

**APPARENT PLACES OF STARS, 2025**  
 TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	10		22		44		1039	
HIP-No.	1599		3419		5661		6732	
Name	ζ Tucanae		β Ceti		102 G. Sculptoris		94 Piscium	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>0<sup>h</sup>21<sup>m</sup></b>	<b>− 64° 43′</b>	<b>0<sup>h</sup>44<sup>m</sup></b>	<b>− 17° 50′</b>	<b>1<sup>h</sup>13<sup>m</sup></b>	<b>− 37° 42′</b>	<b>1<sup>h</sup>28<sup>m</sup></b>	<b>+ 19° 22′</b>
<b>12</b> 27 <sup>d</sup> .7	22 <sup>s</sup> 4893	60 <sup>′</sup> 029	50 <sup>s</sup> 8325	65 <sup>′</sup> 279	55 <sup>s</sup> 0853	99 <sup>′</sup> 418	03 <sup>s</sup> 1514	17 <sup>′</sup> 632
<b>1</b> 6.7	22.1299	59.338	50.7286	65.730	54.9312	99.873	03.0479	17.339
<b>1</b> 16.7	21.7805	57.981	50.6385	65.856	54.7798	99.842	02.9581	16.934
<b>1</b> 26.7	21.4025	56.416	50.5040	66.057	54.5818	99.712	02.8149	16.073
<b>2</b> 5.6	21.1120	54.253	50.3921	65.879	54.4109	98.998	02.6737	15.249
<b>2</b> 15.6	20.9064	51.497	50.3223	65.255	54.2818	97.695	02.5673	14.543
<b>2</b> 25.6	20.7118	48.441	50.2604	64.462	54.1541	96.133	02.4763	13.670
<b>3</b> 7.6	20.5792	45.172	50.2091	63.491	54.0419	94.280	02.3880	12.733
<b>3</b> 17.5	20.5455	41.751	50.1841	62.291	53.9676	92.109	02.3136	11.906
<b>3</b> 27.5	20.6058	37.930	50.2296	60.612	53.9621	89.447	02.3194	11.397
<b>4</b> 6.5	20.7139	34.095	50.3050	58.764	53.9872	86.641	02.3656	10.958
<b>4</b> 16.4	20.8746	30.600	50.3774	57.008	54.0227	83.940	02.4005	10.492
<b>4</b> 26.4	21.1754	26.908	50.5328	54.793	54.1506	80.810	02.5174	10.519
<b>5</b> 6.4	21.5512	23.228	50.7533	52.298	54.3449	77.508	02.7177	10.939
<b>5</b> 16.4	21.9299	20.116	50.9636	50.049	54.5372	74.562	02.9158	11.318
<b>5</b> 26.3	22.4069	17.254	51.2145	47.688	54.7862	71.585	03.1482	12.076
<b>6</b> 5.3	22.9781	14.572	51.5271	45.125	55.1070	68.536	03.4457	13.340
<b>6</b> 15.3	23.5441	12.369	51.8513	42.711	55.4420	65.806	03.7713	14.733
<b>6</b> 25.3	24.1190	10.752	52.1704	40.536	55.7829	63.453	04.0948	16.223
<b>7</b> 5.2	24.7304	09.724	52.4900	38.571	56.1410	61.438	04.4111	17.927
<b>7</b> 15.2	25.3568	09.007	52.8382	36.631	56.5310	59.609	04.7657	19.949
<b>7</b> 25.2	25.9287	08.865	53.1702	35.009	56.9049	58.276	05.1198	21.966
<b>8</b> 4.1	26.4285	09.600	53.4378	34.008	57.2250	57.698	05.4072	23.761
<b>8</b> 14.1	26.9300	10.642	53.7105	33.124	57.5564	57.349	05.6972	25.781
<b>8</b> 24.1	27.3733	11.996	53.9801	32.423	57.8791	57.337	05.9996	27.884
<b>9</b> 3.1	27.6717	14.064	54.1720	32.374	58.1198	58.110	06.2366	29.580
<b>9</b> 13.0	27.9105	16.472	54.3260	32.644	58.3246	59.262	06.4311	31.190
<b>9</b> 23.0	28.1010	19.008	54.4670	33.058	58.5132	60.626	06.6135	32.844
<b>10</b> 3.0	28.1651	21.681	54.5709	33.753	58.6490	62.349	06.7760	34.273
<b>10</b> 13.0	28.1197	24.491	54.6226	34.764	58.7235	64.404	06.8902	35.405
<b>10</b> 22.9	27.9995	27.400	54.6213	36.062	58.7433	66.711	06.9409	36.290
<b>11</b> 1.9	27.8346	29.862	54.6265	37.212	58.7555	68.829	07.0008	37.214
<b>11</b> 11.9	27.5791	31.993	54.6101	38.374	58.7278	70.914	07.0486	37.919
<b>11</b> 21.8	27.2199	34.108	54.5184	39.865	58.6186	73.216	07.0117	38.117
<b>12</b> 1.8	26.8741	35.579	54.4324	41.087	58.5102	75.082	06.9631	38.340
<b>12</b> 11.8	26.5218	36.279	54.3697	41.938	58.4094	76.447	06.9388	38.588
<b>12</b> 21.8	26.0898	36.676	54.2556	42.898	58.2460	77.765	06.8598	38.359
<b>12</b> 31.7	25.6703	36.552	54.1220	43.709	58.0625	78.716	06.7402	37.920
Mean Place	22.9542	30.554	52.0933	49.367	55.7306	78.994	04.6300	18.395
sec δ, tan δ	+2.342	−2.118	+1.051	−0.322	+1.264	−0.773	+1.060	+0.352
Dble. Trans.	September 26		October 2		October 9		October 13	

**Apparent places of ten-day stars**

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**APPARENT PLACES OF STARS, 2025**  
 TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	1045		80		110		119	
HIP-No.	7513		10642		14240		15510	
Name	<i>v</i> Andromedae		67 Ceti		$\mu$ Hor		92 G. Eridani	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>1<sup>h</sup>38<sup>m</sup></b>	<b>+ 41°31'</b>	<b>2<sup>h</sup>18<sup>m</sup></b>	<b>– 6°18'</b>	<b>3<sup>h</sup>04<sup>m</sup></b>	<b>– 59°37'</b>	<b>3<sup>h</sup>20<sup>m</sup></b>	<b>– 42°57'</b>
<b>12</b> 27 <sup>d</sup> .8	16 <sup>s</sup> .5759	61''957	14 <sup>s</sup> .6232	27''404	14 <sup>s</sup> .7720	97''876	57 <sup>s</sup> .1365	96''580
<b>1</b> 6.8	16.4183	62.197	14.5405	28.126	14.4806	99.422	56.9975	98.248
<b>1</b> 16.7	16.2777	62.090	14.4574	28.713	14.1433	100.491	56.8309	99.545
<b>1</b> 26.7	16.0790	61.311	14.3145	29.462	13.7446	101.319	56.6003	100.676
<b>2</b> 5.7	15.8732	60.334	14.1711	29.836	13.3493	101.334	56.3631	101.066
<b>2</b> 15.7	15.7052	59.253	14.0529	29.838	12.9686	100.621	56.1374	100.793
<b>2</b> 25.6	15.5657	57.787	13.9344	29.827	12.5692	99.598	55.8959	100.274
<b>3</b> 7.6	15.4318	56.055	13.8124	29.652	12.1852	98.075	55.6522	99.287
<b>3</b> 17.6	15.3119	54.285	13.7034	29.171	11.8512	95.964	55.4311	97.715
<b>3</b> 27.6	15.2900	52.685	13.6609	28.310	11.5700	93.326	55.2612	95.640
<b>4</b> 6.5	15.3268	51.028	13.6473	27.355	11.3259	90.474	55.1174	93.352
<b>4</b> 16.5	15.3576	49.293	13.6268	26.373	11.1334	87.484	54.9903	90.873
<b>4</b> 26.5	15.4787	48.068	13.6856	24.847	11.0422	83.935	54.9459	87.805
<b>5</b> 6.4	15.7027	47.206	13.8170	23.055	11.0273	80.228	54.9701	84.541
<b>5</b> 16.4	15.9362	46.342	13.9477	21.428	11.0554	76.785	55.0136	81.468
<b>5</b> 26.4	16.2058	45.933	14.1215	19.503	11.1782	73.144	55.1220	78.117
<b>6</b> 5.4	16.5493	46.141	14.3649	17.245	11.4015	69.381	55.3121	74.563
<b>6</b> 15.3	16.9355	46.608	14.6364	15.094	11.6711	65.998	55.5405	71.314
<b>6</b> 25.3	17.3224	47.323	14.9143	13.030	11.9930	62.936	55.7997	68.292
<b>7</b> 5.3	17.6959	48.450	15.2016	10.928	12.3862	60.095	56.1006	65.379
<b>7</b> 15.3	18.1140	50.081	15.5326	08.767	12.8333	57.531	56.4531	62.670
<b>7</b> 25.2	18.5400	51.893	15.8662	06.882	13.2945	55.594	56.8193	60.512
<b>8</b> 4.2	18.8908	53.709	16.1495	05.427	13.7588	54.381	57.1688	58.977
<b>8</b> 14.2	19.2371	55.959	16.4481	03.946	14.2565	53.448	57.5475	57.651
<b>8</b> 24.1	19.6014	58.482	16.7611	02.657	14.7528	53.072	57.9394	56.838
<b>9</b> 3.1	19.8991	60.795	17.0145	02.010	15.1937	53.655	58.2841	56.932
<b>9</b> 13.1	20.1421	63.196	17.2378	01.586	15.6138	54.693	58.6105	57.441
<b>9</b> 23.1	20.3653	65.805	17.4563	01.276	16.0159	56.095	58.9325	58.292
<b>10</b> 3.0	20.5713	68.311	17.6516	01.379	16.3465	58.165	59.2164	59.826
<b>10</b> 13.0	20.7220	70.609	17.8011	01.861	16.6041	60.752	59.4489	61.894
<b>10</b> 23.0	20.7909	72.747	17.8968	02.591	16.8030	63.647	59.6322	64.280
<b>11</b> 2.0	20.8636	74.947	17.9990	03.301	16.9469	66.583	59.7964	66.769
<b>11</b> 11.9	20.9240	76.899	18.0807	04.226	17.0043	69.740	59.9124	69.558
<b>11</b> 21.9	20.8835	78.313	18.0808	05.531	16.9639	73.148	59.9443	72.652
<b>12</b> 1.9	20.8138	79.666	18.0715	06.612	16.8787	76.129	59.9498	75.403
<b>12</b> 11.8	20.7670	80.906	18.0756	07.522	16.7377	78.759	59.9340	77.913
<b>12</b> 21.8	20.6589	81.516	18.0181	08.696	16.4991	81.378	59.8402	80.506
<b>12</b> 31.8	20.4936	81.729	17.9203	09.756	16.2090	83.493	59.6978	82.684
Mean Place sec $\delta$ , tan $\delta$	18.3024 +1.336	55.392 +0.886	15.4696 +1.006	20.681 –0.111	13.0828 +1.978	82.476 –1.707	56.7342 +1.367	85.025 –0.932
Dble. Trans.	October 15		October 25		November 6		November 10	

