31.08	43	28.5
		36.80	31.04		30.3
		41.78			33.0
		46.80			36.0
	27976	51.85		1656	37.8
		976			156
		1.53		43	33.12
		6.82	11.986		−62.06
		12.25	11.99		
		17.13	18207		
	5993	22.20		44	4.0
		993	42 31.060		7.2
		50.080			12.2
		11.986			14.3
		31.033		555	17.8
		31.084			55
		31.058		44	11.10
					−90.04

X 79

ι Aurigæ

h m s
4 49 19
° ′
+32 59

0.08661

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Tupman's Star 9.76852

h m s
4 50 59
° ′
+54 4

0.08661

4	49	1.70		48	50.4		4	50	—			
		4.45	6.760		52.6	91.80	2258	3163	50.95			
		6.65	676		54.5	22.45	2307	2815	54.92			
		9.25			56.0		23.13	2463	58.50			
	3380	11.75		2715	58.0		23.02	2109	1.93			
		3380			215							
		16.75		48	54.30	20.246	2246	1406	8.40			
		19.00			+32.14	22.498	2225	1055	11.70			
		21.58					2223	703	15.20			
		24.00	26.420				2278	348	19.30	22502		
		26.27	26.42				2250	0.00	22.50	2250	51	(43.1
		28.90	26.46				2304	857	26.55			44.6
		31.30					2256	704	29.60			45.3)
		33.78					2245	1055	33.00			
	23778	36.20					2219	20252	36.27			
		5778						1408	2252			
		41.30							—			
		43.85	46.172						—			
		46.23	46.17						—			
		48.50	5293						—			
	23086	50.98		48	54.30				—			
		3086	49 26.440	+	32.14							
		6.760										
		46.160				22.719						
		26.460				22.635						
		26.420										
		26.440										

B 5 6.38·
B 5 48.00·
B 6 4.62·

B 13 42.78 -

B 8 45.98·

~~*~~ ~~*~~

Tupman's Star 9.76730

h m s
4 52 38
° '
+54 11

0.08661

1881

Oct. 11

h	m	s		m	s
4.	52	—			
		—			
		—			
		—			
		—			
1.20	1410	47.10	9.61		
1.76	1058	51.18	1201		
1.07	705	54.02			
0.49	349	57.00			
0.40	000	0.40		54	0.7
		—			2.8
1.34	-706	8.30			4.5
1.32	1058	11.90			6.1
1.03	1412	15.15		214	7.3
			5.92		214
0.49	2116	21.65	1.184	54	428
0.97	2468	25.65	29.416		−63.09
1.09	2821	29.30	29.41		
1.44	3174	33.18			
1.93	14708	37.30			
	3587	4708		54	4.28

1.192
1.194

S

Sun. 9.99613

h m s
18 12 2
° '
−7 38

0.08661

Oct. 11/12

13	10	—			11	50.0	12 2082	46.00		12	9.8
		—		682	34.41	51.5	1873	48.00	50.226		12.9
		—		679 694	6.882	53.4	1666	50.28	50.23		14.5
		—		698		54.8	1458	52.40			16.5
		—		694		57.3	25113	54.45		717	18.0
					59	58.9	1249	113			217
5703	833	48.70	514.64	703		259	833	58.70		12	14.34
5720	625	50.95	57.182	705		5518	625	0.80			+52.62
5716	416	53.00		696	62.73		416	2.80			
5706	206	55.00	57.187	696	6.97		206	4.90	6974		
5725	000	57.25	57.189	692			000	6.92	697		
5720	208	59.28		692			208	9.00			
5728	417	1.45		698			417	11.15			
5720	625	3.45		695			625	13.20			
5726	51468	5.60		696			6277	15.30			
	834	6468	286.07				834	6277			
5739	1241	9.80	57.214	701	14.19		1249	19.50			
5718	1457	11.75	13866	718	7.095		1457	21.75			
5719	1666	13.85	1387					—			
5719	1874	15.93						—			
5712	6933	18.00			11	59		—		12	1434
	2088	1933									

57.198
57.193

6.982
6.958

B 1 55.88 s
B 2 13.42

B 33 32.62

B 6 9.15

138 X

α Hydrae

9 21 47

° ′

−8 9

Oct. 12

1.17609 0.08661

9.99559

1.17168

9 21 31.58
33.65 35.782
35.80 3578
37.88
17891 40.00
2891
44.00
46.00
48.28
50.30 52.364
52.40 5236
54.45 52.42
56.55
58.60
47128 0.70
2128
4.84
7.00 9.124
9.20 9.07
11.23 10485
4562 13.35
4562 21 52.390
35.822
9.124
52.473
52.364
52.418

21 24.1
25.9
27.3
29.0
1374 30.5
374
21 27.48
+ 24.91
22 23.2
24.8
26.8
27.5
1313 29.0
313
22 26.26
− 33.87
21 2748
22 26.26
+ 24.91
− 33.87
58.78
1.76923
1.17168
2.94091
1.85077
8.90986
498 244

9 21 47.03

B 20 7.30.
B 21 18.02.
R 21 18.42.

21 18.22.
70.92

8 8 44.6

140

θ

θ Urs. Maj.

h m s
9 24 56
° ′
+52 13

0.08661

9 24 30.56
33.84 37226
37.18 3725
40.55
18613 44.00
3613
50.76
54.00
57.45
0.80 4203
4.29 420
7.58 4.21
11.00
14.30
3783 17.65
3783
24.37
27.80 31166
31.16 31.17
34.50 12.842
15583 38.00
583 25 4.205
37.226
31.166
4.196
4.203
4.199

24 5.3
8.0
10.6
13.4
533 16.0
33
24 10.66
+ 53.54
25 7.2
9.7
12.0
14.7
606 17.0
106
25 12.12
− 7.92
24 10.66
25 12.12
+ 53.54
− 7.92
61.46

9 24 56.63

B 59 50.12.
B 0 37.20.

52 12 39.4

142

V

ε Leonis

h m s
9 39 8.
° ′
+24 19

1.17609 0.08661
9.95965
1.13574

9 38 52.16
54.40 56.668
56.70 5667
58.90
28334 1.18
3334
5.77
8.00
10.35
12.53 14.800
14.87 14.80
17.03 14.79
19.25
21.50
13320 23.90
4320
28.37
30.65 32.916
32.88 3291
35.25 14958
16458 37.43
1458 39 14.795
56.668
32.916
14.792
14.800
14.796

38 38.5
40.5
41.5
43.5
2092 45.2
92
38 41.84
+ 32.95
39 43.4
44.7
46.4
48.8
2338 50.5
338
39 46.76
− 31.97
38 41.84
39 46.76
+ 32.95
− 31.97
64.92
1.81238
1.13574
2.94812
1.86159
8.91347
441 3

B 53 8.35.
B 54 20.88.
R 54 21.25.

54 21.06.
72.71

1881

Oct. 12

146

α Leonis

h	m	s		m	s	
10	2	4				
	°	′			1.17609	0.08661
	+12	33			9.98950	
					1.16559	
10	1	49.45		1	43.0	
		51.47	53.640		44.4	
		53.60	53.64		46.0	
		55.83			47.6	
	26820	57.85		2308	49.8	
		1820			308	
		2.00		1	46.16	
		4.16			+ 24.37	
		6.23				
		8.35	10.518			
		10.58	1052	2	40.2	
		12.70	10.54		42.1	
		14.78			43.8	
		16.87			45.6	
	9467	19.00		2191	47.4	
		467			191	
		23.15		2	43.82	
		25.82	27.440		−33.29	
		27.50	27.44			
		29.55	14108			
	13720	31.68		1	46.16	
		3720	2 10.530	2	43.82	
		53.640		+	24.37	
		27.440		−	33.29	
		10.540			57.66	
		10.519			1.76087	
		10.529			1.16559	
					2.92646	
					1.84073	
					8.91427	
10	2	4.68			4 41134	

B 39 22.90 ·
B 40 32.10 ·
R 40 32.30 ·

40 32.20 ·
69.30

12 32 38.0

148 X

ζ Leonis

h	m	s		m	s	
10	10	6				
	°	′			1.17609	0.08661
	+24	0			9.96073	
					1.13682	
10	9	50.48		9	38.2	
		52.74	54.976		40.0	
		54.98	54.97		41.7	
		57.20			43.3	
	27488	59.48		2083	45.1	
		2488			83	
		4.00		9	41.66	
		6.22			+ 31.38	
		8.48				
		10.90	13.029			
		13.00	13.03	10	44.5	
		15.27	13.06		46.2	
		17.53			47.5	
		19.86			49.3	
	11726	22.00		2386	51.1	
		2726			386	
		26.50		10	47.72	
		28.85	31.150		−34.68	
		31.20	31.15			
		33.40	14612			
	15575	35.80		9	41.66	
		575	10 13.045	10	47.72	
		54.976		+	31.38	
		31.150		−	34.68	
		43.063			66.06	
		13.029			1.81994	
		13.046			1.13682	
					2.95676	
					1.86285	
					8.90609	
					4 3620	

B 11 53.35 ·
B 13 6.42 ·
R 13 6.12 ·

13 6.27 ·
72.92

c X

γ′ Leonis

h	m	s		m	s	
10	13	27				
	°	′			1.17609	0.08661
	+20	26			9.97178	
					1.14787	
10	13	11.44		12	51.5	
		13.62	15.804		53.5	
		15.76	15.80		55.0	
		18.00			56.9	
	7902	20.20		2755	58.6	
		2902			255	
		24.55		12	55.10	
		26.73			+ 38.29	
		29.00				
		31.24	33.374			
		33.28	33.38	14	2.6	
		35.58	33.40		4.0	
		37.80			5.8	
		39.97			7.4	
	30037	42.22		290	9.2	
		3037			290	
		46.60		14	5.80	
		48.77	51.000		−32.41	
		51.00	51.00			
		53.23	6680			
	25500	55.40		12	55.10	
		500	13 33.390	14	5.80	
		15.804		+	38.29	
		51.000		−	32.41	
		33.402			70.70	
		33.374			1.84942	
		33.388			1.14787	
					2.99729	
					1.90655	
					8.90926	
10	13	27.26			4 3821	

B 45 39.48 ·
B 47 0.12 ·

47 0.12 ·
80.64

20 26 16.3

61

173 ×

ε Urs. Maj.

h m s
12 48 48
° ′
+56 36

Oct. 12

0.08661

12	48	18.10		48	16.5
21.87		22.00	25.640		19.3
		25.77	25.64		21.6
		29.18			23.8
	12820	33.15		1074	26.2
		2820			74
		40.50		48	21.48
		44.30			+34.11
		47.95			
		51.75	55.530		
		55.60	55.53	49	26.1
		59.34	55.66		29.6
		2.95			32.7
		6.40			37.0
	49977	10.65		1662	40.8
		4977			162
		18.20		49	33.24
		22.00	25666		−37.65
		25.60	25.67		
		29.38	11131		
	12833	33.15		49	49.5
		2833	48 55.595		52.5
		25.640	−.006		56.4
		25.666	55.589		59.6
		55.653		2809	2.9
		55.530			309
		55.591		49	56.18

B 36 50.85.
B 37 39.80.
B 37 53.52.

