

# Spectrophotometry of speckle binary stars. II

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**Abstract.** Spectrophotometric observations of the second set consisting of 15 stars of speckle interferometric binaries are presented. Observations covered the range 3700–8100 Å with a resolution of 18 Å. Results are presented in the form of the measured flux corrected for atmospheric extinction in the units of  $\text{erg}/\text{cm}^2 \cdot \text{s} \cdot \text{Å}$ , with no corrections for interstellar reddening.  $B, V$ , and  $R$  magnitudes,  $B - V$  colour indices and entire spectral types are also presented and compared with those of Hipparcos catalogue and SIMBAD.

**Key words:** stars: spectrophotometry: spectral energy distribution — stars: binaries: speckle binary stars

## 1. Introduction

As we mentioned in paper I (Al-Wardat, 2002a): “the study of binary and multiple systems by means of speckle interferometry made a valuable contribution to the understanding of formation and evolution of stellar systems, especially in the recent years with the aid of large telescopes and utilization of diffraction limited techniques”. The direct results of speckle interferometric observations are separation angle, orientation angle, and magnitude difference for the subcomponents of each binary or multiple system (Balega et al., 2002). In its turn, this leads to the determination of the orbit and orbital period. Using other kinds of observations, like high resolution spectroscopy (Tokovinin, 1995) or wide range spectrophotometry (Al-Wardat, 2002b), the number of deduced parameters can be raised, and wide understanding of such systems can be achieved.

In paper I, we introduced spectrophotometric observations of 20 stars. In this paper we present the observations of a new set consisting of 15 stars. The observations cover the range 3700–8100 Å with a resolution of 18 Å, 6 Å/px. The objects of the study were taken from the speckle interferometric programme, which has been carried out at the 6 m telescope of the Special Astrophysical Observatory since the early 90s. The programme mainly includes late type dwarfs in the vicinity of the Sun, fundamental parameters of which are badly known. The presented data can be used as a reference for building theoretical spectral energy distributions on the basis of Kurucz blanketed models. This, along with the magnitude difference from speckle interferometric observations, can be

used to build a spectral energy distribution for each of the components from which we can get their  $T_{\text{eff}}$ ,  $\lg g$ , and spectral types.

The stars are listed in Table 1 with different identifications: Hipparcos (Col. 1), HD (Col. 2), other identifications (Col. 3). The coordinates of the stars (Table 1, Cols. 4, 5) were taken from SIMBAD astronomical database.

## 2. Observations and data analysis

Spectra were obtained using the same system which was described in paper I, at the same telescope (Carl Zeiss Jena 1 m of SAO) during the photometrical nights, May 25, 26 and 27, 2002. The seeing was around 1.5". The times of observations in terms of Julian Dates are listed in Table 1, Col.6.

Standards from Massey et al. (1988), Oke (1990) and Hamuy et al. (1992, 1994) were used for the calibration of the system. Spectra were reduced by the same way which was described in paper I using ESO-MIDAS<sup>1</sup> routines. The standard deviation of  $B$  and  $V$  magnitudes, obtained for each star from the sample of the spectra, is typically better than 0<sup>m</sup>06, and for the  $R$  band it is better than 0<sup>m</sup>07. The error bars are the lowest in the central part of the spectrum where the blue and red spectra overlap.

<sup>1</sup> Munich Image Data Analysis System, developed, maintained and distributed by the European Southern Observatory.

Table 1: *List of the stars and log of observations*

Star name			$\alpha_{2000}$ (h)(m)(s) (4)	$\delta_{2000}$ (°) (′) (″) (5)	Times of obs. JD 2452420+ (6)
Hip (1)	HD (2)	Other identifications (3)			
55266	98353	55UMA	11 19 07.9	+38 11 08	1.299, 1.315, 2.239, 2.26
75529	–	–	15 25 48	+84 30 14.4	2.389, 2.433
79796	–	–	16 17 05.4	+55 16 09.1	2.399, 2.423
81470	–	Cou985	16 38 24.2	+35 13 33.8	0.445, 0.506, 1.383, 1.447, 2.299, 2.325
82817	–	Wolf630	16 55 28.8	-08 20 10.8	0.469, 0.518, 1.401, 1.442
83064	–	Cou1289	16 58 22.9	+39 42 35.8	0.463, 0.513, 1.388, 1.452, 2.304, 2.33
83791	–	Cou1291	17 07 30	+38 10 20.6	0.474, 0.500, 1.392, 1.456, 2.335, 2.378
84140	155876	GL661	17 12 07.9	+45 39 59	0.479, 0.495, 1.397, 1.458, 2.34, 2.372
87991	–	KUI84	17 58 24.4	+04 27 41.3	1.408, 1.438
88127	–	40Dra	18 00 03.2	+80 00 14.7	1.538, 1.552
88136	–	41Dra	18 00 09.2	+80 00 14.7	1.534, 1.549
88817	166046	–	18 07 49.5	+26 05 50.4	1.470, 1.500
88818	166045	–	18 07 49.6	+26 06 04.6	1.468, 1.494
95995	184467	–	19 31 08	+58 35 09.6	2.408, 2.416
96302	184759/60	CYG9	19 34 50.9	+29 27 46.6	0.533, 0.545, 1.474, 1.49

### 3. Results and discussion

The final results ( $B_J$ ,  $V_J$ ,  $R_C$ ,  $(B - V)_J$ , and the entire spectral types) are listed in Table 2. The raw data of the SED of the stars (corrected for the atmospheric extinction) are listed in Table 3 in units of  $\text{erg}/\text{cm}^2 \cdot \text{s} \cdot \text{\AA}$ . These data are plotted in Fig. 1, where graphs are arranged according to the spectral type.

$BVR$  synthetic magnitudes are computed using the following integrals:

$$X = -2.5 \log \frac{\int S_x(\lambda) F_\lambda d\lambda}{\int S_x(\lambda) d\lambda} + ZP,$$

where  $S_x(\lambda)$  is the transmission function for the pass-band  $X$ . We adopted the filter functions  $B_{90}$ ,  $V_{90}$  and  $R_{90}$  published by Bessel (1990).  $ZP$  is the zero point for the magnitude scale. For  $V$  band  $ZP$  is solved using the spectrophotometric calibration of Vega published by Hayes (1985) and the  $V$  magnitude of  $0^m03$  measured by Johnson et al. (1966). While for  $B$  and  $R$  bands it is solved using the Vega magnitudes published by Hamuy et al. (2001) as  $B = 0^m014$ , and  $R = 0^m042$ , since they are more reliable than those obtained by Johnson et al. (1966) (see Appendix B in Hamuy et al., 2001). The integrals are computed after interpolating  $S_x(\lambda)$  to the wavelength spacing of  $F_\lambda^{Star}$  which is 6  $\text{\AA}$ .

Figs. 2 and 3 show comparisons between the calculated  $V$  magnitudes and  $B - V$  colour indices with Johnson  $V$  and  $B - V$  of Hipparcos catalogue (fields H5 and H37). The Hipparcos magnitudes are taken either from the ground-based observations or

calculated from  $V_T$  of Tycho using different relations for different kinds or luminosity classes of the stars (for more information see Hipparcos and Tycho catalogues, Sec. 1.3 (ESA, 1997)).

The entire spectral types of the binaries are estimated by comparing  $B - V$  with the intrinsic colours of FitzGerald (1970) neglecting interstellar reddening since all of the stars are nearby stars and their interstellar reddening lies within the error values of  $B - V$  (see Al-Wardat, 2002b). The results are listed in Table 2, Col. 8, along with those from SIMBAD (Col. 9) for comparison sake, where they show a good agreement (within the error values of  $B - V$ ) for 15 stars, while the other 5 stars (Hip75529, Hip83791, Hip84140, Hip88136, and Hip96302) show differences between the spectral types estimated in this work and those given by SIMBAD. The spectral type of Hip88136 was approved as F8 using atmospheric modeling by Al-Wardat (2002b).

### 4. Conclusions

Composite spectral energy distributions of 15 speckle binary stars are measured. 3 are of A, 5 of F, 2 of G, 2 of K, and 3 of M spectral type.

The  $BVR$  magnitudes and the  $B - V$  colour indices are calculated, and the entire spectral types of the pairs are estimated.

A good agreement has been found between the calculated colour magnitudes and colour indices and those of Hipparcos catalogue. The entire spectral types of the stars are also estimated and compared with those given by SIMBAD.