**APPARENT PLACES OF STARS, 2025**  
 TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	120		153		1116		173	
HIP-No.	15863		19095		19513		22361	
Name	$\alpha$ Persei		174 G. Eridani		44 Tauri		Groombridge 848	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>3<sup>h</sup>26<sup>m</sup></b>	<b>+ 49°56'</b>	<b>4<sup>h</sup>06<sup>m</sup></b>	<b>- 27°34'</b>	<b>4<sup>h</sup>12<sup>m</sup></b>	<b>+ 26°32'</b>	<b>4<sup>h</sup>52<sup>m</sup></b>	<b>+ 75°58'</b>
<b>12</b> 27 <sup>d</sup> 9	08 <sup>s</sup> 3018	69''803	40 <sup>s</sup> 7084	64''446	22 <sup>s</sup> 6094	50''388	19 <sup>s</sup> 4190	70''274
<b>1</b> 6.8	08.1974	71.209	40.6484	66.254	22.5974	50.869	19.2779	73.233
<b>1</b> 16.8	08.0834	72.197	40.5640	67.865	22.5709	51.131	19.0432	75.739
<b>1</b> 26.8	07.8704	72.556	40.4081	69.400	22.4544	51.040	18.5500	77.692
<b>2</b> 5.8	07.6200	72.751	40.2319	70.295	22.3067	51.073	17.9145	79.451
<b>2</b> 15.7	07.3852	72.716	40.0585	70.646	22.1649	51.120	17.2450	80.813
<b>2</b> 25.7	07.1540	72.077	39.8664	70.868	22.0095	50.776	16.5251	81.369
<b>3</b> 7.7	06.9023	71.042	39.6570	70.677	21.8256	50.301	15.7160	81.346
<b>3</b> 17.7	06.6464	69.865	39.4511	69.909	21.6310	49.921	14.8663	80.986
<b>3</b> 27.6	06.4878	68.534	39.2924	68.726	21.5037	49.502	14.1740	80.096
<b>4</b> 6.6	06.3814	66.828	39.1525	67.365	21.4015	48.836	13.5645	78.483
<b>4</b> 16.6	06.2594	64.930	39.0102	65.737	21.2764	48.129	12.9286	76.482
<b>4</b> 26.5	06.2418	63.317	38.9395	63.510	21.2338	47.752	12.5003	74.419
<b>5</b> 6.5	06.3445	61.718	38.9351	61.085	21.2779	47.368	12.3206	71.964
<b>5</b> 16.5	06.4619	59.945	38.9405	58.750	21.3231	46.825	12.2032	69.128
<b>5</b> 26.5	06.6328	58.535	38.9970	56.029	21.4095	46.676	12.2278	66.448
<b>6</b> 5.4	06.9061	57.570	39.1286	53.014	21.5805	46.738	12.4969	63.951
<b>6</b> 15.4	07.2465	56.680	39.3001	50.212	21.8035	46.792	12.9477	61.332
<b>6</b> 25.4	07.6070	55.994	39.4959	47.498	22.0416	46.952	13.4951	58.821
<b>7</b> 5.4	07.9772	55.796	39.7228	44.711	22.2947	47.474	14.1287	56.786
<b>7</b> 15.3	08.4259	56.040	40.0062	42.033	22.6167	48.219	14.9755	55.102
<b>7</b> 25.3	08.9071	56.406	40.3099	39.801	22.9638	48.876	15.9470	53.505
<b>8</b> 4.3	09.3270	56.955	40.5931	38.000	23.2659	49.557	16.8703	52.270
<b>8</b> 14.2	09.7701	58.069	40.9084	36.295	23.6002	50.591	17.8978	51.703
<b>8</b> 24.2	10.2594	59.452	41.2509	35.042	23.9767	51.634	19.0679	51.455
<b>9</b> 3.2	10.6931	60.761	41.5574	34.590	24.3092	52.391	20.1840	51.363
<b>9</b> 13.2	11.0853	62.392	41.8511	34.462	24.6202	53.297	21.2626	51.853
<b>9</b> 23.1	11.4757	64.404	42.1512	34.631	24.9422	54.378	22.3733	52.939
<b>10</b> 3.1	11.8615	66.394	42.4354	35.498	25.2642	55.214	23.4974	54.214
<b>10</b> 13.1	12.1932	68.361	42.6821	36.900	25.5486	55.893	24.5289	55.750
<b>10</b> 23.1	12.4393	70.485	42.8852	38.591	25.7762	56.648	25.4031	57.813
<b>11</b> 2.0	12.6955	72.811	43.0880	40.480	26.0236	57.479	26.2835	60.298
<b>11</b> 12.0	12.9343	74.967	43.2622	42.783	26.2595	58.065	27.1045	62.809
<b>11</b> 22.0	13.0486	76.873	43.3577	45.427	26.3997	58.447	27.6579	65.449
<b>12</b> 1.9	13.1206	78.959	43.4314	47.833	26.5193	59.072	28.0843	68.527
<b>12</b> 11.9	13.2042	80.965	43.4973	50.174	26.6524	59.661	28.4763	71.621
<b>12</b> 21.9	13.1947	82.471	43.4910	52.716	26.7070	59.894	28.6290	74.437
<b>12</b> 31.9	13.0947	83.776	43.4306	54.946	26.6925	60.155	28.5401	77.251
Mean Place sec $\delta$ , tan $\delta$	09.4392 +1.554	59.085 +1.190	40.5680 +1.128	60.559 -0.522	23.3496 +1.118	43.331 +0.500	19.0905 +4.129	57.420 +4.006
Dble. Trans.	November 12		November 22		November 23		December 3	

**APPARENT PLACES OF STARS, 2025**  
 TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	201		203		210		223	
HIP-No.	25336		25769		26311		27628	
Name	$\gamma$ Orionis		17 Cam		$\epsilon$ Orionis		$\beta$ Col	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>5<sup>h</sup>26<sup>m</sup></b>	<b>+ 6°22'</b>	<b>5<sup>h</sup>32<sup>m</sup></b>	<b>+ 63°05'</b>	<b>5<sup>h</sup>37<sup>m</sup></b>	<b>- 1°10'</b>	<b>5<sup>h</sup>51<sup>m</sup></b>	<b>- 35°45'</b>
<b>12</b> 28 <sup>d</sup> 0	29 <sup>s</sup> 6865	21''051	35 <sup>s</sup> 0516	16''464	30 <sup>s</sup> 2991	69''100	52 <sup>s</sup> 2096	31''138
<b>1</b> 6.9	29.7373	20.357	35.1148	18.987	30.3536	70.253	52.2255	33.890
<b>1</b> 16.9	29.7652	19.583	35.1224	21.172	30.3837	71.454	52.2022	36.591
<b>1</b> 26.9	29.7042	18.733	34.9582	22.987	30.3269	72.673	52.0981	39.156
<b>2</b> 5.8	29.6069	18.260	34.7106	24.764	30.2331	73.454	51.9488	41.096
<b>2</b> 15.8	29.5029	18.004	34.4388	26.263	30.1303	73.954	51.7784	42.534
<b>2</b> 25.8	29.3722	17.567	34.1150	27.078	29.9996	74.566	51.5756	43.847
<b>3</b> 7.8	29.2033	17.273	33.7168	27.457	29.8303	74.949	51.3363	44.650
<b>3</b> 17.7	29.0147	17.329	33.2787	27.617	29.6406	74.899	51.0791	44.741
<b>3</b> 27.7	28.8727	17.441	32.9244	27.275	29.4933	74.733	50.8494	44.470
<b>4</b> 6.7	28.7393	17.458	32.5921	26.265	29.3526	74.589	50.6263	43.945
<b>4</b> 16.7	28.5778	17.650	32.2159	24.946	29.1848	74.192	50.3915	42.910
<b>4</b> 26.6	28.4830	18.212	31.9627	23.541	29.0799	73.380	50.2094	41.255
<b>5</b> 6.6	28.4564	18.754	31.8436	21.692	29.0393	72.547	50.0845	39.386
<b>5</b> 16.6	28.4258	19.203	31.7329	19.461	28.9956	71.760	49.9726	37.397
<b>5</b> 26.5	28.4352	20.016	31.7025	17.344	28.9906	70.579	49.9041	34.884
<b>6</b> 5.5	28.5193	21.090	31.8181	15.311	29.0579	69.123	49.9056	32.013
<b>6</b> 15.5	28.6459	22.008	32.0289	13.062	29.1674	67.827	49.9558	29.267
<b>6</b> 25.5	28.7905	22.988	32.2862	10.850	29.2955	66.472	50.0385	26.444
<b>7</b> 5.4	28.9573	24.262	32.5946	09.032	29.4468	64.829	50.1590	23.359
<b>7</b> 15.4	29.1925	25.554	33.0382	07.421	29.6650	63.203	50.3451	20.378
<b>7</b> 25.4	29.4556	26.592	33.5493	05.780	29.9121	61.863	50.5698	17.778
<b>8</b> 4.4	29.6899	27.577	34.0230	04.436	30.1345	60.607	50.7960	15.389
<b>8</b> 14.3	29.9649	28.715	34.5765	03.635	30.3980	59.256	51.0660	13.085
<b>8</b> 24.3	30.2859	29.610	35.2243	03.006	30.7074	58.213	51.3817	11.292
<b>9</b> 3.3	30.5780	30.060	35.8331	02.453	30.9915	57.672	51.6910	10.222
<b>9</b> 13.2	30.8637	30.498	36.4336	02.402	31.2717	57.208	52.0049	09.465
<b>9</b> 23.2	31.1708	30.894	37.0743	02.841	31.5742	56.862	52.3401	09.084
<b>10</b> 3.2	31.4864	30.804	37.7343	03.368	31.8859	57.081	52.6824	09.546
<b>10</b> 13.2	31.7773	30.410	38.3493	04.111	32.1753	57.671	53.0060	10.628
<b>10</b> 23.1	32.0288	30.002	38.8876	05.367	32.4284	58.335	53.2995	12.027
<b>11</b> 2.1	32.3054	29.468	39.4608	06.982	32.7054	59.202	53.5993	13.887
<b>11</b> 12.1	32.5747	28.555	40.0135	08.600	32.9752	60.505	53.8805	16.390
<b>11</b> 22.1	32.7644	27.472	40.4125	10.420	33.1691	62.010	54.0933	19.259
<b>12</b> 2.0	32.9405	26.613	40.7666	12.718	33.3493	63.327	54.2772	22.086
<b>12</b> 12.0	33.1269	25.669	41.1228	15.056	33.5375	64.759	54.4459	25.124
<b>12</b> 22.0	33.2407	24.482	41.3352	17.235	33.6552	66.432	54.5433	28.443
<b>12</b> 31.9	33.2910	23.503	41.4127	19.555	33.7105	67.877	54.5736	31.509
Mean Place sec $\delta$ , tan $\delta$	30.0225 +1.006	14.575 +0.112	35.1625 +2.209	0 5.524 +1.970	30.5263 +1.000	75.443 -0.021	51.6051 +1.232	36.449 -0.720
Dble. Trans.	December 12		December 14		December 15		December 19	

