

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 erg/cm² · s·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 blancketed 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_{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-MIDAS¹ routines. The standard deviation of *B* and *V* magnitudes, obtained for each star from the sample of the spectra, is typically better than 0^m06, and for the *R* band it is better than 0^m07. The error bars are the lowest in the central part of the spectrum where the blue and red spectra overlap.

¹ 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			α_{2000} (h)(m)(s)	δ_{2000} (°) (')' ("')	Times of obs. JD 2452420+ (6)
Hip (1)	HD (2)	Other identifications (3)	(4)	(5)	
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 erg/cm² · s · Å. 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 passband 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 $B = 0^m 014$, and $R = 0^m 042$, 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_λ^{Star} which is 6 Å.

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.

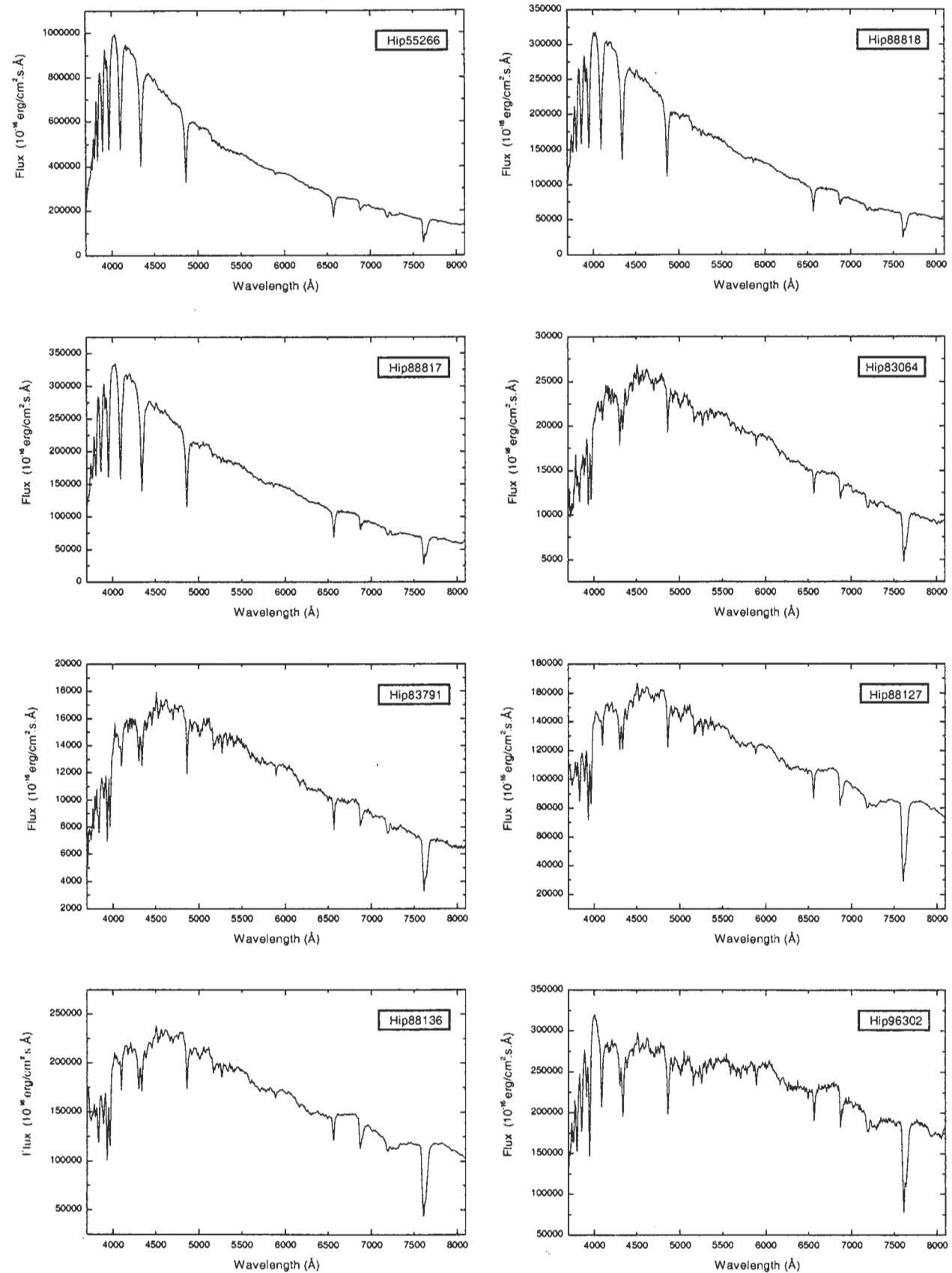


Figure 1: Spectral energy distributions of the stars labeled with the star names.

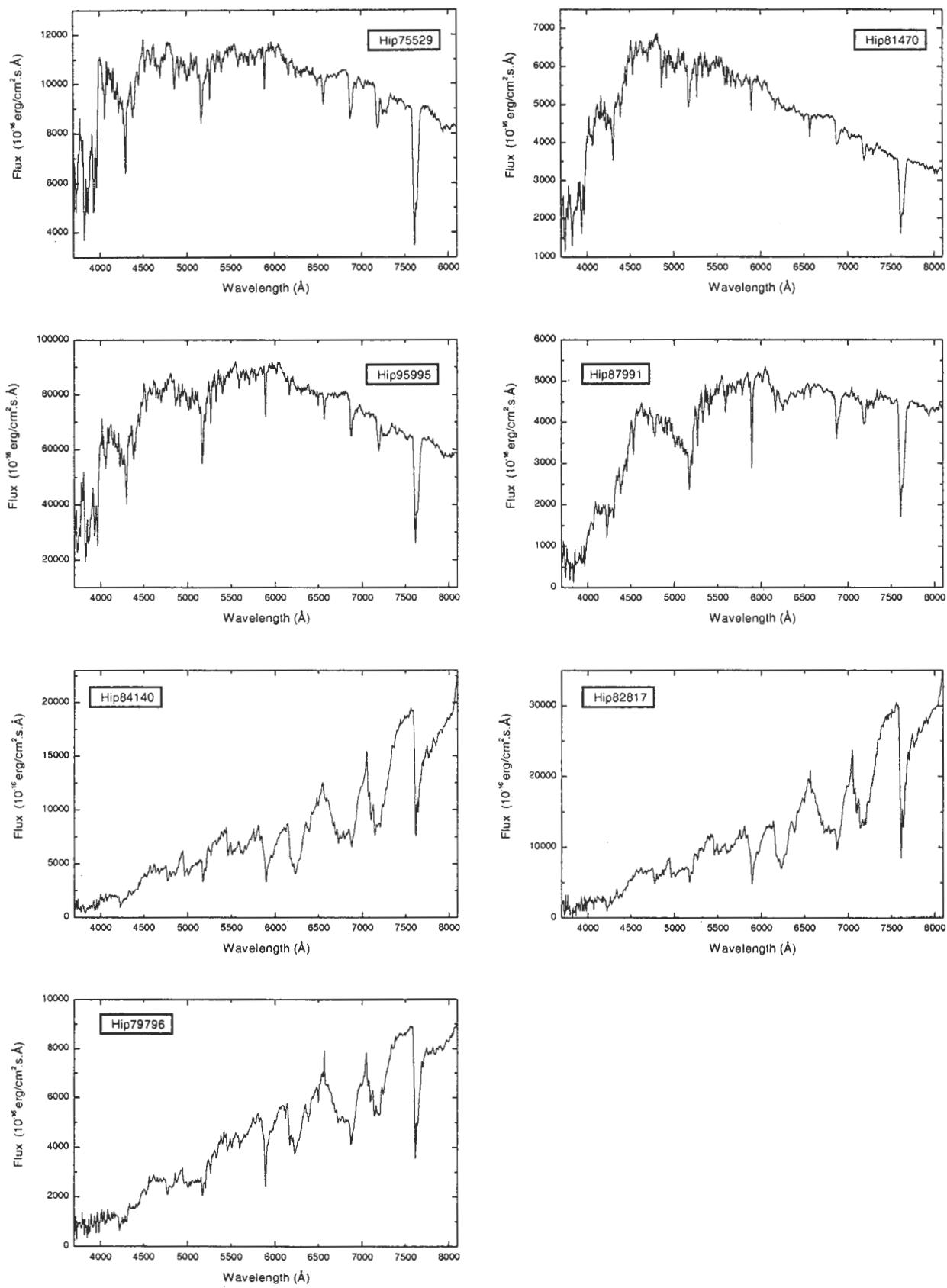


Figure 1: (Continued).

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 (9)
Hip (1)	HD (2)	Other identifications (3)	(4)	(5)	(6)	(7)	(8)	
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.

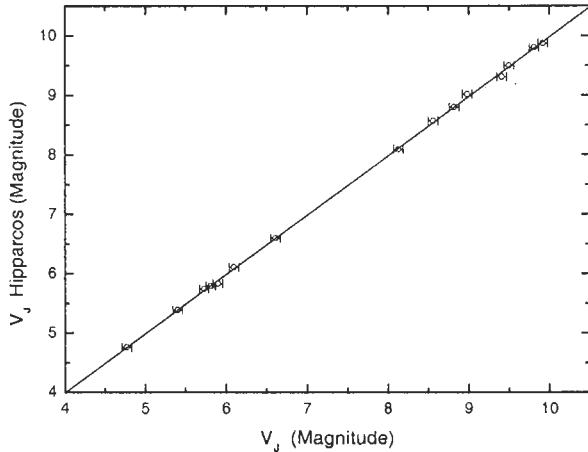


Figure 2: Comparison between the calculated V_J magnitudes and V_J magnitudes of Hipparcos catalogue.

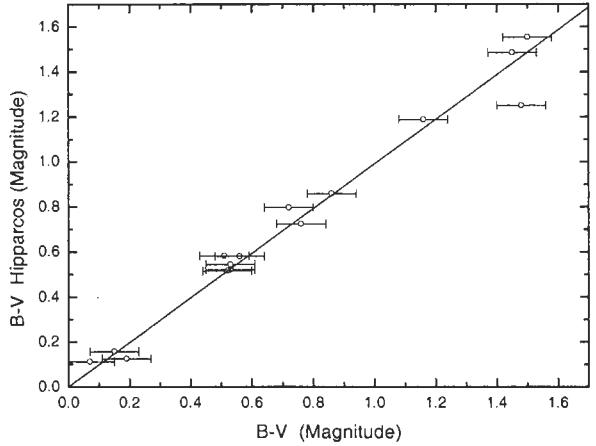


Figure 3: Comparison between the calculated $(B - V)_J$ and $(B - V)_J$ of Hipparcos catalogue. Note that the star which lies out of the line is the variable star Hip79796.

