A spectrophotometric comparison of the physical properties of classical Cepheids and nonvariable supergiants and bright giants

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A SPECTROPHOTOMETRIC COMPARISON OF THE PHYSICAL PROPERTIES OF CLASSICAL CEPHEIDS AND NONVARIABLE SUPERGIANTS AND BRIGHT GIANTS

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ABSTRACT

Spectrophotometric observations using 30 Å resolution in the wavelength range 3408–5910 Å have been obtained for nine classical Cepheids with log P (days) from 0.29 to 1.43 over several phases and for 14 F, G, and K spectral-type supergiants and bright giants. The observations were obtained in order to make an empirical comparison of the physical properties of the Cepheids and the nonvariables which have similar spectral types. Flux distributions for all stars were normalized to 4700 Å and corrected for interstellar reddening. The observed flux distributions are tabulated for all observations. The nonvariable stars were compared to existing models, and significant deviations between observations and models were found for wavelengths between 3408 and 4600 Å over a wide temperature range. Strengths of strongest absorption features were determined from the intrinsic flux distributions, but no significant differences were found between the two types of stars. Ratios of intrinsic flux distributions show that α Per matched δ Cep and η Aql near maximum within the errors of measurement. At other phases of these two Cepheids their continua can generally be matched by that of a nonvariable star to within ± 0.1 spectral types. However, real differences remain at most observed phases which do not appear to be due entirely to luminosity differences. Similar results were found for DT Cyg, T Vul, and X Cyg.

Subject headings: spectrophotometry — stars: Cepheids — stars: supergiants

I. INTRODUCTION

The existence of both stable and variable stars on the H-R diagram in what is called the Cepheid instability strip has been demonstrated by several investigators. Schmidt (1972*a*) showed that four of 11 F and G spectral type supergiants, whose temperatures were measured by means of Hα line profiles and whose absolute magnitudes were gathered from the literature, fell more than 2 standard error limits within the instability strip. Fernie and Hube (1971) examined 48 stars with MK spectral types similar to those of the classical Cepheids. They found that 43 of the 48 were stable to within 0.01 mag. They then showed that several of these stars fell within conservative boundaries for the Cepheid instability strip. One of the stars Fernie and Hube suspected of variability (ϵ Leo, 0.09 mag) was assumed to be a nonvariable in the present study.

Cox, King, and Tabor (1973) reported theoretical results which can explain this overlap in terms of the mass fraction of helium in a given star. According to their results, stars with helium mass fraction between 0.28 and 0.38 would pulsate, but not those with less than 0.20. Schmidt, Rosendhal, and Jewsbury (1974) found no significant difference in element abundance of three Cepheids and 11 normal supergiants, but they did find a lower surface gravity for the Cepheids, which they interpreted as being consistent with the helium abundance requirement suggested by Cox *et al.*

Until now, observations of Cepheids have consisted with a few exceptions of either high-resolution photographic spectrograms or low-resolution wide-band filter photometry. A new body of data has been assembled here consisting of medium-resolution narrow-band photoelectric spectrophotometry of selected classical Cepheids and nonvariable supergiants and bright giants. An empirical comparison is made of the observed spectrophotometric properties of these two types of stars in hope of further understanding the overlap of variables and nonvariables in the Cepheid instability strip.

II. OBSERVATIONS

The observations were made with the University of Iowa Observatory 61 cm telescope and photoelectric spectrophotometer described by Neff and Clements (1972, 1973). The instrumental profile was triangular with a full width at half-maximum response of 30.1 Å, and measurements were made at 30.1 Å intervals in the wavelength region 3408–5910 Å. One or two standard stars were measured nightly over a wide range in air mass in order to compute atmospheric extinction, and the flux standards α Lyr and/or α Leo were scanned each night to determine instrumental sensitivity.

Combination of uncertainties in determination of extinction coefficients, instrumental sensitivity, and detector output current amounts to typical errors in the relative flux distributions of 21% at the wavelength extremes and 2% near 4700 Å.