**APPARENT PLACES OF STARS, 2025**  
 TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	1166		243		245		254	
HIP-No.	29134		30324		30438		32246	
Name	$\nu$ Doradus		$\beta$ Canis Majoris		$\alpha$ Carinae		$\epsilon$ Geminorum	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>6<sup>h</sup>08<sup>m</sup></b>	<b>– 68°50'</b>	<b>6<sup>h</sup>23<sup>m</sup></b>	<b>– 17°57'</b>	<b>6<sup>h</sup>24<sup>m</sup></b>	<b>– 52°42'</b>	<b>6<sup>h</sup>45<sup>m</sup></b>	<b>+ 25°06'</b>
<b>12</b> 28 <sup>d</sup> 0	38 <sup>s</sup> .4356	47 <sup>''</sup> .972	49 <sup>s</sup> .4704	64 <sup>''</sup> .546	32 <sup>s</sup> .6201	28 <sup>''</sup> .849	29 <sup>s</sup> .6659	21 <sup>''</sup> .359
<b>1</b> 7.0	38.3018	51.337	49.5499	66.758	32.6284	32.196	29.8120	21.583
<b>1</b> 16.9	38.0539	54.661	49.5989	69.004	32.5761	35.545	29.9289	21.690
<b>1</b> 26.9	37.7085	57.820	49.5631	71.154	32.4385	38.742	29.9395	21.802
<b>2</b> 5.9	37.2611	60.326	49.4829	72.784	32.2338	41.325	29.9021	22.224
<b>2</b> 15.9	36.7345	62.289	49.3839	74.042	31.9857	43.406	29.8472	22.720
<b>2</b> 25.8	36.1470	64.069	49.2519	75.286	31.6954	45.331	29.7498	22.929
<b>3</b> 7.8	35.5134	65.259	49.0762	76.132	31.3604	46.688	29.5950	23.166
<b>3</b> 17.8	34.8607	65.646	48.8737	76.375	30.9992	47.258	29.4041	23.610
<b>3</b> 27.7	34.1958	65.607	48.7012	76.409	30.6483	47.438	29.2520	23.843
<b>4</b> 6.7	33.5459	65.221	48.5292	76.306	30.3020	47.285	29.0933	23.779
<b>4</b> 16.7	32.9381	64.214	48.3294	75.752	29.9535	46.499	28.8885	23.789
<b>4</b> 26.7	32.3689	62.520	48.1806	74.704	29.6448	45.049	28.7478	23.889
<b>5</b> 6.6	31.8630	60.541	48.0871	73.549	29.3900	43.323	28.6712	23.703
<b>5</b> 16.6	31.4418	58.348	47.9927	72.293	29.1663	41.359	28.5794	23.341
<b>5</b> 26.6	31.1007	55.565	47.9329	70.560	28.9897	38.797	28.5254	23.180
<b>6</b> 5.6	30.8547	52.375	47.9390	68.516	28.8841	35.823	28.5500	23.080
<b>6</b> 15.5	30.7094	49.265	47.9881	66.595	28.8417	32.908	28.6195	22.720
<b>6</b> 25.5	30.6662	46.032	48.0592	64.565	28.8500	29.836	28.7082	22.383
<b>7</b> 5.5	30.7324	42.502	48.1565	62.218	28.9133	26.431	28.8066	22.364
<b>7</b> 15.4	30.8930	39.083	48.3201	59.945	29.0500	23.118	29.0014	22.186
<b>7</b> 25.4	31.1518	36.041	48.5181	57.981	29.2455	20.149	29.2270	21.829
<b>8</b> 4.4	31.5114	33.200	48.7043	56.090	29.4739	17.321	29.4249	21.591
<b>8</b> 14.4	31.9435	30.482	48.9346	54.203	29.7550	14.593	29.6777	21.552
<b>8</b> 24.3	32.4458	28.323	49.2147	52.741	30.0934	12.400	29.9908	21.319
<b>9</b> 3.3	33.0128	26.924	49.4837	51.846	30.4542	10.916	30.2810	20.869
<b>9</b> 13.3	33.6164	25.898	49.7572	51.138	30.8332	09.776	30.5763	20.581
<b>9</b> 23.2	34.2464	25.326	50.0577	50.700	31.2393	09.070	30.9088	20.383
<b>10</b> 3.2	34.8821	25.688	50.3750	50.992	31.6615	09.284	31.2644	19.873
<b>10</b> 13.2	35.5043	26.751	50.6786	51.785	32.0743	10.181	31.6048	19.271
<b>10</b> 23.2	36.1019	28.212	50.9549	52.771	32.4642	11.456	31.9148	18.901
<b>11</b> 2.1	36.6399	30.251	51.2548	54.165	32.8470	13.327	32.2679	18.512
<b>11</b> 12.1	37.1088	33.030	51.5502	56.149	33.2045	15.951	32.6238	17.881
<b>11</b> 22.1	37.5029	36.241	51.7793	58.401	33.4985	18.998	32.9004	17.354
<b>12</b> 2.1	37.7894	39.499	51.9926	60.598	33.7422	22.123	33.1730	17.154
<b>12</b> 12.0	37.9650	43.053	52.2084	63.038	33.9463	25.585	33.4640	16.890
<b>12</b> 22.0	38.0310	46.929	52.3579	65.739	34.0731	29.384	33.6774	16.552
<b>12</b> 32.0	37.9744	50.582	52.4444	68.212	34.1166	32.986	33.8216	16.520
Mean Place sec $\delta$ , tan $\delta$	34.4517 +2.771	55.065 –2.585	49.4061 +1.051	73.082 –0.324	31.1010 +1.651	37.732 –1.313	30.0071 +1.104	12.658 +0.469
Dble. Trans.	December 23		December 27		December 27		January 1	

## APPARENT PLACES OF STARS, 2025

TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	306		323		348		354	
HIP-No.	39429		42452		45238		46390	
Name	ζ Puppis		Groombridge 1460		β Carinae		α Hydrae	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>8<sup>h</sup>04<sup>m</sup></b>	<b>− 40°04′</b>	<b>8<sup>h</sup>41<sup>m</sup></b>	<b>+ 52°36′</b>	<b>9<sup>h</sup>13<sup>m</sup></b>	<b>− 69°48′</b>	<b>9<sup>h</sup>28<sup>m</sup></b>	<b>− 8°45′</b>
<b>12</b> 28 <sup>d</sup> 1	29 <sup>s</sup> 1632	16 <sup>″</sup> 706	10 <sup>s</sup> 2324	75 <sup>″</sup> 569	29 <sup>s</sup> 6679	54 <sup>″</sup> 901	49 <sup>s</sup> 8019	58 <sup>″</sup> 434
<b>1</b> 7.0	29.3330	20.052	10.5951	76.745	30.0334	58.405	50.0625	60.721
<b>1</b> 17.0	29.4637	23.601	10.9081	77.988	30.3153	62.351	50.3045	63.145
<b>1</b> 27.0	29.5098	27.035	11.0775	79.559	30.4939	66.322	50.4626	65.318
<b>2</b> 6.0	29.4879	30.072	11.1829	81.508	30.5136	70.172	50.5706	67.164
<b>2</b> 15.9	29.4234	32.824	11.2471	83.510	30.4088	73.963	50.6505	68.840
<b>2</b> 25.9	29.3174	35.518	11.2230	85.304	30.2352	77.800	50.6886	70.476
<b>3</b> 7.9	29.1506	37.733	11.0996	87.128	29.9481	81.267	50.6616	71.729
<b>3</b> 17.8	28.9327	39.251	10.9107	89.037	29.5387	84.134	50.5796	72.476
<b>3</b> 27.8	28.7214	40.561	10.7334	90.488	29.0752	86.892	50.5091	73.242
<b>4</b> 6.8	28.4981	41.573	10.5041	91.480	28.5801	89.327	50.4131	73.869
<b>4</b> 16.8	28.2355	41.874	11.2230	92.411	28.0250	90.965	50.2545	73.945
<b>4</b> 26.7	27.9947	41.657	09.9417	93.013	27.4193	92.135	50.1197	73.842
<b>5</b> 6.7	27.7936	41.217	09.7331	92.962	26.8323	93.008	50.0150	73.774
<b>5</b> 16.7	27.5925	40.377	09.4797	92.568	26.2720	93.275	49.8807	73.425
<b>5</b> 26.7	27.4088	38.929	09.2658	92.012	25.6958	92.853	49.7524	72.739
<b>6</b> 5.6	27.2746	37.073	09.1394	91.087	25.1428	91.921	49.6653	71.935
<b>6</b> 15.6	27.1876	35.150	09.0515	89.656	24.6748	90.705	49.6053	71.183
<b>6</b> 25.6	27.1256	32.908	08.9806	88.018	24.2618	88.960	49.5475	70.231
<b>7</b> 5.5	27.0878	30.176	08.9531	86.411	23.8843	86.532	49.4953	68.939
<b>7</b> 15.5	27.1174	27.469	09.0301	84.474	23.5956	83.975	49.5042	67.801
<b>7</b> 25.5	27.1975	24.913	09.1474	82.184	23.4267	81.321	49.5435	66.809
<b>8</b> 4.5	27.2866	22.191	09.2497	80.030	23.3425	78.217	49.5635	65.577
<b>8</b> 14.4	27.4248	19.483	09.4466	77.918	23.3290	75.011	49.6307	64.400
<b>8</b> 24.4	27.6291	17.189	09.7296	75.538	23.4429	72.047	49.7584	63.579
<b>9</b> 3.4	27.8568	15.312	09.9990	73.138	23.6917	69.233	49.8884	62.931
<b>9</b> 13.4	28.1062	13.637	10.3063	70.985	24.0117	66.512	50.0372	62.359
<b>9</b> 23.3	28.3962	12.325	10.6898	68.968	24.4109	64.086	50.2322	62.042
<b>10</b> 3.3	28.7313	11.828	11.1183	66.845	24.9373	62.375	50.4752	62.292
<b>10</b> 13.3	29.0780	11.905	11.5504	64.898	25.5427	61.182	50.7317	62.855
<b>10</b> 23.2	29.4151	12.275	11.9819	63.455	26.1749	60.279	50.9847	63.483
<b>11</b> 2.2	29.7848	13.353	12.4940	62.157	26.8484	60.212	51.2982	64.651
<b>11</b> 12.2	30.1679	15.231	13.0215	60.903	27.5740	61.030	51.6427	66.367
<b>11</b> 22.2	30.5053	17.466	13.4763	60.197	28.2907	62.263	51.9478	68.126
<b>12</b> 2.1	30.8220	19.973	13.9576	60.023	28.9408	64.037	52.2657	70.041
<b>12</b> 12.1	31.1387	23.043	14.4703	59.969	29.5602	66.626	52.6166	72.398
<b>12</b> 22.1	31.4009	26.490	14.8922	60.263	30.1354	69.738	52.9248	74.869
<b>12</b> 32.1	31.5934	29.893	15.2424	61.146	30.5896	73.069	53.1844	77.180
Mean Place sec δ, tan δ	28.8588 +1.307	34.199 −0.841	10.1491 +1.647	72.170 +1.309	28.1490 +2.899	80.974 −2.721	50.4231 +1.012	73.128 −0.154
Dble. Trans.	January 21		January 30		February 7		February 11	