S

Sun.

h m s
13 15 45
° ′
−8 0

Oct. 12/13

0.08661

13	14	18.30		15	20.5	16	28.28		15	44.9
		20.40	22.490		21.9		30.40	32.460		46.0
		22.50	22.49		23.5		32.45	32.46		47.4
		24.60			25.0		34.57			48.9
	11245	26.65		1183	27.4	16230	36.60		2375	50.3
		1245			183		1230			375
		30.70		15	2366		41.00		15	47.50
		33.00			−44.45		43.00			+61.82
		34.90					45.00			
		37.00	39.144				47.25	47.361		
		39.00	39.14				49.37	49.36		
		41.25	39.28				51.55	49.29		
		43.40					53.63			
		45.50					55.70			
	35230	47.55				44425	57.75			
		8230					8425			
		51.90					1.90			
		54.00	56.070				4.00	6.120		
		55.95	56.07				6.20	6.12		
		58.15	7856				8.20	9858		
	28035	0.35		15	23.66	3060	10.30		15	4750
		3035	14 39.210				3060	16 49.325		
				−	44.45				+	61.82

B .55 44.28
B

B 28 26.65

		260 X				303 X				306 X		
		α Lyrae				ζ Cygni				α Cephei		
		h m s 18 32 57				h m s 21 7 56				h m s 21 15 48		
		° ′ +38 41	1.17609 9.89244	0.08661		° ′ +29 45	1.17609 9.93862	0.08661		° ′ +62 5	1.17609 9.67042	0.08661
	1881	Oct. 13.	1.06853				1.11471				0.84651	
h	m s		m s									
18	32 36.90		32 33.0	21	7 38.44		7 23.5	21	15 11.80		14 27.3	15 3.5
	39.40	42066	35.9		40.70	43128	25.7		16.00	20500	30.2	6.5
	42.00	4207	38.3		43.00	4313	27.7		20.45	2050	33.0	9.9
	44.75		40.4		45.50		29.3		24.95		36.35	13.4
	21033 47.28		1892 41.6		21564 48.00		1376 31.4		10250 29.30		1665 39.7	502 16.9
	1033		392		1564		376		250		165	502
	52.60		32 37.84		52.77		7 2752		38.28		14 33.30	15 10.04
	55.20		+25.31		55.00		+34.66		42.56		+83.07	+46.33
	57.93				57.37				46.95			
	0.57	3,156			59.85	2,170			51.30	55.807		
	3.15	315	33 46.2		2.10	2.17	8 33.4		55.82	5691	16 44.9	17 16.5
	5.77	3.16	47.8		4.50	2.19	35.2		0.10	55.83	48.0	18.0
	8.45		50.4		6.86		36.9		4.75		51.4	18.7
	11.00		52.0		9.30		38.6		8.93		54.4	19.8
	2840 13.73		2509 54.5		1953 11.78		1844 40.3		51220 13.57		68 58.1	938 20.8
	2840		09		1953		344		52.26		68	438
	18.95		33 50.18		16.50		8 36.88		22.50		16 51.36	17 18.76
	21.65	24,250	−47.03		18.90	21,250	−34.70		26.57	31,160	−54.99	−82.34
	24.15	2425			21.25	2125			31.00	31.16		
	26.90	12632			23.60	12438			35.50	11166		
	12125 29.60		32 37.84		10625 26.00		7 2352		15580 40.23		14 33.30	15 10.04
	2125	33 3.155	33 50.18		625	8 2.180	8 36.88		580	15 56.370	16 51.36	17 18.76
	42.066		+ 26.31		43.128		+ 38.66		20.500		+ 83.07	+ 46.33
	21.250		− 47.03		21.250		− 34.70		31.160		− 54.99	− 82.39
	3.158		72.34		2.189		73.36		35.830		138.06	128.72
	3.156		1.85938		2.170		1.86546		55.807		2.14007	2.10965
	3.157		1.06853		2.179		1.11471		55.818		0.84651	0.84651
			2.92791				2.98017				2.98658	2.95616
			1.83664				2.01263				1.81050	1.81050
			8.90873				9.03246				8.82392	8.85434
18	32 56.45		4881				692	21	15 47.34		34850	4524
B	31 45.95 ·			B	27 18.18 ·			B	7 3.25 ·			
B	32 54.60 ·			B	28 31.12 ·			B	7 24.80 ·			
				R	28 31.15 ·			B	8 22.68 ·			
								B	8 36.18 ·			
	32 54.60 ·				28 31.13				8 07.89			
	68.65				42 ~~102.95~~				64.64			
38	40							62	5 28.9			

307 ×

β Aquarii

h m s
21 25 22
° ′
−6 5

21 25 6.37
8.45 10534
10.53 1053
12.62
5267 14.70
267
18.80
20.95
23.00
25.00 27149
27.20 2715
29.25 27.15
31.37
33.37
24434 35.40
6434
39.55
41.65 43776
43.83 4378
45.85 5431
21888 48.00
1888 25 27.150
10.534
43776
27.155
27.149
27.152

24 55.6
57.9
59.3
1.0
2964 2.6
464
24 59.28
+27.87

24 59.28
+ 27.87

0.09661

308 ×

β Cephei

h m s
21 27 11
° ′
+70 3

21 26 19.45
25.60 31720
31.85 3172
37.90
15860 43.80
860
55.87
1.80
8.00
14.00 20112
20.23 2011
26.20 20.09
32.33
38.28
18101 44.30
101
56.40
2.42 8.460
8.50 846
14.53 16018
4230 20.45
4230 27 20.100
31.720
8.460
20.090
20.112
20.101

21 27 10.22

26 20.2
24.5
28.0
32.2
1431 38.2
431
26 28.62
+51.48

27 21.8
26.7
31.4
35.3
1570 41.8
70
27 31.40
−11.30

28 27.3
31.8
37.0
42.0
1856 47.5
356
28 37.12
−77.02

29 8.2
9.2
10.1
11.4
511 12.2
11
29 10.22
−110.12

26 28.62 27 31.40
28 37.12 29 10.22
+ 51.48 − 90.12
− 77.02 − 110.12
128.50 200.24

0.09661

309 ×

ε Pegasi 0.09661

h m s
21 38 25
° ′
+9 20

1.17609
9.99421
1.17030

21 38 9.30
11.36 13440
13.40 1344
15.50
6720 17.64
1720
21.85
23.90
26.00
28.10 30209
30.22 3021
32.22 30.19
34.43
36.50
27188 38.66
188
42.85
44.82 46946
46.86 4695
49.00 6039
23473 51.20
3473 38 30.200
13.440
46.946
30.193
30.209
30.201

38 2.0
3.4
5.1
6.7
257 8.5
257
38 5.14
+25.06

39 3.1
5.1
7.2
9.1
350 10.5
350
39 7.00
−36.80

38 5.14
39 7.00
+ 25.06
− 36.80
61.86
1.79141
1.17030
2.96171
1.86747
8.90576
4367

B 16 38.20 ·

B 10 14.82 ·
B 10 41.20 ·
B 11 22.45 ·
B 11 19.72 ·

B 51 37.90 ·
B 52 51.62 ·
B 52 51.58 ·

52 51.60 ·
73.70

70 2 53.1

564

α Can. Maj

h m s
6 39 37
° '
−16 33

1881

Oct. 13

h m s
6 39
—
—
—
—
—

+8.61 2.51 23.77 53.90
6.46 2.66 2.641 56.20
4.30 2.58 58.28
+2.13 2.58 0.45 2.646
−1.20 2.60 2.60 2.64
2.15 2.85 5.00
4.31 2.72 7.03
6.46 2.59 9.05
8.62 2.68 2381 11.30
2381
12.92 2.53 13.41 15.45
15.07 2.53 2.682 17.60 19.918
17.22 2.78 20.00 19.92
19.38 2.80 22.18
−21.59 2.77 9959 24.36
4959

2.661
2.656
6 39 57.41

m s
40 32.5
34.5
36.0
37.6
1794 38.8
294
40 35.88
−33.22
40 35.88

0.08661

111

57 Ha. Cephei

h m s
6 44 42
° '
+87 13

6 45 45.95
47.68
49.00
58.27
46 3.22
5.55
13.60
16.68
20.00
27.10
31.16
33.20
39.80
43.18
45.50
54.70
58.00
0.70
47 10.90
13.30
15.30
23.48
26.20
28.85
38.18
41.20
43.77
50.60
53.30
55.50
48 5.60
8.20
10.25
20.62
23.58
26.70

48 37.4
50 20.0
55 19.4
56 53.5

0.08661

×

118

β Can. Min.

h m s
7 20 48
° '
+8 31

1.17609 0.08661
999518
1.17127

7 20 30.30
32.35 34436
34.43 34.44
36.48
17218 38.62
2218
42.80
44.80
46.90
49.00 51.039
51.00 51.04
53.15 51.08
55.17
57.26
45935 59.27
935
3.53
5.57 7.720
7.72 7.72
9.78 10216
3860 12.00
3860 20 51.060
34.436
7.720
51.078
51.041
51.059

20 22.9
24.1
26.0
27.3
1290 28.7
290
20 25.80
+25.26
21 21.4
22.9
24.4
26.0
1228 28.1
228
21 24.56
−33.50
20 25.80
21 24.56
+ 25.26
− 33.50
58.76
1.76908
1.17127
2.94035
1.85534
8.91499
1422

45 9.80 ·

R 0 56.52 ·
R 1 2.02 ·
R 1 12.52 '
R 1 15.48 ·

B 40 14.05 ·
B 41 25.82 ·
R 41 25.68 ·

41 25.73
71.676

16 33 10.4

866

119

α² Geminor

h m s
7 27 3
° '
+32 9

1.17609 0.08661
9.92771
1.10380

7 26 46.70
49.15 51.516
51.47 51.51
53.90
25758 56.36
758
1.35
4.00
6.19
8.60 1
11.13 12.99(?)
? 30.50 12.03
16.00
18.25
687 20.85
687
25.66
28.19 30.558
30.62 30.55
32.87 142.06
15274 35.45
279 7 27 12.01(?)

7 27 4.25

26 40.7
42.0
44.6
46.1
2212 47.8
212
26 44.24
+27.77
27 43.0
45.1
46.5
48.0
2325 49.9
325
27 46.50
−34.49
26 44.24
27 46.50
+ 27.77
− 34.49
62.26
1.79421
1.10380
2.89801
1.80154
8.90353
4 34.43

B 3 44.22
B 4 47.58
R 4 47.50

4 47.54
63.32

32 8 38.8

×

120

α Can. Min.

h m s
7 33 7
° '
+5 32

1.17609 0.08661
9.99797
1.17406

7 32 52.77
54.92 56.850
56.88 56.86
58.73
28430 1.00
3425
5.00
7.20
9.30
11.39 13.399
13.36 13.40
15.45 13.37
17.50
19.64
12059 21.75
3059
25.65
27.78 29.882
29.78 29.88
32.00 14674
14941 34.20
4941 33 13.385
56.860
29.882
13.371
13.399
13.385

7 33 7.76

32 38.0
40.0
42.0
43.8
2090 45.2
90
32 41.80
+31.58
33 42.0
43.6
45.4
47.0
2270 49.0
270
33 45.40
−32.02
32 41.80
33 45.40
+ 31.58
− 32.02
63.60
1.80346
1.17406
2.97752
1.87344
8.89592
4 29.568

B 39 59.80
B 41 14.40
R 41 14.65

41 14.52
74.72

5 31 38.6

×

148

γ Leonis

h m s
10 10 6
° '
+24 0

0.08661

10 9 50.60
52.73 55.068
54.97 55.07
57.29
27534 59.75
2534
4.00
6.50
8.70
10.85 13.110
13.15 13.11
15.29 13.15
17.46
19.84
11799 22.20
2799
26.75
28.78 31.226
31.20 31.23
33.60 14630
15613 35.80
613 10 13.130
55.068
31.226
13.147
13.110
13.128

9 38.3
40.2
42.4
44.1
2117 46.7
117
9 42.34
+30.79
10 49.3
51.0
52.7
54.2
2630 55.8
130
10 52.60
−39.47
9 42.34
10 52.60
+ 30.79
− 39.47
70.26

B 11 53.65
B 12 10.15
R 12 10.32

12 10.23

1881 Oct. 13

C

j' Leonis

h	m	s
10	13	27

°	'
+20	26

0.08661

h	m	s		m	s
10	13	11.32		12	52.5
		13.60	15.784		54.8
		15.75	15.78		56.4
		18.00			58.2
	7892	20.25		2817	59.8
		2892			317
		24.65		12	56.34
		26.70			+37.03
		29.00			
	-	31.20	33.348		
		33.40	33.35		
		35.55	33.40		
		37.73			
		39.90			
	30013	42.00			
		3013			
		46.58			
		48.80	51.020		
		51.00	51.02		
		53.30	6680		
	25510	55.42		12	56.34
		510	13 33.375		
		15.784		+	37.03
		51.020			
		33.402			
		33.348			
		33.375			