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Table 3: Flux (E-16 erg/cm² · s · Å)

Lambda · Å	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP
55266	75529	79796	81470	82817	83064	83791	84140	87991	86127	88136	88817	88818	85985	96302		
3706	220955	4840	544	1133	1908	10869	5308	1205	660	100997	117532	103597	229094	132198		
3712	271885	4840	64806	721	2332	2087	11174	5165	797	597	109328	124113	102204	31315	144456	
3718	286866	6424	1207	2373	2329	12961	7074	1422	730	109649	120469	122703	96595	162251		
3724	310795	6861	724	2358	2484	9763	2612	1612	1123	106993	162104	131385	127734	148433		
3730	319860	4832	263	2601	343	10737	7455	735	771	103283	164620	125605	224245	167374		
3736	316488	5736	956	2075	000	11011	7457	1061	1044	98985	144125	140309	132229	22645	178624	
3742	348075	5703	761	1455	512	10223	7988	1761	277	96975	164758	240095	187829			
3748	345250	5793	853	1370	3215	11351	9097	773	5518	140856	182212	171219	27650	179485		
3754	360876	7150	977	1139	989	10607	7106	826	360	98296	142879	167707	166490	163701		
3760	40788	7151	918	2333	1415	8196	946	1064	664	10193	164895	174713	22545	163898		
3766	428781	7369	991	2275	3204	13172	9387	1019	751	103081	146635	161176	146363	28476	169280	
3772	387088	8629	792	1224	12663	8158	494	602	106530	149434	18415	170232	399724	214964		
3778	446729	7850	791	1985	000	13511	7844	564	562	111748	157794	205723	198585	48195	210753	
3784	518852	7917	695	2854	1235	15487	9097	1124	615	111905	223158	211267	24004	17829		
3790	525860	7610	1361	2803	1668	16811	10324	1120	493	105871	148587	206878	41263	179267		
3796	61986	7141	900	2440	437	14729	9198	1224	182	10197	145183	188222	181321	42179	154922	
3802	437213	6714	918	2340	13211	724	1064	818	628	107918	148408	164761	49629	152371		
3808	608864	7742	1084	2632	675	14434	10136	1035	484	102199	154727	167724	147750	52015	182728	
3814	615112	6127	731	2214	000	14366	10233	650	449	108776	145788	174110	388871	2105216		
3820	690528	3679	435	1979	1059	13327	9144	383	469	101285	145788	234780	219305	311535	226118	
3826	636617	4335	1081	1342	220	13616	8846	405	593	91465	128969	267679	241491	19843	236118	
3832	508447	4361	000	1281	1385	11613	8228	573	546	108465	118865	288822	261810	23988	247224	
3838	472737	5072	860	1600	687	11476	7619	652	112	9692	121020	288128	265786	21265	232657	
3844	586156	6203	634	2160	000	13846	7640	863	103267	140742	178111	162161	529296	221613		
3850	648464	4846	341	2160	716	14945	9426	941	606	114262	146262	246460	234407	34735	197284	
3856	615112	6127	5825	843	2198	1700	15346	10390	795	922	117185	196693	217410	388871	2105216	
3862	815636	5264	2108	1465	5716	10890	848	675	118116	166622	1767018	167121	261115	186697		
3868	821227	4770	1096	2299	353	15277	11158	767	545	117153	167929	168710	167919	288526	212365	
3874	796169	5851	537	2323	2022	16742	11522	1132	628	107648	157647	203156	186113	269697	242190	
3880	694181	5880	609	2215	1874	16401	11299	834	592	106413	148487	242388	216576	34867	26887	
3886	562212	6830	978	2656	1172	14417	1086	1086	590	107811	137881	253890	349098	277390		
3892	469377	7308	1300	2628	1900	15304	10176	1198	677	100043	140704	260791	267056	386108	272172	
3898	153077	7144	2945	2134	13691	10122	942	658	102266	153434	207328	177274	261295	261295		
3904	674771	7321	818	2442	1670	15560	11213	841	827	117767	164856	2307749	281517	39418	245073	
3910	797715	8021	811	2673	984	17140	10887	1170	796	115916	169091	234393	268567	307456	219201	
3916	880267	7645	755	2964	1280	18567	11789	1485	696	115934	165833	268236	248441	241455		
3922	505030	6422	798	2976	2404	18390	11493	1617	610	100880	146322	286763	259710	287059	244089	
3928	493294	4836	1241	1939	2070	11575	9693	657	621	71759	116298	266679	289286	265281		
3934	642269	4836	1236	2520	1239	12432	9038	1313	694	102404	139831	289929	265112	405589	243690	
3940	688019	5444	1114	1607	985	11174	7507	1023	582	106155	168588	304022	322591	184250		
3946	880011	7010	943	2019	1912	14013	10032	733	709	104901	144322	190946	181241	37306	146438	
3952	866332	7439	546	1550	14639	10663	1439	600	110742	164866	160783	159767	39775	310852		
3958	753822	6625	677	2909	1000	16927	11580	1694	1012	101475	143679	165217	156656	343934	318557	
3964	607444	5809	1273	2686	3146	16842	9431	914	891	853138	121383	214830	195758	27140	252303	
3970	477875	5914	1392	2104	2470	11783	8013	1000	850	106820	146322	286763	28701	327177		
3976	499023	7630	1114	1676	4480	2692	1239	1236	1061	1093	124211	168588	304022	281249	184250	
3982	632044	8826	961	3139	933	17805	12654	13154	1574	1093	13255	185555	318718	296573	310852	
3988	768599	9250	548	3720	10956	1054	2006	13446	13456	1127	138234	193626	320521	302753	316086	
3994	856782	9077	897	1116	4152	2502	22139	14599	1445	1549	148638	204975	327269	312541	310494	306641
4000	920894	11013	1074	1421	4193	2812	22583	14820	1756	1590	149492	207295	325411	310494	289053	
4006	949567	11083	1386	4010	2720	20864	14198	1702	1249	141747	201393	313177	316914	320992	3130524	
4012	969637	10779	1319	1392	2778	12432	10661	1933	1647	1394	149496	20616	326866	316960	61643	
4018	983241	11016	1476	2692	2697	21234	15061	1933	1262	147036	210626	330719	311226	313662	312750	
4024	866332	10807	989	3118	15700	11607	15487	1093	1497	143701	164730	304022	281249	184250		
4030	990070	10659	1122	4398	2335	12871	14881	1601	1499	145604	204118	304022	332281	313662		
4036	992704	9772	10074	1072	14193	14193	14820	14074	1492	149492	204975	327269	312541	310494	306641	
4042	994831	10074	1074	1072	20864	14198	1702	1249	141747	201393	313177	316914	320992	3130524		
4048	974476	9768	1072	4013	22189	14066	14906	1794	1549	149496	204975	327269	312541	310494	306641	
4054	978374	9779	889	2266	22813	14875	14780	1911	1525	149492	204975	327269	312541	310494	306641	
4060	951633	8611	996	4211	2363	22499	14720	2265	1613	141137	199694	303048	305353	313662		
4066	933232	9194	1051	3930	1669	21673	14489	1918	1406	140702	200192	298703	280236	55370	286488	