## APPARENT PLACES OF STARS, 2025

TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	363		1260		1275		422	
HIP-No.	47594		49339		52098		54872	
Name	Groombridge 1564		193 G. Hydrae		37 LMi		$\delta$ Leonis	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>9<sup>h</sup>44<sup>m</sup></b>	<b>+ 69°06'</b>	<b>10<sup>h</sup>05<sup>m</sup></b>	<b>- 24°24'</b>	<b>10<sup>h</sup>40<sup>m</sup></b>	<b>+ 31°50'</b>	<b>11<sup>h</sup>15<sup>m</sup></b>	<b>+ 20°22'</b>
<b>12</b> 28 <sup>d</sup> 1	24 <sup>s</sup> 3819	68 <sup>''</sup> 743	30 <sup>s</sup> 9288	16 <sup>''</sup> 016	08 <sup>s</sup> 2468	36 <sup>''</sup> 832	26 <sup>s</sup> 6736	64 <sup>''</sup> 973
<b>1</b> 7.1	25.0510	69.997	31.2183	18.825	08.6136	35.919	27.0258	63.379
<b>1</b> 17.1	25.6329	71.480	31.4926	21.894	08.9627	35.196	27.3701	61.927
<b>1</b> 27.1	26.0187	73.509	31.6888	24.787	09.2190	35.058	27.6349	61.041
<b>2</b> 6.0	26.3199	76.001	31.8293	27.486	09.4363	35.388	27.8651	60.562
<b>2</b> 16.0	26.5436	78.610	31.9368	30.096	09.6275	35.952	28.0739	60.309
<b>2</b> 26.0	26.6048	81.155	32.0059	32.668	09.7575	36.687	28.2331	60.292
<b>3</b> 7.9	26.5064	83.814	32.0073	34.860	09.8094	37.801	28.3215	60.713
<b>3</b> 17.9	26.3054	86.556	31.9455	36.538	09.8014	39.261	28.3515	61.530
<b>3</b> 27.9	26.0670	88.814	31.8896	38.208	09.7940	40.530	28.3842	62.241
<b>4</b> 6.9	25.7046	90.632	31.8070	39.637	09.7345	41.766	28.3705	63.062
<b>4</b> 16.8	25.2161	92.364	31.6567	40.406	09.5940	43.283	28.2771	64.280
<b>4</b> 26.8	24.7768	93.605	31.5174	40.945	09.4779	44.574	28.2011	65.346
<b>5</b> 6.8	24.3426	94.078	31.4027	41.392	09.3740	45.464	28.1349	66.153
<b>5</b> 16.8	23.8219	94.158	31.2574	41.386	09.2145	46.327	28.0138	67.085
<b>5</b> 26.7	23.3480	93.891	31.1071	40.948	09.0603	47.077	27.8890	67.981
<b>6</b> 5.7	22.9759	93.037	30.9867	40.280	08.9465	47.460	27.7936	68.595
<b>6</b> 15.7	22.6301	91.561	30.8926	39.505	08.8426	47.463	27.7043	68.952
<b>6</b> 25.6	22.3054	89.747	30.7975	38.388	08.7303	47.320	27.6007	69.258
<b>7</b> 5.6	22.0626	87.772	30.6994	36.818	08.6269	47.107	27.4944	69.540
<b>7</b> 15.6	21.9590	85.285	30.6580	35.310	08.5872	46.419	27.4416	69.387
<b>7</b> 25.6	21.9032	82.357	30.6501	33.807	08.5647	45.381	27.4023	68.966
<b>8</b> 4.5	21.8612	79.495	30.6249	31.940	08.5169	44.413	27.3326	68.652
<b>8</b> 14.5	21.9765	76.513	30.6425	30.098	08.5311	43.184	27.3137	68.046
<b>8</b> 24.5	22.2114	73.174	30.7238	28.549	08.6052	41.500	27.3493	67.006
<b>9</b> 3.5	22.4486	69.847	30.8179	27.085	08.6697	39.717	27.3755	65.899
<b>9</b> 13.4	22.7773	66.719	30.9328	25.694	08.7646	37.889	27.4254	64.671
<b>9</b> 23.4	23.2416	63.667	31.0954	24.580	08.9215	35.857	27.5311	63.154
<b>10</b> 3.4	23.7765	60.564	31.3173	24.041	09.1268	33.511	27.6871	61.279
<b>10</b> 13.3	24.3416	57.717	31.5629	23.854	09.3497	31.141	27.8629	59.311
<b>10</b> 23.3	24.9570	55.423	31.8094	23.817	09.5863	28.966	28.0511	57.417
<b>11</b> 2.3	25.7016	53.311	32.1211	24.463	09.9061	26.564	28.3211	55.156
<b>11</b> 12.3	26.4710	51.378	32.4747	25.758	10.2626	24.039	28.6337	52.680
<b>11</b> 22.2	27.1821	50.170	32.7987	27.210	10.5878	21.924	28.9222	50.499
<b>12</b> 2.2	27.9650	49.561	33.1349	29.030	10.9575	20.001	29.2549	48.327
<b>12</b> 12.2	28.7894	49.182	33.5081	31.466	11.3770	18.020	29.6418	45.974
<b>12</b> 22.2	29.5016	49.379	33.8487	34.142	11.7548	16.419	29.9990	43.916
<b>12</b> 32.1	30.1417	50.315	34.1417	36.836	12.1005	15.346	30.3306	42.259
Mean Place sec $\delta$ , tan $\delta$	23.2423 +2.806	70.502 +2.621	31.7204 +1.098	35.335 -0.454	08.9349 +1.177	34.833 +0.621	27.6685 +1.067	60.914 +0.372
Dble. Trans.	February 15		February 21		March 1		March 10	

