

APPARENT PLACES OF STARS, 2024
 SOUTHERN CIRCUMPOLAR STARS AT UPPER TRANSIT AT GREENWICH
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK6 Star No. 1662 = Hipparcos Star No. 30678 = A Octantis

Day	January		February		March		April		May		June	
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	06 ^h 04 ^m	–	06 ^h 03 ^m	–	06 ^h 03 ^m	–	06 ^h 02 ^m	–	06 ^h 02 ^m	–	06 ^h 02 ^m	–
	88° 45′	88° 45′	88° 45′	88° 45′	88° 45′	88° 45′	88° 45′	88° 45′	88° 45′	88° 45′	88° 45′	88° 44′
1	44.741	04.039	83.910	12.837	53.059	17.713	75.448	18.393	42.305	14.447	18.576	66.704
2	44.447	04.346	83.045	13.111	51.852	17.856	74.123	18.310	41.345	14.194	18.152	66.437
3	44.139	04.672	82.110	13.387	50.583	17.984	72.833	18.200	40.465	13.947	17.696	66.191
4	43.797	05.014	81.099	13.655	49.265	18.088	71.608	18.070	39.645	13.718	17.186	65.956
5	43.401	05.370	80.016	13.904	47.921	18.161	70.461	17.934	38.850	13.516	16.621	65.714
6	42.932	05.736	78.882	14.125	46.585	18.202	69.388	17.811	38.038	13.341	16.016	65.454
7	42.379	06.101	77.729	14.313	45.293	18.216	68.359	17.712	37.175	13.183	15.403	65.168
8	41.741	06.454	76.599	14.469	44.074	18.215	67.329	17.642	36.247	13.026	14.815	64.854
9	41.032	06.785	75.529	14.604	42.934	18.219	66.255	17.595	35.263	12.854	14.281	64.518
10	40.283	07.085	74.534	14.736	41.850	18.243	65.113	17.557	34.251	12.657	13.818	64.167
11	39.534	07.353	73.602	14.883	40.781	18.296	63.904	17.509	33.245	12.431	13.430	63.811
12	38.826	07.597	72.697	15.056	39.680	18.376	62.648	17.439	32.276	12.177	13.114	63.458
13	38.181	07.831	71.775	15.257	38.514	18.470	61.378	17.341	31.366	11.902	12.858	63.117
14	37.600	08.073	70.798	15.477	37.276	18.562	60.125	17.213	30.526	11.616	12.645	62.791
15	37.056	08.337	69.749	15.704	35.977	18.638	58.913	17.061	29.755	11.326	12.456	62.483
16	36.511	08.628	68.628	15.923	34.642	18.688	57.757	16.891	29.047	11.041	12.270	62.192
17	35.928	08.942	67.451	16.124	33.300	18.711	56.662	16.711	28.389	10.767	12.069	61.917
18	35.280	09.272	66.240	16.300	31.975	18.707	55.628	16.530	27.763	10.507	11.837	61.651
19	34.555	09.606	65.020	16.450	30.687	18.681	54.646	16.354	27.150	10.263	11.562	61.387
20	33.755	09.930	63.814	16.575	29.448	18.639	53.702	16.189	26.530	10.035	11.244	61.115
21	32.898	10.236	62.639	16.680	28.261	18.590	52.777	16.038	25.884	09.817	10.894	60.826
22	32.004	10.518	61.506	16.772	27.125	18.541	51.853	15.902	25.198	09.605	10.535	60.513
23	31.100	10.775	60.418	16.859	26.030	18.499	50.909	15.778	24.466	09.388	10.198	60.173
24	30.208	11.010	59.370	16.948	24.959	18.468	49.929	15.662	23.694	09.158	09.917	59.810
25	29.344	11.228	58.350	17.046	23.896	18.451	48.902	15.546	22.896	08.905	09.717	59.434
26	28.517	11.436	57.343	17.157	22.819	18.448	47.826	15.422	22.100	08.626	09.607	59.060
27	27.728	11.643	56.329	17.281	21.710	18.455	46.711	15.279	21.336	08.319	09.578	58.701
28	26.969	11.856	55.287	17.418	20.555	18.466	45.573	15.111	20.633	07.991	09.601	58.369
29	26.226	12.079	54.202	17.565	19.346	18.474	44.441	14.915	20.010	07.652	09.640	58.065
30	25.481	12.318	53.059	17.713	18.083	18.470	43.342	14.691	19.472	07.317	09.660	57.787
31	24.716	12.571			16.777	18.445	42.305	14.447	19.003	06.998	09.637	57.523
32	23.910	12.837			15.448	18.393			18.576	06.704		
	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)
	45.93	45.92	46.00	45.99	46.03	46.02	46.01	46.00	45.95	45.94	45.86	45.85