10 13 27.29

B 45 40.18 ·

20 26 16.2

149

μ Urs. Majoris

h	m	s
10	15	16

°	'
+42	6

1.17609
9.87039
1.04648

0.08661

10	14	55.65		14	32.0
		58.50	1320		34.0
		1.35	1.32		35.8
		4.15			37.5
	660	6.95		1790	39.7
		660			290
		12.60		14	35.80
		15.50			+ 47.82
		18.10			
		20.60	23.606		
		23.60	23.60	16	13.3
		26.30	23.65		15.5
		29.00			17.5
		32.00			19.3
	21245	34.75		874	21.8
		3245			374
		40.60		16	17.48
		43.00	45.980		-53.86
		46.00	45.98		
		48.75	4730		
	22990	51.55		14	35.80
		2990	15 23.625	16	17.48
		1.320		+	47.82
		45.980		-	53.86
		23.650			101.68
		23.606			2.00723
		23.628			1.04648
					3.05371
					1.96653
					8.91282
					4.4038

B 6 52.28 ·
B 8 24.62 ·
R 8 25.02 ·

8 24.82 ·
9 2.54

153

β Urs. Maj.

h	m	s
10	54	41

°	'
+57	1

0.08661

10	54	11.17		54	3.5
		14.90	18.584		6.3
		18.50	18.58		9.2
		22.35			11.8
	9292	26.00		459	15.1
		4292			459
		33.68		54	9.18
		37.60			+39.71
		41.00			
		45.00	48.834		
		48.90	48.83		
		52.90	48.96		
		56.48			
		59.95			
	43951	4.00			
		7951			
		11.70			
		15.80	19.350		
		19.38	19.35		
		22.97	9793		
	9675	26.90		54	9.18
		4675	54 48.895		
		18.584		+	39.71
		19.350			
		48.967			
		48.834			
		48.900			

B 11 50.98 ·

~~154~~

α Urs. Maj.

h m s
10 56 23
° ′
+62 23

0.08661

10 55 48.00
52.00 56.640
56.55 56.64
1.00
28320 5.65
3320

14.40
19.00
23.60
28.00 32.439
32.35 32.44
37.00 32.45
41.50
45.85
29195 50.25
2195

59.25
3.70 8.272
8.27 8.27
12.80 18491
4136 17.24
4136 56 32.445
56.640
8.272
32.456
32.439
32.447

10 56 23.98

56 31.0
34.9
40.1
43.5
19561 46.6
461

56 39.22
− 6.78

57 15.5
20.0
24.3
27.9
1191 31.4
191

57 23.82 −17.58
− 51.38 20.47
23.40
26.33
−24.34

57 48.9
51.0
53.8
56.3
2690 59.0
190

57 53.80
− 81.36

155

Ψ χ Urs. Maj.

h m s
11 3 0
° ′
+45 8

0.08661

11 — — — — — — — — — — — — — — — —

7.35 3 24.80
7.35 36.53 27.82 30.704
7.35 7.31 30.75 30.70
7.27 33.60
7.21 15352 36.55
352

3 24.1
27.2
28.8
30.2
1422 31.9
422

3 28.44
−21.13

3 55.0
57.8
0.0
2.5
00 4.7
0.0

4 0.00
−52.69

3 28.44
4 0.00

0.08661

156

δ Leonis

h m s
11 7 49
° ′
+21 10

1.17609 0.08661
9.96966
1.14575

11 7 33.20
35.28 37.534
37.45 37.53
39.78
18767 41.96
3767

46.35
48.50
50.70
53.00 55.200
55.20 55.20
57.35 55.24
59.70
2.00
49680 4.00
4680

8.50
10.60 12.960
13.00 12.96
15.20 11049
6480 17.50
1480 7 55.220

11 7 49.19

7 20.5
22.4
24.2
26.1
1~~4~~207 27.5
207

7 24.14
+ 31.08

8 25.5
27.5
29.0
31.2
1462 33.0
462

8 29.24
− 34.02

7 ~~28~~24.14
8 29.24
+ 31 ~~27~~.08
− 34.02
65 ~~61~~.10
~~1.76604~~ 1.81358
1.14575
~~2.93179~~ 2.95933
1.86894
~~8.93715~~ 8.90961
~~45643~~ 4362

B 50 23.75 ·
B 50 47.85 ·
B 51 4.52 ·

B 5 11.88 ·
B 5 36.55 ·
R 5 36.75 ·

5 36.65 ·

B 1 51.20 ·
B 3 5.42 ·
R 3 5.28 ·

3 5.15 ·
73.95

62 23 5.4

21 ~~9~~10 13.3

1881phae.proj.1522.

		S						S			
		Sim.						Sim.			
		h m s 13 19 27 ° ' −8 23		0.08661				h m s 13 26 53 ° ' −9 8		0.08661	
	1881	Oct. $\frac{13}{14}$						Oct. $\frac{15}{16}$			
h	m s		m s								
13	18 0.87		19 9.6	20 11.20		19 38.0	25 28.00		26 28.0	27 38.00	
	2.90	4.994	12.9	13.40	15.470	40.0	30.00	32.216	30.1	40.85	42.720
	5.00	4.99	14.6	15.50	15.47	41.4	32.28	32.21	32.0	42.85	42.72
	7.00		16.3	17.65		42.5	34.42		33.4	44.90	
	2497 9.20		718 18.4	7735 19.60		2055 43.6	16108 36.38		1585 35.0	21360 47.00	
	2497		218	2735		55	1108		85	1360	
	13.36		19 14.36	23.80		19 41.10	40.50		26 31.70	51.25	
	15.48		−52.62	25.80		+ 51.13	42.55		+ 42.75	53.28	
	17.45			28.20			44.70			55.57	
	19.60	21.750		30.48	32.267		46.82	48.911		57.60	59.676
	21.76	21.75		32.20	32.27		48.88	48.91		59.70	59.68
	23.90	21.74		34.15	32.19		51.00	49.00		1.90	59.56
	25.90			36.60			53.12			3.78	
	28.05			38.50			55.28			6.00	
	19575 30.25			29040 40.67			44020 57.35			53708 8.00	
	1575			2040			8020			8708	
	34.32			44.74			1.50			12.30	
	36.40	38.490		46.86	48.920		3.65	5.790		14.32	16.414
	38.50	38.49		49.00	48.92		5.75	5.79		16.35	16.41
	40.55	4348		51.00	6439		7.90	9800		18.55	11913
	19245 42.68		19 14.36	24460 53.00		19 41.10	2895 10.15		26 31.70	8207 20.55	
	4245	18 21.745		4460	20 32.230		2895	25 48.955		3207	27 59.620
			+ 52.62			+ 51.13			+ 42.75	~~+6.41~~	
B 18 7.80				B 50 58.88			R 2 25.70				

		226				p ~~xx~~				76		
		η Draconis Lac.				Tupman's Stern				9 Camel.		
		h m s 4 22 23				h m s 4 37 28				h m s 4 42 22		
		+118° 13'		0.11581		+51° 48'		0.11581		+66° 8'		0.11581
		Oct. 16										
4	22 50.00	+48.78 33.78	23 13.0	4	37 —			4.	—		41 13.9	
	54.00	39.28 33.28	167.61 17.3		—				—		18.0	
	58.55	34.92 33.47	33.521 20.5		—				—		21.7	
	3.00	30.55 33.55	23.1		—				—		25.2	
	29290 7.35	26.18 33.53	1014 27.5		—				—		1090 30.2	
	4290		14								90	
	22 58.58		23 20.28	+13.35 52.52	346.66 39.17			+20.40 31.25	42 10.85		41 21.80	
			+13.24	18.01 52.16	52.044 42.15			13.40 31.40	282.07 16.00		+69.63	
				6.67 52.67	45.40			10.19 31.39	31.341 21.20			
					—			+5.05 31.25	26.20	31.348		
					—		38 39.5	−0.00 31.40	31.40	31.35	43 19.5	
				−3.33 51.77	55.10		41.9	5.07 31.43	36.50		24.7	
				6.67 51.91	58.58		45.2	10.20 31.20	41.40		27.3	
				10.01 51.99	2.00		47.5	15.40 31.28	46.68		31.4	
				13.36 52.24	5.60		2249 50.8	20.43 31.42	8213 51.90		1378 34.9	
							249		1213		378	
				20.02 52.26	259.89 12.28		38 44.98	30.60 31.60	157.97 2.20		43 27.56	
				23.35 51.53	51.978 15.28	18.692	−52.83	35.64 31.56	31.594 7.25	12.416	−56.13	
				26.70 51.95	18.65	1869		40.80 31.75	12.55	12.41		
				30.03 51.87	21.90			45.40 31.60	17.50			
		722 33.521	23 2028	−33.47 51.88	9346 25.35			54.12 31.46	6208 22.58		41 2180	
					4346		38 44.98		1208		43 2756	
				52.036				31.467				
				52.046				31.431				

R 3 36.68'

B 25? 44.20

B 4 46.30

B ~~5~~2 54.15

5 54.15

67.85

		×b9 ~~44~~				×b2 ~~44~~				84		
		Tupman's Star				Tupman's Star				β Eridani		
		h m s				h m s				h m s		
		4 50 59		0.11581		4 52 38		0.11581		5 2 3		0.11581
		+54° 4′				+54° 11′				−5° 14′		
	1881	Oct. 16										
h	m s		m s									
4	50 47.46		53 20.5	4	52 26.05		53 52.0	5	—			
	51.10	54604	22.6		29.58		54.4		—			
	54.50	54.60	26.8		33.17		56.4		—			
	58.18		29.5		36.73		59.4		—			
27302	1.78		1317 32.3		40.20		2847 2.5		—			
	2302		317				347					
	8.80		50 26.34		47.00		53 56.94		—			
	12.00		+ 56.39		50.95				—			
	15.55				54.20				—			
	18.85	22.706			57.78	1.242		+2.05 9.23	2 7.18			
	23.00	22.70			1.28	1235	54 7.7	−0.80 9.25	55.53 9.25		2 43.1	
	26.35	22.76			4.40		9.3	2.07 9.30	9.255 11.37		44.8	
	29.80				8.22		10.9	4.14 9.25	13.39		46.6	
	33.30				11.75		12.8	6.22 9.20	15.42		48.4	
20435	36.70				1118 15.60		549 14.2	8.30 9.30	17.60		2328 49.9	
	2435				1118		49				328	
	43.60				22.28		54 10.98	12.43 9.23	46.08 21.66		2 46.56	
	47.57	50.924			25.90	29.456		14.58 9.05	9.216 23.55	25.806	− 37.33	
	51.00	50.92			29.30	29.46		16.58 9.27	25.85	25.81		
	54.45	16552			33.00			18.65 9.32	27.97			
25462	58.00		50 26.34		14728 36.80		53 56.94	−20.74 9.21	12903 30.00			
	462	51 22.730			4728	53 1.272	54 10.98		2903		2 46.56	
			+ 56.39									
								9.235				
								9.228				

B 7 58.65.

B 2 19.72.
B 2 29.60.

B 27 9.02.