## APPARENT PLACES OF STARS, 2025

TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No. HIP-No. Name	423 54879 $\vartheta$ Leonis		426 55282 $\delta$ Crateris		1307 57939 Groombridge 1830		455 59747 $\delta$ Crucis	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>11<sup>h</sup>15<sup>m</sup></b>	<b>+ 15° 17'</b>	<b>11<sup>h</sup>20<sup>m</sup></b>	<b>- 14° 54'</b>	<b>11<sup>h</sup>54<sup>m</sup></b>	<b>+ 37° 31'</b>	<b>12<sup>h</sup>16<sup>m</sup></b>	<b>- 58° 52'</b>
<b>12</b> 28 <sup>d</sup> .2	33 <sup>s</sup> .5007	28''928	35 <sup>s</sup> .7741	45''001	25 <sup>s</sup> .4004	68''211	28 <sup>s</sup> .4022	59''189
<b>1</b> 7.2	33.8439	27.177	36.1045	47.460	25.8207	66.653	28.9322	61.204
<b>1</b> 17.1	34.1807	25.522	36.4335	50.111	26.2336	65.415	29.4752	63.806
<b>1</b> 27.1	34.4400	24.394	36.6922	52.491	26.5677	64.914	29.9530	66.513
<b>2</b> 6.1	34.6640	23.641	36.9073	54.738	26.8748	64.918	30.3505	69.578
<b>2</b> 16.1	34.8670	23.092	37.0982	56.944	27.1607	65.230	30.6963	72.995
<b>2</b> 26.0	35.0235	22.766	37.2543	59.042	27.3862	65.913	31.0152	76.572
<b>3</b> 8.0	35.1109	22.874	37.3442	60.777	27.5351	67.100	31.2412	80.086
<b>3</b> 18.0	35.1401	23.387	37.3699	62.100	27.6239	68.673	31.3510	83.448
<b>3</b> 28.0	35.1734	23.808	37.4023	63.473	27.7037	70.155	31.4492	87.011
<b>4</b> 6.9	35.1633	24.364	37.4017	64.602	27.7202	71.761	31.5059	90.378
<b>4</b> 16.9	35.0746	25.350	37.3230	65.139	27.6489	73.701	31.4433	93.173
<b>4</b> 26.9	35.0025	26.219	37.2518	65.619	27.5894	75.377	31.3384	95.942
<b>5</b> 6.8	34.9416	26.872	37.1960	66.074	27.5233	76.711	31.2337	98.554
<b>5</b> 16.8	34.8278	27.699	37.0949	66.094	27.3885	78.082	31.0707	100.516
<b>5</b> 26.8	34.7089	28.536	36.9791	65.845	27.2466	79.249	30.8429	102.079
<b>6</b> 5.8	34.6182	29.143	36.8828	65.526	27.1287	79.953	30.5944	103.350
<b>6</b> 15.7	34.5347	29.542	36.7995	65.123	27.0041	80.281	30.3610	104.195
<b>6</b> 25.7	34.4368	29.937	36.7013	64.439	26.8586	80.410	30.0962	104.452
<b>7</b> 5.7	34.3339	30.355	36.5871	63.439	26.7128	80.310	29.7744	104.092
<b>7</b> 15.7	34.2834	30.379	36.5209	62.578	26.6175	79.623	29.4947	103.532
<b>7</b> 25.6	34.2470	30.173	36.4756	61.697	26.5269	78.564	29.2559	102.540
<b>8</b> 4.6	34.1795	30.107	36.3988	60.448	26.4070	77.479	28.9837	100.800
<b>8</b> 14.6	34.1601	29.770	36.3596	59.307	26.3446	75.956	28.7384	98.883
<b>8</b> 24.5	34.1954	29.020	36.3776	58.430	26.3341	73.914	28.5791	96.861
<b>9</b> 3.5	34.2223	28.228	36.3989	57.507	26.3124	71.775	28.4697	94.403
<b>9</b> 13.5	34.2693	27.307	36.4379	56.645	26.3236	69.470	28.3910	91.783
<b>9</b> 23.5	34.3714	26.080	36.5243	56.042	26.3984	66.832	28.3768	89.223
<b>10</b> 3.4	34.5246	24.486	36.6719	55.855	26.5234	63.883	28.4868	86.847
<b>10</b> 13.4	34.6977	22.776	36.8459	55.895	26.6731	60.899	28.6708	84.562
<b>10</b> 23.4	34.8812	21.113	37.0258	56.032	26.8494	58.016	28.8784	82.344
<b>11</b> 2.4	35.1452	19.039	37.2835	56.792	27.1183	54.845	29.2013	80.793
<b>11</b> 12.3	35.4527	16.708	37.5937	58.044	27.4330	51.608	29.6376	79.782
<b>11</b> 22.3	35.7360	14.622	37.8829	59.320	27.7348	48.800	30.0854	78.936
<b>12</b> 2.3	36.0610	12.489	38.2026	60.970	28.0992	46.103	30.5658	78.792
<b>12</b> 12.2	36.4400	10.121	38.5764	63.170	28.5252	43.383	31.1302	79.485
<b>12</b> 22.2	36.7907	07.992	38.9301	65.460	28.9268	41.156	31.7104	80.563
<b>12</b> 32.2	37.1150	06.209	39.2518	67.747	29.3160	39.478	32.2515	82.092
Mean Place sec $\delta$ , tan $\delta$	34.5451 +1.037	23.240 +0.273	37.0786 +1.035	60.770 -0.266	26.4993 +1.261	68.007 +0.768	30.8995 +1.935	86.254 -1.657
Dble. Trans.	March 10		March 12		March 20		March 26	



**APPARENT PLACES OF STARS, 2025**  
 TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	464		468		479		1357	
HIP-No.	60823		61084		62131		67057	
Name	$\sigma$ Centauri		$\gamma$ Crucis		330 G. Hydrae		83 Vir	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>12<sup>h</sup>29<sup>m</sup></b>	<b>– 50°21'</b>	<b>12<sup>h</sup>32<sup>m</sup></b>	<b>– 57°14'</b>	<b>12<sup>h</sup>45<sup>m</sup></b>	<b>– 28°27'</b>	<b>13<sup>h</sup>45<sup>m</sup></b>	<b>– 16°18'</b>
<b>12</b> 28 <sup>d</sup> 3	23 <sup>s</sup> 4372	53''029	33 <sup>s</sup> 1025	54''237	20 <sup>s</sup> 3619	31''085	50 <sup>s</sup> 3390	12''918
<b>1</b> 7.2	23.8981	55.035	33.6244	56.105	20.7370	33.229	50.6923	14.899
<b>1</b> 17.2	24.3759	57.562	34.1652	58.545	21.1294	35.683	51.0732	17.020
<b>1</b> 27.2	24.7926	60.137	34.6442	61.086	21.4647	37.988	51.4067	18.867
<b>2</b> 6.1	25.1481	63.029	35.0510	64.006	21.7620	40.430	51.7191	20.801
<b>2</b> 16.1	25.4678	66.235	35.4134	67.297	22.0412	43.025	52.0268	22.818
<b>2</b> 26.1	25.7644	69.549	35.7523	70.741	22.2979	45.558	52.3182	24.629
<b>3</b> 8.1	25.9812	72.767	36.0025	74.141	22.4903	47.861	52.5547	26.157
<b>3</b> 18.0	26.1016	75.827	36.1412	77.426	22.6114	49.934	52.7306	27.491
<b>3</b> 28.0	26.2210	79.070	36.2730	80.927	22.7415	52.113	52.9210	28.875
<b>4</b> 7.0	26.3040	82.100	36.3643	84.240	22.8386	54.024	53.0790	29.936
<b>4</b> 17.0	26.2795	84.573	36.3362	87.012	22.8448	55.393	53.1486	30.530
<b>4</b> 26.9	26.2298	87.046	36.2697	89.796	22.8469	56.798	53.2189	31.240
<b>5</b> 6.9	26.1851	89.377	36.2038	92.437	22.8576	58.110	53.2946	31.875
<b>5</b> 16.9	26.0821	91.085	36.0755	94.443	22.8113	58.884	53.3071	32.037
<b>5</b> 26.8	25.9273	92.443	35.8827	96.088	22.7315	59.428	53.2861	32.121
<b>6</b> 5.8	25.7607	93.563	35.6686	97.473	22.6529	59.883	53.2631	32.263
<b>6</b> 15.8	25.6039	94.296	35.4652	98.436	22.5774	60.089	53.2330	32.224
<b>6</b> 25.8	25.4149	94.489	35.2257	98.827	22.4712	59.912	53.1644	31.928
<b>7</b> 5.7	25.1744	94.137	34.9255	98.633	22.3254	59.392	53.0506	31.501
<b>7</b> 15.7	24.9726	93.637	34.6640	98.246	22.2154	58.899	52.9641	31.216
<b>7</b> 25.7	24.7988	92.742	34.4368	97.417	22.1184	58.170	52.8769	30.758
<b>8</b> 4.7	24.5831	91.155	34.1680	95.843	21.9735	56.936	52.7307	29.946
<b>8</b> 14.6	24.3918	89.446	33.9231	94.102	21.8534	55.753	52.6027	29.327
<b>8</b> 24.6	24.2720	87.663	33.7587	92.237	21.7870	54.640	52.5159	28.820
<b>9</b> 3.6	24.1800	85.466	33.6351	89.904	21.7225	53.239	52.4161	28.044
<b>9</b> 13.5	24.1095	83.138	33.5380	87.400	21.6710	51.822	52.3221	27.329
<b>9</b> 23.5	24.0939	80.895	33.5019	84.941	21.6642	50.596	52.2664	26.859
<b>10</b> 3.5	24.1796	78.830	33.5850	82.622	21.7286	49.593	52.2711	26.540
<b>10</b> 13.5	24.3219	76.846	33.7380	80.357	21.8274	48.683	52.3034	26.274
<b>10</b> 23.4	24.4796	74.932	33.9122	78.142	21.9344	47.858	52.3371	26.159
<b>11</b> 2.4	24.7430	73.665	34.2032	76.566	22.1336	47.642	52.4660	26.432
<b>11</b> 12.4	25.1032	72.893	34.6070	75.482	22.4059	47.837	52.6670	27.031
<b>11</b> 22.3	25.4658	72.253	35.0214	74.537	22.6694	48.078	52.8601	27.601
<b>12</b> 2.3	25.8655	72.284	35.4742	74.286	22.9754	48.874	53.1062	28.666
<b>12</b> 12.3	26.3467	73.101	36.0162	74.848	23.3560	50.297	53.4337	30.203
<b>12</b> 22.3	26.8375	74.240	36.5759	75.766	23.7363	51.864	53.7667	31.722
<b>12</b> 32.2	27.2981	75.781	37.1026	77.136	24.0971	53.648	54.0943	33.371
Mean Place	25.8463	77.660	35.7913	80.425	22.4628	48.637	52.6650	22.977
sec $\delta$ , tan $\delta$	+1.568	–1.208	+1.849	–1.555	+1.138	–0.542	+1.042	–0.293
Dble. Trans.	March 29		March 30		April 2		April 18	