Program star characteristics are listed in Tables 1 and 2 for the Cepheids and nonvariables, respectively. The HR numbers are those from the *Catalogue of*

TABLE 1

ABSOLUTE MAGNITUDES AND MK SPECTRAL TYPES AT MAXIMUM AND MINIMUM FOR NINE CLASSICAL CEPHEIDS

HR	NAME	PERIOD (days)	M_V Max	M_V Min	AUTHORITIES*	SPECTRAL TYPE Max	SPECTRAL TYPE Min
0829	SU Cas	1.95	−2.53	−2.18	1, 2, 3, 4	F5 Ib–II	F7 Ib
8084	DT Cyg	2.50	−2.86	−2.56	1, 2, 3, 4	F5.5 I–II	F7 I–II
7988	T Vul	4.44	−3.66	−3.02	1, 2, 4	F5 Ib	G0 Ib
8571	δ Cep	5.37	−3.94	−3.13	1, 2, 3, 4	F5 Ib	G2 Ib
6863	Y Sgr	5.77	−4.01	−3.28	1, 2, 3, 4	F6	G5
7570	η Aql	7.18	−4.31	−3.50	1, 2, 3, 4	F6.5 Ib	G2 Ib
7932	X Cyg	16.39	−5.28	−4.29	1, 2, 3, 4	F7 Ib	G8 Ib
6661	Y Oph	17.12	−5.19	−4.70	1, 2, 4	F8 Ib	G3 Ib
2310	T Mon	27.02	−5.95	−4.96	1, 3, 4	F7 Iab	K1 Iab

* Authorities for M_V: (1) Parsons and Bouw 1971. (2) Wielen 1974. (3) Fernie and Hube 1968. (4) Kraft 1961.

Bright Stars (Hoffleit 1964), while the periods and spectral types of the Cepheids are from Kukarkin *et al.* (1969). The spectral type for the nonvariables is in each case the consensus of the determinations listed in the Navy *UBV* catalog (Blanco *et al.* 1968).

The observed normalized flux distributions are presented for the nonvariables and the Cepheids in Appendices A and B, respectively. In each case λ represents the central wavelength in angstroms of channel N, $F_\lambda/F_{\lambda 0}$ is the flux at each wavelength normalized to the value at 4700 Å, and σ is the standard deviation of the normalized flux in each channel. For each observation the logarithm of the absolute flux at 4700 Å, in watts per square meter per angstrom, determined from the relative spectrophotometry and the absolute flux of α Lyr given by Neff *et al.* (1976) is listed at the foot of each column. The Cepheid flux distributions are listed in order of increasing period and phase in the light curve.

III. DETERMINATION OF INTRINSIC FLUX DISTRIBUTIONS

The observed flux distributions were corrected for interstellar reddening according to the law determined by Underhill and Walker (1966) by using color excesses tabulated from the literature. The recent reddening law by Schild (1977) emphasizes that the linear relation used by Underhill and Walker is an approximation. However, a comparison of the two laws shows no disagreement larger than the errors of measurement in this work. For the Cepheids the adopted values of color excess are just the means of the values from the nine sources listed in Table 3. The typical standard deviation of the mean for these values is about 0.06 mag. An uncertainty in Cepheid color excess of 0.06 mag would produce a corresponding uncertainty in the ability to match flux distributions of about 0.1 spectral types. Results obtained for Cepheids based on methods using supergiants have been included since the mean values calculated excluding supergiant methods differ from those adopted here by at most 0.05 mag in the case of T Mon. The color excesses for the nonvariables were calculated from $B - V$ measurements compiled in the Navy catalog (Blanco *et al.* 1968) and from intrinsic color indexes, $(B - V)_0$, averaged over the intrinsic color functions from the sources cited in Table 4.