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

λ	HJD	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip			
4072	90377	79539	946	3967	1177	21963	13025	1545	1527	140168	198487	247887	240998	268889			
4078	859749	10005	1058	4197	2269	21663	13808	1697	1791	140083	198487	247887	240998	268889			
4084	805968	10927	1493	2805	2384	22765	13886	1919	1919	140159	198487	247887	240998	268889			
4090	714104	10736	1405	4651	2805	22765	13870	1804	1950	137221	196354	169869	172690	168139			
4096	584029	9960	1108	4486	2364	22842	13576	1949	2086	173884	179881	157897	185717	171121			
4102	473895	10124	1222	4420	2146	20886	12524	2043	1997	132884	172674	185717	171121	162717			
4108	495742	10646	1287	4705	2844	20642	12244	2154	1930	132591	185105	223563	200591	167880			
4114	61498	10693	1051	4890	3108	21761	13875	2108	1783	143061	209598	241367	288063	270553			
4120	724890	10187	1053	5008	2865	23118	14868	1758	1786	146073	209598	276567	261656	69044			
4126	800969	10298	1236	5006	2723	23256	15293	2078	1996	147142	210164	291048	276749	677834			
4132	849339	10472	1367	4674	2768	23413	15886	2064	1967	149526	213472	305861	289343	64323			
4138	889126	10098	1227	4650	2450	23883	15688	2049	1816	152018	218612	313728	279596	63669			
4144	914087	9696	1098	4809	2687	24626	15530	1960	1760	151981	217553	302420	161534	279923			
4150	928009	1250	1613	4255	23952	15617	1882	1757	151087	217406	315535	303493	262603	284534			
4156	91694	1414	4619	2636	23704	15872	2063	1876	152261	216580	316716	307316	286211	286211			
4162	941344	10471	1347	5067	2761	24377	15802	2059	1936	153180	216834	316875	305659	66880	281005		
4168	947060	9485	1148	2450	3075	24506	15964	1846	1774	150225	217452	309528	603688	274327	274327		
4174	924723	9392	1199	4645	3088	22826	16049	2064	1871	147136	208459	310082	297969	61844	273741		
4180	922349	9603	1289	4754	2295	23433	14993	1988	1943	149723	215238	298778	62455	260000	274945		
4186	926668	9748	1254	4710	2736	24274	15531	1929	2000	150514	214241	316551	301664	60572	274866		
4192	936808	9388	1234	4807	2893	28107	15602	1788	1931	151315	215180	317892	304123	60732	274866		
4198	931618	9656	1235	4589	2443	24371	16021	1950	1916	151046	215084	317400	314064	59116	281210		
4204	932619	10088	1235	4589	2758	22458	16025	1950	1917	152158	216818	316875	303668	62288	286281		
4210	931700	10023	1108	5071	2487	23738	160204	1967	1986	153630	220920	317169	303089	66995	289675		
4216	923188	9499	938	4937	1734	24160	16026	1573	1830	152031	218133	314105	303189	626222	284864		
4222	8890	641	4840	1512	23107	1549	1426	1666	14824	21252	308649	54800	280255	280255			
4228	914933	9092	703	4332	922	23047	1549	931	1208	164550	210312	305998	294129	53979	280808		
4234	600664	9312	870	4332	1401	22558	16020	1048	1324	147584	210454	308711	298602	58184	283383		
4240	907439	994	4521	2760	15854	16054	1208	1621	148103	214024	308737	293842	60572	284686			
4246	91517	1009	4780	1710	23149	15535	1361	1442	1722	148480	214819	305924	290444	56924	281937		
4252	86569	9158	1167	4496	1852	23561	15549	1442	1708	151224	173945	304011	291162	54722	281552		
4258	898202	9010	895	4498	2516	23225	16001	16004	1802	148197	213485	311755	297941	55293	282859		
4264	893425	9344	1031	4588	3009	23488	15808	1745	1928	146505	211755	300586	290676	57941	278305		
4270	884755	8406	1095	4673	2473	23211	15555	1607	1798	144539	208522	300582	288304	54708	274385		
4276	884051	8665	940	4332	2806	20790	1919	22662	15115	1578	1868	143822	206942	294943	285339	58228	272737
4282	87153	81713	1043	4643	2016	22517	15425	1792	1850	151053	214145	308531	284821	56087	284682		
4288	863570	8268	1238	4423	2225	22049	14763	1809	1913	153501	195608	306320	298044	56924	281937		
4294	849447	7933	1024	4207	2407	2465	19403	18883	1745	18204	184050	210108	305924	291569	54722	281552	
4300	817877	6389	983	3925	2465	19403	18086	1727	1708	151224	173761	262206	43501	234121	234121	234121	
4306	793214	6478	966	3674	2687	17881	17284	1681	1724	16080	171435	235279	243191	53281	232251	232251	
4312	776118	8444	1207	3614	3024	18513	13248	1937	1867	182700	185887	257459	241739	540708	242355	242355	
4318	746927	8968	1292	4432	2806	20790	14691	1981	2244	136246	195277	245778	209699	58228	272737	272737	
4324	884614	8184	1356	4947	3386	21784	14653	2107	2370	158697	213959	231092	284952	56087	284682	284682	
4330	601444	9347	1503	488611	9129	3471	1559	20857	2491	2488	131994	185935	202643	289538	520355	283388	
4336	488611	9129	1631	4510	4722	3241	1507	2284	2267	13042	143221	207636	288132	56802	262745	262745	
4342	401084	9516	1752	4665	4074	19642	16205	2403	2710	121083	171742	139286	264535	522274	264709	195319	
4348	468732	9515	1637	5032	2674	20253	13124	2461	2600	130301	185157	140306	264063	502937	216970	216970	
4354	578035	9624	1530	4975	3034	21108	14185	2181	2572	140856	178864	200694	178864	519771	232251	232251	
4360	637396	10109	1510	5149	2736	22915	15271	2058	2771	147580	209699	210984	198273	58782	259669	259669	
4366	5300	1562	3127	4986	2986	14653	15829	2167	2899	149325	212746	236169	227111	67239	268043	268043	
4372	760848	9124	1503	5187	3314	24123	15771	2468	2738	146852	211417	260189	241150	61671	266801	266801	
4378	781901	8798	1631	5101	3471	23866	16864	2401	2640	143221	205108	207636	248113	56802	262745	262745	
4384	784379	8636	1527	4722	3241	22355	15107	2284	2267	141103	205108	264535	252274	56406	264709	264709	
4390	789138	9041	1534	4665	2930	15178	15178	2413	2397	142828	23537	142828	253599	61516	257557	257557	
4396	797454	9154	1544	5048	2914	22667	165654	2501	2541	146432	211184	267193	25307	62393	265223	265223	
4402	806944	8996	1508	5003	3345	23070	15294	2588	2582	148190	213040	268518	258793	59475	266412	266412	
4408	813736	9445	1617	5003	3412	23019	15309	2579	2579	146081	213040	268518	258793	59475	266412	266412	
4414	812056	10003	1704	5312	3598	23909	16084	2587	2769	152767	218866	273324	263397	60380	267876	267876	
4420	809228	10213	1598	5483	3435	16108	16481	2564	2870	145481	213040	268518	258793	59475	266412	266412	
4426	819737	10353	1592	5456	3993	24801	16484	2564	2969	154715	221080	267951	267951	67802	274137	274137	
4432	819756	10479	1613	5542	3423	16529	16529	2566	2842	153838	219899	277232	267000	70184	276005	276005	
4438	815856	10535	1684	5563	3868	24798	16157	2782	2932	154341	219782	276772	265238	71786	275238	275238	

Table 3: Flux (E-16 erg/cm² · s · Å) (continued)

Lambda Å	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	
4444	807024	10491	75529	79196	81470	82817	83004	83791	84140	87991	88136	88817	88818	95595	96302	
4450	807068	10066	5981	1716	5981	4498	24896	16337	3313	3123	152676	217472	272429	261830	73271	277856
4456	801066	9973	10283	1888	5472	4328	24059	15470	2960	2797	150013	214336	268985	268984	73436	273814
4462	801066	9973	10644	2005	5742	4952	24606	16030	3400	3172	156086	221523	268985	268984	73436	273814
4468	797332	10644	2005	6046	5244	25746	16260	3598	3409	158577	226012	269017	268985	73284	280663	
4474	795305	10903	2116	61828	5255	25967	16821	3745	3449	158526	225410	267108	267713	76043	284650	
4480	782811	11108	2234	6258	25433	25586	16594	3764	3477	158543	226266	268866	264543	282554	78581	
4486	781258	11108	2234	6100	5492	25586	16394	3677	3732	160833	222235	264543	284462	284255	81030	
4492	790739	11205	2172	6292	5207	25268	16818	3788	3758	164054	234192	269113	262587	84197	294473	
4498	794261	11490	2299	6202	5455	26601	17497	4107	4027	167033	237399	262587	262587	84197	294473	
4504	79425	11810	2308	6584	5294	26926	17547	4107	4053	166559	237399	262665	262665	82913	292597	
4510	788134	11807	2279	6685	5294	26461	17457	3848	3909	163839	231894	263266	263266	81271	292597	
4516	780847	11115	2271	6517	5535	26861	17016	3840	3860	158807	225612	268891	268891	78055	288533	
4522	710598	10530	2116	6374	6037	25869	17016	3838	3838	154536	21016	262161	277310	73197	27310	
4528	710598	10491	2079	6530	5402	24777	16467	36002	3707	157526	222235	264547	263343	75334	273468	
4534	763096	11016	2152	5777	5753	24667	16802	4871	4328	161818	232256	262197	262197	277612	277612	
4540	761304	10984	2807	6008	5867	24903	16500	3890	3890	165823	236634	263151	263151	77803	277906	
4546	752101	11040	2274	6290	6054	25277	16169	4019	3829	157568	225634	264447	264408	80403	279403	
4552	744711	11375	2338	6200	6165	25519	16418	4181	3848	157436	22495	268560	268560	80411	277450	
4558	74331	11393	6287	6522	26042	16861	41861	4194	4035	162010	229210	258114	248567	81168	280306	
4564	745588	11415	27970	6499	6583	26531	17444	4597	4289	162735	233043	259188	249192	81655	283136	
4570	746001	11410	2770	6796	6523	26880	17135	4805	4254	163027	234269	262161	284197	813028	284197	
4576	743482	11184	2847	6650	6635	26310	16874	4871	4328	162256	202717	252497	260322	80432	28448	
4582	736262	11268	2656	6424	6652	25582	16424	4571	4157	160016	227232	262634	262634	802219	280008	
4588	730381	10997	2643	6257	6331	25033	16444	4180	4211	165852	227232	268552	268552	80529	277943	
4594	734192	10786	6216	6379	6260	25307	16585	4176	42458	162556	228346	267669	267669	79962	279059	
4600	737708	11017	6388	6664	25653	16857	4296	4245	4302	163216	231815	2601775	2601775	80355	283553	
4606	741318	11165	2796	6469	6709	25999	17192	4574	4302	163216	231815	261775	261775	821112	283796	
4612	71538	11538	2770	6859	6647	27353	17415	4905	4324	164035	233188	262239	262239	851317	289318	
4618	727419	11494	2851	6686	7177	26062	17332	5002	4404	164035	233188	262239	262239	821114	291414	
4624	726651	11631	2776	6646	6635	26284	17292	4486	4475	162816	226298	262177	262177	802027	290227	
4630	715754	11461	2693	6395	6395	26255	17392	4428	4432	163208	232987	262027	262027	824665	280033	
4636	759559	10999	2623	6578	6260	25548	17597	4176	4355	161778	228346	265667	265667	79962	279059	
4642	724797	10737	6416	6270	52758	16183	4229	4189	4296	161248	230821	258987	248759	80894	279818	
4648	714501	10946	2609	6291	6430	25518	16144	4317	4125	158914	228177	255851	244704	80738	274070	
4654	714654	11079	2626	6298	6413	25255	16729	4616	4156	161215	228123	265964	247078	811290	275264	
4660	712689	10816	2770	6480	6516	25270	16671	4574	4308	158216	226298	263633	242324	824339	2824339	
4666	716532	10545	2678	6376	6464	24815	16251	4522	4252	155555	228240	264766	264766	817157	271706	
4672	704104	10728	2862	6345	6464	24815	16482	4187	4153	166023	222219	248957	248957	80564	275807	
4678	695341	10770	26061	63335	6219	24874	16562	4035	42754	167198	228346	268050	268050	811191	284544	
4684	701058	10787	26273	6423	6522	25264	16578	41662	4146	168560	227431	249883	249883	80890	273420	
4690	695144	10726	2737	6694	6535	25083	16621	4305	4176	158333	226260	249069	249069	81198	273064	
4696	696690	10538	2671	6293	6649	24724	16474	4196	4196	166215	22703	243787	243787	812388	274070	
4702	687869	10271	2733	6291	6766	24310	16510	4009	4009	158386	220265	244624	244624	81290	275264	
4708	677265	10595	2698	63973	6518	24846	16527	4547	4327	159778	228727	240798	240798	817308	268084	
4714	682861	10959	2657	6548	24651	16461	4388	4145	4157	159748	224460	243638	243638	818370	268265	
4720	677377	11094	23052	6545	6769	25352	17029	4464	4350	165946	224420	243845	243845	817128	275654	
4726	686215	10992	2763	6683	6594	25386	16494	4589	4265	158390	222710	246051	246051	812117	274481	
4732	681392	10867	2866	6504	6735	25083	16694	4609	4173	157476	226076	241712	241712	81979	272255	
4738	677038	11060	2671	6442	6724	24724	16474	4534	4129	158315	226852	240798	240798	81198	272255	
4744	677265	11224	2717	6624	7082	24980	16733	4732	4141	159778	228727	242070	242070	816622	274070	
4750	678239	10977	2486	6595	25139	16600	4713	4053	159771	226081	242515	242515	817128	275654		
4756	679954	10977	2486	6548	24651	16461	4388	4145	4157	159721	224420	243845	243845	81452	274481	
4762	671865	11377	2302	6493	5261	24999	16512	4346	3435	158382	224420	243845	243845	812117	274481	
4768	677390	11702	2091	6652	4934	25224	16875	3467	3467	157476	226076	241712	241712	81979	272255	
4774	670046	11568	2127	6692	4864	2677	16667	3422	3435	161644	226852	240798	240798	81562	272255	
4780	669255	11563	2290	6642	5737	25085	16860	3736	3681	160818	230440	248907	248907	816622	274070	
4786	671865	11718	2435	6442	5343	24846	16744	4870	4870	160818	230440	248907	248907	816778	274070	
4792	664022	116062	2622	6228	25912	16667	4278	4063	4063	162173	231236	243638	243638	812387	275654	
4804	658037	11568	2438	6540	2205	25536	16516	4226	4200	161062	231236	243638	243638	816520	275654	
4810	648460	11672	2401	6676	5520	25017	16579	3758	4183	4183	161195	230343	243638	243638	817324	275654