## APPARENT PLACES OF STARS, 2025

TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No. HIP-No. Name	509 67301 $\eta$ Ursae Majoris		529 70069 $\nu$ Cen		1396 73996 45 Bootis		564 74785 $\beta$ Librae	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>13<sup>h</sup>48<sup>m</sup></b>	<b>+ 49°10'</b>	<b>14<sup>h</sup>22<sup>m</sup></b>	<b>- 56°29'</b>	<b>15<sup>h</sup>08<sup>m</sup></b>	<b>+ 24°45'</b>	<b>15<sup>h</sup>18<sup>m</sup></b>	<b>- 9°28'</b>
12 28 <sup>d</sup> 3	31 <sup>s</sup> 1938	62''056	03 <sup>s</sup> 5046	50''476	23 <sup>s</sup> 1336	69''519	20 <sup>s</sup> 2630	29''649
1 7.3	31.6389	59.694	04.0296	51.004	23.4497	66.717	20.5741	31.436
1 17.3	32.0992	57.820	04.6129	52.014	23.8015	64.239	20.9280	33.210
1 27.2	32.5157	56.818	05.1548	53.130	24.1268	62.407	21.2500	34.660
2 6.2	32.9339	56.340	05.6629	54.795	24.4585	60.844	21.5703	36.207
2 16.2	33.3457	56.298	06.1622	56.962	24.8010	59.582	21.9024	37.788
2 26.1	33.7066	56.927	06.6611	59.279	25.1299	58.974	22.2318	39.025
3 8.1	34.0039	58.249	07.0890	61.719	25.4194	58.989	22.5208	39.957
3 18.1	34.2491	60.030	07.4189	64.337	25.6683	59.389	22.7620	40.769
3 28.1	34.4716	61.967	07.7657	67.270	25.9261	60.059	23.0272	41.526
4 7.0	34.6174	64.334	08.0759	70.108	26.1449	61.321	23.2664	41.871
4 17.0	34.6720	67.131	08.2544	72.679	26.2865	63.072	23.4219	41.852
4 27.0	34.7159	69.728	08.4057	75.512	26.4276	64.754	23.5825	41.980
5 7.0	34.7204	72.199	08.5554	78.303	26.5565	66.588	23.7473	41.972
5 16.9	34.6367	74.848	08.6163	80.599	26.6153	68.806	23.8449	41.537
5 26.9	34.5239	77.243	08.6005	82.804	26.6417	70.914	23.9068	41.152
6 5.9	34.4022	79.141	08.5498	84.957	26.6567	72.742	23.9601	40.916
6 15.8	34.2420	80.753	08.4841	86.720	26.6446	74.564	23.9962	40.503
6 25.8	34.0377	82.134	08.3512	88.032	26.5857	76.353	23.9841	39.935
7 5.8	33.8138	83.080	08.1236	88.988	26.4832	77.822	23.9157	39.450
7 15.8	33.6094	83.350	07.9141	89.777	26.3905	78.829	23.8622	39.159
7 25.7	33.3831	83.257	07.7043	90.051	26.2756	79.716	23.7928	38.707
8 4.7	33.1190	82.954	07.4049	89.634	26.1001	80.479	23.6493	38.079
8 14.7	32.8961	81.971	07.1077	89.079	25.9366	80.637	23.5114	37.766
8 24.7	32.7023	80.400	06.8663	88.242	25.7917	80.386	23.3987	37.552
9 3.6	32.4913	78.667	06.6246	86.735	25.6189	80.076	23.2567	37.091
9 13.6	32.3129	76.544	06.3862	84.973	25.4497	79.359	23.1086	36.779
9 23.6	32.1937	73.874	06.1937	83.131	25.3113	78.090	22.9868	36.761
10 3.5	32.1206	70.868	06.1071	81.085	25.2123	76.543	22.9129	36.783
10 13.5	32.0804	67.744	06.0785	78.828	25.1327	74.835	22.8579	36.798
10 23.5	32.0865	64.479	06.0618	76.501	25.0678	72.806	22.8037	36.995
11 2.5	32.1939	60.806	06.1799	74.546	25.0875	70.256	22.8389	37.612
11 12.4	32.3589	57.103	06.4242	72.732	25.1662	67.604	22.9401	38.282
11 22.4	32.5455	53.720	06.6816	70.879	25.2511	65.017	23.0358	38.976
12 2.4	32.8239	50.266	07.0114	69.633	25.4058	62.062	23.1954	40.136
12 12.4	33.1819	46.815	07.4694	68.979	25.6423	58.941	23.4446	41.597
12 22.3	33.5504	43.920	07.9666	68.497	25.8958	56.138	23.7092	42.932
12 32.3	33.9462	41.514	08.4647	68.473	26.1705	53.492	23.9839	44.386
Mean Place sec $\delta$ , tan $\delta$	32.5769 +1.530	72.074 +1.158	07.6188 +1.812	68.653 -1.511	25.3123 +1.101	76.153 +0.461	22.9612 +1.014	31.440 -0.167
Dble. Trans.	April 18		April 27		May 9		May 11	

**APPARENT PLACES OF STARS, 2025**  
 TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	560		588		603		622	
HIP-No.	74946		77622		79593		81377	
Name	$\gamma$ Trianguli A		$\epsilon$ Ser		$\delta$ Ophiuchi		$\zeta$ Ophiuchi	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>15<sup>h</sup>21<sup>m</sup></b>	<b>– 68°46′</b>	<b>15<sup>h</sup>52<sup>m</sup></b>	<b>+ 4°23′</b>	<b>16<sup>h</sup>15<sup>m</sup></b>	<b>– 3°45′</b>	<b>16<sup>h</sup>38<sup>m</sup></b>	<b>– 10°37′</b>
<b>12</b> 28 <sup>d</sup> 4	13 <sup>s</sup> 2120	01 <sup>″</sup> 681	02 <sup>s</sup> 7440	65 <sup>″</sup> 801	38 <sup>s</sup> 2525	32 <sup>″</sup> 510	30 <sup>s</sup> 9319	03 <sup>″</sup> 748
<b>1</b> 7.3	13.9068	01.025	03.0245	63.569	38.5207	34.341	31.1897	05.147
<b>1</b> 17.3	14.7117	00.823	03.3501	61.501	38.8389	36.058	31.5020	06.461
<b>1</b> 27.3	15.4920	00.789	03.6516	59.864	39.1347	37.434	31.7938	07.507
<b>2</b> 6.3	16.2563	01.431	03.9602	58.253	39.4397	38.884	32.0972	08.705
<b>2</b> 16.2	17.0329	02.693	04.2864	56.753	39.7663	40.307	32.4263	09.943
<b>2</b> 26.2	17.8324	04.175	04.6131	55.763	40.0989	41.288	32.7666	10.797
<b>3</b> 8.2	18.5561	05.951	04.9068	55.207	40.4017	41.931	33.0797	11.401
<b>3</b> 18.2	19.1591	08.134	05.1615	54.858	40.6665	42.465	33.3565	11.987
<b>3</b> 28.1	19.7935	10.736	05.4402	54.713	40.9618	42.835	33.6694	12.448
<b>4</b> 7.1	20.3835	13.373	05.6941	55.107	41.2372	42.715	33.9666	12.471
<b>4</b> 17.1	20.7934	15.974	05.8716	55.894	41.4357	42.274	34.1865	12.252
<b>4</b> 27.0	21.1601	18.998	06.0551	56.598	41.6432	41.944	34.4184	12.178
<b>5</b> 7.0	21.5132	22.078	06.2397	57.510	41.8562	41.404	34.6595	11.905
<b>5</b> 17.0	21.7319	24.801	06.3583	58.844	42.0034	40.458	34.8344	11.259
<b>5</b> 27.0	21.8298	27.599	06.4430	60.100	42.1159	39.603	34.9740	10.728
<b>6</b> 5.9	21.8563	30.463	06.5173	61.172	42.2177	38.914	35.1028	10.362
<b>6</b> 15.9	21.8396	32.967	06.5699	62.383	42.2986	38.044	35.2108	09.794
<b>6</b> 25.9	21.7082	35.100	06.5732	63.670	42.3279	37.075	35.2648	09.121
<b>7</b> 5.9	21.4197	36.992	06.5215	64.733	42.2969	36.311	35.2539	08.653
<b>7</b> 15.8	21.1285	38.695	06.4787	65.515	42.2736	35.760	35.2495	08.346
<b>7</b> 25.8	20.8108	39.831	06.4139	66.364	42.2269	35.072	35.2196	07.854
<b>8</b> 4.8	20.3452	40.295	06.2752	67.211	42.0995	34.348	35.1025	07.307
<b>8</b> 14.7	19.8576	40.578	06.1384	67.604	41.9696	34.013	34.9791	07.097
<b>8</b> 24.7	19.4216	40.443	06.0186	67.793	41.8551	33.790	34.8691	06.920
<b>9</b> 3.7	18.9657	39.499	05.8644	68.089	41.7019	33.387	34.7159	06.505
<b>9</b> 13.7	18.4985	38.198	05.7016	68.093	41.5350	33.216	34.5441	06.270
<b>9</b> 23.6	18.0779	36.678	05.5601	67.678	41.3854	33.393	34.3860	06.315
<b>10</b> 3.6	17.7923	34.703	05.4578	67.149	41.2742	33.590	34.2650	06.290
<b>10</b> 13.6	17.5828	32.324	05.3696	66.550	41.1747	33.796	34.1531	06.213
<b>10</b> 23.6	17.3888	29.751	05.2823	65.655	41.0708	34.267	34.0322	06.366
<b>11</b> 2.5	17.3830	27.322	05.2778	64.308	41.0501	35.126	33.9950	06.833
<b>11</b> 12.5	17.5601	24.794	05.3353	62.905	41.0932	35.985	34.0230	07.239
<b>11</b> 22.5	17.7708	22.107	05.3900	61.497	41.1302	36.846	34.0427	07.631
<b>12</b> 2.4	18.1004	19.919	05.5080	59.622	41.2293	38.188	34.1236	08.471
<b>12</b> 12.4	18.6264	18.161	05.7132	57.524	41.4194	39.750	34.2985	09.532
<b>12</b> 22.4	19.2339	16.476	05.9365	55.614	41.6292	41.155	34.4952	10.446
<b>12</b> 32.4	19.8747	15.255	06.1772	53.657	41.8566	42.674	34.7106	11.513
Mean Place sec $\delta$ , tan $\delta$	19.7474 +2.762	15.483 –2.574	05.3593 +1.003	69.554 +0.077	41.0710 +1.002	29.250 –0.066	33.9421 +1.017	0 0.139 –0.187
Dble. Trans.	May 12		May 20		May 26		May 31	