TABLE 2

ABSOLUTE MAGNITUDES AND MK SPECTRAL TYPES FOR 14 NONVARIABLES

HR	Name	M_V	Authorities*	Spectral Type
2693	δ CMa	−7.1	3, 5, 6	F8 Ia
1865	α Lep	−4.5	8	F0 Ib
1017	α Per	−4.6	3, 4, 6	F5 Ib
7796	γ Cyg	−4.5	8	F8 Ib
8232	β Aqr	−4.9	1, 2, 3, 7	G0 Ib
1603	β Cam	−5.2	1, 2, 3	G0 Ib
8414	α Aqr	−5.2	1, 2, 3, 7	G2 Ib
8313	9 Peg	−4.7	7	G5 Ib
2473	ε Gem	−4.8	1, 2, 7	G8 Ib
8465	ζ Cep	−4.5	1, 2, 7	K1 Ib
3873	ε Leo	−2.1	1, 7	G0 II
6536	β Dra	−6.4	1, 7	G2 II
2630	ω Gem	−3.2	1, 2	G5 II
4392	56 UMa	−0.2	1	G8 II

* Authorities for M_V: (1) Wilson and Bappu 1957. (2) Kraft *et al.* 1964. (3) Parsons and Bouw 1971. (4) Schmidt-Kaler 1961. (5) Feinstein 1967. (6) Osmer 1972. (7) Schmidt 1972*a*. (8) Keenan 1963.

The intrinsic flux distributions are presented for the nonvariables in Figures 1 and 2, and for the Cepheids near maximum and minimum brightness in Figures 3 and 4, respectively.

IV. COMPARISON

An attempt was made to calibrate the effective temperatures and gravities of the nonvariables in terms of existing model atmospheres. The intrinsic normalized flux distributions were compared to some of the models of Parsons (1969) and Johnson (1974). There were major deviations between the models and observations in the wavelength region 3408–4600 Å even though reasonable temperature matches were achieved. The deviations precluded suitable calibration of the nonvariables.

The strengths of the strongest absorption features in the spectra of the nonvariables and Cepheids were also compared. Unfortunately for this traditional method of analyzing spectra, the differences due to luminosity were about the same size as the errors in measuring the line strengths. No convincing evidence was found for

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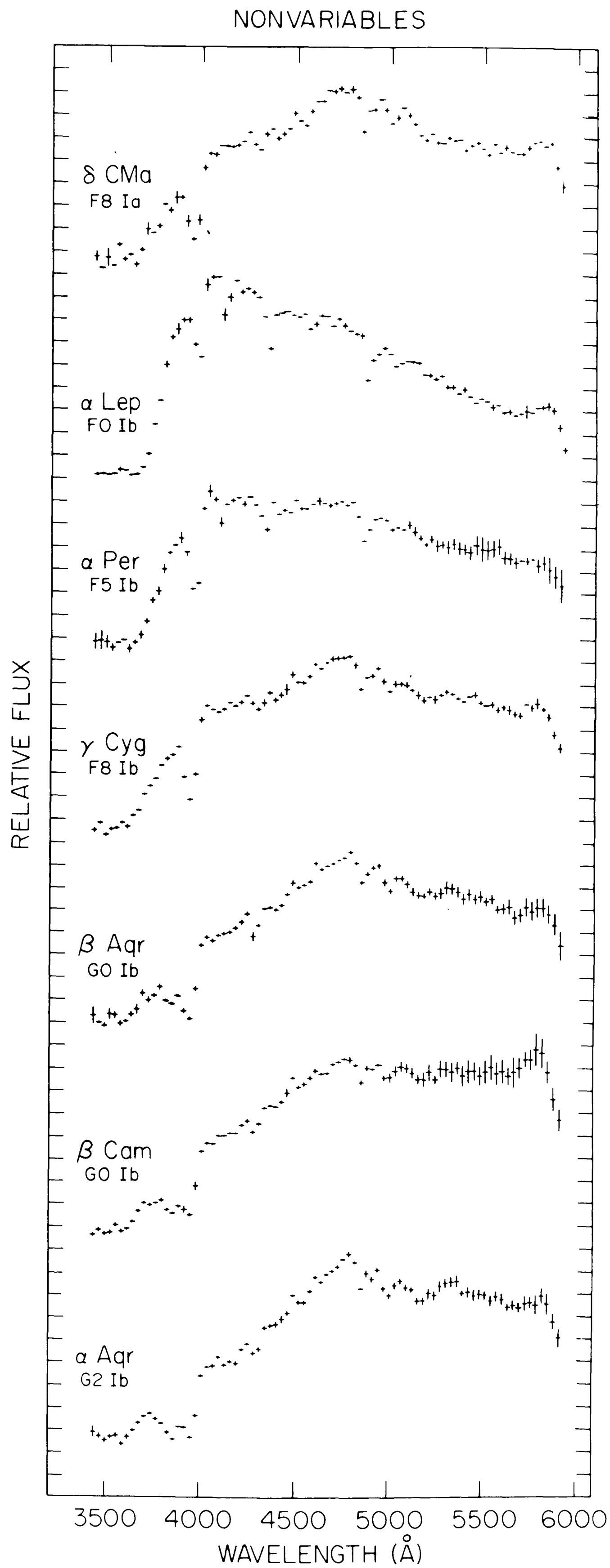