SPECTROPHOTOMETRY OF SPECKLE BINARY STARS. II

Table 3: Flux (E-16 erg/cm²·s·Å) (continued)

Table 3: Flux ($E^{-1}6 \text{ erg}/\text{cm}^2 \cdot \text{s} \cdot \text{\AA}$) (continued)

Lambda Å	Hip 56266	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
5198	612319	9543	2489	6082	6501	20770	14033	3929	2714	132666	196217	181130	67849	251747
5199	618905	9984	2488	5362	6444	21082	14345	4482	3117	136022	198304	180356	67849	248446
5200	502574	10041	2354	5639	6098	21427	14588	4286	2942	138444	198304	194838	70083	248063
5201	512238	10346	2898	6641	6639	21616	14690	4642	3142	138097	194651	193977	70097	247637
5218	10401	10401	2110	5937	8876	7716	13154	14734	5690	139861	192607	178845	75793	243362
5224	509999	10202	3265	5937	8410	21322	14365	6056	3893	139897	191763	190044	75662	242366
5236	493704	10379	3427	5808	8795	21226	14168	6379	3900	165633	194860	191748	77887	255109
5242	492476	10813	3516	5857	9098	21215	14432	6644	4153	138749	190797	178589	81985	253424
5248	505976	10870	3495	6152	8856	21637	14872	6464	4389	142119	198634	192116	86005	24311
5254	505071	10667	3331	6072	8595	21442	14738	6126	4320	141459	199562	191274	84197	245706
5266	490391	9371	2942	5577	8136	21372	14636	6185	4238	146024	189895	189949	81392	235427
5278	482172	9883	3216	5193	8722	20008	13794	5718	3675	132117	186334	182837	81395	234464
5284	486704	10503	3241	4575	8775	20241	13916	6336	3841	180007	186768	172329	73349	255559
5290	490358	11101	3735	6185	9789	21109	14345	6681	4187	136989	19023	192325	83668	254934
5296	489127	10992	3638	6260	9767	21484	14822	6992	4379	141675	197669	184792	81242	262229
5302	484157	11180	3726	6038	9602	21307	14601	6860	4356	138820	197074	188634	87045	261674
5308	488567	11232	3805	6179	9602	21510	14900	7042	4601	141050	198317	183420	817477	256395
5314	477068	11175	3903	6355	9815	21575	14974	7104	4780	141018	170382	173349	87740	247670
5320	477579	10753	3707	6229	9817	21716	14804	7137	4578	158034	192674	186801	81151	260415
5326	475835	10468	3565	6536	9439	21127	14155	6828	4065	158604	192990	184445	82436	253039
5332	469399	10655	3604	5708	9364	20613	13985	6741	3982	15414	161694	186805	174837	85217
5338	473632	10858	3683	5937	9535	20913	14301	6928	4283	130947	191830	186537	81845	263635
5344	371734	11031	3744	6036	9746	21152	14500	7029	4275	168825	197438	197074	83773	265417
5350	480622	11339	3984	6064	10084	21380	14568	7149	4393	137899	196905	186937	713189	86322
5356	475905	11384	4167	6234	10556	21817	14831	7453	4741	141346	182029	186565	891116	256650
5362	472900	11096	4207	6359	10847	21977	14944	7447	4915	143028	190182	187023	71852	255309
5368	463102	10889	4130	6035	10654	21646	14402	7272	4559	137595	194841	184538	82394	255568
5374	473554	11117	4208	5957	10734	21252	14455	7291	4471	137004	19043	185427	80879	255755
5380	475221	11922	4404	6127	11242	21580	14593	7764	4709	139560	194560	184336	81032	263635
5386	471493	11025	4434	6196	11719	21764	14733	8032	4764	148894	190912	187056	81616	265401
5392	471459	10791	4250	6101	11613	21141	14610	7971	4634	140664	181400	167039	83934	252143
5404	470001	10460	4141	5724	11043	20867	13919	7674	4315	130685	191227	182587	81379	260069
5410	459689	11247	4336	5755	10981	20879	13998	7520	4206	133640	190845	181056	167007	80383
5416	459384	11047	4230	5952	11665	20808	14269	8023	4653	131617	190450	181463	811574	251716
5422	467983	11020	4640	6055	11860	21578	14406	8242	4792	137116	194059	183381	81615	265833
5434	462565	11066	4404	5866	11435	21105	14266	8045	4625	138725	191765	182787	83775	265808
5440	458276	11324	4185	5895	11455	21186	14161	7828	4417	136803	194559	183027	167655	83863
5446	458099	11263	4217	6038	11090	21474	14349	7857	4616	138338	190720	183332	817104	260504
5452	463470	11530	4333	6042	10370	21548	14258	6880	4844	134569	191451	181056	167077	80383
5458	459326	11351	3833	6118	9489	21617	14513	6309	4651	137983	192999	179789	837397	253781
5464	457903	11446	4018	6059	9077	21382	14131	6132	4660	138683	189326	182715	86741	260520
5470	459384	11263	4060	5995	9879	21184	14365	5858	4648	138623	194975	186647	818842	268733
5476	458035	11098	4095	5996	9620	21244	14224	6404	4652	136878	191997	182027	167804	263406
5482	452526	11351	4218	5936	9660	21235	14132	6019	4686	136567	191734	186447	817020	265393
5488	453708	11530	4333	6042	10270	21548	14258	6880	4844	136426	191570	178805	86875	262809
5494	451618	11520	4280	6271	10458	21521	14450	7022	4940	137083	192671	177616	866513	263431
5500	460352	11404	4111	9654	8083	21662	14186	5722	4660	139068	193326	182833	86818	264959
5506	458981	11293	4018	6077	9117	21325	13911	5938	4756	138683	194975	187647	818842	265724
5512	454336	11311	3985	6138	9385	21645	14365	5858	4648	138623	194944	186844	816558	265104
5518	455270	11574	4178	6067	9370	21177	14173	6126	4776	136244	192000	181202	167055	263406
5524	453791	11523	4383	6247	6868	21382	14196	6287	4955	136657	191734	186447	817422	265393
5530	452365	11357	4333	6042	10270	21548	14258	6880	4844	136426	191570	178805	86875	262809
5536	451618	11520	4280	6262	6087	21172	13977	6171	4961	135149	190096	177380	86322	263913
5542	448922	11592	4385	6882	21211	13957	6139	4961	135092	188993	178777	84878	261755	90624
5548	448903	11640	4309	6194	9965	21418	14100	6358	5034	135752	190703	175345	90214	270523
5554	448903	11606	4605	6221	10106	21420	13993	6426	5136	135256	189924	171195	91732	271812