Mean R.A. 06^h03^m07^s.010

Double lower transit June 21

Mean Dec. –88° 45′ 08″.977

Apparent Places of Southern Circumpolar Stars

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APPARENT PLACES OF STARS, 2024
 SOUTHERN CIRCUMPOLAR STARS AT UPPER TRANSIT AT GREENWICH
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK6 Star No. 1662 = Hipparcos Star No. 30678 = A Octantis

Day	July		August		September		October		November		December	
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	06 ^h 02 ^m	– 88°44′	06 ^h 02 ^m	– 88°44′	06 ^h 02 ^m	– 88°44′	06 ^h 03 ^m	– 88°44′	06 ^h 03 ^m	– 88°44′	06 ^h 03 ^m	– 88°44′
1	09.637	57.523	16.079	48.389	36.805	41.959	04.415	40.596	30.772	45.000	44.305	53.588
2	09.562	57.261	16.438	48.109	37.713	41.787	05.487	40.642	31.495	45.273	44.390	53.944
3	09.444	56.988	16.848	47.812	38.672	41.631	06.552	40.713	32.152	45.552	44.427	54.282
4	09.307	56.694	17.327	47.508	39.668	41.497	07.591	40.808	32.745	45.827	44.440	54.600
5	09.183	56.376	17.877	47.206	40.679	41.388	08.588	40.920	33.284	46.092	44.454	54.897
6	09.099	56.035	18.495	46.913	41.687	41.303	09.532	41.044	33.787	46.340	44.494	55.179
7	09.080	55.678	19.166	46.638	42.672	41.238	10.419	41.172	34.277	46.571	44.574	55.458
8	09.136	55.314	19.874	46.384	43.619	41.190	11.253	41.296	34.779	46.785	44.697	55.744
9	09.267	54.953	20.597	46.153	44.521	41.151	12.045	41.410	35.315	46.990	44.849	56.049
10	09.464	54.602	21.317	45.943	45.374	41.114	12.815	41.507	35.897	47.196	45.002	56.383
11	09.712	54.268	22.015	45.752	46.184	41.069	13.586	41.587	36.526	47.417	45.121	56.746
12	09.992	53.954	22.678	45.573	46.965	41.010	14.385	41.653	37.184	47.664	45.168	57.134
13	10.284	53.660	23.298	45.399	47.738	40.934	15.235	41.714	37.835	47.946	45.119	57.533
14	10.568	53.385	23.875	45.221	48.534	40.838	16.148	41.782	38.437	48.263	44.972	57.927
15	10.828	53.124	24.417	45.031	49.382	40.730	17.115	41.873	38.953	48.604	44.746	58.302
16	11.050	52.870	24.944	44.822	50.304	40.622	18.108	42.001	39.367	48.951	44.478	58.648
17	11.229	52.616	25.486	44.590	51.303	40.531	19.080	42.169	39.693	49.288	44.207	58.966
18	11.369	52.351	26.077	44.340	52.357	40.473	19.989	42.370	39.962	49.602	43.964	59.263
19	11.486	52.067	26.746	44.081	53.423	40.455	20.807	42.587	40.216	49.889	43.768	59.549
20	11.606	51.759	27.506	43.830	54.454	40.475	21.539	42.803	40.489	50.154	43.617	59.835
21	11.766	51.426	28.342	43.604	55.417	40.519	22.210	43.003	40.803	50.408	^{43.504} _{43.409}	^{60.130} _{60.441}
22	11.998	51.078	29.220	43.415	56.304	40.570	22.857	43.180	41.164	50.658	43.312	60.771
23	12.321	50.727	30.095	43.262	57.131	40.612	23.515	43.337	41.567	50.917	43.192	61.119
24	12.734	50.390	30.929	43.138	57.927	40.637	24.208	43.479	41.999	51.190	43.030	61.483
25	13.213	50.080	31.703	43.029	58.724	40.642	24.949	43.616	42.442	51.483	42.811	61.859
26	13.718	49.803	32.421	42.919	59.549	40.631	25.739	43.758	42.875	51.797	42.523	62.240
27	14.212	49.557	33.100	42.797	60.421	40.610	26.571	43.911	43.280	52.132	42.160	62.618
28	14.665	49.331	33.768	42.657	61.347	40.588	27.430	44.084	43.637	52.485	41.727	62.985
29	15.066	49.113	34.452	42.497	62.328	40.573	28.299	44.279	43.931	52.850	41.237	63.333
30	15.422	48.889	35.177	42.323	63.356	40.574	29.159	44.498	44.154	53.221	40.710	63.657
31	15.750	48.650	35.959	42.141	64.415	40.596	29.989	44.739	44.305	53.588	40.177	63.956
32	16.079	48.389	36.805	41.959			30.772	45.000			39.663	64.234
	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)
	45.77	45.76	45.69	45.68	45.64	45.63	45.66	45.65	45.73	45.72	45.83	45.82