FIG. 1.—Intrinsic flux distributions for nonvariables normalized to value at 4700 Å. Relative flux is indicated by horizontal lines. Vertical lines represent ±1 standard deviation from the mean.

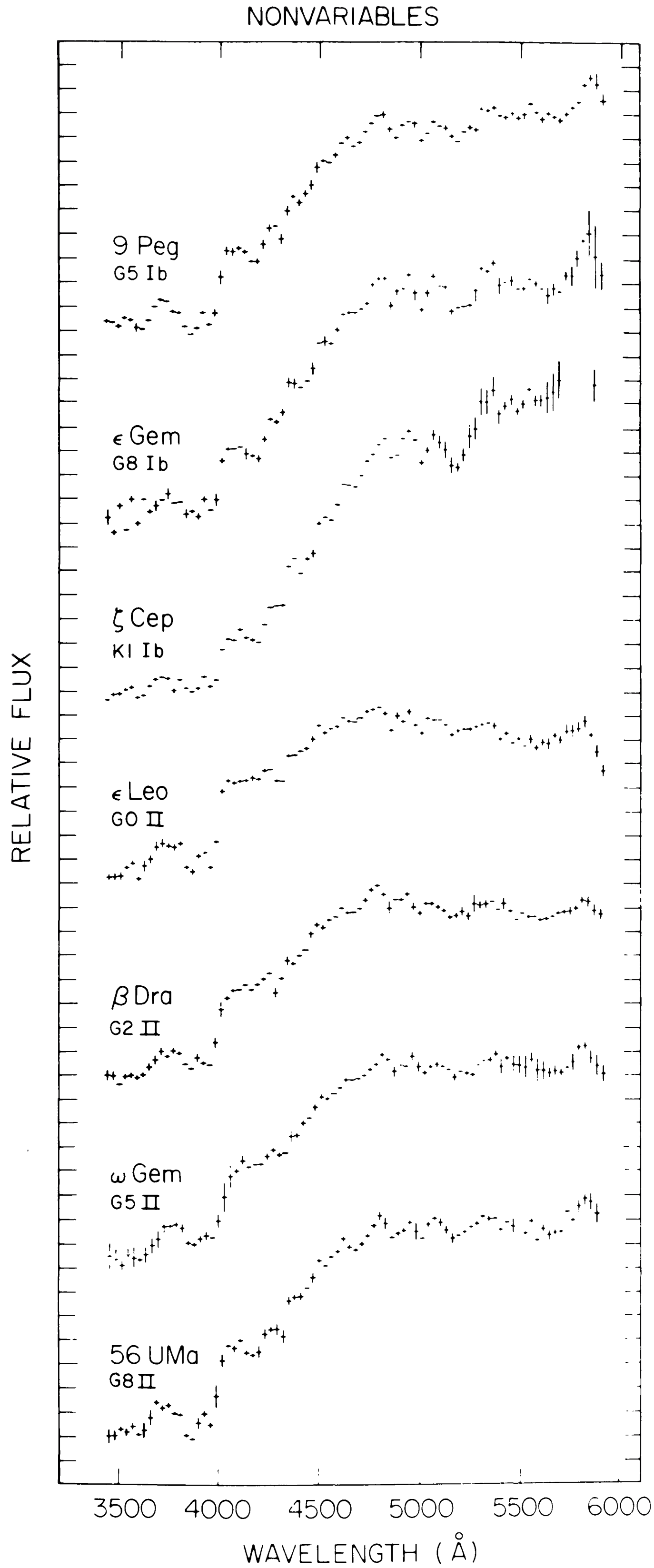

FIG. 2.—Intrinsic flux distributions for nonvariables normalized to value at 4700 Å. Relative