86 X
α Aurigae
h m s
5 7 59
° '
+45 52

1.17609 0.11581
9.84282
1.01891

5 7 37.40
40.30 43.250
43.25 4325
46.30
21625 49.00
1625
55.20
57.87
0.90
3.68 6.870
6.90 6.87
9.90 6.92
12.80
15.78
6183 18.80
6183
24.65
27.70 30.608
30.43 3059
33.69 13384
15295 36.57
304 8 6.895
43.250
30.608
6.929
6.870
6.899

5 8 0.08

7 29.6
31.7
33.8
36.0
1693 38.2
193
7 3386
+33.03
8 46.4
49.0
52.0
54.1
2582 56.7
82
8 5164
−44.75
7 33.86
8 51.64
+ 33.03
− 44.75
77.78
1.89087
1.01891
2.90978
1.85089
8.94111
4 5925

B 20 16.38
B 21 27.20
R 21 27.45

21 27.32
70.94

45 52 27.5

X 90
β Tauri
h m s
5 18 50
° '
+28 30

1.17609 0.11581
9.94390
1.11999

5 18 33.98
36.20 38.560
38.56 3856
40.90
19280 43.22
4280
48.00
50.35
52.60 57.367
55.00 ~~56.256~~
57.85 57.37
59.65 57.35
2.10
4.45
51630 6.80
5630
11.60
13.50 16.144
16.27 1614
18.40 11470
8072 20.95
3072 18 57.360
38.560
16.144
57.352
57.367
57.359

5 18 51.25

18 17.3
19.3
21.1
22.8
1046 24.4
49
18 2098
+36.38
19 32.5
35.8
37.2
39.0
1855 41.0
355
19 3710
−39.74
18 2092
19 37.10
+ 36.44
− 39.74
76.18
1.88184
1.11999
3.00183
1.93364
8.93181
4537

B 41 53.30
B 43 19.12
R 43 19.15

43 19.13
85.83

28 30 18.8

X 93
δ Orionis
h m s
5 25 59
° '
−0 23

0.11581

5 25 44.60
46.50 48.636
48.57 4864
50.73
24318 52.78
4318
56.80
58.85
0.90
3.00 5.046
5.00 504
7.15 5.12
9.00
11.28
4538 13.40
4541
17.50
19.50 21.612
21.67 2161
23.69 13025
10806 25.70
806 26 5.070
48636
21612
5124
5057
5090

25 24.5
26.5
28.0
29.5
1395 31.0
395
25 2790
+37.17
26 28.1
30.4
32.0
33.7
1702 35.4
102
26 3204
−26.97
25 27.90
26 34.04
+ 37.17
− 28.97
66.14
1.82046

B 34 35.28

556 X

α Leporis

h m s
5 27 32
° '
−17 54

1881

Oct 16

0.11581

h m s
5 27 15.86
17.98 20146
20.10 20.19
22.33
10093 24.46
073
28.80
30.85
33.00
35.26 37391
37.36 37.34
39.50 37.70
41.65
44.00
33602 46.10
6652
50.40
52.70 55224
54.78 55.22
57.00 7541
27612 59.24
2612 27 37.520
20.146
54.824
37.485
37.391
37.438

m s
27 8.0
10.2
12.0
13.3
583 14.8
83
27 11.66
+25.86
27 11.66
+ 25.86

5
+18.67 46.03
16.61 46.01
14.50 45.88
12.45 45.85
6.30 45.80
6.22 45.90
4.15 45.85
+2.05 45.90
−0.00 46.00
2.07 45.93
4.15 45.97
6.22 45.88
8.31 45.92
45.950
45.924

96 X

ι Orionis

h m s
5 29 40
° '
−5 59

0.11581

29 25.26 +20.75 46.01
229.78 27.36 29360
45.956 29.40 29.36
31.38
14680 33.40
4680
413.15 37.50
45.905 39.63
41.70
43.85 45909
46.00 45.91
48.00
50.12
52.10
41318 54.23
5318
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—
—
—

29 9.4
11.0
12.3
14.0
621 15.4
121
29 12.42
+33.50
29 12.42

97 X

ε Orionis

h m s
5 30 14
° '
−1 17

0.11581

5 30 58.96
~~1.08~~
3.20
5.32
7.45
11.60
13.70
16.00
17.95 19990
20.00 19.99
22.15
24.00
26.28
17991 28.20
8991
32.18
34.30 36372
36.40 36.37
38.35
18183 40.60
8186 31 19.883

30 16.3
17.5
19.7
21.3
978 23.0
478
30 19.56
30 59.0
1.1
3.1
4.9
150 6.9
150
31 3.00
30 19.56
31 3.00

B 5 11.12 ·

B 10 30.32 ·

B 28 48.32 ·
B 29 44.72 ·
R 29 44.82 ·

29 44.77 ·

b
×
α Columbae.

h m s
5 35 23
° ′
−34 8

1.17609
9.91789
1.09398

0.11581

Oct-16

5 35 3.00
5.50 7.906
7.88 7.90
10.35
3953 12.80
3953
18.00
20.45
22.85
25.40 27.908
28.00 2791
30.37 27.96
32.82
35.43
25117 37.85
7117
43.00
45.50 48.034
48.12 4803
50.55 5593
24017 53.00
4017 35 27.935
7.906
48.034
27.970
27.908
27.939

34 48.3
50.8
52.4
54.2
2617 56.0
117
34 52.34
+ 35.59
36 4.8
7.5
9.1
10.6
443 12.3
443
36 8.86
−40.43
34 52.34
36 8.86
+ 35.59
− 40.93
76.52
1.88377
1.09398
2.97775
1.90870
8.93095
4 52.32

B 16 32.42 .
B 17 53.50 .
R 17 53.42 .

17 53.46 .
81.04

119
α Gem.

h m s
7 27 3
° ′
+32 9

Oct. 18

0.11581

7 27 —
—
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—
—

−14.62 11.33 56.63 25.95
17.06 11.72 11.326 28.78 30.840
18.50 11.35 30.85 30.84
21.94 11.06 33.00
−24.45 11.17 15420 35.62
420

7 27 4.42

27 45.8
47.8
49.5
51.0
2470 52.9
470
27 49.40
+ 21.92
27 49.40

R 5 2.75 .

32 8 38.3

120
×
α Can. Min.

h m s
7 33 7
° ′
+5 32

0.11581

7 32 52.80
54.90 56880
56.85 5688
58.85
28440 1.00
3440
5.12
7.20
9.45
11.45 13.502
13.55 1350
15.60 1347
17.65
19.65
12152 21.85
3152
26.00
28.00 30.060
30.20 3006
32.00 14694
15030 34.10
030 33 13.485
56880
30060
13470
13.502
13.486

7 33 7.91

32 44.2
46.2
47.9
49.5
2390 51.2
390
32 47.80
+ 25.68
32 47.80
+ 25.68

R 40 13.20 .
R 40 13.70 .

40 13.45

5 31 38.2

122 +

β Gem.

h m s
7 38 5
° ′
+28 19

0.11581

1881 Oct. 18

h m s
37 48.80
51.28 53.620
53.58 53.62
56.12
26810 58.32
1810
2.90
5.27
7.63
10.00 12.314
12.25 1231
14.70 12,32
17.00
19.40
11083 21.68
2083
26.20
28.70 31.020
31.10 31.02
33.45 14464
15510 35.65
510 38 12.315
53.620
31.020
12.320
12.314
12317

7 38 6.12

m s
37 38.3
40.3
42.6
44.3
2120 46.5
120
37 42.40
+29.41

37 42.40
+ 29.91

R 53 51.42.
R 53 51.48.

53 51.45.

28 18 29.8

γ 570

15 Argus

h m s
8 2 31
° ′
−23 58

0.11581

8 2 13.82
15.85 18.218
18.25 1822
20.40
9109 22.77
4109
27.30
29.55
31.60
33.88 36.242
36.22 36.24
38.50 36,24
40.90
43.00
32618 45.23
5618
49.85
52.00 54.370
54.48 5437
56.62 7259
27185 58.90
2185 2 36.240
18.218
54.370
36.294
36.242
36.268

1 57.3
58.3
59.9
1.5
3004 3.4
0.4
2 0.08
+36.16

2 0.08
+ 36.16

10

R 7 56.90.
R 7 57.08.

7 56.99.

153

β Urs. Maj.

h m s
10 54 41
° ′
+57 1

0.11581

Ch f

155

χ Urs. Maj

h m s
11 3 0
° ′
+45 8

0.11581

156
X
δ Leonis

h m s
11 7 49
° ′
+21 10

0.11581

11 2 —
—
—
—
—

+11.70	7.20	65.60	55.50			
8.78	7.26	7.289	58.48			
5.84	7.19		1.35			
+2.84	7.46		4.57	7294		
-0.00	7.35		7.35	729	3	47.3
2.92	7.38		10.30			49.4
5.85	7.25		13.10			51.6
8.78	7.22		16.00			54.1
11.71	7.29	6565	19.00		2587	56.3
			6565			87
17.55	7.21	36.20	24.76		3	51.74
20.40	7.28	7.24	27.68	30.644		− 44.47
23.40	7.15	-	30.55	3064		
26.33	7.35		33.68			
-29.34	7.21	15322	36.55			
			322		3	51.74

7.264
7.271

11 7	33.00		7	14.7
	35.18	37.430		16.4
	37.37	37.23		18.3
	39.70			19.5
18615	41.90		902	21.3
	3715			402
	46.28		7	18.04
	48.55			+37.03
	50.65			
	52.90	55.124		
	55.10	55.12		
	57.29	55.02		
	59.55			
	1.80			
49612	4.00			
	4612			
	8.40			
	10.60	12.820		
	12.80	12.82		
	15.00	11005		
6410	17.30		7	1804
	1410	7 55.070		
	37.430		+	37.03
	12.820			
	55.125			
	55.124			
	56.124			

11 7 49.29

R 5 41.98·
R 5 36.88·

R 1 52.55·
R 1 49.72·

21 10 12.3

S

Sun

h m s
13 38 11
° ′
−10 13

0.11581

1881 Oct. 18/19

h	m	s		m	s	m	s	
13	36	43.53		37	43.2	38	57.85	
		45.70	47.756		45.5		56.85	58.970
		47.60	47.76		47.6		58.95	58.97
		49.95			49.2		1.00	
	23878	52.00		2370	51.5	29485	3.20	
		3878			370		4485	
		54.20		37	47.40		7.25	
		58.20			− 42.87		9.48	
		0.30					11.50	
		2.40	4.494				13.70	15.763
		4.55	4.49				15.87	15.76
		6.60	4.57				18.00	15.80
		8.60					19.90	
		10.80					22.00	
	4045	12.80				14187	24.17	
		4045					5187	
		17.00					28.40	
		19.40	21.380				30.55	32.636
		21.50	21.38				32.58	32.64
		23.55	12914				34.80	15161
	10690	25.45		37	4740	16318	36.85	
		690	37 4.530				1318	39 15.780
					− 42.88			

R 7 50.55

S

Sun

h m s
13 41 57
° ′
−10 35

0.11581

Oct. 19/20

13	40	30.00		41	23.0	42	41.00	
		32.00	34.100		25.1		43.00	45.184
		34.00	34.10		26.1		45.25	45.18
		36.20			28.5		47.27	
	17050	38.30		1333	30.0	2592	49.40	
		2050			333		2592	
		42.50		41	26.66		53.70	
		44.55			− 35.71		55.80	
		46.78					57.80	
		48.88	50.944				0.00	2.067
		50.95	50.94				2.00	2.07
		53.00	50.97				4.15	2.10
		55.15					6.15	
		57.23					8.32	
	45850	59.46				1860	10.68	
		850					1860	
		3.70					14.80	
		5.80	7.840				16.85	19.020
		7.85	7.84				19.00	19.02
		9.85	10594				21.15	12420
	3920	12.00		41	2666	9510	23.30	
		3920	40 50.955				4510	43 2.085
					− 35.71			

R 1° 28.18

120 x
α Can. Min.
h m s
7 33 7
+5° 32′
0.11581
1881
Oct. 20

7 32 52.42 33 1.5
54.80 56.720 3.3
56.80 5672 5.5
58.60 7.0
28360 0.98 253 8.0
3360 253
5.00 33 5.06 +9.17 12.27
6.78 +8.21 7.03 12.23
8.92 4.68 12.16
11.15 13.231 +2.32 12.07
13.15 1323 −0.10 12.00
15.20 13.31 2.34 11.93
17.35 4.64 12.24
19.68 7.03 11.97
11908 21.85 9.39 12.11
2908
25.70 14.86 12.44
27.87 29.902 16.40 12.20
29.75 2990 18.75 12.20
31.96 14662 21.10 12.05
14951 34.78 33 5.06 −23.57 12.19
4951 33 13.270
56.720 + 8.21
29.902 12.157
13.311 12.140
13.231
13.271

7 33 7.97

R 40 37.58
R 40 37.70

40 37.64

5 31 38.1

---

122 x
β Gem.
h m s
7 38 5
+28° 19′
0.11581

7 —
—
—
—
—
38 2.90
108.88 5.20
12.098 7.38
9.75 12.103
12.00 12.10 38 38.9
14.27 41.1
16.93 43.4
19.00 45.6
10893 21.50 2181 49.1
1893 181
61.08 26.50 38 43.62
12.216 28.60 30.980 −31.48
30.95 3098
33.15
15490 35.70
490 38 43.62
12.103