Mean R.A. 06^h03^m07^s.010

Double lower transit June 21

Mean Dec. –88°45′08″.977

APPARENT PLACES OF STARS, 2024
 SOUTHERN CIRCUMPOLAR STARS AT UPPER TRANSIT AT GREENWICH
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK6 Star No. 1666 = Hipparcos Star No. 76996 = ρ Oct

Day	January		February		March		April		May		June	
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	15 ^h 48 ^m	–	15 ^h 49 ^m	–	15 ^h 49 ^m	–	15 ^h 49 ^m	–	15 ^h 49 ^m	–	15 ^h 49 ^m	–
		84°32′		84°32′		84°32′		84°32′		84°32′		84°32′
1	55.586	09.550	03.277	06.496	11.288	08.231	18.995	14.366	24.182	23.340	26.190	34.011
2	55.765	09.374	03.545	06.435	11.575	08.326	19.241	14.657	24.292	23.719	26.182	34.288
3	55.949	09.185	03.831	06.382	11.875	08.440	19.471	14.970	24.381	24.085	26.192	34.559
4	56.145	08.986	04.133	06.344	12.181	08.581	19.680	15.294	24.456	24.427	26.219	34.838
5	56.357	08.780	04.449	06.330	12.487	08.751	19.865	15.617	24.529	24.742	26.257	35.136
6	56.587	08.576	04.771	06.347	12.784	08.950	20.031	15.922	24.611	25.031	26.294	35.458
7	56.839	08.383	05.090	06.397	13.062	09.170	20.188	16.201	24.712	25.307	26.319	35.803
8	57.109	08.209	05.396	06.474	13.316	09.398	20.349	16.451	24.833	25.584	26.327	36.162
9	57.392	08.064	05.679	06.568	13.548	09.617	20.526	16.681	24.969	25.879	26.312	36.526
10	57.678	07.953	05.939	06.659	13.765	09.812	20.726	16.907	25.110	26.198	26.276	36.885
11	57.957	07.872	06.181	06.733	13.982	09.977	20.944	17.146	25.245	26.544	26.221	37.232
12	58.218	07.813	06.418	06.779	14.211	10.119	21.172	17.408	25.364	26.910	26.153	37.560
13	58.457	07.759	06.663	06.799	14.462	10.250	21.399	17.697	25.463	27.289	26.077	37.867
14	58.677	07.693	06.926	06.805	14.732	10.389	21.616	18.011	25.541	27.669	26.000	38.154
15	58.888	07.605	07.210	06.810	15.018	10.547	21.816	18.344	25.598	28.043	25.926	38.423