flux is indicated by horizontal lines. Vertical lines represent ±1 standard deviation from the mean.

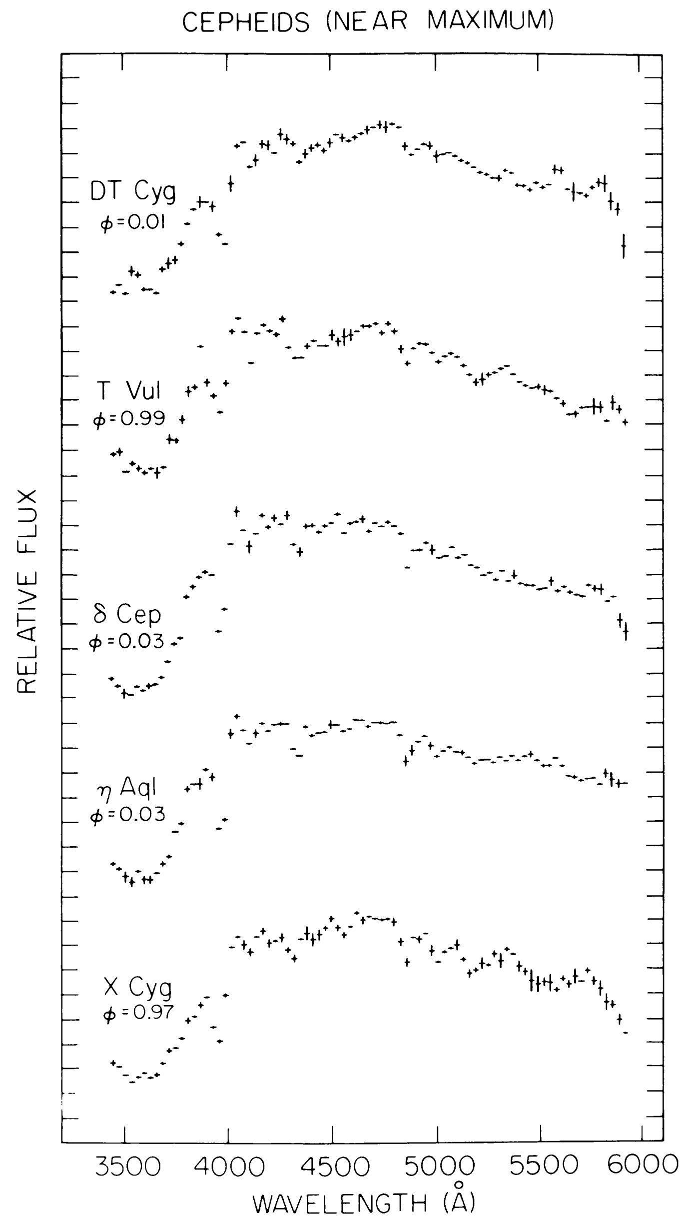

FIG. 3.—Intrinsic flux distributions for five Cepheids near maximum normalized to the value at 4700 Å. Symbols same as in Fig. 1, except ϕ denotes the phase in the light cycle.