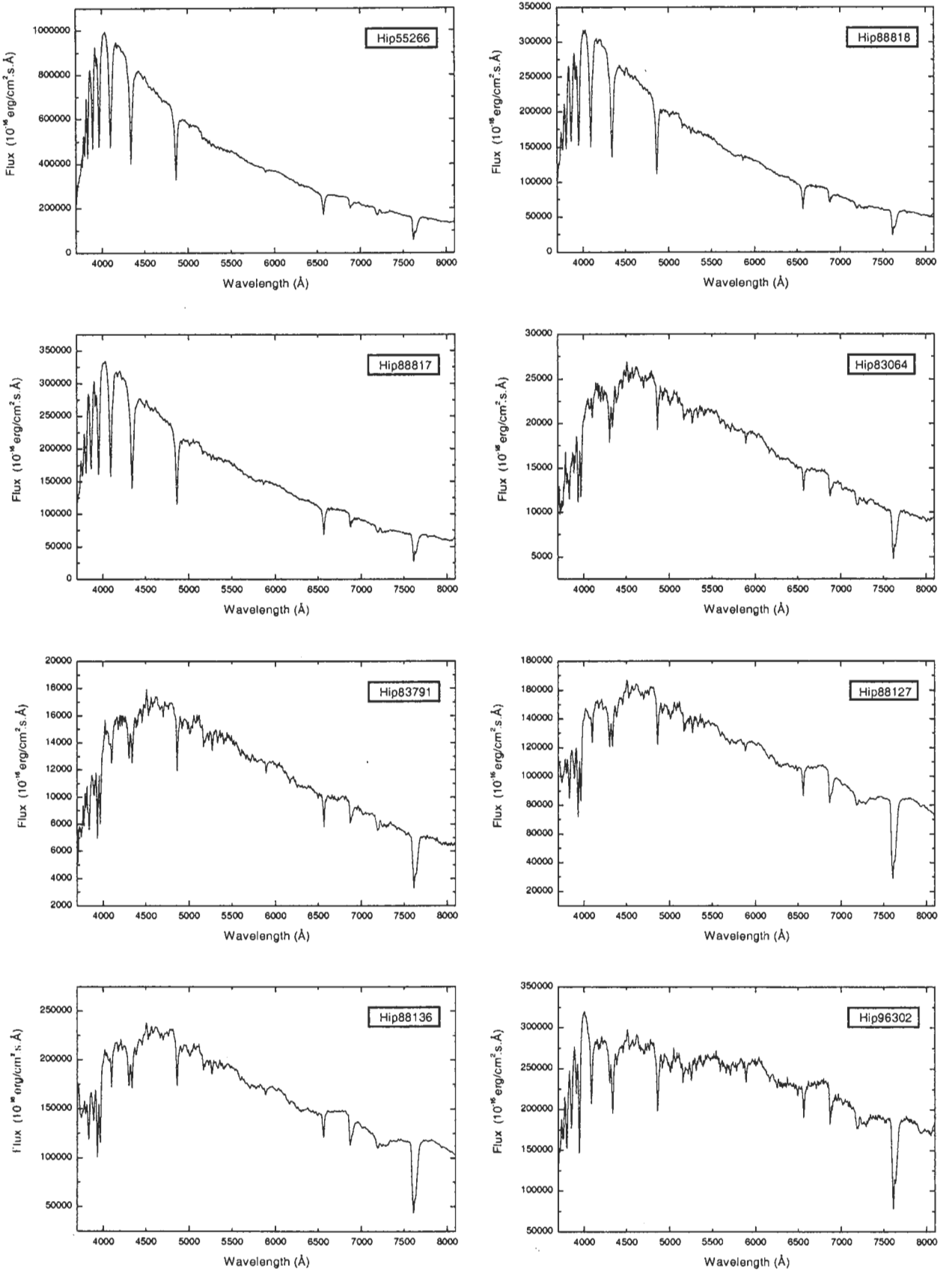


Figure 1: Spectral energy distributions of the stars labeled with the star names.

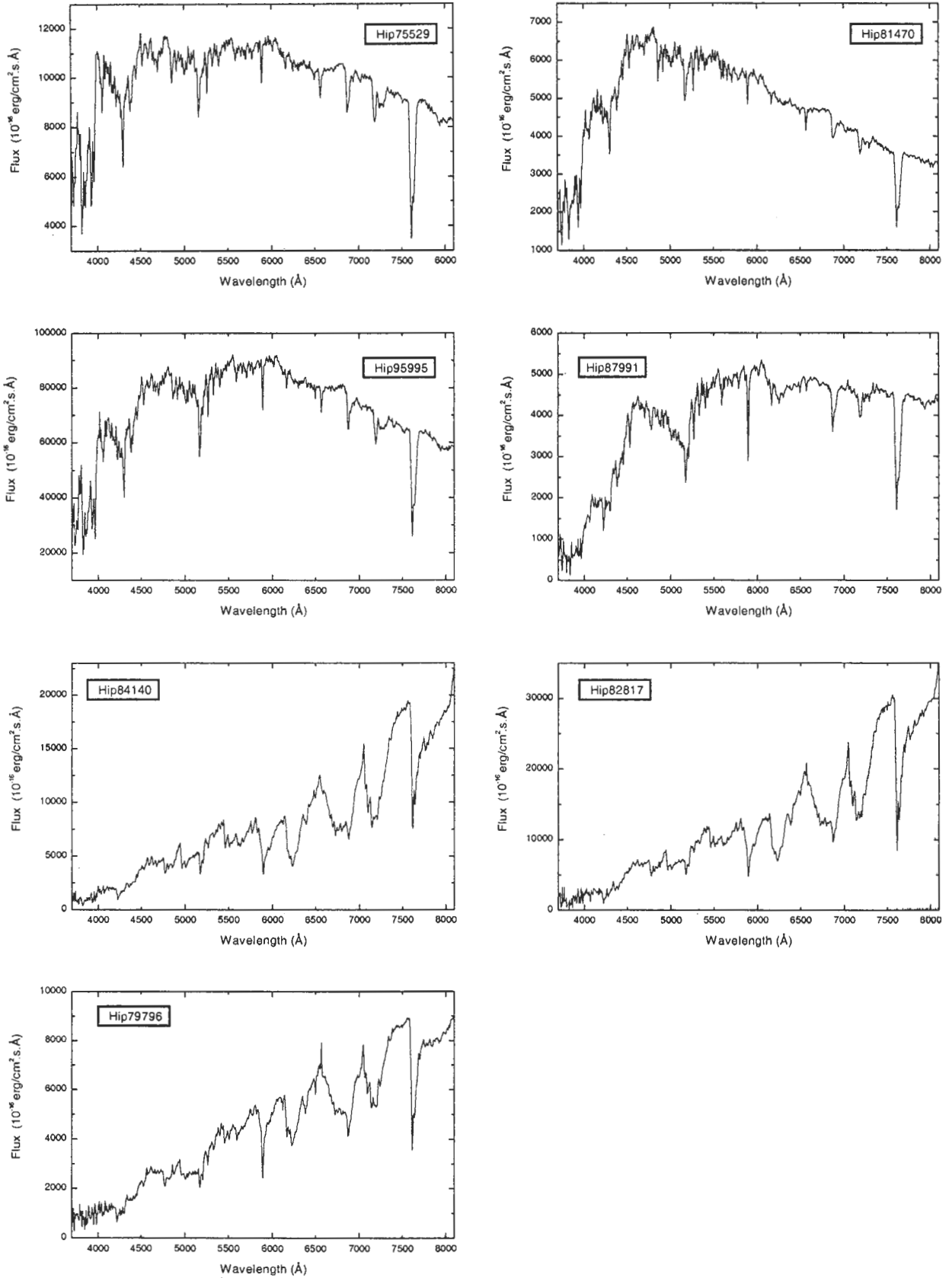


Figure 1: (Continued).

Table 2:  $B_J$ ,  $V_J$ ,  $R_C$ ,  $(B - V)_J$ , and spectral type results of this work

Star name			$B_J$ mag $\pm 0.06^*$	$V_J$ mag $\pm 0.06^*$	$R_C$ mag $\pm 0.07^*$	$(B - V)_J$ $\pm 0.08^*$	Sp. type this work	Sp. type SIMBAD
Hip (1)	HD (2)	Other identifications (3)						
55266	98353	55UMa	4.84	4.77	4.75	0.07	A3	A2V
75529	—	—	9.54	8.82	8.34	0.72	G6	K0V
79796	—	—	11.40	9.92	8.97	1.48	M4	M1
81470	—	Cou985	10.26	9.50	9.18	0.76	G9	K2
82817	—	Wolf630	10.48	8.98	7.95	1.50	M4	M3Ve
83064	—	Cou1289	8.64	8.13	7.90	0.51	F8	G0
83791	—	Cou1291	9.09	8.56	8.33	0.53	F8	G5
84140	155876	GL661	10.86	9.41	8.44	1.45	M0.5	K5
87991	—	KUI84	10.97	9.81	9.19	1.16	K5	K8
88127	—	40Dra	6.63	6.10	5.81	0.53	F8	F7
88136	—	41Dra	6.25	5.73	5.45	0.52	F8	K2V
88817	166046	—	6.00	5.81	5.72	0.19	A6	A3V
88818	166045	—	6.05	5.90	5.86	0.15	A5	A3V
95995	184467	—	7.47	6.61	6.13	0.86	K1	K2V
96302	184759/60	CYG9	5.96	5.40	4.98	0.56	F9	A0V

\* The error values for most of the stars are better than these values.

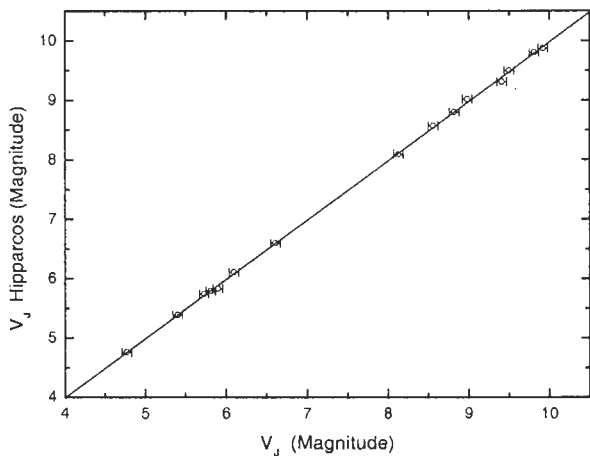


Figure 2: Comparison between the calculated  $V_J$  magnitudes and  $V_J$  magnitudes of Hipparcos catalogue.