## APPARENT PLACES OF STARS, 2025

TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No. HIP-No. Name	625 82273 $\alpha$ Trianguli A		635 83613 60 Herculis		1456 84862 72 Herculis		660 86670 $\kappa$ Scorpii	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>16<sup>h</sup>51<sup>m</sup></b>	<b>- 69°04'</b>	<b>17<sup>h</sup>06<sup>m</sup></b>	<b>+ 12°42'</b>	<b>17<sup>h</sup>21<sup>m</sup></b>	<b>+ 32°25'</b>	<b>17<sup>h</sup>44<sup>m</sup></b>	<b>- 39°02'</b>
12 28 <sup>d</sup> .4	15 <sup>s</sup> 9559	11''778	30 <sup>s</sup> 9652	18''890	34 <sup>s</sup> 2257	60''924	11 <sup>s</sup> 2897	31''750
1 7.4	16.5173	10.066	31.1806	16.415	34.4216	57.661	11.5401	31.134
1 17.4	17.2212	08.592	31.4500	14.185	34.6750	54.728	11.8680	30.500
1 27.4	17.9201	07.231	31.7095	12.357	34.9332	52.268	12.1797	29.800
2 6.3	18.6562	06.510	31.9888	10.564	35.2210	49.952	12.5176	29.477
2 16.3	19.4544	06.361	32.2973	08.953	35.5419	47.952	12.9002	29.425
2 26.3	20.3014	06.360	32.6194	07.954	35.8804	46.705	13.3106	29.224
3 8.2	21.1067	06.719	32.9236	07.432	36.2095	46.077	13.7014	29.111
3 18.2	21.8327	07.644	33.2016	07.124	36.5199	45.798	14.0595	29.341
3 28.2	22.6287	08.970	33.5118	07.188	36.8560	46.049	14.4761	29.661
4 7.2	23.3970	10.401	33.8078	07.912	37.1767	47.110	14.8861	29.835
4 17.1	23.9985	12.058	34.0379	09.010	37.4386	48.647	15.2097	30.128
4 27.1	24.5952	14.258	34.2778	10.133	37.7024	50.333	15.5575	30.772
5 7.1	25.1914	16.602	34.5212	11.616	37.9588	52.493	15.9251	31.388
5 17.1	25.6414	18.812	34.7033	13.533	38.1541	55.146	16.2155	31.858
5 27.0	25.9847	21.331	34.8523	15.388	38.3122	57.791	16.4654	32.618
6 6.0	26.2657	24.104	34.9870	17.109	38.4460	60.344	16.7031	33.635
6 16.0	26.4836	26.650	35.0966	19.024	38.5456	63.101	16.9145	34.482
6 25.9	26.5673	29.041	35.1539	20.992	38.5897	65.898	17.0569	35.292
7 5.9	26.4794	31.476	35.1504	22.640	38.5717	68.326	17.1124	36.355
7 15.9	26.3727	33.811	35.1458	24.033	38.5404	70.451	17.1699	37.461
7 25.9	26.1993	35.671	35.1110	25.491	38.4717	72.578	17.1887	38.278
8 4.8	25.8308	37.096	34.9954	26.790	38.3260	74.427	17.0881	38.991
8 14.8	25.4199	38.427	34.8697	27.571	38.1639	75.651	16.9687	39.854
8 24.8	25.0222	39.321	34.7481	28.147	37.9958	76.566	16.8547	40.502
9 3.7	24.5418	39.439	34.5827	28.728	37.7846	77.340	16.6738	40.695
9 13.7	24.0153	39.223	34.3981	28.904	37.5545	77.568	16.4567	40.839
9 23.7	23.5063	38.743	34.2220	28.587	37.3287	77.164	16.2429	40.977
10 3.7	23.0867	37.618	34.0731	28.145	37.1242	76.501	16.0628	40.684
10 13.6	22.7033	35.946	33.9299	27.568	36.9266	75.571	15.8824	40.056
10 23.6	22.3096	34.022	33.7802	26.549	36.7287	74.055	15.6784	39.423
11 2.6	22.0973	31.962	33.7031	25.089	36.5975	71.997	15.5691	38.744
11 12.6	22.0480	29.497	33.6825	23.603	36.5205	69.835	15.5344	37.706
11 22.5	22.0132	26.744	33.6590	21.990	36.4523	67.447	15.4827	36.512
12 2.5	22.1204	24.268	33.6965	19.880	36.4486	64.511	15.5058	35.583
12 12.5	22.4434	21.900	33.8196	17.616	36.5281	61.419	15.6451	34.648
12 22.4	22.8497	19.399	33.9666	15.506	36.6414	58.469	15.8104	33.506
12 32.4	23.3206	17.226	34.1392	13.297	36.7922	55.442	16.0040	32.550
Mean Place sec $\delta$ , tan $\delta$	23.2709 +2.799	14.263 -2.615	33.7139 +1.025	27.315 +0.225	36.9059 +1.185	71.076 +0.636	15.2307 +1.287	25.624 -0.811
Dble. Trans.	June 4		June 8		June 11		June 17	

**APPARENT PLACES OF STARS, 2025**  
 TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No. HIP-No. Name	671 87585 $\xi$ Draconis		691 90422 $\alpha$ Telescopii		700 90647 Groombridge 2655		699 91262 $\alpha$ Lyrae	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>17<sup>h</sup>53<sup>m</sup></b>	<b>+ 56°51'</b>	<b>18<sup>h</sup>28<sup>m</sup></b>	<b>- 45°57'</b>	<b>18<sup>h</sup>28<sup>m</sup></b>	<b>+ 77°33'</b>	<b>18<sup>h</sup>37<sup>m</sup></b>	<b>+ 38°48'</b>
<b>12</b> 28 <sup>d</sup> 5	55 <sup>s</sup> 2221	58''244	47 <sup>s</sup> 5407	16''262	25 <sup>s</sup> 0015	44''442	45 <sup>s</sup> 2627	21''047
<b>1</b> 7.4	55.3708	54.481	47.7538	14.999	24.9930	40.724	45.3631	17.733
<b>1</b> 17.4	55.5984	51.059	48.0548	13.636	25.1621	37.274	45.5310	14.685
<b>1</b> 27.4	55.8769	48.080	48.3441	12.218	25.5608	34.140	45.7205	11.925
<b>2</b> 6.4	56.2152	45.264	48.6726	11.163	26.1382	31.080	45.9493	09.210
<b>2</b> 16.3	56.6038	42.822	49.0598	10.372	26.8393	28.341	46.2231	06.782
<b>2</b> 26.3	57.0302	41.200	49.4835	09.446	27.6687	26.368	46.5347	05.075
<b>3</b> 8.3	57.4745	40.260	49.8963	08.676	28.6213	25.011	46.8567	03.924
<b>3</b> 18.3	57.9186	39.736	50.2864	08.336	29.6391	24.028	47.1738	03.085
<b>3</b> 28.2	58.3780	39.879	50.7480	08.097	30.6456	23.741	47.5298	02.896
<b>4</b> 7.2	58.8237	40.947	51.2094	07.791	31.6521	24.388	47.8902	03.578
<b>4</b> 17.2	59.2246	42.557	51.5867	07.751	32.6552	25.559	48.2073	04.713
<b>4</b> 27.1	59.6049	44.447	51.9996	08.107	33.5526	27.080	48.5307	06.152
<b>5</b> 7.1	59.9502	46.954	52.4386	08.492	34.3168	29.301	48.8557	08.248
<b>5</b> 17.1	60.2305	50.022	52.7975	08.864	34.9924	32.118	49.1315	10.884
<b>5</b> 27.1	60.4546	53.165	53.1191	09.617	35.5283	35.076	49.3708	13.622
<b>6</b> 6.0	60.6203	56.313	53.4315	10.695	35.8690	38.142	49.5820	16.440
<b>6</b> 16.0	60.7239	59.735	53.7143	11.669	36.0384	41.573	49.7605	19.602
<b>6</b> 26.0	60.7550	63.232	53.9222	12.705	36.0584	45.143	49.8832	22.880
<b>7</b> 6.0	60.7063	66.365	54.0372	14.096	35.9092	48.412	49.9350	25.843
<b>7</b> 15.9	60.6058	69.235	54.1511	15.543	35.5566	51.527	49.9623	28.662
<b>7</b> 25.9	60.4432	72.113	54.2165	16.746	35.0433	54.729	49.9475	31.575
<b>8</b> 4.9	60.2015	74.645	54.1472	17.944	34.4199	57.605	49.8484	34.167
<b>8</b> 14.8	59.9168	76.522	54.0528	19.291	33.6418	59.899	49.7153	36.209
<b>8</b> 24.8	59.5960	78.067	53.9546	20.397	32.7121	61.941	49.5630	38.037
<b>9</b> 3.8	59.2293	79.378	53.7722	21.071	31.7174	63.762	49.3604	39.679
<b>9</b> 13.8	58.8374	80.051	53.5424	21.680	30.6633	64.963	49.1237	40.744
<b>9</b> 23.7	58.4342	80.013	53.3073	22.227	29.5339	65.484	48.8730	41.185
<b>10</b> 3.7	58.0396	79.635	53.0951	22.253	28.3722	65.690	48.6317	41.375
<b>10</b> 13.7	57.6560	78.884	52.8714	21.876	27.2396	65.505	48.3877	41.229
<b>10</b> 23.7	57.2850	77.412	52.6147	21.444	26.1611	64.553	48.1294	40.370
<b>11</b> 2.6	56.9706	75.326	52.4518	20.804	25.1127	62.992	47.9218	38.975
<b>11</b> 12.6	56.7135	73.061	52.3596	19.669	24.1500	61.225	47.7622	37.437
<b>11</b> 22.6	56.4986	70.432	52.2432	18.322	23.3549	58.995	47.6079	35.474
<b>12</b> 2.5	56.3614	67.176	52.2067	17.100	22.6945	56.081	47.5069	32.879
<b>12</b> 12.5	56.3117	63.733	52.2937	15.712	22.1582	52.942	47.4845	30.105
<b>12</b> 22.5	56.3315	60.352	52.4076	14.054	21.8359	49.756	47.5016	27.305
<b>12</b> 32.5	56.4258	56.832	52.5551	12.528	21.7329	46.319	47.5596	24.263
Mean Place sec $\delta$ , tan $\delta$	58.2469 +1.830	69.569 +1.532	51.7649 +1.438	0 5.719 -1.034	30.2331 +4.644	54.231 +4.535	48.1664 +1.283	31.569 +0.804
Dble. Trans.	June 20		June 28		June 28		July 1	