TABLE 3

COLOR EXCESSES OF CEPHEIDS
(in hundredths of a magnitude)

Source	SU Cas	DT Cyg	T Vul	δ Cep	Y Sgr	η Aql	X Cyg	Y Oph	T Mon
Fernie 1967	30	14	15	14	26	21	36	74	37
Nikolov 1967*a*, *b*	33	11	12	10	...	11	31	76	58
Sandage and Tammann 1968	33	...	...	11	...	18	45	85	43
Schneider 1969	29	12	14	16	...	24	41	...	13
Fernie 1970	31	13	10	08	27	20	39	67	33
Parsons and Bouw 1971	23	04	08	10	21	18	24	62	25
Makarenko 1971	30	05	10	13	21	13	30	57	33
Schmidt 1972*b*	36	20	13	...	...	...	...	...	...
Feltz and McNamara 1976	...	06	09	14	...	17	36	...	...
Adopted means	31	11	11	12	24	18	35	70	35

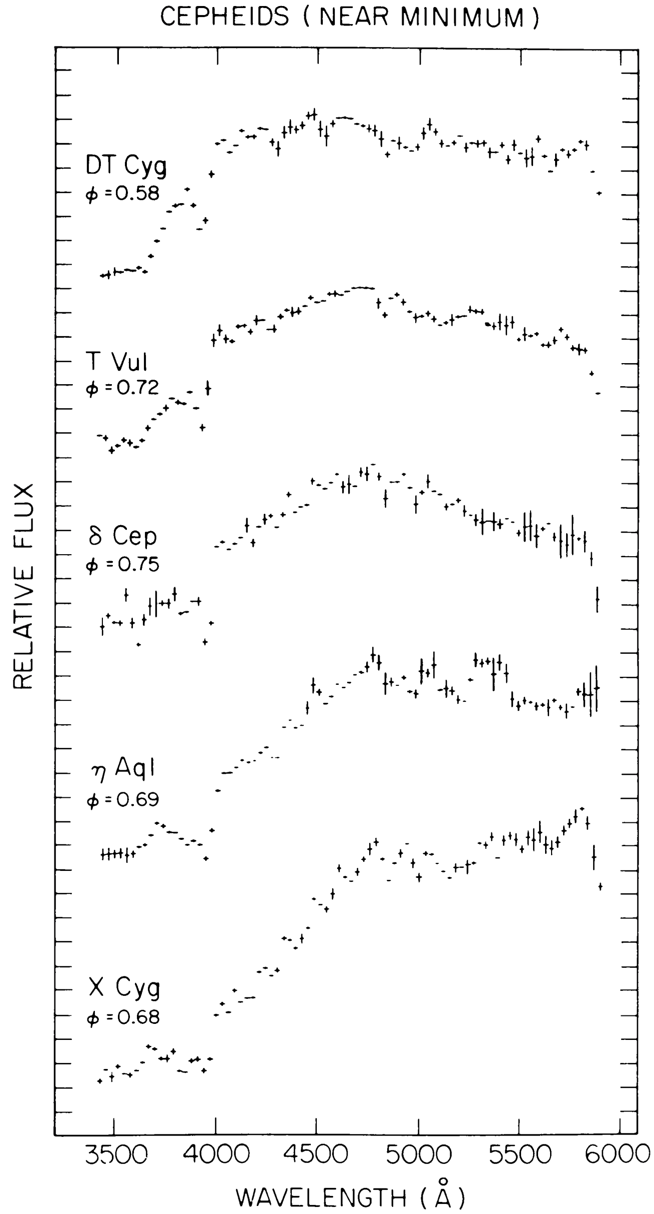

FIG. 4.—Intrinsic flux distributions for five Cepheids near minimum normalized to the value at 4700 Å. Symbols same as in Fig. 1, except ϕ denotes the phase in the light cycle.

any differences between Cepheids and nonvariables using this method.