7 38 6.19

R 54 5.15

28 18 29.7

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154 x
α Urs. Maj.
h m s
10 56 23
+62° 23′
0.11581

10 55 47.83 55 36.5
52.35 56.690 37.5
56.55 5669 39.1
1.22 42.0
28345 5.50 2006 45.5
3345 06
14.32 55 40.12
18.78 + 53.02
23.36
27.58 32.108
31.90 32.11 57 19.6
36.38 32.19 24.5
41.00 29.0
45.65 32.1
28897 50.00 1391 33.7
1897 391
59.00 57 27.82
3.20 7.700 −55.67
7.55 770
12.18 18439
3850 16.57 55 40.12
3850 56 32.150 57 27.82
56.690 + 52.03
7.700 − 55.67
32.195 107.70
32.108
32.151

10 56 24.23

R 50 4.15
R 50 3.88

50 4.01

62 23 3.2

		156 ×				164				166		
		δ Leonis				β Leo.			×	γ Urs. Maj		
		h m s				h m s				h m s		
		11 7 49				11 43 1				11 47 35		
		° '		0.11581		° '		0.11581		° '		0.11581
		+21 10				+15 14				+54 21		
	1881	Oct. 20										
h	m s		m s									
11	7 32.80		7 31.3	11	—		11	11	47 7.0		46 46.2	
	34.95	37.274	33.0		—				10.48	14.052	50.0	
	37.30	37.27	34.4		—				14.00	14.05	52.4	
	39.50		36.4		—				17.60		55.7	
18637	41.82		1727 37.6		—				7026 21.18		2618 57.5	
	3637		227						2026		118	
	46.00		7 34.54		—				28.30		46 52.36	
	48.25		+ 20.36		—				31.75		+ 50.09	
	50.45			+4.27 7.27	43 3.00				35.30			
	52.70	54.876		+2.12 7.30	50.71 5.18				38.95	42.467		
	54.90	54.88		−0.00 7.35	7.244 7.35		43 32.9		42.55	42.47		
	57.00	54.93		2.13 7.34	9.47		34.4		46.00	42.43		
	59.35			4.28 7.14	11.42		35.9		49.48			
	1.45			6.42 7.18	13.60		37.2		53.19			
49388	3.78			8.57 7.13	15.70		1788 38.4		38220 56.68			
	4388						288		2220			
	8.30			12.83 7.17	35.66 20.00		43 35.76		3.75			
	10.36	12.696		14.97 7.03	7.134 22.00	24.264	−28.56		7.17	10.816		
	12.60	12.59		17.11 7.11	24.22	24.26			10.84	10.81		
	14.77	10986		19.25 7.20	26.45				14.40	8486		
6298	16.95		7 34.54	21.50 7.15	12132 28.65				5408 17.92		46 52.36	
	1298	7 54.905			21.32		43 35.76		4.08	47 42.450		
	37.274		+ 20.36						14.052		+ 50.09	
	12.496			7.188					10.816			
	54.935			7.197					42.430			
	54.876			11	43 1.63				42.467			
	54.905								42.448			
11	7 49.34							11	47 35.52			
R	2 12.32 ·			R	59 20.85 ·			R	51 49.30 ·			
R	2 12.32 ·							R	51 49.42 ·			
									51 49.36 ·			
21	10 11.8			15	13³ 56.5			54	20 56.1			

S

Lim.

h m s
13 45 45
° '
−10 56

0.11581

1881

Oct. 20/21

	13	44	—		45	18.8	46	28.38	
			—			21.4		30.55	32.582
			—			23.0		32.60	32.58
			—			25.2		34.70	
			—		1153	26.9	16291	36.68	
						153		1291	
+8.41	37.81	339.30	29.40		45	23.06		40.90	
6.31	37.69	37.70	31.38			+ 45.33		43.00	
4.20	37.70		33.50					45.20	
+2.08	37.78		35.70	37.703				47.45	49.409
−0.00	37.78		37.78	37.70				49.55	49.41
2.10	37.77		39.87					51.55	49.44
4.20	37.50		41.70					53.60	
6.31	37.69		44.00					55.65	
8.42	37.58	339.33	46.00				44468	57.78	
			6933					8468	
12.61	37.79	188.89	50.40					2.00	
14.71	37.67	37.778	52.38	54.520				4.25	6.306
16.43	38.09		54.52	54.53				6.40	6.30
18.88	37.82		56.70					8.38	9888
21.08	37.522	7263	58.60		45	23.06	3153	10.50	
			2260					3153	46 49.425

37.739
37.728

240

β Draconis

h m s
17 27 45
° '
+52 24

0.11581

Oct. 21

17		—			
		—			
		—			
		—			
		—			
		—			
	27	41.45	+7.81	49.26	419.68
		44.92	5.20	50.12	52.46
		48.35	+2.58	50.93	
		51.70	−0.00	51.70	
		55.00	2.60	52.40	
		58.57	5.21	53.36	
		1.90	7.81	54.09	
		5.25	−10.43	54.82	
		—			
		—			
		—			
		—			
		—			

17 27 44.83

R 50 47.05

A Rouly

5

252

γ Draconis
~~γ Ursæ Maj~~

h m s
17 53 52
° ′
+51 31

a.11581

1881
Oct. 21

h	m	s		m	s
17	53	24.85		53	16.5
		28.00	31.374		19.3
		31.40	31.37		21.4
		34.60			23.9
	15687	38.02		1073	26.2
		687			73
		44.60		53	21.46
		48.00			+ 36.44
		51.28			
		54.60	57.926		
		57.85	57.92		
		1.25	57.88		
		4.70			
		7.80			
	52133	11.25			
		7133			
		17.75			
		21.00	24.390		
		24.40	24.39		
		27.80	11576		
	12195	31.00		53	2146
		2195	53 57.900		
				+	3644

11 47 35.54

R 42 20.55·
R 42 20.52·

42 20.53·

54 20 55.8

13

S
Lim.

h m s
13 .53 21
° ′
−11 38

0.11581

Oct. 22/23

52	3.1	54	14.50	
	4.9		16.50	18.760
	7.0		18.85	18.76
	8.5		20.90	
342	10.7	9380	23.00	
	342		4380	
52	6.84		27.20	
			29.25	
			31.30	
			33.45	35.589
			35.55	35.59
			37.70	35.64
			39.85	
			41.90	
		32030	44.10	
			5030	
			48.30	
			50.40	52.520
			52.45	52.52
			54.60	7128
52	684	26260	56.85	
			1260	54 35.615

R 33 0.95

322 x

η Pegasi

h m s
22 37 30
° ′
+29 36

Oct. 23

0.11581

22	37	11.62		37	4.2
		13.95	16310		5.7
		16.30	16.31		7.6
		18.68			9.1
	8155	21.00		373	10.7
		3155			373
		25.75		37	746
		28.23			+27.84
		30.52			
		32.75	35.283		
		35.30	35.28	38	8.2
		37.65	35.32		9.9
		40.00			11.8
		42.40			13.3
	31755	44.75		584	15.2
		4755			484
		49.60			11.68
		52.00	54.330		−36.38
		54.35	5433		
		56.70	70.64		
	27165	59.00		37	7.46
		2165	37 35.300	38	11.68
		16.310		+	27.84
		54.330		−	36.38
		35.320			64.22
		35.283			
		35.301			

329 x

α Pegasi

h m s
22 58 54
° ′
+14 34

0.11581

22	58	38.30		58	22.5
		40.50	42.620		23.8
		42.70	42.62		25.2
		44.68			26.8
	21310	46.92		1265	28.2
		1310			265
		51.00		58	2530
		53.28			+34.37
		55.40			
		57.62	59.669		
		59.72	59.67	59	31.8
		1.85	59.67		33.2
		3.95			34.5
		6.00			36.0
	53702	8.20		1732	37.7
		8702			232
		12.35		59	34.64
		14.57	16.720		−34.97
		16.78	16.72		
		18.90	11934		
	8360	21.00		58	25.30
		3360	58 59.670	59	34.64
		42.620		+	34.37
		16.720		−	34.97
		59.670			69.34
		59.669			
		59.669			

22 58 54.31

R 37 8.42.
R 37 7.85.

37 8.14.

R 38 57.50.
R 38 59.92.

14 34 29.3

S

Sun

h m s
14 2 0
° '
−12 20

0.11581

1881
Ex. hour

Oct. 24/25

603

o Sagittarii

h m s
18 47 57
° '
−26 26

0.11581

Oct. 25

h m	s		m	s	m	s	
	31.95			21.0		—	
	34.15	36130		23.0		—	
	36.10	36.13		24.4		—	
	38.20			25.9		—	
18063	40.25		1217	27.4		—	
	3065			217			
	44.45		24.34			—	
	46.55					—	
	48.70		+4.22	5.02	31.70	0.80	
	50.80	53.021	+2.04	5.27	5.283	3.18	
	53.00	53.02	−1.00	5.32		5.32	
	55.27	53.11	2.11	5.29		7.40	
	57.27					—	
	59.55		6.34	5.26		11.60	
47719	1.60		8.46	5.54		14.00	
	2719						
	5.95		12.67	5.33	27.15	18.00	
	7.90	10100	14.78	5.40	5.43	20.18	22.340
	10.00	10.10	16.40	5.32		22.22	22.34
	12.35	10623	+19.01	5.57		24.55	
5050	14.30			24.34	11170	26.75	+24.19 5.56
	050	− 53.065				1170	
			5.356 5.350				

18.	47	38.32		47	26.4
		40.70	43.000		28.5
		43.13	43.00		30.5
		45.25			32.4
	21500	47.60		1521	34.3
		·1500			21
		52.25		47	3042
		54.45			+30.98
		56.80			
		59.00	1.389		
		1.38	1.39		
		3.62	1.42		
		5.90			
		8.30			
	1250	10.80			
		1250			
		15.20			
		17.60	19.852		
		19.80	19.85		
		22.18	12285		
	9926	24.48		·47	3042
		4926	48 1.405		
		43.000		+	30.98
		19.852			
		1.426			
		1.389			
		1.407			

R 5. 33.70

R 36 40.30.
R 36 40.58.

36 40.44.

275		289		138	
β Cygni		γ Cygni		α Hydrae	
h m s 19 25 58 ° ′ +27 43	0.11581	h m s 20 18 1 ° ′ +39 53	0.11581	h m s 9 21 47 ° ′ −8 9	0.11581

19	25	40.45		25	25.13
		42.80	45.154		27.8
		45.20	45.15		29.3
		47.52			31.0
	22577	49.80		1462	32.8
		2577			462
		54.38		25	29.24
		56.80			+34.53
		59.00			
		1.45	3.748		
		3.78	3.75		
		6.00	3.79		
		8.42			
		10.80			
	3373	13.10			
		3373			
		17.75			
		20.10	22.440		
		22.47	22.44		
		24.70	12759		
	11220	27.18		25	29.24
		1220	26 3.770	+	34.53
		45.154			
		22.440			
		3.797			
		3.748			
		3.772			

20						
					18	41.4
						44.0
						45.9
						47.7
					2281	49.1
						281
					18	45.62
						−39.34
18	30.48	−24.20	6.28	12.57		
	33.27	−26.48	6.29	6.285		
					18	45.62

9	21	32.00		21	17.3
		34.00	36146		18.8
		36.00	36.15		20.0
		38.25			21.7
	18073	40.18		1016	23.8
		3073			16
		44.52		21	2032
		46.50			+ 32.42
		48.60			
		50.60	52.724		
		52.70	52.72		
		54.80	52.76		
		56.90			
		58.90			
	47452	1.00			
		2452			
		5.25			
		7.25	9.380		
		9.40	9.38		
		11.48	10553		
	4690	13.52		21	2032
		4690	21 52.740	+	32.42
9	21	47.39			

R 29 12.68 ·

R 20 40.82 ·

R 19 2.38 ·

8 8 45.8

140 ✗

θ Urs. Maj.

h m s
9 24 56
° ′
+52 13

0.11581

1881

Oct. 25

h m s
9 24 31.15
34.20 37.670
37.50 3767
41.10
18835 44.40
3835
51.40
54.30
57.75
1.30 4.600
4.60 460
8.10 4.65
11.30
14.65
4140 18.00
4140
24.90
28.30 31.630
31.55 3163
35.00 12930
15815 38.40
815 25 4.625
37670
31630
4.650
4.600
4.625

m s
24 33.7
37.0
39.7
41.5
1949 43.0
449
24 38.68
+ 25.64

24 38.98
+ 25.64

9 24 57.17

R - 23.58.