16	59.101	07.492	07.512	06.828	15.308	10.731	21.995	18.685	25.638	28.405	25.862	38.678
17	59.329	07.359	07.826	06.870	15.594	10.942	22.155	19.027	25.668	28.749	25.809	38.927
18	59.576	07.218	08.142	06.937	15.869	11.176	22.297	19.362	25.693	29.075	25.769	39.178
19	59.844	07.082	08.454	07.031	16.127	11.425	22.426	19.685	$\frac{25.719}{25.750}$	$\frac{29.383}{29.877}$	25.741	39.439
20	60.130	06.962	08.756	07.146	16.367	11.682	22.547	19.993	25.792	29.962	25.719	39.717
21	60.428	06.866	09.042	07.275	16.589	11.939	22.666	20.284	25.846	30.246	25.697	40.017
22	60.729	06.796	09.312	07.411	16.797	12.190	22.787	20.561	25.913	30.537	25.665	40.339
23	61.025	06.751	09.566	07.547	16.994	12.429	22.917	20.827	25.989	30.843	25.615	40.676
24	61.311	06.727	09.808	07.675	17.185	12.654	23.059	21.089	26.069	31.170	25.541	41.016
25	61.583	06.716	10.043	07.792	17.378	12.864	23.213	21.355	26.143	31.522	25.443	41.346
26	61.841	06.709	10.276	07.896	17.576	13.063	23.379	21.632	26.205	31.893	25.326	41.654
27	62.085	06.700	10.512	07.987	17.785	13.255	23.553	21.929	26.246	32.278	25.201	41.931
28	62.321	06.682	10.757	08.070	18.006	13.447	23.728	22.250	26.264	32.664	25.077	42.177
29	62.552	06.652	11.015	08.149	18.242	13.647	23.896	22.595	26.259	33.039	24.966	42.400
30	62.785	06.610	11.288	08.231	18.488	13.862	24.049	22.961	26.239	33.391	24.871	42.610
31	63.025	06.557			18.742	14.101	24.182	23.340	26.212	33.715	24.794	42.822
32	63.277	06.496			18.995	14.366			26.190	34.011		
	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)
	10.50	10.45	10.50	10.45	10.50	10.45	10.51	10.46	10.51	10.46	10.52	10.47

Mean R.A. 15^h49^m18^s.454 Double lower transit November 17 Mean Dec. –84°32′23″.106

APPARENT PLACES OF STARS, 2024
 SOUTHERN CIRCUMPOLAR STARS AT UPPER TRANSIT AT GREENWICH
 EQUINOX BASED RIGHT ASCENSION – WHOLE NUTATION