The continuous flux distributions of the Cepheids were systematically compared to those of the nonvariables. A nonvariable that would best match each observed phase of the five Cepheids DT Cyg, T Vul, δ Cep, η Aql, and X Cyg was selected by a combination of χ^2 minimization and visual inspection of ratio spectra of Cepheids divided by nonvariables. In order to interpret the ratio spectra for the Cepheids, ratio spectra between pairs of nonvariables were computed for various temperature and luminosity differences. The results of the division of a G2 Ib flux distribution into the flux distributions of three hotter and three cooler luminosity class Ib stars are given in Figures 5 and 6, respectively. The characteristics of ratio spectra indicating a progressively hotter numerator star as shown in Figure 5 are as follows: increasing negative slope of the spectrum, increasing relative excess at 3850 Å, and an increase in relative strength of the Hγ and Hδ lines with increasing temperature differences. Figure 6 shows a trend to increasing positive slope for ratio spectra of progressively cooler numerator stars.

Differences in ratio spectra due to luminosity are shown in Figure 7, where flux ratios of luminosity class II to Ib for four nonvariables of G spectral type are given. Relative differences for ϵ Leo/β Aqr and β Dra/α Aqr are small, but there is a relative excess of

TABLE 4

COLOR EXCESSES OF NONVARIABLES (in hundredths of a magnitude)

Star	$B-V$	$(B-V)_0$	Authorities*	E_{B-V}
δ CMa	68	59	1, 2, 3, 4, 5	09
α Lep	21	17	1, 2, 3, 4, 5	04
α Per	48	37	1, 2, 3, 4, 5	11
γ Cyg	67	59	1, 2, 3, 4, 5	08
β Aqr	83	75	1, 2, 3, 4, 5	08
β Cam	90	75	1, 2, 3, 4, 5	15
α Aqr	98	86	1, 2, 3, 4, 5	12
9 Peg	117	99	1, 2, 3, 5	18
ε Gem	141	109	1, 2, 3, 5	32
ζ Cep	158	124	1, 2, 3, 5	34
ε Leo	80	71	3, 5	09
β Dra	96	82	3, 5	14
ω Gem	94	87	3, 5	07
56 UMa	100	97	3, 5	03

*Authorities for intrinsic color functions: (1) Feinstein 1959. (2) Kraft and Hiltner 1961. (3) FitzGerald 1970. (4) Parsons 1971. (5) Kron 1978.

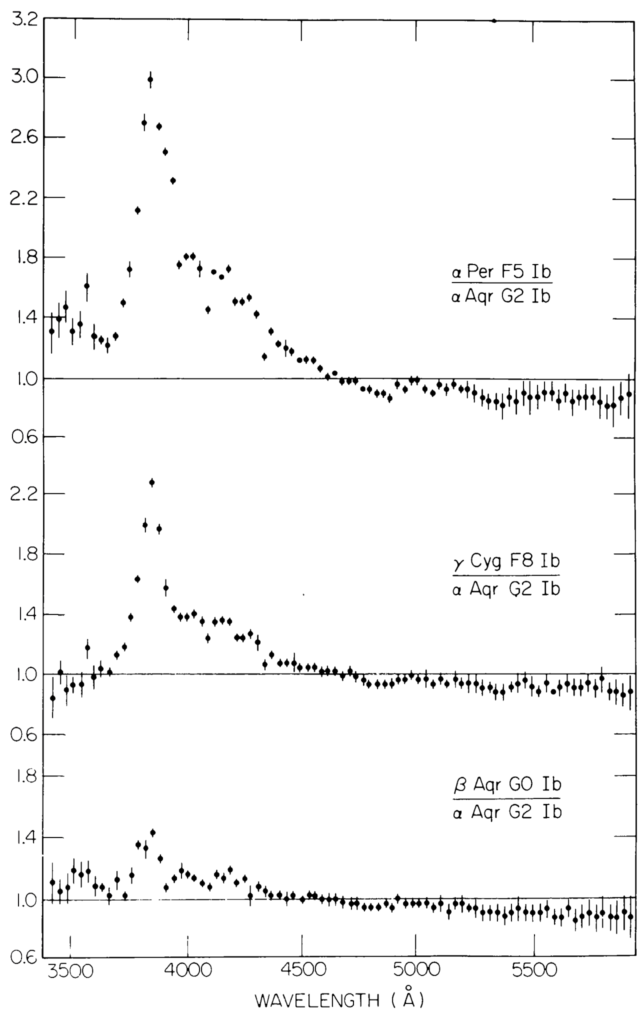

FIG. 5.—Ratio spectra for three supergiants hotter than α Aqr. Circles indicate flux ratios which are normalized to 4700 Å. Vertical lines represent ±1 standard deviation from the mean.