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

Lamda Å	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	HIP	
5560	448920	11400	4498	9095	9998	21065	13277	6481	5024	134866	189750	111641	157622	88818	88817	88816	88815	88814	88813	
5566	431194	11171	4422	5969	10055	13737	6713	4817	13124	185979	168720	167199	261266	871199	871198	871197	871196	871195	871194	
5572	439650	11079	4447	5969	10369	20666	13447	6723	4638	131850	185387	168341	152223	86540	261190	86540	261189	86540	261188	
5578	438238	11164	4428	5859	10382	20812	13577	7130	4704	131510	183026	168718	168474	153668	87222	87222	87222	87222	87222	
5584	438494	10863	4322	5988	10522	20695	13030	7080	4764	130256	182677	168474	154740	169366	84396	254289	84396	254289	84396	
5590	10693	41572	5447	5498	9936	20125	13137	6818	4243	12845	187597	169293	168474	246647	82349	246647	82349	246647	82349	
5596	431563	10834	3958	5610	9689	19950	13128	6610	4453	127849	179701	166611	152179	83953	256240	83953	256240	83953	256240	
5602	430276	11019	4027	5569	9061	19988	13035	5948	4472	129003	178965	167907	154255	86461	255336	86461	255336	86461	255336	
5608	429567	11224	4270	5924	10232	13491	6021	4785	12947	181587	178503	163602	158034	88526	259034	88526	259034	88526	259034	
5614	430235	11177	4260	6021	9622	20504	13037	6285	4912	130867	183303	167153	152362	87205	260476	87205	260476	87205	260476	
5620	410196	10991	4205	5992	10219	13016	61537	6632	4632	129459	180133	166183	150504	866205	252661	866205	252661	866205	252661	
5626	427372	11157	4226	5774	9431	20252	13232	6144	4707	128755	180136	166636	151945	87376	255260	87376	255260	87376	255260	
5632	425926	11293	4347	5968	9435	20331	13150	6021	4904	129052	182939	162201	149893	88443	252468	88443	252468	88443	252468	
5638	423858	11218	4372	5859	9438	20285	13175	6165	4932	128636	180641	160641	161435	87493	253802	87493	253802	87493	253802	
5644	423740	11165	4378	5829	9398	10038	13194	6165	4909	127377	178585	161553	147300	89166	249910	89166	249910	89166	249910	
5650	428292	11071	4545	5783	10383	20294	13178	6418	4899	127006	177652	161981	141971	88691	249910	88691	249910	88691	249910	
5656	419738	10868	4511	5744	10361	20294	12989	6689	4851	125383	176121	160912	147199	85594	215123	85594	215123	85594	215123	
5662	410450	10923	4445	5642	9892	10305	13056	6677	4713	125063	175888	165162	144363	85315	244363	85315	244363	85315	244363	
5668	414575	11184	4402	5642	9892	19513	12944	6376	4840	126119	176742	160382	145374	87364	248251	87364	248251	87364	248251	
5674	561339	11261	4518	5719	9956	20331	13122	6265	4956	126448	174600	162201	149893	88719	257297	88719	257297	88719	257297	
5680	414708	11047	4534	5893	10298	19906	12881	6571	4853	124929	174600	161911	145498	87434	251825	87434	251825	87434	251825	
5686	411357	10912	4492	5634	10883	19756	12728	6735	4866	124095	173752	158761	144447	85819	249570	85819	249570	85819	249570	
5692	406468	11138	4032	5590	10317	19513	12809	6827	4778	124233	173861	156155	142614	872116	254136	872116	254136	872116	254136	
5698	405001	11123	4881	5643	10621	19496	12892	6988	4868	123021	172543	153155	143542	86526	247966	86526	247966	86526	247966	
5704	406322	10777	4714	5613	10291	19478	12748	6712	4748	123712	171283	151201	143901	883802	242612	883802	242612	883802	242612	
5710	406161	10754	4771	5520	11214	19321	12802	7319	4704	122932	171721	156981	143012	88715	242251	88715	242251	88715	242251	
5716	401924	11085	4453	5859	10298	19763	12816	7312	4733	124869	17418	16148	140311	846063	249640	846063	249640	846063	249640	
5722	412266	4870	5673	11143	19379	12816	7324	4915	125724	175110	157904	161910	159194	87454	255623	87454	255623	87454	255623	
5728	401088	11226	4870	5745	10387	19663	12816	7322	5003	125603	174629	158394	146444	87819	255112	87819	255112	87819	255112	
5734	398789	11418	4948	5794	11171	19987	13155	7691	4914	125601	174251	154304	139779	88921	253386	88921	253386	88921	253386	
5740	401191	11339	5023	5733	11502	19055	12975	7559	5004	124723	174550	153159	139118	88726	258157	88726	258157	88726	258157	
5746	411240	11240	5174	5626	10855	19177	129729	7600	4851	123712	174087	151200	143097	87377	254644	87377	254644	87377	254644	
5752	397020	10994	5223	5660	12568	19592	12738	8050	5006	122984	172377	153053	138010	86214	252792	86214	252792	86214	252792	
5758	5764	11106	5182	5636	12412	19429	12720	7452	4921	124170	173562	151649	142669	87448	251837	87448	251837	87448	251837	
5764	394233	11182	5026	5648	11543	19257	12720	7452	5053	123836	172243	150963	148119	87819	257412	87819	257412	87819	257412	
5770	393966	11220	4933	5624	11166	19232	12838	7115	4962	122543	170911	150104	137054	88378	253386	88378	253386	88378	253386	
5776	5776	11010	5000	5619	11817	19380	12801	7229	5081	125604	174478	157054	141492	871076	246970	871076	246970	871076	246970	
5782	5782	991724	10760	4968	5547	11495	19206	12659	4847	122722	170776	151492	137104	813921	246970	813921	246970	813921	246970	
5788	5788	990554	10855	5469	11607	19202	12657	7600	4851	123804	174248	153682	144987	874487	247488	874487	247488	874487	247488	
5794	5794	990851	11130	5241	5501	11877	19204	126769	7869	4748	124747	172948	151291	137054	873772	256544	873772	256544	873772	256544
5800	388432	11192	5383	5644	12820	19345	12739	7464	4930	124599	173618	151809	141426	87448	256396	87448	256396	87448	256396	
5806	388432	11294	5268	5585	12939	19126	12744	8621	6002	124573	173281	152169	148149	87448	256396	87448	256396	87448	256396	
5812	388945	11273	5269	5622	11581	19205	12750	7825	5081	125604	174478	151570	147312	87448	256396	87448	256396	87448	256396	
5818	388474	11424	5047	5669	11231	19244	12718	7189	5071	125517	175029	151352	148511	87448	256396	87448	256396	87448	256396	
5824	384754	11426	5174	5726	11435	19245	12718	7176	5115	125554	175277	151359	147312	87448	256396	87448	256396	87448	256396	
5830	5830	99376	11410	5195	5789	11803	19361	12819	7485	5124	125532	174200	151290	147054	87448	256396	87448	256396	87448	256396
5836	5836	380050	11444	5142	5697	11667	19345	12739	7464	5179	123221	171466	153305	139006	89455	258205	89455	258205	89455	258205
5842	385089	11419	5017	5683	11813	19345	12739	7464	5179	123221	171466	153305	139006	89455	258205	89455	258205	89455	258205	
5848	385344	11032	4679	5645	10803	19065	12826	6895	5053	122208	170454	151362	137578	87393	254034	87393	254034	87393	254034	
5854	385344	11032	4617	5656	9863	11921	12666	6523	4834	122145	170256	149054	135796	87392	250894	87392	250894	87392	250894	
5860	384359	11122	4617	5622	11581	19109	12666	6523	4834	122145	170256	149054	135796	87392	250894	87392	250894	87392	250894	
5866	382006	11435	4505	5518	9567	11892	12616	6230	4957	123344	170965	151057	144988	87392	253578	87392	253578	87392	253578	
5872	382293	11150	4452	5601	9128	18943	12689	5899	4963	123198	171169	147191	138104	90466	256396	90466	256396	90466	256396	
5878	380050	11444	4194	5716	8622	19082	12617	5603	4989	121558	170407	151471	137706	89794	258205	89794	258205	89794	258205	
5884	385089	11442	3406	5644	7334	18991	12221	5131	4925	124047	173149	151471	138104	89794	258205	89794	258205	89794	258205	
5890	372054	9770	2611	5336	6739	18625	12076	4361	3871	117449	164697	161090	136771	87393	254034	87393	254034	87393	254034	
5896	366120	9897	2422	4842	5258	18053	12153	3282	3282	117532	168427	161269	136965	87392	254034	87392	254034	87392	254034	
5902	36																			

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

Lambda Å	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip		
5932	75529	79796	4473	5665	8340	19034	12651	5123	6093	124130	172530	147396	133186	90570	90995		
5938	11530	11228	11641	4635	5691	8850	19070	12573	5124	5093	124327	172421	150592	135030	91250	253668	
5944	11273	11289	11358	4652	5655	9449	19067	12553	5124	5088	123794	172732	148084	134067	91059	256811	
5950	370076	370076	11419	4595	5565	9281	19065	12552	5124	5136	123764	172732	147557	132567	90404	257641	
5956	3696561	3683398	11477	4612	5636	9025	18942	12591	5124	6744	5120	145570	176422	148327	133742	89430	258493
5962	36968	36968	11710	4777	5766	9207	19113	12647	5124	5131	124234	173073	148845	132726	90468	262019	
5974	371351	11591	4777	5706	9296	19131	12647	5124	5121	123812	172817	146693	132778	91884	260259		
5980	369878	11326	4703	5622	9502	18832	12580	5124	5085	5123	123030	171554	147288	132550	91596	258677	
5986	369276	11418	4888	5866	12390	6049	12503	6116	5166	123265	17097	149384	131008	89384	255871		
5992	366697	11535	5091	5556	10391	18923	12503	6116	5166	122866	170572	145237	130057	90674	260581		
5998	367687	11504	5070	5562	10574	18865	12449	6116	5166	122359	170187	149383	130530	90593	261861		
6004	368633	11369	4977	5475	10980	18626	12469	6116	5177	121873	169781	146521	130408	88939	253348		
6010	60116	11303	5064	5485	10964	18645	12486	6116	5093	121858	169047	146056	130863	88923	254486		
6016	369235	11239	5098	5451	11036	18645	12482	6116	4958	121673	169095	145885	130909	88085	258208		
6022	366432	11078	5138	5369	11578	18857	121446	6960	4980	121693	168829	144169	129915	87742	256650		
6028	363517	11369	5319	5370	11707	18866	12321	7191	5003	122748	169092	148282	131008	88697	255531		
6034	363553	11360	5420	5530	11856	18776	124477	7400	5137	123866	17036	143826	129139	91833	260578		
6040	365043	11501	5418	5602	12145	18819	12335	7432	5248	123026	171226	143626	129060	91171	264673		
6046	362491	11653	5585	5571	12310	18818	12560	7638	5323	121838	169432	143968	128398	91798	267939		
6052	360705	11476	5633	5632	12540	18714	12308	7847	5338	121672	168404	143388	128443	91849	269061		
6058	361160	11599	5630	5630	12515	18291	12307	7901	5265	120205	165542	143871	127763	91003	257102		
6064	360659	11396	5513	5505	12765	18479	12290	7890	5212	121655	168814	140607	125900	89072	256204		
6070	357227	11369	56398	5485	12738	18485	12200	7888	5149	121596	168157	140821	126947	90081	259793		
6076	387157	11440	56695	5578	12937	18666	12347	7993	5241	120626	167072	141082	126728	89372	256830		
6082	334564	11208	5681	5412	12951	18355	12229	8109	5213	119961	166565	142974	129790	89390	252081		
6088	385621	11197	5689	5405	12800	18344	12020	8072	5140	119384	166071	139479	124798	88387	252916		
6094	60094	11065	5700	5314	12992	18159	12150	8121	5068	116647	16935	143845	128739	87339	253164		
6100	351926	11013	5655	5302	13231	18108	11854	8394	4912	117889	164088	141116	124486	88071	249046		
6106	340341	10929	5473	5282	12691	17902	11826	8276	4903	118420	164931	133058	123033	87062	251012		
6112	349608	11204	55112	5345	12785	18715	11988	8128	4833	114488	169003	133598	123005	88110	249047		
6118	349155	11065	55452	5266	12990	17491	11798	8392	4851	117660	163817	136859	122550	865234	247364		
6124	343213	11082	5425	5186	12569	17892	11841	7931	4729	116553	160260	134688	121260	863985	247598		
6130	343213	10833	5610	5115	13179	17664	11665	7650	4800	114988	159284	167275	130627	85861	243116		
6136	340975	10844	5713	5117	13681	17465	116335	8680	4876	110205	159171	133436	118711	124760	242506		
6142	340975	10409	5422	5140	8748	16849	113033	5497	4778	114198	157629	132973	117986	85780	240370		
6148	34351	5141	8730	11413	87370	17309	11413	8761	4748	113290	156976	133479	119028	86377	242475		
6154	337754	10793	5483	5149	12439	17265	11487	8628	4748	113290	156976	133479	118527	88337	238081		
6160	343513	10547	4840	5135	10884	17280	113034	7779	4434	112003	155121	132370	118527	88337	238081		
6166	338359	10374	5184	6224	12690	17892	11793	8118	4770	116802	151922	131029	113019	80319	234440		
6172	331714	10452	4710	4941	8695	16835	11050	6516	4734	113234	151894	131028	113108	80319	234440		
6178	331870	10890	4445	5023	8713	16905	11305	6539	4388	113934	157821	132875	117683	81140	230878		
6184	331870	10885	4522	5140	8748	16849	113033	6589	4590	114644	157786	132062	117485	83800	240848		
6190	330664	10853	4351	5133	87370	16871	11413	6533	4651	111043	159171	133436	118711	84618	236883		
6196	330665	10955	4188	5133	87370	16871	11413	6533	4651	111043	159171	133436	118711	84618	236883		
6202	330595	10376	10869	4227	5128	8233	17064	113559	4737	112023	151013	131065	116988	85143	243442		
6208	325955	11050	4412	5192	8392	17064	113559	6539	4651	112334	151854	131056	116023	865952	242705		
6214	326506	10359	4270	5142	8112	17024	11049	6048	4605	112594	156333	132819	114229	86176	240164		
6220	325165	10273	3974	5037	7484	16852	11233	6495	4495	112719	156111	132767	114469	84618	236883		
6226	325180	10647	3771	5037	7135	16812	11157	6492	4492	112050	154988	132767	112898	83397	236687		
6232	321261	10718	3739	5016	6947	16871	11279	6495	4488	111043	153038	132081	113135	83175	234503		
6238	319168	10650	3812	4964	6994	16612	110633	4090	4402	109744	152285	128111	114210	83150	236309		
6244	31244	10609	3960	4887	7583	16235	10934	4225	4438	109460	151156	128271	113770	82085	233868		
6250	312699	10550	4412	5192	8392	17064	113559	6497	4472	108318	156135	128271	113770	82085	233868		
6256	316215	10273	4039	4917	7942	16261	10709	4659	4459	108380	151093	128271	113770	82085	233868		
6262	316964	10577	4108	8400	4897	8000	11618	10898	4857	4492	108380	151054	128271	113770	82085	233868	
6268	31268	10349	4278	4957	8000	116333	10898	5154	4434	109834	151489	128271	113770	82085	233868		
6274	31274	10681	4299	4898	8969	16489	10933	5331	4545	107278	149473	124126	110733	830375	237110		
6280	320732	10415	4321	4787	8911	16232	10793	5425	4491	107090	148710	122417	110946	81676	230630		
6286	320526	10518	4439	4854	9031	16070	10786	5462	4550	10203	149431	122467	103497	82456	228251		
6292	303816	10539	4460	4894	9037	16020	10780	5701	4449	102497	149141	122467	103497	82456	234261		
6298	304278	10470	4679	4854	10102	16112	10739	6064	4449	106465	147120	122467	102979	81041	230795		