52 12 36.9

308

β Cephei Sc.

h m s
9 27 11
° ′
109 57

0.11581

9 27 —
—
59.90 + 48.35 48.25 143.72
5.38 42.29 47.67 47.906
11.55 + 36.25 47.80 1471
—
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28 22.2
26.0
29.5
32.3
37.1
471
28 29.42
- 41.51

28 29.42

21 27 955 47

R 17 59.38.

70 21 55.2

✗ 153

β Urs. Maj.

h m s
10 54 41
° ′
+57 1

0.11581

10 54 11.00
14.90 18.670
18.70 1867
22.45
9335 26.30
4335
33.85
37.85
41.50
45.20 49.044
49.00 49.04
52.85 49.01
56.55
0.40
44140 4.20
8140 11.78
15.67 19.360
19.35 1936
23.00 9803
27.00
9680 4680 s
54 49.025

54 38.3
41.8
44.3
47.0
2208 49.4
208
54 44.16
+ 4.86

54 44.16
+ 4.86

R 12 44.38.

154
×
α Urs. Maj.
h m s
10 56 23
° ′
+62 23

0.11581

10 55 46.10
52.65 57.010
57.10 57.01
1.35
28505 5.85
3505
14.75
19.18
23.70
28.00 32.523
32.48 32.52
36.90 32.60
41.38
46.00
29271 50.32
2271
57.30
3.75 8.190
8.10 8.19
12.70 18520
4095 17.10
4095 56 32.560
57.010
8.170
32.590
32.523
32.556

55 46.0
48.5
52.0
55.2
2604 58.7
104
55 52.08
+ 40.48

55 52.08
+ 40.48

10 56 24.42

R 50 7.58
R 50 7.78

50 7.68

62 23 1.7

155
ψ χ Urs. Maj.
h m s
11 8 0
° ′
+45 8

0.11581

11

−20.47 7.48
−23.0 7.45

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3 16.00 −8.78 7.22
19.00 11.71 7.29
24.95 17.50 7.40
27.95 30.800
30.75 30.80
33.70 26.23 7.37
15400 36.65 −29.34 7.31
400

7.380
7.360

3 42.1
45.0
14.51 47.1
7.255 49.2
2349 51.5
349
3 46.98
37.01 −39.62
7.505

3 46.98

R 53 54.10
R 53 42.02

×156
δ Leo.
h m s
11 7 49
° ′
+21 10

0.11581

11 7 33.28
35.40 37.606
37.55 37.60
39.80
18803 42.00
3803
46.35
48.66
50.83
53.00 55.250
55.27 55.25
57.50 55.31
59.74
1.90
49725 4.00
4725
8.50
10.85 13.020
13.00 13.02
15.30 11 062
6510 17.45
1510 7 55.280
37.606
13.020
55.313
55.250

7 17.5
19.5
21.0
22.5
10.45 24.0
45
7 20.90
+ 34.38

7 20.90
+ 34.38

11 7 49.46

R 1 57.35
R 1 57.60

1 57.47

21 10 10.8

0.11581

166†

γ Urs. Maj.

h m s
11 47 35
° ′
+54 21

Oct. 25

1881

0.11581

h	m		s		m	s
11	47		7.56		46	44.9
			11.00	14.528		47.0
			14.54	1453		48.9
			18.00			51.0
		7264	21.54		2451	53.3
			2264			451
			28.54		46	49.02
			32.22			+53.88
			35.88			
			39.35	42.860		
			42.90	4286		
			46.55	4294		
			49.88			
			53.45			
		38574	56.97			
			3574			
			4.00			
			8.00	11.360		
			11.40	1136		
			14.98	8589		
		5680	18.42		46	49.02
			680	47 42.900		
			14528		+	53.88
			11.360			
			42.944			
			42.860			
			42.902			

11 47 35.65

S

Lm-

h m s
14 4 57
° ′
−12 40

Oct. 25/26

0.11581

h	m		s	
14	3		22.75	
			24.58	26.870
			26.87	2677
			28.95	
		13385	31.20	
			3435	
			35.37	
			37.53	
			39.40	
			41.58	43.793
			43.87	4379
			45.85	43.76
			47.90	
			50.24	
		39414	52.40	
			3414	
			56.53	
			58.60	0.762
			0.83	076
			2.85	8753
		381	5.00	
			381	3 43.775

m		s	
5		35.20	
		37.33	39.546
		39.63	3956
		41.70	
	19773	43.87	
		4773	
		48.00	
		50.20	
		52.20	
		54.50	56.506
		56.50	5650
		58.70	56.45
		0.82	
		2.78	
	50855	4.85	
		5855	
		9.05	
		11.22	13.350
		13.30	1335
		15.48	11290
	6675	17.70	
		1675	5 56.475

R 51 47.82.
R 51 48.20.

51 48.01.

54 20 54.5

A Rouly

240 X

β Draconis

h m s
17 27 45
° '
+52 24

Oct. 26

0.11581

17	27	18.0			
		21.4	24.820		
		24.83	2482		
		28.27			
	12410	31.60			
		2410			
		38.36			
		41.83			
		45.15			
		48.50	51.932		
		51.82	51.93	28	27.0
		55.28	51.93		29.6
		58.70			32.1
		2.10			34.6
	46739	5.65		1610	37.7
		1739			110
		12.30		28	3220
		15.60	19.040		−40.27
		19.00	19.04		
		22.30	10386		
	9520	26.00			
		4520	27 51.930	28	32.20
				−	40.27
		51932			

17 27 44.70

R 50 16.92·

52 23 38.7

X 241

α Ophiuchi

h m s
17 29 27
° '
+12 39

0.11581

17	29	11.60			
		13.70	15.794		
		15.77	15.79		
		17.90			
	7897	20.00			
		2897			
		24.20			
		26.30			
		28.50			
		30.50	32691		
		32.70	3269	30	2.6
		34.80	32.74		4.4
		36.95			6.2
		39.12			7.6
	29422	41.15		300	9.2
		2422			300
		45.42		30	6.00
		47.56	49.702		−33.29
		49.68	49.70		
		51.85	6549		
	24851	54.00			
		4851	29 32.715	30	6.00
				−	33.29
		32691			

17 29 26.86

R 34 20.42·
R 34 20.45·

34 20.43·

12 39 3.0

252
X
γ Draconis

h m s
17 53 52
° '
+51 31

0.11581

17	53	25.00		53	12.0
		28.27	31.546		15.0
		31.60	31.55		17.4
		34.86			19.6
	15773	38.10		862	22.2
		773			362
		44.80		53	1724
		47.96			+40.84
		51.45			
		54.78	58.063		
		57.95	58.06		
		1.35	58.11		
		4.70			
		8.18			
	52257	11.40			
		7257			
		18.00			
		21.40	24.680		
		24.60	2468		
		28.00	11623		
	12340	31.40		53	1724
		2340	53 58.085		
		31.546		+	40.84
		24680			
		58.113			
		58.063			
		58.088			

0.11581

17 53 51.05

R 42 17.75·
R 42 17.58·

42 17.66·

51 30 30.3

260 × α Lyrae
h m s
18 32 57
° ′
+38 41
0.11581

603 σ Sagittarii
h m s
18 47 57
° ′
−26 26
0.11581

289 γ Cygni
h m s
20 18 1
° ′
+89 53
0.11581

1881 Oct. 26

h m s
18 32 36.28 | m s 32 14.2 | 18 | 20 17 ~~39.70~~
38.86 41466 | 16.1 | ~~42.35~~
41.39 41.47 | 17.5 | 45.00
44.10 | 19.3 | 47.70
20733 46.70 | 883 21.2 | 50.50
7.33 | 383
52.03 | 32 17.66 | 56.00
54.80 | +46.03 | 58.80
57.60 | 1.20
0.14 2711 | 4.85 7.191
2.60 2.71 | 48 27.7 | 7.55 7.19 | 18 40.7
5.30 2.68 | +2.30 1.85 48 4.15 | 29.6 | 10.12 | 43.1
7.90 | 4.61 1.61 7.68 6.22 | 31.2 | 12.85 | 45.0
10.65 | 6.41 1.75 1.920 8.66 | 33.0 | 15.35 | 46.6
2440 13.38 | 9.23 1.77 11.00 | 1560 34.5 | 6472 18.30 | 2254 50.0
2440 | 60 | 6472 | 254
18.60 | 13.82 1.83 8.33 15.65 | 48 31.20 | 22.90 | 18 45.08
21.40 23906 | 16.13 1.72 11666 17.85 20.116 | +29.42 | 25.30 28.120
23.95 2390 | 18.44 1.56 20.00 2011 | 28.00 28.12
26.38 12537 | 20.74 1.74 22.48 | 30.90
11953 29.20 | 32 17.66 −23.12 1.48 10058 24.60 | 14060 −33.50
1953 33 2.695 | 058 | 48 31.20 | 4060 18 6.872 18 45.08
41466 | + 46.03
23906 | 1.793
2.686 | 1.779
2.711
2.698

18 32 56.13

R 46 36.28 · | R 37 41.70 · | R 20 42.20 ·
R 46 36.45 · | R 37 44.12 · | R 20 41.95 ·

46 36.36 · | 37 44.12 · | 20 42.07 ·

38 40 48.1

294 x

α Cygni

h m s
20 37 26
° ′
+44 52

0.11581

20	37	2.80		36	39.8
		5.65	8.570		41.8
		8.42	8.57		44.6
		11.50			46.7
	4285	14.48		2214	48.5
		4285			214
		20.20		36	4428
		23.00			+ 47.58
		26.00			
		29.00	31.836		
		31.87	31.84		
		34.77	31.89		
		37.70			
		40.45			
	28652	43.53			
		1652			
		49.45			
		52.30	55.208		
		55.29	55.21		
		58.00	6378		
	27604	1.00		36	4428
		2604	37 31.865		
		8.570		+	47.58
		55.208			
		31.889			
		31.836			
		31.862			

20 37 25.02

298 x

ε Cygni

h m s
20 41 27
° ′
+33 32

0.11581

20	41	8.46		41	15.5
		10.82	13396		17.5
		13.44	13.39		20.0
		15.90			21.7
	6698	18.36		982	23.5
		1698			482
		23.26		41	1964
		25.58			+ 13.47
		28.02			
		30.60	33.077		
		33.10	33.08		
		35.50	33.14		
		38.03			
		40.60			
	29769	43.00			
		2769			
		48.00			
		50.45	52906		
		52.78	52.90		
		55.40	6629		
	26453	57.90		41	19.64
		1453	41 33.110		
		13.396		+	13.47
		52.906			
		33.151			
		33.077			

x 303

ζ Cygni

h m s
21 7 56
° ′
+29 45

0.11581

21	7	38.05		7	46.4
		40.45	42.882		48.3
		42.78	42.88		49.8
		45.28			51.2
	21441	47.85		2483	52.6
		1441			483
		52.33		7	4966
		54.65			+12.17
		57.17			
		59.48	1.822		
		1.77	1.82		
		4.17	1.84		
		6.58			
		8.98			
	1640	11.27			
		1640			
		16.00			
		18.42	20.796		
		20.86	20.79		
		23.00	12367		
	10398	25.70		7	4966
		398	8 1.830		
		42.882		+	12.17
		20.796			
		1.839			
		1.822			
		1.830			

R 20 36.70 ·
R 20 36.98 ·

20 36.84

44 51 55.5

R 40 45.32 ·
R 40 45.35 ·

40 45.33 ·

R 27 52.15 ·
R 27 49.60 ·

306

α Cephei

h m s
21 15 48
° '
+62 5

0.11581

1881

Oct. 26.