FK6 Star No. 1666 = Hipparcos Star No. 76996 = ρ Oct

Day	July		August		September		October		November		December	
	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.	R.A.	Dec.
	15 ^h 49 ^m	–	15 ^h 49 ^m	–	15 ^h 49 ^m	–	15 ^h 49 ^m	–	15 ^h 49 ^m	–	15 ^h 49 ^m	–
	84°32′	84°32′	84°32′	84°32′	84°32′	84°32′	84°32′	84°32′	84°32′	84°32′	84°32′	84°32′
1	24.794	42.822	20.468	48.887	14.320	50.216	08.736	46.269	05.695	38.027	06.855	28.920
2	24.729	43.047	20.304	49.050	14.080	50.182	08.551	46.030	05.678	37.684	06.998	28.638
3	24.668	43.292	20.121	49.213	13.837	50.124	08.379	45.774	05.677	37.351	07.142	28.379
4	24.601	43.558	19.919	49.366	13.597	50.041	08.225	45.508	05.689	37.036	07.281	28.140
5	24.519	43.839	19.701	49.501	13.364	49.937	08.088	45.237	05.707	36.741	07.408	27.914
6	24.418	44.128	19.474	49.614	13.144	49.816	07.968	44.970	05.724	36.466	07.521	27.691
7	24.295	44.415	19.243	49.703	12.938	49.684	07.862	44.713	05.734	36.205	07.622	27.459
8	24.153	44.690	19.014	49.768	12.749	49.550	07.766	44.472	05.732	35.953	07.717	27.209
9	23.996	44.946	18.792	49.812	12.574	49.420	07.674	44.249	05.717	35.697	07.815	26.935
10	23.829	45.180	18.583	49.842	12.411	49.301	07.577	44.043	05.691	35.427	07.927	26.639
11	23.659	45.390	18.386	49.864	12.255	49.198	07.471	43.848	05.661	35.133	08.061	26.329
12	23.493	45.580	18.205	49.886	12.097	49.113	07.351	43.656	05.638	34.810	08.223	26.018
13	23.333	45.752	18.035	49.916	11.932	49.043	07.215	43.453	05.635	34.461	08.411	25.722
14	23.185	45.914	17.874	49.959	11.750	48.981	07.068	43.227	05.659	34.099	08.617	25.453
15	23.051	46.071	17.715	50.021	11.550	48.914	06.921	42.968	05.714	33.741	08.829	25.216
16	22.929	46.233	17.549	50.102	11.333	48.827	06.786	42.676	05.793	33.403	09.035	25.008
17	22.817	46.407	17.368	50.195	11.106	48.706	06.677	42.358	05.884	33.093	09.227	24.820
18	22.710	46.600	17.166	50.290	10.885	48.548	06.597	42.034	05.974	32.812	09.402	24.639
19	22.598	46.814	16.942	50.371	10.681	48.357	06.543	41.719	06.054	32.552	09.560	24.454
20	22.473	47.045	16.701	50.423	10.503	48.149	06.506	41.427	06.118	32.302	09.709	24.256
21	22.327	47.285	16.457	50.437	10.351	47.940	06.473	41.159	06.167	32.050	09.853	24.043
22	22.157	47.519	16.221	50.415	10.217	47.746	06.433	40.913	06.203	31.787	10.000	23.813
23	21.965	47.732	16.005	50.369	10.091	47.572	06.379	40.678	06.233	31.509	10.156	23.569
24	21.760	47.913	15.811	50.313	09.962	47.418	06.310	40.444	06.264	31.212	10.325	23.317
25	21.556	48.059	15.636	50.262	09.823	47.278	06.228	40.202	06.300	30.897	10.511	23.061
26	21.362	48.176	15.473	50.226	09.668	47.142	06.136	39.945	06.349	30.568	10.715	22.809
27	21.187	48.275	15.312	50.208	09.499	47.002	06.040	39.668	06.413	30.229	10.937	22.569
28	21.030	48.370	15.143	50.207	09.316	46.850	05.946	39.371	06.496	29.888	11.174	22.348
29	20.887	48.474	14.962	50.216	09.124	46.679	05.860	39.053	06.599	29.551	11.421	22.152
30	20.752	48.594	14.764	50.226	08.929	46.485	05.787	38.720	06.720	29.226	11.671	21.983
31	20.615	48.733	14.549	50.228	08.736	46.269	05.732	38.375	06.855	28.920	11.916	21.839
32	20.468	48.887	14.320	50.216			05.695	38.027			12.149	21.713
	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)	sec(δ)	tan(δ)
	10.52	10.47	10.52	10.48	10.52	10.48	10.52	10.47	10.51	10.47	10.51	10.46

Mean R.A. 15^h49^m18^s.454 Double lower transit November 17 Mean Dec. –84°32′23″.106