SPECTROPHOTOMETRY OF SPECKLE BINARY STARS. II

(continued)

Lamda Å	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip
6304	3017374	75529	79796	81470	82817	83064	83791	84140	87991	88127	88136	88687	886818	95595	96502	
6310	30174	10346	4711	4815	11237	16003	10827	6529	4434	106716	147660	123207	108297	78932	228087	
6316	10275	10619	4971	4854	11769	16147	10882	6526	4526	107030	148937	121919	108082	782794	233414	
6322	303731	10363	5221	4816	12336	15915	10657	7434	4614	108396	148284	123015	108940	81130	226334	
6328	202653	10609	5314	4855	12692	15920	10718	7626	4630	107918	148061	122822	108900	82626	232265	
6334	302858	10454	5308	4947	12852	16093	10731	7801	4634	107956	148081	122926	107704	81908	232114	
6340	301296	10484	5335	4835	13391	16008	10773	8180	4696	107868	149185	121276	107588	82699	228840	
6346	2396706	10635	5642	4872	12816	16001	10777	8441	4739	108283	149421	120243	108207	82807	233414	
6352	299095	10517	5778	4906	13656	15962	10736	8727	4709	108633	148035	120478	106913	82439	229400	
6358	297992	10510	5390	4855	13359	15948	10647	8531	4683	107681	149754	120820	107671	81792	227133	
6364	298561	10547	5372	4879	12941	15996	10690	8331	4679	108784	147057	120571	107283	82288	232687	
6370	287991	10721	5394	4935	12788	15996	10657	8408	4673	109764	151122	121471	107449	83411	239800	
6382	294907	10728	5132	4930	12333	16093	10767	8416	4719	109074	149126	121926	106993	83983	235140	
6388	278563	10671	6042	5002	12354	16014	10742	7948	4646	108657	149060	119690	106433	83355	230994	
6394	298580	10522	5220	4906	12320	15933	10774	8377	4625	107766	148959	122246	107780	83472	229840	
6400	294355	10526	5689	4783	14275	15819	10850	8981	4636	106809	148652	119089	106042	80276	231903	
6416	293085	10358	5652	4786	14993	15759	10801	9635	4670	106459	147558	119296	106379	80805	230310	
6418	289335	10477	5070	4824	15160	15670	10661	9922	4675	106551	147065	117207	104024	80466	231010	
6424	291247	10406	5592	4818	14927	15535	10697	9670	4774	107302	147524	117177	101659	811689	228837	
6430	289104	10360	6071	4829	15345	15535	10605	9798	4745	107138	147636	117308	101227	811621	229815	
6436	286483	10537	5387	4842	15250	15542	10596	9732	4713	107077	148031	116983	102534	79851	232474	
6442	281925	10667	6166	4833	15682	15586	10665	10021	4717	106450	145650	117156	102519	81851	232537	
6448	281925	10364	6119	4786	15119	15915	10433	10371	10059	4696	10543	145747	116938	101828	80233	
6454	285298	10323	6285	4761	16230	15420	10313	10188	4699	105548	145903	113686	98936	811438	225666	
6460	279756	10323	6285	4761	16230	15420	10313	10188	4699	105548	145903	113686	98936	811438	225666	
6466	277217	10379	6252	4718	16376	15334	10346	10285	4701	105654	146701	11384	99706	80520	227211	
6472	275793	10308	6346	4713	16359	15093	10386	10448	4718	107009	147029	113667	101463	79399	230666	
6478	272731	10161	6471	4753	16848	15085	10342	11080	4782	107630	146964	115040	100135	79351	229864	
6484	273009	10164	6376	4743	16658	15361	10274	11210	4693	103863	144054	113483	99186	81192	224719	
6490	274375	99555	6165	4642	16256	15199	10008	10427	4553	103810	143434	112274	96007	77590	216625	
6502	270452	99227	5827	4579	16348	14893	9924	10449	4553	104501	146477	111571	97222	76042	219518	
6508	268159	10238	6336	4685	17398	14903	10103	10892	4750	106154	146554	114701	97069	79475	227060	
6514	261589	10435	6558	4712	17774	15097	10134	11299	4802	106112	146813	110779	9492	80888	228912	
6520	263802	10279	6756	4724	18047	14999	10156	11438	4889	106763	146452	108037	90175	80483	225529	
6526	264310	10232	6755	4760	18703	15067	10067	11658	4904	105664	146521	108384	94565	80625	226408	
6532	260553	10339	6948	4761	19233	15095	10195	12058	4935	107231	149456	110763	92030	828056	228056	
6538	261166	99555	6531	4729	16279	14869	10158	12482	4951	104256	145951	105848	98010	825016	225566	
6544	251917	10379	7023	4736	19686	14986	9938	12562	4912	101883	138620	102657	90159	80616	225566	
6550	242216	10047	6841	4738	16356	14793	9640	12415	4902	96659	132321	96762	85530	77958	211329	
6556	228457	9752	6878	4666	16228	17912	14559	9753	4783	88367	125177	98867	80888	78113	224943	
6662	207069	9308	6492	4644	14332	20566	13636	8130	11500	4712	86537	121616	77522	19097	73356	
6668	251338	9194	6565	4699	17714	14871	12432	7526	11265	49361	127656	683930	110493	71018	193647	
6674	171616	9526	6924	4301	18692	12624	8786	11060	4655	107633	136806	112820	68103	74555	205748	
6680	196630	9897	6531	4487	17627	13574	9479	10903	4799	103068	142225	87804	77190	77662	219361	
6686	218487	10089	6553	4632	17191	14204	9842	10777	4861	104232	144525	95435	82686	78668	221556	
6692	231166	10107	6841	4705	16356	14793	9640	11190	4831	104287	145077	100478	97657	80109	225566	
6698	243302	10084	6520	4628	16061	14399	9149	11877	4783	105368	145368	102769	91157	80588	228308	
6704	249413	10164	6492	4644	17641	14539	10013	10902	4862	106320	147007	104089	91557	78713	224943	
6710	251338	10347	6565	4699	17714	14871	10144	10934	4896	106440	147902	108010	91471	78113	224943	
6716	266201	10381	6552	4717	17628	14862	10109	10747	4928	106823	148581	107333	93675	80506	231234	
6722	258422	10365	6343	4740	16270	14847	10705	4867	107213	148547	110087	94819	80085	235245		
6728	258556	10272	6343	4632	16292	14775	9995	10250	4869	106708	147146	107686	93647	80109	230335	
6734	6634	10251	6242	4697	16330	14642	9917	9806	4856	105962	147303	105588	93624	80311	229308	
6740	261329	10308	6203	4614	15876	14760	9952	9420	4861	105568	147518	104087	94863	80030	228108	
6746	251338	10347	6028	4696	15276	14893	9971	9346	4881	105785	146513	10805	95205	79663	228944	
6752	15276	10361	6762	4746	14611	14871	9971	10203	8831	4926	106749	148056	108415	93442	80496	229116
6758	6664	10294	5745	4736	14466	14964	9961	8541	4876	106131	147328	106213	92595	80765	230114	
6764	260004	10299	5817	4719	14873	14853	10023	8608	4902	105223	146428	106428	95603	79666	232545	