h 21	m 15		s		m	s
			—			
			—			
			—			
			—			
+17.63	54.63	437.54	37.00			
		54.692	—			
6.80	54.65		45.85			
+4.36	54.93		50.57			
−0.06	54.64		54.64		16	47.8
4.39	54.51		58.90			50.7
8.82	54.73		3.55			54.0
13.22	54.63		7.82			57.0
17.65	54.85		12.50		2709	1.4
						20.9
26.44	54.41	273.57	20.85		16	54.18
30.84	54.86	54.714	25.70	29.994		−59.48
35.26	54.69		29.95	29.99		
39.66	54.81		34.47			
−44.20	54.80	14997	39.00			
			4997		16	54.18
54.703						
54.701						
21	15		46.82			

X 307

β Aquarii

h m s
21 25 22
° '
−6 5

0.11581

21	25	s		24	s
		6.27			56.3
		8.25	10.352		58.4
		10.38	1035		59.8
		12.36			1.0
	5176	14.50		2981	2.6
		176			481
		18.73		24	5962
		20.78			+27.33
		22.80			
		24.86	26996		
		26.96	2699		
		29.00	26.92		
		31.24			
		33.29			
	24296	35.30			
		6296			
		39.35			
		41.32	43490		
		43.58	4349		
		45.50	5384		
	21745	47.70		24	59.62
		1745	25 26.955		
		10.352		+	27.33
		43.490			
		26.921			
		26.996			
		26.958			

0.11581

21			
−18.13	18.67	27	36.80
24.21	18.54	97.21	42.75
		18.605	
36.26	19.20		55.46
42.30	18.70	94.55	1.00	7.296
48.95	19.00	18.41	7.35	7.30
54.40	18.90		13.30
−60.62	18.75	3648	19.37
			3648
18.707			
18.823			

308

β Cephei

h m s
21 27 11
° '
+70 3

0.11581

	s
27	53.2
	57.6
	1.5
	5.5
98	12.0
	98
28	1.56
	−33.14
29	8.4
	12.0
	17.2
	21.2
850	26.2
	350
29	17.00
	−118.18
28	1.96
29	17.00

R 8 38.58.
R 8 38.62.

R 16 39.98.

R 10 8.22.
R 10 38.48.

8 38.60.

62 5 40.8

			X 309				322				619		
							X						
			ε Pegasi				η Pegasi				α Piscis		
			h m s				h m s				h m s		
			21 38 25				22 37 30				22 51 9		
			° ′		0.11581		° ′		0.11581		° ′		0.11581
			+9 20				+29 36				−30 15		
	21	38 9.10		38 1.2	22	37 12.37		36 55.0	22	3 —			
		11.27	13260	2.4		14.60	17048	57.0		—			
		13.30	13.26	3.8		17.14	1705	59.0		—			
		15.18		5.2		19.33		0.8		—			
		6630 17.45		191 6.5		8524 21.80		2947 2.9		—			
		16.30		191		3524		447					
		21.65		38 3.82		26.40		36 58.94	+9.55 13.70	51 4.15			
		23.85		+26.19		28.85		+ 37.01	7.17 13.77	123.93 6.60			
		25.90				31.10			4.77 13.67	13.770 8.90			
		27.90	30039			33.65	35,920		+2.36 13.76	11.40	13.776		
		30.00	3004			35.85	3592		−0.00 13.73	13.73	1378	51 52.9	
		32.20	29.98			38.30	35.99		2.38 13.82	16.20		54.4	
		34.25				40.78			4.78 13.82	18.60		56.4	
		36.30				43.00			7.17 13.83	21.00		58.2	
		27035 38.30				32328 45.35			9.57 13.8	2398 23.40		2816 59.7	
		0.35				5328				3398		316	
		42.60				50.19			14.33 13.92	69.33 28.25		51 56.32	
		44.65	46,700			52.58	54.942		16.72 13.83	13.866 30.55	32990	−42.55	
		46.65	46.70			54.92	5494		19.11 13.89	33.00	3299		
		48.50	5996			57.27	7199		21.50 −13.90	35.40			
		23350 50.80		38 3.82		27471 59.75		36 58.94	−23.96 13.79	6495 37.75			
		3350	38 30.010			2471	37 35.955			1495		51 56.32	
		13.260		+ 26.19		17.048		+ 37.01					
		46.700				54.942			13.818				
		29.980				35.995			13.804				
		30.039				35.920			22	51 8.87			
		30.069				35.957							
	R	51 40.85 ·			R	35 43.62 ·			R	25 36.60 ·			
	R	51 40.38 ·			R	35 43.65 .							
		51 40.61 ·				35 43.63 ·							
									30	14 49.1			

1881phae.proj.1522.

1881

Oct. 26

154

α Urs. Maj

h m s
22 56 24
° '
+117 37

0.11581

h m s
22. —
—
—
—
—
+17.83 27.73 56 9.90
13.35 27.75 248.40 14.40
8.40 27.50 27.60 18.60
+4.44 27.44 23.00 27.592.
−0.00 27.75 27.75 27.59
4.40 27.60 32.00
8.84 27.49 36.38
13.35 27.60 40.95
17.81 27.54 4833 45.35 27.54
6833
—
—
—
—
—

m s
56 42.2
44.2
48.8
52.4
2426 55.0
426
56 48.52
−20.92
57 40.8
43.0
46.9
51.0
2351 53.4
351
57 47.02
−79.42
56 48.52
57 47.02

22 56 24.47

− 39 47.75 '
− 39 14.48 '

41 23 1.4

×138

α Hydrae

h m s
9 21 47
° '
−8 9

0.11581

9 21 32.05
34.00 36.240
36.85 36.24
38.40
18120 40.40
3120
44.60
46.58
48.97
50.88 52.972
53.19 52.97
54.87 53.01
57.16
59.18
47675 1.32
2675
5.70
7.60 9.780
9.73 9.78
11.87 10.602
4890 14.00
4890 21 52.990
36.240
9.780
53.010
52.972
52.991

9 21 47.42

21 25.3
26.6
28.4
30.0
1419 31.6
41.9
21 28.38
+24.61
21 28.38
+ 24.61

R 20 13.30 '
R 20 13.42 '

20 13.36 '

8 8 45.9

140

θ ϑ Urs. Maj.

h m s
9 24 56
° '
52 13

0.11581

9 24 —
—
—
—
—
—
—
—
+6.73 4.63 32.85 57.90
+3.33 4.53 4.693 1.20
−0.00 4.70 4.70
3.36 4.64 8.00
6.74 4.64 11.38
10.10 4.60 14.70
13.49 4.51 18.00
20.21 4.79 23.50 25.00
23.57 4.65 4.70 28.22 31.668
26.95 4.70 31.65 31.67
30.32 4.68 35.00
33.79 4.68 15834 38.47
834
4.696
4.696

9 24 57.21

25 37.9
40.1
42.9
45.8
2151 48.4
151
25 43.02
−38.42
25 43.02

R 1 17.45 '

52 12 36.7

142 X

ε Leo.

h m s
9 39 8
° '
+24 19

0,11581

9 38 52.70
54.80 57.184
57.18 57.18
59.47
28592 1.77
3592
6.20
8.56
10.85
13.00 15.288
15.25 15.29
17.55 15.31
19.83
22.00
13759 24.35
4759
28.90
31.20 33.440
33.50 33.44
35.65 15062
16720 37.95
1720 39 15.300
57.184
33.440
15.312
15.288
- 15.300

38 32.0
33.7
35.0
36.6
1755 38.2
255
38 35.10
+40.20

38 35.10
+ 40.20

R 53 9.08
R 53 8.92

53 9.00

164 X

β Leonis

h m s
11 43 1
° '
+15 14

0.11581

11 42 46.40
48.48 50.632
50.60 50.63
52.78
25316 54.90
316
59.20
1.28
3.50
5.60 7.752
7.70 7.75
9.87 7.75
12.00
14.23
6976 16.38
6976
20.58
22.75 24.880
24.87 24.88
27.00 13551
12440 29.20
2440 43 7.750
50.632
24.800
7.716
7.752
7.734

42 27.6
29.1
30.5
32.4
1534 33.8
34
42 30.68
+37.07
43 33.4
35.0
37.4
38.8
1848 40.2
348
43 36.96
-29.21

42 30.68
43 36.96
+ 37.07
- 29.21
66.28

11 43 1.76

R 59 24.22
R 59 24.15

59 24.18

15 13 55.3

166 X

γ Urs. Maj.

h m s
11 47 35
° '
+54 21

0.11581

11 47 7.56
11.14 14.674
14.60 14.67
18.37
7337 21.70
2337
28.90
32.37
36.00
39.55 43.031
42.93 43.03
46.40 43.02
50.18
53.70
38728 57.25
2728
4.28
7.82 11.360
11.40 11.36
14.83 8603
5680 18.47
680 47 43.025
14.674
11.360
43.017
43.031
43.024

46 38.3
41.0
44.2
46.1
2179 48.3
179
46 43.58
+59.44

46 43.58
+ 59.44

11 47 35.67

R 51 45.42
R 51 45.10

51 45.26

54 20 54.0

173 ⊥

E Urs Maj

h m s
12 48 48
° ′
+56 36

1881 Oct. 26

0.11581

h m s
12 48 18.00
21.90 25.610
25.70 25.61
29.45
12805 33.00
2805
40.45
44.40
48.30
52.00 55.694
55.75 55.69 49 18.1
59.55 55.68 22.2
3.20 23.7
7.00 26.5
50125 10.60 1209 29.8
5125 209
18.30 49 24.18
21.85 25.760 +28.50
25.80 25.76
29.50 11137
12880 33.35
2880 48 55.685 49 24.18
25,610
25,760 + 28.50
55.685
55.694
55.689

S minute doubtful

Lun.

h m s
14 8 42
° ′
−13 1

Oct. 26/27

0.11581

14 6 59.20
1.35 3.410
3.37 3.41
5.58
1705 7.55
1705
11.85
14.00
16.20
18.20 20.383
20.35 20.38
22.50 20.37
24.65
26.70
18345 29.00
345
33.20
35.30 37.330
37.30 37.33
39.35 4074
18665 41.50
3665 7 20.375

X.

9 12.20
14.20 16.268
16.28 16.27
18.28
8134 20.38
3134
24.80
26.85
29.00
31.10 33.294
33.30 33.29
35.35 33.30
37.50
39.80
29965 41.95
2965
46.00
48.25 50.330
50.30 50.33
52.40 6660
25165 54.70
165 9 33.295

R 37 57.00. – – 32.42
R 37 50.72.

37 50.86.