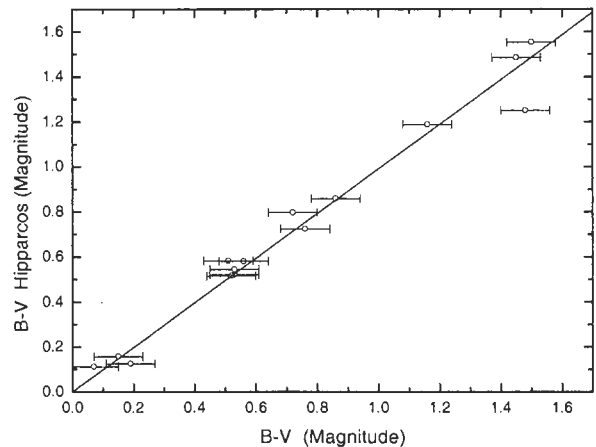


Figure 3: Comparison between the calculated  $(B - V)_J$  and  $(B - V)_J$  of Hipparcos catalogue. Note that the star which lies out of the line is the variable star Hip 79796.

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Table 3: Flux ( E-16 erg/cm<sup>2</sup> . s . Å )

Lambda, Å	Hip 55266	Hip 75529	Hip 79796	Hip 81470	Hip 82817	Hip 83064	Hip 83791	Hip 84140	Hip 87991	Hip 88127	Hip 88136	Hip 88818	Hip 89595	Hip 96302
3700	220955	4840	544	1133	1908	10869	5308	1205	660	109079	167109	88170	103597	132198
3706	220955	4840	544	1133	1908	10869	5308	1205	660	109079	167109	88170	103597	132198
3712	271885	6806	721	2332	2087	11174	5165	797	597	109328	174417	124113	103597	132198
3718	286666	6424	1207	2373	2329	12951	7704	1422	730	109649	174055	130469	122703	144456
3724	310795	5861	724	2358	2484	9763	7426	1612	1123	109693	162104	131385	127734	148433
3730	319960	4832	263	343	10737	7859	735	371	103283	150894	134620	125605	37974	157378
3736	316488	5736	956	2075	000	11011	7457	1061	744	98953	144125	143039	125229	178624
3742	348075	5708	761	1455	512	10223	7698	1761	377	96975	144222	164758	163095	187829
3748	345250	5793	853	1370	3215	11851	7097	773	227	95518	140856	182212	171219	179845
3754	340876	7150	977	1139	989	10607	7106	826	360	101193	142379	176707	166490	183866
3760	407788	7151	918	2233	1415	10764	8196	664	946	101956	148598	158717	147713	168304
3766	428781	7369	991	2275	3204	13172	9387	1019	751	103018	161176	146365	147713	168304
3772	387308	8629	792	2142	1224	12663	8158	494	602	106530	149434	184415	170232	189280
3778	446729	7950	691	1985	000	13511	7844	564	562	111748	157794	205723	195859	241494
3784	518523	7817	695	1854	1235	15487	9035	1124	618	111905	157338	223158	195859	241494
3790	525360	7610	1361	2803	1668	16811	10324	1120	493	105871	148537	218542	205678	206132
3796	461986	7141	900	2440	437	14729	9198	1224	182	102197	145183	188222	181321	154922
3802	457213	6714	898	2371	724	13211	9420	818	628	107918	148408	164761	156140	152378
3808	508264	7742	1084	2632	675	14434	10136	1035	484	112199	164727	147750	147750	182728
3814	615412	6127	731	2214	059	13327	9144	383	469	108775	154168	193693	174110	205216
3820	690528	3679	435	1979	1059	13327	9144	383	469	108775	154168	193693	174110	205216
3826	636617	4335	1081	1342	220	13616	8846	405	593	91405	128969	234780	213905	252615
3832	508547	4361	000	1281	1365	11613	8828	573	540	84605	118859	263769	241491	19348
3838	427337	5072	860	1600	687	11476	7619	652	112	109092	21020	282128	265785	247224
3844	516156	6203	634	2038	000	13846	7640	884	265	103627	140742	278111	261761	226163
3850	664861	4846	341	2160	1716	14945	9426	941	606	114262	161106	246460	234407	197284
3856	761037	5825	843	2191	1700	16346	10390	795	922	117185	165534	207328	201839	177274
3862	815856	5264	502	2108	1465	15716	10890	848	675	118310	166622	169710	187121	186697
3868	821887	4770	1096	2299	353	15277	11158	767	545	117153	166292	169710	187121	186697
3874	796469	5851	537	2323	2022	16742	11622	1132	628	112868	187647	203156	186113	212365
3880	694181	5880	609	2215	1874	16401	11299	834	592	105413	148487	242388	215575	266877
3886	562321	6830	978	2266	1920	14447	10616	1086	670	98907	140077	293464	267056	277390
3892	496377	7308	1300	2628	1900	18390	11493	1198	877	100043	140077	293464	267056	277390
3898	559117	7144	1166	2945	2134	16391	10122	942	658	110226	159240	303780	283785	38314
3904	674771	7321	818	2444	1670	15660	11213	841	827	117767	164856	300749	281517	273172
3910	797715	8021	811	2673	984	17140	10887	1170	796	119816	169001	264393	250676	219201
3916	860267	7645	755	2964	1230	18567	11789	1488	696	115934	165833	268236	246941	241455
3922	925030	6422	798	2976	2404	20864	14198	1702	1249	100830	146322	280763	269710	254089
3928	904437	4836	996	2463	3045	16939	9237	850	1000	79279	116866	289325	266679	254089
3934	842269	4836	1241	1937	3045	16939	9237	850	1000	79279	116866	289325	266679	254089
3940	866195	5444	1114	1607	985	11174	7507	1023	582	86155	117748	232527	223548	233600
3946	840011	7010	943	2019	1912	14013	10032	733	709	104901	144332	190946	181241	184250
3952	866632	7439	546	2581	1540	14639	10663	1439	600	110742	143866	160783	152582	209902
3958	733828	6623	677	2909	1000	16927	11580	1694	1012	101472	143679	158217	156856	209902
3964	607444	5803	1273	2696	3146	15842	9493	914	801	85318	112293	168210	195758	241455
3970	477875	5914	1392	2104	2470	11788	8013	793	630	82938	115401	254880	236965	261691
3976	499023	7630	1285	2520	1249	12432	9306	1313	594	102404	139831	280929	236965	261691
3982	632044	8826	661	3204	2692	12470	10601	1543	951	122411	168588	304022	281249	305573
3988	748991	9250	548	3139	3363	17805	12364	1693	890	132855	183535	318716	266573	310852
3994	567821	10596	897	3720	2066	19652	13164	1674	1327	138284	195826	320521	302793	310852
4000	842694	11083	1094	4170	2006	20446	13946	2201	1346	139686	197800	339117	312293	31857
4006	949367	11083	1366	4010	2720	20864	14198	1702	1249	101363	197800	339117	312293	31857
4012	969650	10779	1319	3998	2278	20470	14281	1647	1394	144886	206616	350778	316960	320032
4018	863241	11016	1476	4460	2697	21234	15061	1933	1262	147036	210626	350778	316960	320032
4024	953852	10687	969	4697	3118	21651	15700	1702	1460	147301	204118	332281	316821	312730
4030	950070	10689	1122	4398	2335	21871	14981	1601	1499	145604	204118	332281	316821	312730
4036	952704	9772	1116	4152	2302	22139	14699	1446	1549	145368	204976	332769	316821	312730
4042	949483	10074	1421	4193	2312	22363	14820	1736	1590	144912	207295	325411	310480	290663
4048	974376	9766	1072	4193	2564	22159	14906	1794	1644	143774	205483	323132	308139	292699
4054	978374	9779	889	4115	2566	22813	14780	1911	1525	142492	205483	323132	308139	292699
4060	951633	8611	996	4211	2363	22499	14720	2265	1513	141137	199694	303048	291616	286488
4066	933232	9194	1051	3990	1669	21673	14489	1918	1406	140702	200192	293703	280236	282272



Table 3: Flux ( E-16 erg/cm<sup>2</sup> . s . Å ) (continued)