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

Lambda A	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip	Hip
6676	260577	75529	79796	81470	82817	83064	83791	84140	87991	88127	88136	88817	88818	96595	96595	96595	96595	96595	
6682	253892	10344	5703	4702	14774	14895	9825	8898	9112	106843	1146760	107536	54165	78831	54165	78831	54165	78831	
6688	258369	10468	5460	4735	14889	14786	9935	8893	4854	114634	1147660	107536	63914	79052	63914	79052	63914	79052	
6694	10462	10340	5413	4681	13600	14757	10103	8182	4883	106860	1147461	107536	64102	80911	64102	80911	64102	80911	
6700	259386	10367	5468	4697	13207	14850	8790	7653	4843	106688	1148326	107536	93316	80640	235092	93316	80640	235092	
6706	258067	10373	5515	4687	13607	14797	9877	8025	4784	106675	1147551	107536	93316	80640	235092	93316	80640	235092	
6712	257124	10365	5489	4680	13697	14723	9860	8049	4754	106027	1147777	106968	92932	79283	235918	92932	79283	235918	
6718	256613	10224	5240	4634	12798	14533	9764	9096	4726	105996	1148205	108334	95292	79230	231261	95292	79230	231261	
6724	257612	10290	5003	4630	11985	14515	9685	7268	4711	105867	1147403	106803	61455	78937	230491	61455	78937	230491	
6730	254974	10314	5028	4636	11985	14722	9638	6871	4755	107500	1148195	109412	94083	79653	235733	94083	79653	235733	
6736	10449	10314	5028	4700	12922	14552	9979	7701	4779	106987	1147789	107657	92897	79800	230618	92897	79800	230618	
6742	256757	10338	5171	4688	12637	14609	9822	7401	4738	107022	1147460	107044	92723	79544	239606	92723	79544	239606	
6748	10376	10376	5195	4685	12415	14645	9872	7558	4782	107538	1147752	1070981	93316	80391	234576	93316	80391	234576	
6754	253862	10485	5061	4630	12177	14734	121702	9965	7382	4808	107487	1147082	107174	92531	78945	231181	92531	78945	231181
6760	255959	10498	5112	4734	12177	14654	10033	7419	4768	107546	1147557	107163	91529	81029	236392	91529	81029	236392	
6766	254113	10519	5255	4715	12638	14638	9979	7701	4779	106987	1147789	107656	92897	79800	235305	92897	79800	235305	
6772	254945	10442	5251	4700	12922	14552	10077	8087	4753	107499	1148663	925282	925282	925282	79800	236803	925282	79800	
6778	252709	10575	5236	4691	13171	14741	10077	7994	4753	107022	1147460	107044	92723	79544	239606	92723	79544	239606	
6826	250956	10576	5043	4693	12334	14875	10089	8087	4753	107938	1148992	104752	91952	81177	232947	91952	81177	232947	
6832	250421	10552	5070	4705	12442	14662	10073	7646	4740	107956	1147443	1070081	92281	81222	231779	92281	81222	231779	
6879	254129	10554	5021	4625	11856	14586	10022	7386	4721	106909	1147450	106021	93465	80735	237770	93465	80735	237770	
6880	251576	10555	4996	4659	12231	14654	9899	7506	4764	106616	1147615	104810	91124	78928	231958	91124	78928	231958	
6881	251030	10551	5011	4679	12435	14672	9806	7536	4732	106636	1147328	107160	80919	78932	232982	80919	78932	232982	
6884	252019	10564	5155	4706	12317	14801	10098	7734	4703	106519	1148155	104387	91517	81363	234878	91517	81363	234878	
6886	250956	10576	5051	4693	12334	14894	10063	7860	4641	106742	1147600	109053	80662	80662	80662	80662	80662	80662	
6888	254142	10556	5043	4693	12334	14899	10005	7683	4746	105956	1145871	104387	89971	80582	234105	89971	80582	234105	
6892	254563	10395	5089	4654	12487	14630	9700	7814	4688	102419	1144791	103103	89736	80703	231217	89736	80703	231217	
6894	248868	10340	5097	4630	12624	14590	9796	8154	4655	104750	1145458	103664	90513	78723	237658	90513	78723	237658	
6895	248914	10431	5011	4577	12472	14272	9800	7472	4594	103776	1143728	103769	88057	77924	233680	88057	77924	233680	
6896	245599	10352	4983	4630	12052	14239	9699	7878	4481	101188	1139419	106063	88263	78835	237056	88263	78835	237056	
6898	243839	10031	4859	4556	11769	14209	9467	7750	4295	102901	1129736	101198	87762	78015	210657	87762	78015	210657	
6899	237954	9320	4612	4352	11115	13519	8873	7475	3790	117620	112760	97176	87643	72551	210657	87643	72551	210657	
6904	216540	98638	5008	4187	12358	14918	8996	8134	4259	941766	1127599	970039	77574	71003	210657	77574	71003	210657	
6916	220285	9844	5174	4227	12938	13140	9070	8606	4856	112556	112556	91718	80243	65256	182150	80243	65256	182150	
6980	200438	8754	4200	3950	10142	11816	8274	8537	4826	86751	112881	80771	70170	64875	194846	70170	64875	194846	
6986	205065	8956	4534	3980	10928	12458	8570	7125	4030	88086	112082	89709	76592	68663	203558	76592	68663	203558	
6989	212509	9024	4667	4025	11288	12764	8600	7417	4098	88231	112216	89833	77668	71882	204942	77668	71882	204942	
6990	214563	9134	4720	4042	11244	12707	8660	7621	4118	89289	1123789	86475	74922	70699	199888	74922	70699	199888	
6991	9578	4766	4099	4177	11625	12718	8896	7179	4158	91766	1127599	77574	71003	210657	77574	71003	210657		
6992	220526	10013	6347	4258	16669	13281	9065	11031	4633	988534	1135729	918268	805434	75144	212979	805434	75144	212979	
6995	222027	10189	6277	4227	13022	13184	9395	8093	4448	97319	1134022	94562	80879	74228	213367	94562	80879	213367	
6997	223131	10061	5449	4412	17646	13205	9317	11597	4555	98411	1135802	930506	801040	74438	211220	930506	801040	74438	
6998	224285	10016	5700	4334	16071	13324	9182	9819	4602	98531	1135233	924123	81524	744700	218440	924123	81524	744700	
6999	226282	10167	6533	4326	15755	13247	9253	10114	4617	98007	1135226	924123	81837	74686	217523	924123	81837	217523	
7000	222725	10150	6301	4358	17411	13338	9382	11346	4736	98849	113732	914556	80344	75144	212979	914556	80344	212979	
7002	218334	9635	4216	18709	13172	8879	12059	11146	4736	98339	1137185	91723	81112	75081	216820	91723	81112	75081	
7004	214794	9970	6271	4128	12561	12651	8734	12598	4602	94453	1136219	930536	81318	76399	208916	930536	81318	76399	
7006	212733	9872	64076	4475	14957	13776	8679	12667	4673	97672	1135336	93876	80524	76395	205211	93876	80524	76395	
7008	214095	9833	6871	4145	14757	13204	12640	12593	8735	13003	94020	1131062	90948	77866	209162	90948	77866	209162	
7010	214155	9810	6970	4099	10249	12520	8801	13414	4693	94368	1131692	90876	71854	71854	71854	71854	71854	71854	
7036	212622	9945	7299	4109	21639	12520	8766	13676	4736	94776	1130538	89976	7007	208100	89976	7007	208100	89976	
7042	214041	10069	7632	4166	22727	12642	8789	14472	4815	94774	1130975	90726	76796	210595	90726	76796	210595	90726	

Table 3: Flux (E-16 erg/cm²·s·Å) (continued)

Table 3: Flux (E-16 erg/cm²·s·Å) (continued)