252 X

γ Draconis

h m s
17 53 52
° '
+ 51 31

0.11581

Oct. 27

17	53	25.15		52	59.5
		28.30	31.640		2.3
		31.60	31.64		4.7
		34.85			6.8
	15820	38.30		225	9.2
		820			225
		44.88		53	4.50
		48.15			53.65
		51.42			
		54.90	58.102		
		58.00	58.10		
		1.37	58.21		
		4.70			
		8.10			
	52292	11.40			
		7292			
		18.20			
		21.05	24.780		
		24.80	24.78		
		28.00	11642		
	12390	31.55		53	4.50
		2390	53 58.155		
		31.640		+	53.65
		24.780			
		58.210			
		58.102			
		58.156			

17 53 51.02

R 42 7.88·
R 42 7.78·

42 7.83·

51 30 30.1

257 X

η Serpentis

h m s
18 15 13
° '
−2 56

0

0.11581

18	14	56.95		14	44.3
		59.00	1.060		45.7
		1.00	106		47.0
		3.15	:		48.7
	530	5.20		2359	50.2
		530			359
		9.35		14	47.18
		11.40			+30.41
		13.50			
		15.50	17.594		
		17.65	17.59		
		19.65	17.59		
		21.70			
		23.75			
	15835	25.85			
		6835			
		29.98			
		32.00	34.120		
		34.12	34.12		
		36.20	3518		
	17060	38.30		14	47.18
		2060	15 17.590		
		1.060		+	30.41
		34.120			
		17.590			
		17.593			
		17.592			

R 7 7.25·
R 7 6.88·

7 7.06·

260 X

α Lyrae

h m s
18 32 57
° '
+38 41

0.11581

18	32	36.44		32	16.0
		39.00	41.680		17.7
		41.60	41.68		20.3
		44.36			22.2
	20840	47.00		1000	23.8
		840			0.0
		52.25		32	2.000
		54.90			+42.80
		57.50			
		0.10	2.789		
		2.80	2.79		
		5.48	2.82		
		8.00			
		10.75			
	2510	13.32			
		2510			
		18.70			
		21.27	23.974		
		24.00	23.97		
		26.60	12565		
	11987	29.30		32	20.00
		1987	33 2.805		
		41.680		+	42.80
		23.974			
		2.827			
		2.789			
		2.808			

18 32 56.11

R 31 37.98·
R 31 37.82·

31 37.90·

38 40 48.0

603 +

o Sagittarii

h m s
18 47 57
° '
−26 26

0.11581

1881

Oct. 27

h	m	s		m	s
18	47	38.76		47	23.8
		41.00	43378		25.3
		43.43	4338		27.0
		45.71			28.4
	21689	47.99		1345	30.0
		1689			345
		52.50		47	26.90
		54.82			+ 34.86
		57.10			
		59.44	1.746		
		1.70	1.75		
		4.00	1.78		
		6.45			
		8.70			
	1571	11.00			
		1571			
		15.55			
		17.87	20192		
		20.22	20.19		
		22.47	12357		
	10096	24.85		47	26.90
		096	48 1.765	+	34.86
		43378			
		20.192			
		1.785			
		1.746			
		1.765			

R 36 32.10
R 36 32.32

36 32.21

269 + :

λ Aquilae

h m s
19 00 00
° '
−5 3

0.11581

h	m	s		m	s
18	59	43.81		59	28.2
		45.98	48.070		30.4
		48.00	48.07		32.0
		50.20			33.8
	24035	52.30		1594	35.0
		4035			94
		56.50		59	31.88
		58.67			+ 33.18
		0.90			
		3.00	5.073		
		5.10	5.07		
		7.20	5.06		
		9.30			
		11.46			
	4566	13.53			
		4566			
		17.86			
		19.92	22.056		
		22.00	22.06		
		24.20	13013		
	11028	26.30		59	31.88
		1028	0 5.065	+	33.18
		48.070			
		22.056			
		5.063			
		5.073			
		5.068			

R 30 25.02
R 30 25.28

30 25.15

277 +

γ Aquilae

h m s
19 40 40
° '
+10 20

0.11581

0.11581

h	m	s		m	s
19	40	24.15		40	25.2
		26.10	28.246		26.5
		28.25	2825		27.6
		30.30			29.5
	14123	32.43		1398	31.0
		4123			398
		36.60		40	27.96
		38.70			+ 17.04
		40.80			
		43.00	45.000		
		45.00	4500		
		47.00	45.01		
		49.20			
		51.30			
	40500	53.40			
		4500			
		57.60			
		59.70	1.772		
		1.76	1.77		
		3.80	8002		
	886	6.00		40	27.96
		886	40 45.005	+	17.04
		28.246			
		1.772			
		45.004			
		45.000			
		45.004			

19 40 39.12

R 52 25.40
R 52 25.28

52 25.34

10 19 50.2

280 X

α Aquilae

h m s
19 45 2
° '
+8 34

0.11581

19	44	46.68		44	56.0
		48.75	50.840		57.7
		50.82	50.84		59.5
		52.95			0.9
	25420	55.00		2965	2.4
		420			465
		59.20		44	59.30
		1.42			+8.19
		3.40			
		5.47	7.566		
		7.65	7.45		
		9.60	7.54		
		11.67			
		13.78			
	6709	15.90			
		6809			
		20.00			
		22.12	24.236		
		24.25	24.24		
		26.39	13508		
	12118	28.42		44	59.30
		2118	45 7.495		
		50.840		+	8.19
		24.236			
		7.538			
		7.566			
		7.552			

R 38 42.78·

283 X

β Aquilae

h m s
19 49 32
° '
+6 7

0.11581

19	49	16.17		49	4.8
		18.33	20.400		6.5
		20.45	20.40		8.0
		22.47			9.8
	10200	24.58		403	11.2
		2.00			403
		28.65		49	8.06
		30.70			+28.94
		32.78			
		34.83	36.966		
		37.00	36.97	50	4.0
		39.00	37.03		5.5
		41.15			7.0
		43.28			8.7
	33269	45.30		355	10.3
		6269			355
		49.50		50	7.10
		51.60	53.664		−30.10
		53.67	53.66		
		55.70	74.06		
	26832	57.85		49	8.06
		1832	49 37.000	50	7.10
		20.400		+	28.94
		53.664		−	30.10
		37.032			59.04
		36.966			
		36.999			

19 49 31.22

R 6 9.80·
R 6 9.65·

6 9.~~65~~ 72

6 6 59.3

294 X

α Cygni

h m s
20 37 26
° '
+44 52

0.11581

20	37	3.00		36	58.0
		5.70	8.720		59.3
		8.70	8.72		1.0
		11.60			3.2
	4360	14.60		67	5.2
		4360			67
		20.30		37	1.34
		23.28			+30.65
		26.17			
		29.00	31.961		
		32.00	31.96	38	9.1
		34.90	32.02		10.8
		37.80			13.0
		40.65			15.0
	28765	43.55		656	17.7
		1765			156
		49.50		38	13.12
		52.35	55.330		−41.13
		55.30	55.33		
		58.30	64.05		
	27665	1.20		37	1.34
		2665	37 31.990	38	13.12
		8.720		+	30.65
		55.330		−	41.13
		32.025			71.78
		31.961			
		31.993			

20 37 25.00

R 21 59.62·
R 21 59.68·

21 59.6~~8~~ 5,

44 51 55.5

298 ε Cygni
h m s
20 41 27
° '
+33 32

0.11581

303 ζ Cygni
h m s
21 7 56
° '
+29 45

0.11581

306 α Cephei
h m s
21 15 48
° '
+62 5

0.11581

1881 Oct. 27

h m s m s
20 41 8.50 21 — 21 15 — 15 40.8
10.90 13400 — — 43.5
13.35 1340 — — 47.8
15.88 — — 49.9
6700 18.37 — — 2350 53.0
1700 350
23.20 — 17.63 54.83 49.13 37.20 15 47.00
25.79 — 13.22 54.72 54.791 41.50 + 7.49
28.20 — 8.80 54.80 46.00
30.70 33193 — 44.36 54.66 50.30 54800
33.20 33.19 42 6.6 — 8 33.8 0.00 55.00 55.00 5480 16 55.0
35.83 33.20 8.2 −2.37 1.95 8 4.32 35.7 4.39 54.76 59.15 59.2
38.00 9.5 4.75 1.93 7.88 6.68 37.5 8.82 54.63 3.45 2.8
40.65 10.9 7.13 2.04 1.995 9.17 39.6 13.22 54.93 8.15 6.5
29874 43.17 475 12.3 9.52 2.06 11.58 1880 41.4 17.65 54.804 9320 12.45 832 9.7
2874 475 380 4320 132
48.00 42 9.50 14.26 1.99 9.84 16.25 8 3760 — 17 2.64
50.50 53000 −36.31 16.63 2.02 1.968 18.65 20996 −35.62 — −67.85
53.00 53.00 19.02 1.98 21.00 2099 —
55.50 6640 21.39 1.91 23.30 —
26500 58.00 −23.84 1.94 10498 25.78 — 15 47.00
1500 41 33.195 42 9.50 498 8 37.60 16 2.64
13.400 − 36.31
53.000 1.981
33.200 1.980 21 15 46.78
33.193
33.196

R 41 40.20.
R 41 40.15.

41 40.17.

R 28 44.60.

R 7 57.68.
R 7 42.98.

62 5 30.9

			X 307				308				309 X		
			β Aquarii				β Cephei				ε Pegasi		
			h m s 21 25 22				h m s 21 27 11				h m s 21 38 25		
			° ' −6 5		0.11581		° ' +70 3		0.11581		° ' +9 20		0.11581
				28.9									
21	25	6.29		25 30.4	21	—		28 1.5	21	38 9.20		38 1.9	
		8.30	10374	32.5		—		4.9		11.35	13380	3.8	
		10.34	1017	34.7		—		9.3		13.30	1338	5.1	
		12.46		1628 36.3		—		13.7		15.50		6.8	
	5187	14.48		128		—		476 18.2		6690 17.55		259 8.3	
		1.87		25 32.56				476		1690		259	
		18.66		− 5.64	+24.17 19.07	26 54.90		28 9.52		21.73		38 518	
		20.70			18.13 19.01	169.00 0.88		−50.74		23.73		+24.87	
		22.75			12.08 18.88	16.777 6.80				25.90			
		24.87	26.964		+5.98 18.45	12.47	18.789			27.97	30.040		
		27.00	2696		−0.00 18.57	18.57	18.79	29 5.4		30.00	3004		
		29.00	26.89		6.03 18.50	24.53		9.2		32.04	30.07		
		31.00			12.04 18.91	31.00		16.0		34.29			
		33.30			18.13 18.82	36.95		20.0		36.30			
	24268	35.40			24.21 18.79	16910 43.00		756 25.0		27036 38.40			
		6268				7910		256		0.36			
		39.47				—		29 15.12		42.62			
		41.50	43614			—		− 116.34		44.75	46764		
		43.60	4361			—				46.75	4676		
		45.65	5378			—				48.80	6014		
	21807	47.85		(25 32.56)		—		28 9.52		23382 50.90		38 5.18	
		1807	25 26.925					29 15.12		3382	38 30.055		
		10.374		− 5.64						13.380		+ 24.87	
		43.614								46.764			
		26.994								30.072			
		26.964			21	27 9.43				30.040			
		26.979								30.056			

ARonly

R 11 9.80·
R 11 37.15·

R 51 45.40·
R 51 45.38·

51 45.39·

70 2 55.6

		311 ×			× 138					140	
		α Aquarii			α Hydrae					o Urs. Maj.	
		h m s			h m s					h m s	
		21 59 45			9 21 47					9 24 56	
		° ′		0.11581	° ′			0.11581		° ′	0.11581
		−0 53			−8 7					+52 13	
	1881	Oct. 27									
h	m s		m s								
21	58 29.40		58 15.3	9	21 32.00		21 22.0	9	—		25 6.9
	31.87	33430	16.7		34.29	36,332	23.3		—		9.5
	33.40	3343	19.0	19.20	36.45	36.33	25.1		—		10.9
	35.48		21.0		38.42		27.0		—		13.9
	16715 37.50		960 23.0		18166 40.50		1259 28.5		—		579 16.7
	1715		450		3166		259				79
	41.80		58 19.00		44.58		21 25.18	+13.47 4.47	21 51.00		25 14.58
	43.70		+30.93		46.70		+ 27.76	10.10 4.63	42.42 54.53		−6.87
	45.85				48.80			6.73 4.73	4.713 58.00		
	47.90	49.926			50.85	52.963		+3.33 4.83	1.50	4.720	
	49.90	49.94			53.00	52.96		−0.01 5.00	5.00	47.20	
	52.03	49.92			55.21	52.92		3.36 4.64	8.00		
	53.87				57.20			6.74 4.63	11.37		
	56.00				59.18			10.10 4.78	14.88		
	44943 58.28				47667 1.15			13.44 4.71	4248 18.20		
	8933				2667				4248		
	2.26				5.30				—		
	4.36	6.404			7.40	9.520			—		
	6.40	6.40.			9.50	9.52			—		
	8.45	9983			11.60	10585			—		
	3202 10.05		58 19.20		4760 13.80		21 25.18		—		25 11.58
	3202	58 49.930			4760	21 52.940					
	33.430		+ 30.73		36.332		+ 27.76				
	6.404				9.520						
	49.917				52.925						
	49.926				52.963			9	24 57.25		
	49.921				52.944						
21	59 44.28			9	21 47.44						
R	0 1.92.			R	20 8.25.			R	0 44.78.		
R	0 2.22.			R	20 8.60.						
	0 2.07.				20 8.42.						
0	53 22.8			8	8 46.0			52	12 36.5