Lambda Å	55206	75229	Hip 79790	Hip 81470	Hip 82817	Hip 83064	Hip 83701	Hip 84140	Hip 87991	Hip 88127	Hip 88136	Hip 88817	Hip 88818	Hip 95995	Hip 96302
4444	807724	10491	1784	5774	4374	24944	10489	3261	3061	154612	270220	274921	262994	73271	277655
4450	807068	10066	1716	5981	4478	24896	16337	3313	3123	152976	271472	272289	261830	70352	278750
4456	808056	9973	1708	5811	4330	23849	15470	2960	2797	150903	2714836	272432	261749	70352	278750
4462	801066	10283	1868	5472	4323	24059	15849	3034	2900	150013	216575	271069	259562	70402	268984
4474	797932	10644	2005	6042	4952	24606	16007	3400	3172	155098	221523	268985	259610	74346	273610
4478	795302	10903	2060	6046	5244	25746	16820	3598	3409	155877	226023	269017	258716	77284	280663
4480	782811	11106	2176	6282	5255	25967	16821	3743	3449	158326	226266	267108	257713	76043	284640
4486	812158	11108	2234	6120	5258	25433	16572	3764	3477	156483	226266	263685	253139	76723	283278
4492	790739	11205	2172	6100	5492	25586	16594	3677	3752	160833	224192	265113	255544	78581	284452
4498	794251	11490	2292	6202	5207	25268	16815	3788	3758	167033	227899	273293	262582	84197	294473
4504	788134	11810	2308	6584	5455	26501	17493	4107	4027	167033	237320	273949	262582	84197	294473
4510	788134	11810	2279	6685	5294	26926	17941	4060	4053	166559	237320	273949	262582	84197	294473
4516	780847	11115	2211	6517	5535	26461	17457	3848	3909	163339	237320	273949	262582	84197	294473
4522	770998	10530	2079	5904	5330	24777	16402	3838	3860	158507	225612	268891	263266	81271	292597
4528	763940	10491	2079	5904	5330	24777	16402	3838	3860	158507	225612	268891	263266	81271	292597
4534	763096	11016	2152	5777	5753	24677	16002	3707	3217	155725	222235	264547	253343	73797	277310
4540	761031	10984	2307	6008	5867	24903	16300	3890	3668	158623	226863	264791	253151	77603	273568
4546	752101	11040	2274	6200	6054	25727	16691	4019	3879	157963	226334	264408	254408	79603	279306
4552	743711	11375	2338	6200	6165	25519	16418	4181	3848	157436	224495	263131	253090	80411	277450
4558	743312	11393	2345	6267	6522	25042	16601	4194	4035	160210	229210	268114	251859	81168	280306
4564	745588	11415	2770	6499	6883	25631	17344	4597	4289	163043	239043	269188	249192	81655	283136
4570	740601	11410	2832	6523	6796	25880	17135	4805	4254	163027	234269	262161	251554	83028	284197
4576	743482	11184	2547	6650	6635	26310	16974	4871	4328	161818	232256	262717	252497	80432	284948
4582	736920	11268	2656	6424	6602	25582	16636	4571	4157	160015	227869	262279	252634	82219	280085
4588	730981	10997	2643	6257	6331	25033	16744	4180	4211	159852	227222	268542	248657	80529	277943
4594	734192	10786	2616	6379	6260	25307	16985	4258	4258	160256	228346	267669	248597	79952	279059
4600	737708	11017	2709	6368	6664	25563	16957	4296	4245	161248	230821	269897	248759	80894	279918
4606	741318	11165	2796	6489	6709	25999	17192	4574	4302	163215	233185	261775	251112	83353	283796
4612	736023	11538	2899	6564	6947	26353	17415	4905	4394	164265	233306	263429	251316	85426	289318
4618	727419	11494	2851	6668	7177	26062	17332	5002	4404	164035	233188	262229	251764	83717	291414
4624	726550	11631	2776	6646	6835	26284	17342	4836	4475	163628	233400	268020	247665	84905	290227
4630	715754	11461	2693	6578	6229	25948	17177	4176	4365	161778	231083	266691	246669	81191	284454
4636	715859	10999	2623	6416	6270	25758	16783	4229	4189	159966	228666	265467	244469	78776	279494
4642	724790	10737	2692	6291	6430	25518	16744	4317	4125	158914	228173	265964	244704	80738	279494
4648	714501	10946	2609	6298	6413	25255	16729	4357	4156	159128	228213	265964	243224	82475	278264
4654	719600	11079	2626	6480	6516	25270	16671	4574	4308	158216	226298	263633	243224	82475	278264
4660	712692	10816	2770	6480	6516	25270	16671	4574	4308	158216	226298	263633	243224	82475	278264
4666	701293	10545	2678	6376	6758	25221	16435	4520	4252	156955	222840	251157	238507	80550	276484
4672	700541	10728	2862	6345	6404	24815	16482	4187	4153	156023	223219	248957	238507	80550	276484
4678	700541	10728	2862	6388	6219	24874	16562	4146	4204	156303	227431	249834	238983	80990	273420
4684	701058	10787	2601	6338	6219	24874	16562	4146	4204	156303	227431	249834	238983	80990	273420
4690	695144	10726	2739	6423	6522	25264	16750	4305	4176	156833	226260	249069	239680	81798	273004
4696	696960	10538	2658	6449	6631	25142	16621	4405	4196	156213	226260	249069	237627	79079	273004
4702	687869	10271	2733	6291	6770	24310	16150	4010	4009	156336	220703	246650	237627	79079	273004
4708	687869	10271	2733	6291	6770	24310	16150	4010	4009	156336	220703	246650	237627	79079	273004
4714	682861	10959	2699	6116	6060	23973	15927	4847	3927	164468	220260	247668	237627	79079	273004
4720	682340	11129	2699	6294	6548	24651	16410	4388	4145	157941	220460	247668	237627	79079	273004
4726	686216	10992	2763	6588	6758	25352	17029	4404	4360	159946	227113	243846	233094	82569	268205
4732	681299	10867	2696	6304	6735	25366	16942	4369	4205	158590	226101	243846	233094	82569	268205
4738	679598	11060	2891	6452	6840	24724	16938	4392	4173	158315	226266	243846	233094	82569	268205
4744	682299	11274	2934	6542	6940	24934	17135	4629	4149	160093	226101	243846	233094	82569	268205
4750	682299	11274	2934	6542	6940	24934	17135	4629	4149	160093	226101	243846	233094	82569	268205
4756	679889	10973	2866	6500	6895	25180	16710	4870	4157	159775	228727	242070	231183	80452	274659
4762	673793	11094	2896	6500	6895	25180	16710	4870	4157	159775	228727	242070	231183	80452	274659
4768	671865	11377	2932	6493	5877	24969	16475	4053	4053	157970	228408	243349	232732	83870	281572
4774	671865	11377	2932	6493	5877	24969	16475	4053	4053	157970	228408	243349	232732	83870	281572
4780	667946	11702	2091	6652	4934	25724	16897	4494	3732	158342	225420	238734	229746	81459	274120
4786	669255	11568	2197	6692	4864	25677	16867	4494	3732	158342	225420	238734	229746	81459	274120
4792	666938	11563	2290	6744	5343	25085	16967	4494	3732	158342	225420	238734	229746	81459	274120
4798	666938	11563	2290	6744	5343	25085	16967	4494	3732	158342	225420	238734	229746	81459	274120
4804	664022	11606	2438	6822	6298	25912	16965	4296	4063	162292	231236	234618	224592	86220	282334
4810	648460	11672	2401	6876	5520	25017	16879	3758	4183	161062	229924	233786	224203	86892	278302
4816	648460	11672	2401	6876	5520	25017	16879	3758	4183	161062	229924	233786	224203	86892	278302



Table 3: Flux (E-16 erg/cm<sup>2</sup> · s · Å) (continued)

Lambda Å	HIP 55266	HIP 75529	HIP 78796	HIP 81470	HIP 82817	HIP 83064	HIP 83791	HIP 84140	HIP 87991	HIP 88127	HIP 88136	HIP 88817	HIP 88818	HIP 95995	HIP 96302
4816	644240	11698	2409	6873	5470	25415	16823	3862	4178	162053	231908	229449	219847	87006	281695
4822	633224	11574	2392	6826	5732	25144	16554	4019	4190	161255	230042	225749	217014	86096	279747
4828	615765	11405	2342	6584	6183	25105	16599	4109	4055	158649	229178	220994	210282	84571	272860
4834	5985959	11248	2446	6594	6151	24653	16176	4233	3963	156657	225104	212884	204635	84381	266386
4840	5701224	11219	2463	6462	5880	24382	15978	4267	3969	154216	219044	205126	196382	82229	259710
4846	5231714	11091	2512	6566	6025	24176	15786	4199	4070	149122	216082	186408	183355	80660	249733
4852	4612003	10456	2718	6476	6021	23306	15205	3947	4139	140052	197312	163439	163190	80660	228431
4858	3795946	9805	2978	5977	6462	21314	12877	3947	3974	125031	177754	132638	135754	77660	199083
4864	3300200	9832	2793	5750	6389	19278	11958	4128	3887	121884	173998	132638	135754	77660	201432
4870	4642292	10501	2598	5433	6056	13541	10354	4104	3787	131453	186610	135556	126092	77206	220142
4876	510537	10605	2598	5433	6056	13541	10354	4104	3787	131453	186610	135556	126092	77206	220142
4882	510537	10605	2598	5433	6056	13541	10354	4104	3787	131453	186610	135556	126092	77206	220142
4888	5440517	10846	2688	5989	6635	23151	15069	4636	3724	144739	207264	193411	186599	81866	251419
4894	5400253	11140	2730	6018	6914	22719	15482	4649	3829	148099	211204	200386	188995	81966	265070
4900	582708	11121	2811	6398	6761	24209	15945	4945	4131	150972	213877	207497	197422	82883	267206
4906	522236	10957	2938	6342	7121	23763	15572	5259	4121	150499	214121	211755	201377	82883	262168
4912	595944	10429	2907	6342	7121	23763	15572	5259	4121	150499	214121	211755	201377	82883	262168
4918	591307	10289	2907	6342	7121	23763	15572	5259	4121	150499	214121	211755	201377	82883	262168
4924	5906659	10764	3042	6687	8250	22615	15063	5625	3691	143761	206859	206876	197286	80963	256631
4930	5943653	10764	3042	6687	8250	22615	15063	5625	3691	143761	206859	206876	197286	80963	256631
4936	5983830	10828	3034	6072	8126	23524	15246	5803	3972	143989	211664	213541	201803	81108	268606
4942	5977701	11119	3042	6186	8245	23056	15663	5884	4004	148127	214157	215541	203853	81108	268606
4948	601141	10961	3179	6342	8487	23513	15743	6223	4110	160270	214738	213541	203853	81108	268606
4954	596652	10669	2773	6342	8487	23513	15743	6223	4110	160270	214738	213541	203853	81108	268606
4960	590886	10768	2529	6027	5967	23521	15677	4174	3774	146515	214589	214597	192666	81903	264601
4966	597626	10979	2595	6223	6106	23702	15373	4245	3969	148956	213176	213970	209830	81707	263108
4972	593572	10979	2595	6223	6106	23702	15373	4245	3969	148956	213176	213970	209830	81707	263108
4978	587730	10459	2565	6223	6228	23609	15494	4308	3934	146570	213006	212451	209547	78812	261180
4984	585462	10673	2613	5946	6358	22744	15080	4313	3859	142693	207830	213421	209547	78812	261180
4990	584628	10639	2616	6049	6422	22480	15288	4496	3859	142693	207830	213421	209547	78812	261180
4996	583396	10460	2493	6111	6488	23657	15362	4679	3657	143861	209893	213932	209830	78812	261180
5002	580468	10191	2443	6035	6082	22501	15105	4679	3657	143861	209893	213932	209830	78812	261180
5008	577069	10137	2373	5858	5746	22511	14703	3946	3483	143456	204254	207328	195092	75604	247079
5014	575015	10233	2389	5858	5746	22511	14703	3946	3483	143456	204254	207328	195092	75604	247079
5020	568737	10243	2468	6063	6173	22805	14729	4080	3481	139966	203760	204743	193184	74356	246052
5026	568737	10243	2468	6063	6173	22805	14729	4080	3481	139966	203760	204743	193184	74356	246052
5032	567338	10523	2361	6063	6318	22861	15194	4316	3547	143984	208411	209797	197272	79488	259083
5038	567338	10523	2361	6063	6318	22861	15194	4316	3547	143984	208411	209797	197272	79488	259083
5044	568116	10837	2614	6281	6593	22723	15203	4531	3525	143559	209702	209270	196501	74830	256925
5050	568116	10837	2614	6281	6593	22723	15203	4531	3525	143559	209702	209270	196501	74830	256925
5056	573184	10937	2655	6479	6843	22575	15086	4679	3612	146259	211775	211585	199890	78165	260560
5062	573184	10937	2655	6479	6843	22575	15086	4679	3612	146259	211775	211585	199890	78165	260560
5068	572338	10927	2659	6295	6512	22908	15787	4781	3612	146259	211775	211585	199890	78165	260560
5074	572338	10927	2659	6295	6512	22908	15787	4781	3612	146259	211775	211585	199890	78165	260560
5080	568593	10574	2610	6113	6680	23217	15678	4753	3659	151591	216162	215175	200268	81176	263193
5086	568593	10574	2610	6113	6680	23217	15678	4753	3659	151591	216162	215175	200268	81176	263193
5092	567520	10938	2691	6364	7185	23547	16104	5089	3590	145938	213572	208537	196399	78151	259926
5098	568885	10725	2577	6148	6833	22929	15886	5026	3462	148398	213292	211049	196915	79339	262469
5104	568885	10725	2577	6148	6833	22929	15886	5026	3462	148398	213292	211049	196915	79339	262469
5110	565574	11031	2603	6166	6745	22929	15886	5026	3462	148398	213292	211049	196915	79339	262469
5116	565574	11031	2603	6166	6745	22929	15886	5026	3462	148398	213292	211049	196915	79339	262469
5122	562631	10711	2681	6365	6777	22811	16020	4866	3282	148809	214372	210080	197848	81178	263626
5128	563550	10280	2578	6088	6985	22417	15495	5045	3206	145808	207687	205171	191824	75411	258568
5134	542562	10298	2677	5974	7090	22260	15184	5421	3241	145854	207170	203998	190521	75585	255083
5140	542562	10298	2677	5974	7090	22260	15184	5421	3241	145854	207170	203998	190521	75585	255083
5146	543673	10388	2617	5957	7084	22102	15141	5421	3241	143752	205279	205020	190609	73053	254054
5152	548493	10418	2606	5957	7084	22192	15197	5062	3163	143900	206145	203135	188987	74842	256637
5158	540146	9883	2810	6028	7025	22179	15354	5354	3265	144588	203839	200939	187949	75872	250277
5164	532284	8733	2567	5744	6954	21718	14761	5304	3138	140007	196035	195683	183203	74765	233029
5170	512190	8421	2126	5917	5935	20615	13715	5304	3138	140007	196035	195683	183203	74765	233029
5176	510592	8890	2045	4927	5089	20390	13900	4313	2967	131023	189831	196951	182686	64953	244170
5182	519205	8769	2173	5037	5197	21080	14181	3411	2454	136897	195896	195146	180311	58065	247548