Lambda Å	Hip 5526	Hip 79796	Hip 81470	Hip 82817	Hip 83064	Hip 83791	Hip 84140	Hip 87991	Hip 88127	Hip 88136	Hip 88818	Hip 88819	Hip 95995	Hip 96302	
7426	177644	9164	8534	3743	27981	10875	7604	17591	4652	85193	117532	73289	62300	67128	
7432	177040	9408	8641	3221	28410	10873	7754	17928	4630	85992	119455	74044	62985	67770	
7438	177193	9296	8581	28448	3779	10742	18348	4646	86008	118560	73742	63048	67010	193713	
7444	175373	9275	8564	3779	28656	10981	7085	18476	4592	85537	118200	74088	63445	66940	
7450	176268	9344	8611	3713	27969	10690	7555	17965	45916	85916	118639	66339	68966	192466	
7456	175151	9400	8599	3749	28512	10737	7665	18144	4621	86083	118397	72940	61988	66681	
7462	174332	9339	8655	3805	28146	10651	7595	18192	4556	85938	118741	668236	619874	193417	
7468	172885	9357	8521	3860	28600	10539	7521	18404	4604	85784	118265	71654	60338	66345	
7474	170293	9280	8564	3860	28600	10539	7544	18379	4603	85724	117581	72680	62360	65725	
7480	169736	9262	8581	3706	28939	10642	7533	18791	4576	85234	117581	71302	61034	191533	
7486	168472	9207	8635	3722	28031	10475	7452	18615	4526	85264	117669	64927	189066	189473	
7492	168036	9151	8522	3610	28345	10432	7425	18545	4451	84886	116998	70111	60635	64167	
7498	165102	9097	8645	3957	29507	10610	7473	18762	4534	85150	116982	67397	630385	187484	
7504	168775	8934	8626	3882	29045	10600	7415	18647	4474	85010	117635	69639	59164	64546	
7510	167468	9002	8658	3843	28951	10380	7211	18847	4430	84304	117240	69083	63758	187179	
7516	165523	9080	8652	3807	29122	10208	7249	18686	4441	84291	116528	70480	58652	63741	
7522	165017	9093	8714	3822	29000	10401	7237	18707	4449	84548	116336	69189	63405	183768	
7528	162473	9104	8753	3854	29054	10183	7223	18553	4446	84804	116923	69741	64690	188274	
7534	164943	9119	8755	3551	29187	10108	7256	18760	4505	84766	117220	70045	59708	64656	
7540	164018	9065	8822	3822	29978	10182	7294	19191	4542	84124	116764	69775	593319	187074	
7546	162192	9055	8923	3551	30072	10158	7379	18954	4527	83755	116350	69629	59667	654742	
7552	163716	9024	8851	3580	30499	10342	7275	19406	4523	83935	116067	68505	58810	186569	
7558	163087	9104	8931	3567	30383	10259	7167	19491	4564	83863	116455	59300	64987	187741	
7564	162269	9048	8897	3541	29914	10149	7120	19203	4560	83223	115878	70840	60056	64602	
7570	162468	9010	8863	3551	29925	10217	7109	19264	4449	83943	114297	69016	64197	187427	
7576	159980	8897	8941	3570	30100	10207	7077	19196	4392	76676	108739	68787	58541	189360	
7582	16801	8714	8449	28866	9979	87082	9397	19305	4028	93495	94342	67885	64227	179495	
7588	164018	9055	8923	3551	25001	9457	6136	18134	3255	45625	72391	62931	55088	57718	
7594	159931	7115	8719	3522	25000	9457	6136	18194	4527	83755	116350	69629	59667	654742	
7600	145152	930	4930	6032	2555	16638	8033	4773	15096	21214	31450	49296	44664	106540	
7606	160734	3494	4268	1894	10235	6038	3549	10713	1715	32120	43754	33981	31590	31402	
7612	170221	3489	3550	1608	8434	2984	5289	7746	1918	35520	47160	27146	23656	26102	
7618	4580	4117	5750	1705	12749	5757	3767	2531	57551	545649	32248	36531	31108	104086	
7624	71772	5169	4981	2103	15456	5658	4213	9844	2471	41173	57665	42617	34976	32727	
7630	97359	4933	6407	6252	13672	6362	10446	4204	41267	58496	42651	37692	37692	109405	
7636	92135	4931	4885	2099	12786	6252	4311	10446	2487	44844	62183	39378	33997	37102	
7642	88451	5303	4891	3211	13801	6380	4374	9797	2654	52535	40283	45380	34957	38074	
7648	5850	5293	3219	14854	6527	48693	10251	2916	65375	77132	43754	33981	31590	31402	
7654	59178	6439	5818	2573	17075	7176	5237	11286	3194	61992	84537	48060	40275	45149	
7660	106060	6962	6416	6252	2967	19101	56521	12035	3413	75551	92067	52385	49038	145311	
7666	122054	7693	6252	2947	18806	8143	5956	12861	38557	72846	99167	564851	47049	51814	
7672	129685	6407	6425	18903	8631	63367	10094	39755	10579	60227	58795	620547	560327	166385	
7678	137910	8588	6805	3289	21007	9146	6641	12794	4232	79744	105959	62922	53022	59669	
7684	143813	8823	7232	3419	22074	9546	6886	14303	4354	81276	112509	64208	44681	61121	
7690	144884	8841	7493	3502	23084	9757	1024	14326	4391	81210	114009	64274	55698	62273	
7696	162156	9011	7455	3515	23569	9850	7042	14441	4349	82665	114827	66569	56739	63894	
7702	7708	165820	8868	7238	22545	10081	7091	12025	4340	83041	115642	67748	56411	186238	
7708	165414	9101	7615	3528	22308	10189	6988	14029	4383	83543	115812	67203	57553	64036	
7714	7712	155429	9066	7729	3514	24315	9928	10714	4478	83848	116372	67645	57214	184661	
7720	155749	9104	7731	3471	24208	9839	10105	14729	4497	84321	117584	68439	57486	184204	
7726	7732	158905	8880	7864	3499	26448	10124	15028	4510	84223	117904	68098	57973	188131	
7732	155871	9126	8006	25781	10187	14638	7050	15583	4515	84126	117592	68717	56351	186582	
7738	150577	9057	8051	20215	10215	16122	4527	85998	117877	68078	58473	146353	187498	186238	
7744	156402	9013	7787	3435	20225	9985	6877	15726	4477	84587	118163	67624	58884	183316	
7750	156301	9050	7756	7692	3453	24615	9820	6927	14812	4481	84509	117728	68291	57937	186611
7756	155629	9066	7731	3471	24208	9839	7112	14821	4481	84509	117728	68291	58652	192845	
7762	7768	151537	9092	7770	3449	24266	9983	7156	14931	4430	84492	117550	66577	64810	188461
7778	156517	9079	7840	3492	24785	10084	7080	14923	4488	84466	117064	66413	64274	190186	
7780	153051	8890	7919	3488	24859	9982	7031	15585	4443	84274	116707	63810	59597	63651	
7786	149941	8885	7841	3475	25160	10026	6985	15578	4431	84509	115726	68291	58694	188153	

(continued)

Luminosity A	Hip 5526	Hip 75529	Hip 79196	Hip 81470	Hip 82449	Hip 82817	Hip 83064	Hip 83791	Hip 84140	Hip 85127	Hip 85791	Hip 88187	Hip 88818	Hip 95395	Hip 96093
7792	148247	8902	7833	3493	25009	9854	6937	15404	4460	84963	117636	65372	55742	63181	18693
7798	152645	8947	7791	3489	2449	9817	6987	15329	4485	84586	117578	65994	57134	62267	184987
7804	152066	8675	7914	3489	26037	9923	7059	15841	4458	84805	117857	65969	56913	62227	189223
7810	152035	8758	7958	3447	25911	9709	6997	16120	4365	84839	117779	65333	65533	62153	185513
7816	151608	8848	8062	3494	26272	9594	6974	16504	4472	84857	118104	65645	55799	64081	185753
7822	151005	8918	8058	3489	26888	9681	6965	16559	4415	84596	118717	66241	86647	63009	188612
7828	149422	8814	7888	3475	26468	9730	7034	16700	4373	84216	118498	61863	51863	61863	187738
7834	150442	8611	7777	3415	26152	9780	7003	16305	4368	84117	117878	65677	55463	61717	183765
7840	149251	8671	7792	3403	26287	9780	6953	16197	4386	83932	117229	66030	55929	61437	183237
7846	149747	8796	7753	3415	26330	9698	6913	15942	4379	83822	116736	65651	55941	60374	186725
7852	148336	8678	7890	3414	26504	9670	6894	16266	4383	83583	116944	66750	55999	62116	185905
7858	147563	8558	8024	3405	26890	9559	6861	16309	4420	82435	116944	65218	55954	62110	183421
7864	149084	8538	8026	3435	27269	9519	6910	16622	4398	82796	116838	65422	65247	61856	186328
7870	148992	8511	7982	3419	27046	9606	6729	16908	4413	82514	115418	64315	54544	61492	183620
7876	148153	8545	7958	3465	27703	9686	17244	4430	82549	115425	64797	54874	61464	182166	
7882	147705	8532	8060	3434	27623	9546	7008	17019	4401	82189	116140	64641	55089	61041	183776
7888	146460	8532	8069	3377	27688	9507	6826	17194	4389	82576	114640	64220	55075	60119	183393
7894	145327	8559	8062	3345	27391	9547	6760	17441	4284	82082	113945	64330	54893	60141	180801
7900	142206	8475	8095	3278	27888	9526	6671	17488	4276	81268	113956	63083	54086	58658	179598
7906	141986	8443	8113	3356	28402	9477	6628	17442	4268	81401	114248	62229	53810	58686	176025
7912	142175	8398	8035	3307	28039	9329	6611	17397	4232	81201	113697	63086	53990	59481	174920
7918	143175	8363	8004	3396	27923	9387	6623	17323	4322	80281	112584	62218	53474	59409	173766
7924	142010	8181	7896	3275	27735	9316	6657	17137	4236	79527	112427	62307	53456	57805	172453
7930	141998	8131	7975	3300	28031	9215	6554	17424	4188	79247	111771	61975	52451	59336	171467
7936	139787	8171	7998	3318	28428	9446	6523	17708	4200	78943	110143	62027	53069	58116	172673
7942	139613	8112	7953	3310	28478	9215	6478	17771	4144	78990	110111	60824	52607	57374	171146
7948	138689	8030	8017	3274	28237	9241	6477	17789	4207	79267	111101	60693	52283	56787	171118
7954	138631	8242	8104	3104	28539	9329	6511	17397	4277	80120	113697	63086	53990	59481	174920
7960	138631	8274	8192	3356	29060	9502	6636	18135	4322	80128	112584	62218	53474	59409	173766
7966	138684	8142	8291	3294	29021	9436	6523	18060	4333	80128	112584	62218	53456	57805	172453
7972	138694	8189	8350	3238	29434	9462	6483	18201	4330	79814	110530	60178	51631	57486	173228
7978	138490	8350	8317	3319	29489	9325	6503	18568	4346	80015	110234	61531	52483	57595	177280
7984	136964	8337	8294	3384	29538	9312	6662	18571	4374	78274	109651	62009	52030	57630	175289
7990	139378	8268	8305	3356	29613	9310	6685	18538	4336	78134	109681	61418	52203	57599	174840
7996	136972	8244	8322	3250	28620	9047	6456	18322	4283	78134	109398	60656	51554	57824	171936
8002	136972	8283	8249	3267	29563	8906	6452	18534	4288	77822	108536	60178	51496	57733	174333
8008	138207	8170	8316	3173	2922	8906	6394	18241	4247	78410	108439	59830	51084	57808	174671
8014	136117	8160	8203	3263	29817	9087	6453	18554	4314	77831	108038	60130	51631	57486	174782
8020	137070	8160	8518	3302	29837	9202	6535	18861	4336	76471	107249	60583	52125	57228	175488
8026	137218	8113	8499	3286	29837	9245	6515	18905	4265	76341	107391	59812	51138	57377	173426
8032	135927	8170	8417	3218	30060	9249	6561	18802	4228	76444	106503	58340	49967	56932	170204
8038	135372	8231	8535	3170	29996	9132	6396	18849	4304	76246	106723	58799	50886	58020	174061
8044	135156	8288	8635	3229	30261	9116	6446	19043	4363	76025	106655	59986	51203	58734	170022
8050	136183	8371	8340	3242	30856	9023	6531	19206	4303	75759	105876	59431	50995	57549	171798
8056	135221	8271	8629	3262	31348	9147	6592	19534	4308	75759	106510	59491	50817	57660	168047
8062	134903	8233	8792	3309	31458	9389	6470	19811	4479	75459	106425	58664	50430	57550	171398
8068	137556	8391	8884	3341	31697	9202	6448	20188	4462	74875	104719	59718	51097	58602	173588
8074	137172	8349	8857	3314	32247	9245	6413	20783	4425	74922	104720	61196	52215	56837	171147
8080	138266	8299	8895	3329	34317	9327	6602	21436	4366	74125	104033	61821	53357	58817	180229
8086	136500	8221	8944	3319	34715	9434	6488	21949	4427	73366	103133	64047	54362	58817	181635
8092	136365	8187	8849	3221	35105	9489	6371	22429	4420	72981	103291	65588	54542	57777	183503
8098	136129	8181	8927	3304	35750	9194	6461	22871	4344	72316	101371	66473	55476	58602	184991