**APPARENT PLACES OF STARS, 2025**

TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No.	725		1517		748		1533	
HIP-No.	94834		97290		98495		101101	
Name	$\omega$ Aql		56 Sagittarii		$\epsilon$ Pavonis		69 Aquilae	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>19<sup>h</sup>18<sup>m</sup></b>	<b>+ 11°38'</b>	<b>19<sup>h</sup>47<sup>m</sup></b>	<b>- 19°41'</b>	<b>20<sup>h</sup>03<sup>m</sup></b>	<b>- 72°50'</b>	<b>20<sup>h</sup>30<sup>m</sup></b>	<b>- 2°47'</b>
<b>12</b> 28 <sup>d</sup> 5	57 <sup>s</sup> .9419	23 <sup>''</sup> .755	47 <sup>s</sup> .7353	67 <sup>''</sup> .677	22 <sup>s</sup> .8204	42 <sup>''</sup> .618	56 <sup>s</sup> .0853	71 <sup>''</sup> .415
<b>1</b> 7.5	58.0272	21.723	47.8233	67.766	22.8925	39.788	56.1176	72.395
<b>1</b> 17.5	58.1745	19.921	47.9600	67.560	23.1378	36.645	56.2103	73.106
<b>1</b> 27.5	58.3223	18.279	48.1110	67.340	23.4034	33.423	56.2961	73.756
<b>2</b> 6.4	58.4998	16.569	48.2873	67.192	23.8125	30.454	56.4116	74.508
<b>2</b> 16.4	58.7214	15.017	48.5146	67.020	24.3855	27.685	56.5771	75.134
<b>2</b> 26.4	58.9784	14.021	48.7774	66.472	25.0501	24.817	56.7822	75.308
<b>3</b> 8.3	59.2388	13.369	49.0409	65.834	25.7555	22.240	56.9945	75.293
<b>3</b> 18.3	59.4912	12.817	49.2977	65.372	26.5002	20.262	57.2054	75.314
<b>3</b> 28.3	59.7984	12.772	49.6230	64.649	27.4013	18.437	57.4847	74.884
<b>4</b> 7.3	60.1174	13.391	49.9617	63.585	28.3242	16.775	57.7861	73.961
<b>4</b> 17.2	60.3900	14.233	50.2479	62.638	29.1553	15.723	58.0475	73.031
<b>4</b> 27.2	60.6888	15.260	50.5758	61.765	30.0925	15.187	58.3508	71.953
<b>5</b> 7.2	61.0111	16.816	50.9386	60.649	31.0802	14.883	58.6932	70.433
<b>5</b> 17.2	61.2888	18.749	51.2510	59.452	31.9367	14.925	58.9983	68.729
<b>5</b> 27.1	61.5429	20.684	51.5462	58.487	32.7617	15.580	59.2913	67.096
<b>6</b> 6.1	61.7898	22.646	51.8454	57.700	33.5854	16.754	59.5902	65.466
<b>6</b> 16.1	62.0197	24.909	52.1303	56.778	34.3319	18.052	59.8815	63.606
<b>6</b> 26.0	62.2014	27.238	52.3641	55.952	34.9407	19.684	60.1301	61.776
<b>7</b> 6.0	62.3177	29.234	52.5306	55.571	35.4006	21.922	60.3173	60.331
<b>7</b> 16.0	62.4281	31.158	52.6998	55.276	35.8297	24.291	60.5062	58.907
<b>7</b> 26.0	62.5056	33.219	52.8328	54.875	36.1229	26.591	60.6645	57.380
<b>8</b> 4.9	62.4911	34.984	52.8588	54.770	36.1588	29.136	60.7253	56.229
<b>8</b> 14.9	62.4506	36.328	52.8621	54.975	36.1271	31.833	60.7604	55.406
<b>8</b> 24.9	62.4014	37.602	52.8579	55.124	36.0257	34.283	60.7862	54.576
<b>9</b> 3.9	62.2938	38.798	52.7797	55.207	35.7082	36.397	60.7439	53.843
<b>9</b> 13.8	62.1466	39.568	52.6550	55.513	35.2709	38.404	60.6536	53.460
<b>9</b> 23.8	61.9855	39.901	52.5156	56.009	34.7809	40.222	60.5427	53.381
<b>10</b> 3.8	61.8335	40.188	52.3815	56.261	34.2471	41.339	60.4321	53.224
<b>10</b> 13.7	61.6686	40.306	52.2248	56.408	33.6323	41.908	60.2963	53.150
<b>10</b> 23.7	61.4733	39.871	52.0278	56.813	32.9358	42.257	60.1158	53.526
<b>11</b> 2.7	61.3300	39.138	51.8896	57.153	32.3560	42.006	59.9798	53.967
<b>11</b> 12.7	61.2296	38.436	51.7929	57.155	31.8384	40.952	59.8769	54.233
<b>11</b> 22.6	61.1101	37.412	51.6628	57.211	31.2628	39.497	59.7382	54.769
<b>12</b> 2.6	61.0353	35.908	51.5828	57.442	30.8372	37.771	59.6357	55.586
<b>12</b> 12.6	61.0381	34.359	51.5892	57.463	30.6115	35.479	59.6060	56.269
<b>12</b> 22.6	61.0610	32.815	51.6074	57.299	30.4305	32.701	59.5848	56.915
<b>12</b> 32.5	61.1062	31.031	51.6460	57.239	30.3514	29.824	59.5778	57.747
Mean Place	60.8183	35.332	50.8332	52.055	29.7055	21.690	58.8797	56.786
sec $\delta$ , tan $\delta$	+1.021	+0.206	+1.062	-0.358	+3.389	-3.238	+1.001	-0.049
Dble. Trans.	July 11		July 18		July 22		July 29	

## APPARENT PLACES OF STARS, 2025

TEN-DAY STARS AT UPPER TRANSIT AT GREENWICH  
EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK5-No. HIP-No. Name	777 102098 $\alpha$ Cygni		1546 102978 $\omega$ Capricorni		1577 108036 $\mu$ Capricorni		855 112029 $\zeta$ Pegasi	
U.T.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	<b>20<sup>h</sup>42<sup>m</sup></b>	<b>+ 45°21'</b>	<b>20<sup>h</sup>53<sup>m</sup></b>	<b>- 26°49'</b>	<b>21<sup>h</sup>54<sup>m</sup></b>	<b>- 13°25'</b>	<b>22<sup>h</sup>42<sup>m</sup></b>	<b>+ 10°57'</b>
<b>12</b> 28 <sup>d</sup> 6	15 <sup>s</sup> 0474	75''219	17 <sup>s</sup> 3893	39''226	38 <sup>s</sup> 5492	68''417	41 <sup>s</sup> 8098	44''337
<b>1</b> 7.6	14.9724	72.412	17.4116	38.821	38.5179	68.701	41.7325	43.253
<b>1</b> 17.5	14.9714	69.665	17.4987	38.058	38.5408	68.636	41.7036	42.325
<b>1</b> 27.5	15.0034	66.808	17.5719	37.217	38.5501	68.542	41.6632	41.209
<b>2</b> 6.5	15.0765	63.779	17.6808	36.374	38.5897	68.432	41.6413	40.014
<b>2</b> 16.5	15.2063	60.891	17.8507	35.438	38.6626	68.301	41.6635	38.979
<b>2</b> 26.4	15.4045	58.494	18.0603	34.152	38.8017	67.484	41.7318	38.246
<b>3</b> 8.4	15.6396	56.409	18.2773	32.822	38.9429	66.683	41.8151	37.602
<b>3</b> 18.4	15.8880	54.496	18.4985	31.696	39.0907	65.961	41.9054	36.961
<b>3</b> 28.3	16.2045	53.277	18.7987	30.283	39.3170	64.791	42.0760	36.881
<b>4</b> 7.3	16.5661	52.850	19.1211	28.615	39.5745	63.273	42.2905	37.247
<b>4</b> 17.3	16.9111	52.755	19.4011	27.194	39.8025	61.908	42.4856	37.610
<b>4</b> 27.3	17.2804	53.166	19.7371	25.825	40.0883	60.375	42.7357	38.390
<b>5</b> 7.2	17.6828	54.410	20.1190	24.261	40.4276	58.483	43.0471	39.753
<b>5</b> 17.2	18.0659	56.194	20.4582	22.772	40.7404	56.608	43.3479	41.276
<b>5</b> 27.2	18.4240	58.271	20.7919	21.566	41.0558	54.850	43.6535	42.950
<b>6</b> 6.2	18.7626	60.726	21.1410	20.566	41.3929	53.118	43.9809	44.900
<b>6</b> 16.1	19.0874	63.722	21.4816	19.524	41.7330	51.275	44.3225	47.165
<b>6</b> 26.1	19.3673	66.981	21.7765	18.691	42.0402	49.587	44.6412	49.478
<b>7</b> 6.1	19.5695	70.125	22.0104	18.388	42.2963	48.349	44.9106	51.591
<b>7</b> 16.0	19.7434	73.455	22.2510	18.181	42.5632	47.126	45.1912	53.899
<b>7</b> 26.0	19.8813	77.055	22.4546	17.968	42.8036	45.919	45.4566	56.320
<b>8</b> 5.0	19.9257	80.378	22.5487	18.194	42.9477	45.227	45.6352	58.324
<b>8</b> 15.0	19.9139	83.418	22.6197	18.722	43.0692	44.816	45.7864	60.185
<b>8</b> 24.9	19.8721	86.480	22.6787	19.210	43.1812	44.409	45.9306	62.109
<b>9</b> 3.9	19.7712	89.352	22.6536	19.747	43.2178	44.226	46.0114	63.757
<b>9</b> 13.9	19.6108	91.736	22.5744	20.519	43.2007	44.378	46.0370	65.050
<b>9</b> 23.9	19.4064	93.654	22.4730	21.446	43.1572	44.760	46.0297	66.093
<b>10</b> 3.8	19.1945	95.391	22.3641	22.108	43.1027	45.044	46.0136	67.095
<b>10</b> 13.8	18.9607	96.748	22.2193	22.664	43.0098	45.405	45.9607	67.840
<b>10</b> 23.8	18.6784	97.328	22.0229	23.449	42.8595	46.148	45.8439	68.044
<b>11</b> 2.7	18.4158	97.470	21.8748	24.013	42.7420	46.765	45.7464	68.201
<b>11</b> 12.7	18.1868	97.408	21.7548	24.156	42.6424	47.121	45.6641	68.364
<b>11</b> 22.7	17.9401	96.661	21.5883	24.331	42.4903	47.713	45.5263	68.010
<b>12</b> 2.7	17.7138	95.231	21.4647	24.500	42.3627	48.352	45.3940	67.403
<b>12</b> 12.6	17.5500	93.578	21.4202	24.291	42.2969	48.668	45.3102	66.897
<b>12</b> 22.6	17.4193	91.587	21.3777	23.847	42.2249	48.903	45.2179	66.169
<b>12</b> 32.6	17.3160	89.089	21.3509	23.411	42.1569	49.202	45.1186	65.149
Mean Place sec $\delta$ , tan $\delta$	18.1187 +1.423	80.930 +1.013	20.2874 +1.121	19.404 -0.506	41.0042 +1.028	50.289 -0.239	44.0854 +1.019	54.444 +0.194
Dble. Trans.	August 1		August 4		August 20		September 1	