Table 3: Flux (E-16 erg/cm<sup>2</sup> . s . Å) (continued)

Lambda Å	Hip 75529	Hip 79796	Hip 81470	Hip 82817	Hip 83054	Hip 83791	Hip 84140	Hip 87991	Hip 88127	Hip 88136	Hip 88817	Hip 88818	Hip 95995	Hip 96302
5188	1512319	2489	6082	5876	20770	14043	3929	2714	132686	193396	196212	182643	67849	95995
5194	518965	9994	2586	5362	0501	20900	14155	4482	136022	193304	196171	181130	72685	248195
5200	513375	10070	5642	6044	21082	14435	4236	3214	138444	193904	194838	180356	73093	249846
5206	502574	10041	2354	6639	21427	14488	4626	2942	139302	190775	193977	179235	70097	249063
5212	512238	10846	2808	6639	21616	14690	4642	3142	138097	199651	192607	178845	75795	247637
5218	510410	10401	3167	6716	21554	14734	5690	3743	139961	198872	192607	176760	79075	243352
5224	509999	10202	3265	5937	8410	13222	6056	3893	139972	197163	190044	175862	76981	249236
5230	483706	10379	3427	5808	8975	12126	6444	3900	136533	194800	191489	177298	77867	258109
5236	492574	10813	3516	5857	8086	12155	6442	4153	138749	199079	192746	178589	81958	255424
5242	485626	10680	3404	6199	8694	11641	6248	4389	142119	199634	192216	179159	86005	249311
5248	505626	10670	3404	6199	8694	11641	6248	4389	142119	199634	192216	179159	86005	249311
5254	505071	10667	3331	6072	8995	11442	6126	4250	141459	199502	191274	177962	84197	254706
5260	490091	9932	3164	5921	21372	14636	6185	4080	138665	191102	183861	169910	78045	239464
5266	490391	9932	3164	5921	21372	14636	6185	4080	138665	191102	183861	169910	78045	239464
5272	482817	9883	3210	5577	20619	13794	5718	3575	132117	185684	182367	169353	69632	247865
5278	479687	10503	3521	6575	8775	13916	6336	3851	134063	191476	186057	174947	81151	260415
5284	486704	10881	3636	9425	20777	14540	6681	4187	138989	190233	192325	174837	85217	259492
5290	489127	10992	3638	9260	9767	14482	6922	4422	140408	199942	188805	174837	85217	259492
5296	489127	10992	3638	9260	9767	14482	6922	4422	140408	199942	188805	174837	85217	259492
5302	484157	11180	3726	6038	9667	14601	6960	4379	141675	197669	184792	171242	83088	263229
5308	488657	11232	3805	6179	9502	14900	7042	4601	141050	198317	185420	171371	87477	252695
5314	477068	11175	3503	6358	9915	15175	7104	4780	141018	198317	185420	171371	87477	252695
5320	477579	10753	3770	6229	9817	15175	7104	4780	141018	198317	185420	171371	87477	252695
5326	475835	10468	3565	5836	9439	14804	7137	4578	138034	193674	186801	170997	82436	259309
5332	469499	10655	3604	5708	9364	13985	6741	3982	134414	191694	183427	169515	80879	259758
5338	473682	10855	3663	5937	9563	20913	7453	4253	136825	194438	185637	171845	84032	263635
5344	471734	11031	3744	6036	9746	21152	7629	4275	136825	194438	185637	171845	84032	263635
5350	480062	11339	3984	6064	10084	21380	7858	4393	137899	196905	186937	173239	83773	265417
5356	475905	11384	4167	6234	10556	21817	8483	4741	143028	200079	184375	169565	89116	258650
5362	472090	11096	4207	6359	10647	21977	8483	4741	143028	200079	184375	169565	89116	258650
5368	463102	10889	4130	6035	10654	21646	8458	4659	137595	194841	186438	170616	83797	261088
5374	473564	11117	4203	5957	10734	21252	8458	4659	137595	194841	186438	170616	83797	261088
5380	475271	11322	4464	6127	11242	14402	7721	4471	137004	194043	186438	171165	85103	258885
5386	471993	11025	4434	6179	11690	14733	8032	4764	139952	196560	184335	170680	86455	254801
5392	471495	10791	4290	6111	11613	14141	7871	4634	138943	194084	181400	167059	83934	252143
5398	468276	10612	4185	5895	11183	13359	7758	4315	130685	191227	182587	167500	80883	255712
5404	470601	10460	4141	5724	10943	20867	7674	4171	134669	191451	181066	167007	80394	257381
5410	459669	10731	4230	5768	10981	20879	7520	4206	133640	190848	179789	166244	82883	257381
5416	459434	11047	4679	5952	11665	20880	8023	4633	136147	194050	181574	167064	86741	260520
5422	467983	11020	4640	5952	11860	21578	8426	4625	137125	194050	181574	167064	86741	260520
5428	465597	10903	4443	5970	11435	21103	8426	4625	137125	194050	181574	167064	86741	260520
5434	462665	11060	4404	5866	11455	21186	8426	4625	137125	194050	181574	167064	86741	260520
5440	468097	11324	4836	6093	11793	21571	8426	4625	137125	194050	181574	167064	86741	260520
5446	463470	11247	3833	6118	9489	21617	8426	4625	137125	194050	181574	167064	86741	260520
5452	452101	11351	3848	6089	8872	21662	8426	4625	137125	194050	181574	167064	86741	260520
5458	452101	11351	3848	6089	8872	21662	8426	4625	137125	194050	181574	167064	86741	260520
5464	457903	11446	4006	6138	9335	21545	8426	4625	137125	194050	181574	167064	86741	260520
5470	459584	11263	4006	6161	9602	21457	8426	4625	137125	194050	181574	167064	86741	260520
5476	458326	11580	4330	5936	9620	21244	6404	4632	135879	193182	182332	166121	86613	264341
5482	453706	11550	4288	6042	10270	21548	6880	4644	136426	193991	178044	162952	89188	262091
5488	453706	11550	4288	6042	10270	21548	6880	4644	136426	193991	178044	162952	89188	262091
5500	460393	11404	4111	6036	9532	21466	6512	4686	135016	191570	178806	163311	86875	262809
5506	468391	11295	4018	5077	9117	21323	13911	4736	130664	192397	179343	162444	88779	264949
5512	445976	11121	3985	5927	9719	21164	3521	4676	136244	194484	174464	161308	86007	262179
5518	453706	11550	4288	6042	10270	21548	6880	4644	136426	193991	178044	162952	89188	262091
5524	453706	11550	4288	6042	10270	21548	6880	4644	136426	193991	178044	162952	89188	262091
5530	452985	11357	4357	5670	9560	21192	6265	4957	136457	191734	174342	160447	86826	264031
5536	451618	11520	4362	6081	9298	21079	13784	4887	135149	190096	175782	163314	89320	262913
5542	448948	11692	4382	6087	9362	21231	13959	4991	134678	189993	175877	162513	90024	261768
5548	448903	11840	4509	9365	21418	13100	6130	4961	135702	190560	174345	160642	90214	270593
5554	445270	11806	4603	9221	21420	13993	6426	5136	135296	189924	171195	158674	91732	271812
5554	445270	11806	4603	9221	21420	13993	6426	5136	135296	189924	171195	158674	91732	271812



