



Reconciliation of Nearby Star Catalogs of Sources Out to 30pc for Exoplanet Searches

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Credit: Dr. Maggie Turnbull (Global Science Institute)



Master Catalog of Stars within 30pc

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1	Name	(M) RA	(M) DEC	(M) DIST (new)	(M) SPEC	(M) V(new)	(M) V(sig) nev	w (M) B-V nev	v (M) B-V(sig) ner	w (G) J	(G) J(sig)	(G) H	(G) H(sig)	(G) K	(G) K(sig)	(G) Lsta	r Mv (new)	(G) Teff	(G) Teff(si
2		A + 25 (1 / 4	All of Al														in an a chuir a chuir an	and an Link Reprint States	egelin bestern er Siekowijeres
3	HIP 57	0.16800	-69.67596	29.869	K2V	8.25440	0.00378	0.87670	0.01658	6.773	0.029	6.341	0.033	6.227	0.02	0.435	5.878327	5090	100
4	HIP 169	0.53640	-68.28076	15.328	K5/MOV	9.17700	0.00391	1.39000	0.04200	6.736	0.035	6.113	0.024	5.896	0.031	0.093	8.249568	3900	100
5	HIP 171	0.54232	27.08226	12.170	G3V	5.80000	0.01500	0.69000	0.01500	4.702	0.214	4.179	0.198	4.068	0.236	0.656	5.373566	5650	100
6	HIP 263	0.82925	4.68714	29.206	M1	12.04000	0.02000	1.47300	0.02000	8.833	0.029	8.183	0.018	7.976	0.024		9.712669		
7	HIP 375	1.16729	34.27150	28.969	~	9.08000	0.04758										6.770354		
8	HIP 400	1.23467	23.26963	26.392	G9V	7.81920	0.00327	0.76624	0.01715	6.398	0.018	6.027	0.036	5.932	0.021	0.434	5.711818	5440	100
9	HIP 428	1.29537	45.78657	11.251	M2	9.95000	0.01900	1.47200	0.01900	6.704	0.021	6.098	0.024	5.853	0.018	0.044	9.694020	3660	100
10	HIP 436	1.32370	-67.83259	15.888	K5V	8.49000	0.01800	1.07600	0.01800	6.44	0.021	5.885	0.033	5.714	0.024	0.159	7.484634	4480	100
11	HIP 439	1.35179	-37.35736	4.342	M1.5V	8.56000	0.02600	1.46200	0.02600	5.328	0.019	4.828	0.076	4.523	0.017	0.022	10.371658	3710	100
12	HIP 473	1.42092	45.81209	11.307	K2	8.14221	0.00350	1.41000	0.01400	6.1	0.025			5.262	0.016	0.119	7.875458	4300	100
13	HIP 518	1.56589	58.43673	21.478	G5V	5.98000	0.00000	0.68700	0.00000	4.871	0.276	4.42	0.078	4.329	0.02	0.988	4.320065	5770	100
14	HIP 522	1.57990	-49.07519	25.714	F7V	5.70127	0.00308	0.51119	0.00574	4.69	0.254	4.646	0.076	4.474	0.024	2.718	3.650459	6200	100
15	HIP 523	1.57875	-65.83919	16.708	M4	12.17000	0.01500	1.55000	0.01500	8.479	0.029	7.839	0.038	7.631	0.017		11.055321		
16	HIP 544	1.65327	29.02150	13.671	KOV	6.06632	0.00310	0.75200	0.00300	4.733	0.019	4.629	0.144	4.314	0.042	0.589	5.387389	5410	100
17	HIP 669	2.06818	-14.82449	27.442	G2/3V	7.04211	0.00310	0.61690	0.00995	5.947	0.027	5.628	0.042	5.556	0.034	0.967	4.850003	5840	100
18	HIP 677	2.09692	29.09043	29.744	B9p	2.04084	0.00306	-0.04609	0.00707	2.129	0.232	2.287	0.158	2.223	0.238	192.717	-0.326171	12010	100
19	HIP 687	2.11367	17.42430	21.749	MO	10.73000	0.01500	1.46000	0.01500	7.807	0.021	7.165	0.018	6.98	0.016	0.063	9.042845	3840	100
20	HIP 738	2.26817	-27.12213	23.447		11.73000	0.01000	1.49300	0.01000	8.655	0.024	8.143	0.026	7.856	0.021	0.031	9.879595	3830	100
21	HIP 746	2.29452	59.14978	16.784	F2III-IV	2.26284	0.00345	0.37206	0.00656	1.714	0.31	1.585	0.174	1.454	0.202	25.876	1.138346	7010	100
22	HIP 897	2.76922	-5.78397	25.543	M2	10.86000	0.01800	1.41800	0.01800	7.976	0.017	7.314	0.024	7.119	0.02	0.077	8.823659	3880	100
23	HIP 910	2.81607	-15.46798	18.748	F5V	4.89181	0.00306	0.47846	0.00616	4.153	0.268	3.8	0.208	3.821	0.218	3.073	3.527079	6320	100
24	HIP 916	2.83704	58.34986	28.082	K7	9.50000	0.02000	1.25400	0.02000	7.189	0.02	6.593	0.02	6.474	0.016	0.219	7.257860	4280	100
25	HIP 950	2.93337	-35.13312	21.277	F3/5V	5.23746	0.00304	0.43806	0.00574	4.414	0.308	4.159	0.238	4.134	0.306	2.895	3.597949	6540	100
26	HIP 974	3.01677	27.09895	26.364	ко	8.70933	0.00372	1.05778	0.03314	6.88	0.018	6.412	0.021	6.298	0.017	0.249	6.604246	4780	100
27	HIP 1006	3.13913	21.71414	27.941	~	11.67000	0.02000	1.48000	0.02000	8.837	0.02	8.277	0.045	8.042	0.027	0.011	9.438808	3910	100
28	HIP 1031	3.20937	-57.91261	20.190	KOV	7.22000	0.00200	0.77500	0.00200	5.852	0.02	5.47	0.026	5.383	0.024	0.485	5.694342	5340	100
29	HIP 1068	3.31100	69.32758	20.036	M6	12.46304	0.01879	1.40000	0.49500	8.556	0.024	7.984	0.02	7.746	0.02	0.038	10.953982	3340	100
30	HIP 1083	3.37115	-36.82871	28.185		10,77000	0.01100	1,44400	0.01100	7.803	0.021	7.183	0.02	6.962	0.018		8.519918		
31	HIP 1092	3.41130	80.66578	19.589	MO	11.00785	0.00575	1.55600	0.08200	7.756	0.034	7.131	0.047	6.904	0.02	0.047	9.547825	3590	100
32	HIP 1242	3.86713	-16.13379	5.940	M3.5V	11.49000	0.01000	1.75000	0.01000	7.215	0.019	6.712	0.034	6.39	0.016	0.005	12.621066	3190	100
33	HIP 1276	4.00831	-48.26085	22.784	M5	11.59752	0.01138	1.64700	0.08200	7.969	0.02	7.357	0.026	7.112	0.015	0.058	9.809349	3470	100
34	HIP 1292	4.05283	-79.85118	17.498	G6V	6.59000	0.00400	0.74900	0.00400	5.366	0.021	4.99	0.038	4.859	0.022	0.657	5.375081	5360	100
35	HIP 1295	4.05913	19.86228	16.308	M:	11,77530	0.01401	1,48500	0.01500	7.875	0.019	7.322	0.018	7.087	0.022	0.007	10,713314	3160	100
36	HIP 1322	4.15113	-50,26967	22.202	M4	12,38000	0.02000	1.53000	0.02000	8,967	0.024	8.33	0.031	8,168	0.024		10.647992		
37	HIP 1349	4.22456	-52.65115	22.599	G2V	6.83678	0.00313	0.62950	0.00812	5.567	0.023	5,195	0.022	5.111	0.022	0.809	5.066349	5750	100
38	HIP 1368	4.27656	40.94830	15.004	MO	8,99000	0.00400	1.37000	0.00400	6.385	0.039	5,748	0.053	5.577	0.024	0.121	8,109001	4020	100
20	LUD 1206	4 33469	20 19200	22 202	M:	11 54000	0.02000	1 50500	0.02000	8.152	0.034	7 499	0.027	7.241	0.018	0.049	9 712386	3550	100