Table 3: Flux ( E-16 erg/cm<sup>2</sup> · s · Å ) (continued)

λ	Hip 55206	Hip 76529	Hip 79796	Hip 81470	Hip 82817	Hip 83064	Hip 84140	Hip 87591	Hip 88127	Hip 88136	Hip 88817	Hip 89595	Hip 90302
5932	369672	11530	4473	5665	8340	19034	5123	5095	124130	172539	147296	133186	254591
5938	372238	11641	4035	4673	8650	19070	12573	5093	124327	172437	150392	135030	255668
5944	373273	11289	4073	5655	9281	19065	5642	5088	123294	172213	148084	134069	256811
5950	370076	11358	4652	5657	9448	19097	5854	5136	123264	172213	148084	134069	257041
5956	368561	11419	4595	5565	9258	18801	5259	5120	124570	172642	148327	133742	258493
5962	368398	11477	4012	5633	9026	18942	5533	5131	124530	173059	148845	133276	260219
5968	369398	11710	4772	5766	9207	19131	5601	5214	123812	173059	146083	132778	260259
5974	371351	11351	4777	5766	9296	19131	5601	5214	123812	173059	146083	132778	260677
5980	369217	11326	4768	5622	9002	18832	5885	5123	123039	171554	142289	132530	260826
5986	369667	11418	4686	5600	9800	18666	6049	5071	123265	170997	142152	131008	265371
5992	366507	11253	5091	5586	10891	18623	6318	5166	122996	170872	142337	130057	266661
5998	367587	11369	5292	5572	10874	18665	6318	5166	122996	170872	142337	130057	261961
6004	366683	11369	5458	5584	10984	18720	6398	5127	121873	169761	140321	130408	263396
6010	369370	11289	5098	5485	11030	18621	6252	5098	121868	169047	140321	130683	264486
6016	369573	11289	5098	5485	11030	18621	6252	5098	121868	169047	140321	130683	264486
6022	366432	11078	5138	5398	11570	18867	6146	4960	121673	169065	140465	129909	265208
6028	366543	11360	5319	5398	11701	18867	6146	4960	121673	169065	140465	129909	265208
6034	363543	11505	5420	5530	11856	18776	7100	5132	123366	171326	143626	132013	266578
6040	366543	11505	5420	5530	11856	18776	7100	5132	123366	171326	143626	132013	266578
6046	367401	11653	5583	5571	12310	18814	7538	5238	121838	169432	143638	128433	269739
6052	367095	11476	5633	5632	12540	18714	7847	5338	121672	168404	143638	128433	269060
6058	361160	11599	5630	5615	12912	18380	7901	5265	122056	169542	143871	127763	257102
6064	360059	11356	5513	5505	12759	18479	7890	5212	121659	169814	140607	125990	256204
6070	357227	11369	5638	5648	12738	18465	7968	5149	120596	168157	140821	126947	259793
6076	357157	11440	5669	5578	12937	18566	7933	5248	121026	167072	141082	126728	259793
6082	354654	11208	5681	5412	12951	18355	8169	5213	119561	166565	139838	124798	252916
6088	354654	11208	5681	5412	12951	18355	8169	5213	119561	166565	139838	124798	252916
6094	352816	11065	5700	5314	12992	18159	8193	5068	118647	165539	139479	124978	252916
6100	351925	11013	5658	5302	13231	18108	8394	4912	117889	164088	141116	124464	249506
6106	350341	10929	5473	5282	12691	17902	8276	4903	118420	164931	138560	123033	251012
6112	349608	11204	5663	5345	12769	17915	8198	4829	118813	164931	138560	123033	251012
6118	349155	11082	5642	5266	12990	17841	8332	4851	117680	163817	136859	122300	249047
6124	342652	10862	5184	5224	12690	17895	8118	4770	116802	161922	134668	120836	247364
6130	343213	11082	5425	5185	12569	17592	8118	4729	115633	160292	134668	120836	249286
6136	348747	10833	5610	5215	13179	17664	8350	4800	114988	159284	136275	121250	247598
6142	340975	10844	5117	5117	13681	17465	8680	4876	115025	159171	133435	120756	243115
6148	340080	11049	5793	5121	13650	17309	8761	4833	114488	159003	133398	118430	242500
6154	337710	10793	5483	5149	12439	17265	8528	4748	113290	156976	132370	118028	242475
6160	336713	10547	4840	5135	10884	17380	8104	4434	112003	155121	132370	118597	238981
6166	333029	10374	4102	4847	9289	16637	7779	4240	110234	156854	133108	118347	234440
6172	331714	10452	4102	4941	9695	16637	7779	4240	110234	156854	133108	118347	234440
6178	330592	10880	4445	5023	8713	16965	8111	4394	113994	157821	132875	117485	238078
6184	331870	10885	4522	5140	8748	16949	8133	4478	114198	157629	132962	117485	240948
6190	330656	10853	4385	5141	8370	17028	8113	4451	114116	157904	132081	117415	242331
6196	330656	10853	4385	5141	8370	17028	8113	4451	114116	157904	132081	117415	242331
6202	328537	10869	4227	5128	8233	17064	8139	4475	114253	157013	131065	116988	242755
6208	328595	10857	4412	5192	8392	17081	8155	4497	114346	156125	129878	116988	243442
6214	3250693	10550	4270	5142	8112	17024	8149	4605	112594	156333	129109	114429	242705
6220	326693	10810	3974	5010	7484	16852	8123	4495	112594	156333	129109	114429	242705
6226	325180	10647	3771	5037	7135	16812	8117	4482	111837	156119	128379	114469	236868
6232	321201	10718	3789	5010	6947	16811	8129	4488	111043	156308	127878	112898	236687
6238	319168	10650	3812	4864	6994	16612	8080	4402	109744	152285	128111	114210	234503
6244	318789	10376	3875	4892	7335	16620	8094	4438	108460	152285	128111	114210	235069
6250	312959	10609	3990	4887	7583	16235	8087	4371	108318	150427	125767	111860	230640
6256	316215	10273	4039	4917	7942	16261	8079	4291	109380	151093	125952	111600	226823
6262	314097	10770	4198	4897	8400	16187	8082	4367	110514	151977	124869	110598	227900
6268	314142	10683	4298	4987	8699	16383	8088	4434	109494	151469	124869	110598	229118
6274	314142	10683	4298	4987	8699	16383	8088	4434	109494	151469	124869	110598	229118
6280	307342	10415	4327	4879	8911	16282	8078	4460	107216	148473	125120	108436	220890
6286	300426	10518	4493	4853	9031	16070	8038	4452	105020	148436	122617	108436	220890
6292	303816	10539	4840	4894	9577	16390	8020	4525	107497	149141	124087	109866	223951
6298	304278	10470	4879	4854	10102	16112	8039	4449	106465	147120	122982	109513	230795



Table 3: Flux (E-16 erg/cm<sup>2</sup> · s · Å) (continued)

Lambda Å	Hip 55266	Hip 75529	Hip 79796	Hip 81470	Hip 82817	Hip 83064	Hip 83791	Hip 84140	Hip 87991	Hip 88127	Hip 88136	Hip 88518	Hip 96996	Hip 96302
6676	260577	10280	5796	4170	82817	83064	83791	84140	87991	88127	88136	88518	96996	96302
6682	256392	10344	5703	4692	14889	14774	14895	8898	4912	10583	10680	10632	94165	229620
6688	258369	10408	5400	4735	13900	14757	9935	8832	4854	10484	10490	10756	93914	230863
6694	260067	10500	5413	4681	13117	14789	9893	7735	4883	10652	10652	10746	94162	233056
6700	265936	10600	5468	4697	13207	14850	9790	7653	4843	10668	10668	10791	93479	235092
6706	258062	10375	5515	4697	13607	14792	9860	8025	4818	10675	10675	10656	92646	232230
6712	257124	10305	5489	4699	13697	14723	9860	8249	4754	10603	10603	10668	92646	229772
6718	2566113	10294	5240	4634	12798	14583	9654	8096	4726	10596	10596	10854	95292	225918
6724	254974	10314	5028	4698	11985	14515	9685	7268	4711	10586	10586	10403	91458	231261
6730	2569757	10349	5173	4669	12187	14711	10025	7376	4757	107684	107684	109412	92897	230491
6742	2520757	10358	5171	4688	12637	14609	9822	7401	4738	107022	107022	107044	92723	229606
6748	253386	10376	5195	4658	12557	14709	9822	7658	4762	107588	107588	107691	93799	234576
6754	2530662	10485	5061	4695	12415	14646	9872	7484	4759	107489	107489	107682	93544	231161
6760	2532656	10498	5112	4734	12177	14702	9969	7382	4808	107487	107487	107174	92531	231687
6766	254113	10519	5255	4715	12640	14638	10077	7719	4769	107546	107546	107163	91529	236320
6772	2549445	10442	5251	4700	12922	14552	9978	7701	4758	107499	107499	107266	93660	235305
6778	253486	10570	5236	4691	13171	14741	10089	7994	4748	107889	107889	107266	93660	238903
6784	252709	10575	5234	4730	12734	14876	10089	8087	4753	107938	107938	105232	92257	239980
6790	253341	10555	5070	4705	12542	14662	10022	7846	4740	107956	107956	105232	91952	231779
6796	254129	10554	5021	4625	11856	14656	10072	7846	4721	106905	106905	106021	93465	237770
6802	251630	10525	4996	4646	12211	14564	9899	7306	4764	106616	106616	104810	91224	231958
6808	2521030	10531	5070	4679	12435	14672	9806	7530	4732	106363	106363	104791	80919	232982
6814	2521240	10564	5165	4740	12517	14801	10088	7734	4703	106519	106519	104815	81363	234878
6820	2509421	10578	5051	4672	12275	14494	10063	7860	4641	106742	106742	104700	80662	235540
6826	2505921	10576	5043	4693	12517	14388	10005	7683	4746	105956	105956	104571	80576	234105
6832	250421	10582	5110	4659	12532	14489	9870	7804	4688	105249	105249	103980	89736	231790
6838	248963	10396	5089	4654	12487	14360	9700	8114	4576	104614	104614	104477	89776	231217
6844	249614	10431	5011	4377	12624	14390	9796	8194	4655	104750	104750	103464	86015	231217
6850	246914	10431	5011	4377	12472	14272	9680	8272	4394	103766	103766	103464	86015	231217
6856	248959	10332	4863	4390	12052	14239	9689	8178	4481	103186	103186	103169	86021	233686
6862	248639	10351	4859	4356	11769	14219	9873	7770	4295	102926	102926	10198	83762	227066
6874	247607	10373	4812	4362	11506	14196	9873	7770	4295	102926	102926	10198	83762	227066
6880	2040484	8734	4300	3952	10143	11816	9274	6942	3626	81566	81566	81750	70170	204942
6886	205065	8926	4594	4025	10926	12458	8570	7125	4030	88086	88086	89709	76590	203358
6892	212509	9024	4657	4025	11288	12764	8600	7477	4038	88281	88281	89393	77668	203948
6898	214863	9134	4720	4042	11424	12700	8660	7621	4118	89289	89289	89393	77668	203948
6904	218738	9578	4766	4099	11625	12718	8896	8134	4158	91766	91766	86475	74922	210657
6910	216540	9863	5008	4187	12358	12918	8996	8134	4259	94120	130388	91373	78643	211075
6916	219285	9844	5174	4227	12998	13140	9070	8937	4376	96192	132223	91718	80243	210657
6922	222027	10071	5272	4262	13138	13395	9240	8903	4448	97319	134022	94952	80879	215748
6928	226877	10061	5449	4334	13942	13894	9299	8811	4559	98411	135302	80040	80400	211220
6934	224285	10016	5879	4322	15575	13247	9253	9819	4602	98431	135302	81837	74686	217523
6940	222349	9810	6004	4322	16035	13336	9146	10582	4642	98007	135771	91850	73776	210911
6946	220526	10013	6347	4268	16669	13251	9065	11031	4633	98654	135829	92589	80342	212979
6952	222591	10159	6277	4303	17100	13247	9235	11269	4633	98849	135829	94456	75144	212979
6958	223725	10150	6301	4358	17411	13338	9382	11346	4633	98849	135829	94456	75144	212979
6964	223313	10307	6475	4412	17646	13525	9317	11597	4714	97701	136219	98965	81112	216360
6970	225198	10276	6459	4378	17789	13491	9174	11749	4673	97672	135336	98876	80524	219861
6976	222822	10167	6683	4326	18428	13332	8969	11988	4628	97240	135336	94283	76385	214458
6982	227479	10249	6607	4309	18699	13104	9140	12207	4691	96889	134730	94283	81098	211477
6988	224073	10113	6507	4302	18588	13197	9160	12165	4628	97246	133672	92569	75267	214126
6994	217673	10012	6526	4302	18589	13311	8963	12292	4658	95407	131938	90445	78412	213357
7000	218394	9938	6635	4216	18709	13172	8879	12393	4638	95010	130830	91755	78873	210073
7006	214794	9970	6721	4128	19185	12651	8754	12598	4602	94453	130563	90177	77722	208916
7012	212733	9872	6878	4155	19572	12667	8679	12975	4601	94080	131007	90066	77722	205211
7018	214095	9830	6871	4145	20040	12593	8795	13003	4636	94020	131062	90648	77865	209152
7024	214165	9813	6910	4099	20315	12520	8801	13414	4693	94368	131692	90870	76915	208276
7030	214021	9945	7299	4169	21369	12550	8766	13676	4726	94770	131538	89976	77007	208100
7042	214041	10069	7632	4166	22727	12642	8789	14472	4815	94774	130975	90726	76786	210395



Table 3: Flux ( $E-16 \text{ erg/cm}^2 \cdot \text{s} \cdot \text{\AA}$ ) (continued)

$\lambda$	Hip 55266	Hip 75529	Hip 79796	Hip 81470	Hip 82817	Hip 83064	Hip 83791	Hip 84140	Hip 87991	Hip 88127	Hip 88136	Hip 88817	Hip 88818	Hip 95995	Hip 96302
7420	177644	9164	8634	3743	27704	10877	7604	17591	4615	85193	117532	73289	88818	60703	187862
7426	178150	9286	8676	3800	27981	10955	7748	17978	4652	85938	118753	73289	88818	62500	188235
7432	177040	9408	8641	3721	28410	10873	7754	17760	4630	85908	119458	74044	88818	62300	193606
7438	177199	9296	8681	3785	28448	11021	7742	18348	4646	85908	118560	73742	88818	67770	193713
7444	175375	9279	8664	3779	28656	10981	7685	18476	4592	85537	118200	74088	88818	63445	192486
7450	175268	9344	8611	3713	27969	10690	7565	17965	4575	85916	118100	72288	88818	66940	192486
7456	175151	9400	8699	3749	28512	10707	7665	18144	4621	86083	118397	72940	88818	61803	189666
7462	174332	9359	8656	3687	28713	10737	7635	18040	4574	86201	119215	72717	88818	66681	193417
7468	172885	9287	8621	3660	28146	10651	7607	18040	4556	85938	118741	71925	88818	66193	189644
7474	170293	9367	8664	3660	28600	10639	7521	18404	4604	86148	118122	71995	88818	66345	188833
7480	170756	9262	8681	3633	28939	10597	7544	18379	4603	85784	118265	71654	88818	60322	188351
7486	169737	9275	8693	3722	29031	10642	7533	18791	4576	85234	117581	71654	88818	65222	188351
7492	168072	9107	8695	3682	28757	10475	7452	18615	4449	85264	117669	71302	88818	60322	188351
7498	166036	9251	8652	3610	28345	10432	7425	18545	4449	84886	116992	71011	88818	61054	189067
7504	165102	9097	8645	3622	29507	10510	7473	18531	4534	85150	116982	71297	88818	60635	189473
7510	168779	8934	8626	3682	29045	10600	7415	18847	4440	85010	117636	69639	88818	65008	187484
7516	167468	9002	8658	3643	28951	10300	7241	18847	4440	84304	117240	69983	88818	63758	187179
7522	165523	9080	8715	3607	29122	10268	7249	18685	4441	84291	116528	70480	88818	63741	187074
7528	165017	9093	8714	3622	29004	10401	7237	18706	4449	84548	116386	69189	88818	63405	188378
7534	162478	9104	8753	3634	29054	10163	7273	18553	4446	84804	116923	69741	88818	63405	188378
7540	164943	9119	8755	3551	29187	10108	7266	18553	4446	84804	116764	69775	88818	64690	188274
7546	164018	9095	8722	3600	29978	10294	7403	19191	4542	84124	116764	69775	88818	64578	188704
7552	162192	9055	8923	3551	30072	10168	7379	18954	4527	83755	116350	69629	88818	65472	190226
7558	163716	9024	8851	3580	30409	10342	7275	19406	4523	83935	116087	68505	88818	64989	186569
7564	165007	9104	8931	3567	30383	10259	7167	19491	4504	83863	116458	69915	88818	64987	187741
7570	162269	9048	8897	3541	29914	10149	7120	19203	4560	83223	115878	70840	88818	64987	187729
7576	163468	9010	8863	3551	29925	10207	7077	19196	4392	83422	114297	69016	88818	64197	187427
7582	165980	8997	8941	3570	30100	10217	7077	19264	4449	83942	114879	68787	88818	64901	189380
7588	160731	8501	8714	3449	28866	9979	6802	19305	4028	83946	114342	67885	88818	64227	179495
7594	165911	8501	8714	3449	28866	9979	6802	19305	4028	83946	114342	67885	88818	64227	179495
7600	145152	4930	6032	2556	16638	6032	4773	15096	2214	31450	52532	42996	88818	37718	153141
7606	160754	3494	4268	1894	10235	6038	3549	10713	1715	29210	43754	35981	88818	31402	106540
7612	70221	3489	4117	1787	11920	4824	3289	7746	1918	30520	47160	27146	88818	23656	78243
7618	57306	4580	4117	1787	11920	4824	3289	7746	1918	30520	47160	27146	88818	23656	78243
7624	71772	5169	4981	2103	15456	5658	4213	9844	2471	41173	57666	42617	88818	31108	104086
7630	97093	4933	5045	2162	16372	6252	4374	10446	2487	44844	62183	38378	88818	37692	109405
7636	92315	4931	4885	2099	12786	6252	4374	10446	2487	44844	62183	38378	88818	37692	109405
7642	88451	5303	4885	2121	13801	6119	4869	10251	2916	56375	77132	40583	88818	37012	108918
7648	92188	5850	5293	2319	14854	6527	4869	10251	2916	56375	77132	40583	88818	37012	108918
7654	99178	6439	5815	2573	17075	7176	5237	12886	3194	61992	84537	48069	88818	41049	127863
7660	109606	6962	6146	2769	19101	7731	5621	12365	3413	67351	92067	52385	88818	45149	136922
7666	122054	7923	6252	2837	18806	8143	5966	12805	3657	72846	99147	56451	88818	49038	148311
7672	129685	8216	6427	3128	18903	8631	6367	12505	3975	76635	103076	57795	88818	51814	156993
7678	137910	8588	6805	3299	21007	9146	6641	12794	4252	79744	105959	62027	88818	56033	166386
7684	143813	8823	7232	3419	22078	9546	6866	13403	4304	82776	112609	64901	88818	61121	180155
7690	148684	8841	7493	3502	23034	9755	6866	13403	4304	82776	112609	64901	88818	62273	182540
7696	152106	9011	7495	3315	23569	9850	7042	14346	4346	83043	114897	66560	88818	63894	184248
7702	164318	9029	7398	3550	23245	10081	7084	14056	4383	83543	115642	67748	88818	64061	186238
7708	159414	10101	7915	3567	22308	10189	6988	14056	4383	83543	115642	67748	88818	64061	186238
7714	158616	9725	7715	3374	23266	9928	7061	14483	4478	83848	116782	67645	88818	64061	186238
7720	158616	9725	7715	3374	23266	9928	7061	14483	4478	83848	116782	67645	88818	64061	186238
7726	158905	8943	7837	3498	24890	10104	7147	15238	4510	84323	118234	68166	88818	64204	185766
7732	158905	8943	7837	3498	24890	10104	7147	15238	4510	84323	118234	68166	88818	64204	185766
7738	158905	8943	7837	3498	24890	10104	7147	15238	4510	84323	118234	68166	88818	64204	185766
7744	158905	8943	7837	3498	24890	10104	7147	15238	4510	84323	118234	68166	88818	64204	185766
7750	156402	9013	7887	3510	26091	10215	7095	15583	4515	84126	117592	68717	88818	63342	188131
7756	156402	9013	7887	3510	26091	10215	7095	15583	4515	84126	117592	68717	88818	63342	188131
7762	156299	9066	7731	3471	24208	9839	7116	14812	4481	83998	117971	67908	88818	63513	189582
7768	156138	9092	7770	3449	24266	9993	7156	14931	4475	84566	118163	67624	88818	63316	187739
7774	165617	9076	7840	3492	24785	10084	7080	14923	4488	84509	117750	66571	88818	64502	189285
7780	155051	8900	7919	3488	24859	9982	7031	15585	4443	84466	117064	66413	88818	64064	190186
7786	149941	8885	7841	3475	25160	10025	6985	15578	4431	84509	117293	64567	88818	62990	189153