Approach:

Step 1: Cross-check between Turnbull and Bryden's individual tables

- → Checked for discrepancies between shared data for stars that both tables catalogued
- \rightarrow Checked for stars that one table included but the other did not
- \rightarrow Compared Turnbull and Bryden's data by computing the differences between their datasets (e.g., for the list of 2,347 HIP stars the differences between Turnbull and Bryden's right ascensions were calculated)
- \rightarrow Cross-checked Turnbull and Bryden's B-V photometry data by computing the ratio between Turnbull and Bryden's B-V values and the average of their B-V uncertainties

 5.383
 0.034
 5.065
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 4.993
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 7.564
 0.032
 6.922
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0.59900 6.51000 10.78463 0.00400 0.01200 6.922 HIP 1463

Currently the master catalog includes 2,347 HIP stars located at distances of 30pc or less with the data seen in the above image along with the radius of the star, its mass, the number of stellar components, the number of known planets, galactic longitude and latitude, parallax, proper motion, spectral class, and Fe/H (i.e. the data not visible in the image). In addition, this catalog will include an addendum that contains approximately 170 additional fainter stars. Data is still being gathered for those sources.

Step 2: Compilation of Turnbull and Bryden's data into master catalog

- \rightarrow Discussed with Turnbull and Bryden whose values should be used for certain types of data such as position, parallax, photometry, etc.
- \rightarrow Created a master catalog using the most updated version of Bryden and Turnbull's data (Master catalog still in progress, Turnbull and Bryden still updating photometry and bolometric corrections)

Step 3: Collaboration with Dr. Brian Mason of USNO, Washington, D.C.

- \rightarrow In order to compile an accurate list of all nearby stars (both physical and optical) within our ≤30pc range, Mason is helping us obtain information on those sources
- \rightarrow This data will be included in the master catalog, and a possible addendum to the catalog will be added to include additional information from Mason about these stars



Benefits to the Astronomical Community:

This catalog will provide astronomers with a complete and comprehensive source of information about almost all of the known stars located within 30pc of our solar neighborhood. Future exoplanet missions, such as TESS and JWST, will be able to use this catalog to select their target stars. Exoplanets discovered around these stars will be among the closest and will provide astronomers with the unprecedented opportunity to perhaps obtain a spectra of an exoplanet and to discover one of the closest planetary systems harboring an Earth-like planet in the habitable zone of its host star.