Table 3: Flux ( $F_{\lambda}$  in  $\text{erg/cm}^2 \cdot \text{s} \cdot \text{\AA}$ ) (continued)

$\lambda$	Hip 55206	Hip 75329	Hip 79736	Hip 81470	Hip 82817	Hip 83064	Hip 83791	Hip 84140	Hip 87991	Hip 88127	Hip 88136	Hip 88617	Hip 88618	Hip 95995	Hip 96302
7792	146237	8902	7833	3493	26009	9864	6937	18404	4460	84963	117636	65372	88617	63181	186093
7796	152645	8947	7797	3469	26073	9817	6987	18329	4450	84586	117578	65742	88618	63181	184987
7804	152055	8767	7914	3469	26037	9723	7059	18641	4368	84806	117857	65969	88618	62527	184987
7810	152055	8076	7688	3447	25911	9609	6997	18120	4365	84859	117741	65333	88618	62527	185213
7816	151008	8648	8002	3494	26272	9594	6974	18504	4472	84857	118104	65645	88618	62527	185753
7822	151008	8648	8002	3494	26288	9691	6965	18559	4415	84596	118717	66241	88618	62527	186012
7828	151727	8614	7856	3475	26468	9676	7034	18700	4373	84216	118437	65949	88618	61863	187388
7834	150442	8611	7777	3415	26152	9730	7003	18505	4368	84117	117678	65677	88618	61771	187388
7840	149251	8071	7792	3403	26230	9698	6913	18197	4386	83952	117236	66030	88618	61437	183237
7846	149747	8796	7753	3415	26330	9698	6913	18552	4379	83822	117036	65651	88618	60374	186725
7852	148450	8078	7690	3414	26504	9670	6864	18266	4363	83583	116944	66750	88618	61169	185905
7858	147533	8558	8024	3405	26390	9569	6861	18309	4420	83453	116944	65218	88618	62110	183421
7864	149064	8558	8026	3435	27269	9619	6910	18622	4398	82796	115839	64222	88618	61856	186328
7870	148992	8511	7992	3419	27046	9620	6729	18695	4413	82710	115418	64315	88618	61492	183020
7876	148155	8645	7958	3465	27703	9606	6886	17244	4400	82549	115425	64797	88618	61464	182166
7882	147703	8645	7866	3434	27923	9546	7008	17019	4401	82189	115140	64691	88618	61041	183376
7888	146460	8532	8099	3377	27688	9507	6826	17194	4389	82576	114640	64220	88618	60519	183393
7894	146327	8059	8062	3345	27391	9647	6760	17441	4284	82082	113945	64330	88618	60141	180501
7900	142206	8475	8095	3278	27688	9526	6671	17488	4276	81269	113956	63083	88618	59668	179598
7906	141966	8443	8113	3350	28402	9477	6628	17442	4268	81401	114248	62229	88618	59481	176025
7912	142315	8398	8034	3307	28039	9329	6611	17397	4320	81201	113697	62086	88618	59409	174920
7918	143175	8363	8005	3396	27541	9387	6623	17321	4322	80281	112684	62218	88618	59474	173766
7924	142010	8181	7896	3349	27375	9316	6657	17137	4296	79527	112472	62307	88618	59409	174507
7930	141598	8131	7976	3300	28031	9215	6654	17424	4188	79247	111771	61976	88618	59336	171467
7936	139787	8171	7998	3318	28428	9446	6523	17708	4200	78943	110143	62027	88618	59369	172673
7942	1395013	8112	7953	3310	28478	9215	6478	17771	4144	78990	110111	60824	88618	59374	171146
7946	138869	8030	8017	3274	28237	9241	6477	17789	4207	79267	111108	60695	88618	59283	171118
7954	138664	8242	8104	3317	28520	9158	6620	17753	4277	79759	111135	60603	88618	59284	171936
7960	138467	8142	8192	3358	29060	9502	6630	18135	4322	80125	110809	61079	88618	59238	174633
7966	138467	8142	8291	3294	29021	9436	6523	18060	4333	79894	110809	60983	88618	59209	173228
7972	138694	8169	8350	3328	29434	9462	6483	18201	4330	79814	110530	60176	88618	59478	173228
7978	138499	8350	8317	3319	29489	9325	6653	18568	4340	80015	110234	61631	88618	59595	177280
7984	136964	8537	8294	3384	29538	9312	6662	18571	4374	80704	110051	60918	88618	59630	176289
7990	139378	8268	8305	3358	29613	9310	6386	18538	4336	80274	109681	61418	88618	59729	174840
7996	137750	8244	8322	3250	29557	9047	6456	18322	4283	78154	109398	60566	88618	59729	174360
8002	136972	8283	8249	3267	29563	9050	6452	18534	4288	77822	108536	60268	88618	59756	173139
8006	136267	8170	8316	3173	29622	8960	6394	18421	4247	78410	108439	59830	88618	59810	173556
8014	136117	8203	8428	3263	29817	9087	6543	18564	4314	77851	108038	60139	88618	59846	174782
8020	137419	8160	8318	3302	29990	9059	6435	18861	4336	76471	107249	59812	88618	59728	176488
8026	137419	8113	8499	3286	29837	9270	6515	18965	4366	76341	107391	59812	88618	59728	173426
8032	135477	8210	8417	3286	30000	9249	6501	18802	4328	76444	106503	58340	88618	59832	170204
8036	135477	8231	8395	3170	29996	9152	6396	18649	4304	76246	106723	58739	88618	59860	174001
8044	135156	8286	8635	3229	30261	9116	6446	18943	4363	76205	105986	58986	88618	59834	170022
8050	135156	8286	8635	3229	30261	9116	6446	18943	4363	76205	105986	58986	88618	59834	170022
8056	135293	8270	8620	3246	30856	9023	6631	18206	4303	75769	106876	59481	88618	59549	171798
8062	134903	8270	8620	3246	30856	9023	6631	18206	4303	75769	106876	59481	88618	59549	171798
8068	134903	8270	8620	3246	30856	9023	6631	18206	4303	75769	106876	59481	88618	59549	171798
8074	137456	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8080	137456	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8086	137456	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8092	137456	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8098	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8104	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8110	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8116	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8122	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8128	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8134	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8140	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8146	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8152	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8158	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8164	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8170	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8176	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8182	136265	8293	8852	3261	31348	9187	6392	18634	4308	75796	106610	59694	88618	59800	171388
8188	136129	8181	8627	3304	35750	9194	6461	22871	4344	72316	101371	66473	88618	58602	184981