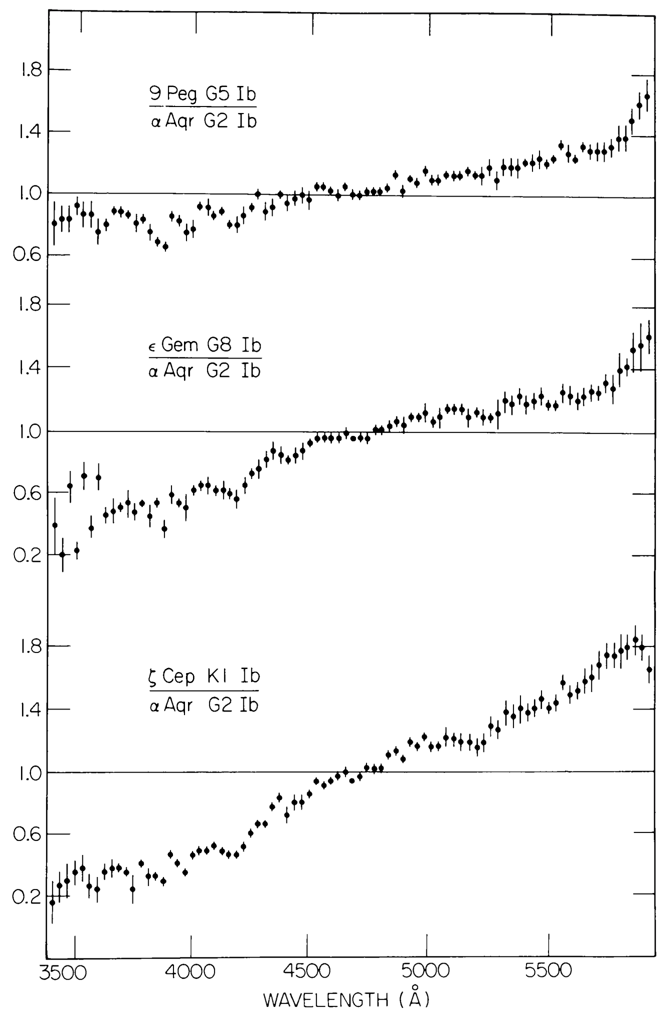

FIG. 6.—Ratio spectra for three supergiants cooler than α Aqr. Symbols same as in Fig. 5.

flux around 3500–4300 Å for ω Gem/9 Peg and 56 UMa/ζ Cep.

The ratio spectra of the Cepheids to nonvariables were inspected using Figures 5, 6, and 7 as guidelines. The results of this comparison are illustrated in Figures 8 and 9, which show the ratio spectra for 10 observed phases of δ Cep. The best fits to the nonvariable stars are seen to be appropriate temperature choices by generally flat ratio spectra. It is not clear if the remaining differences are due to luminosity since the effect is small near the effective temperature of δ Cep, as is seen for the G0 II/G0 Ib ratio in Figure 7. Notable differences in relative absorption-line strengths can be seen at phases 0.50 and 0.60 where the Ca II H and K lines are 3 standard deviations stronger and phases 0.90 and 0.94 where they become 3 or 4 standard deviations weaker than in the nonvariables.

Since the continua of δ Cep, η Aql, and X Cyg were matched well by luminosity class II nonvariables at some phases near minimum, the absolute magnitudes of both Cepheids and nonvariables have been gathered from the literature and plotted in Figure 10 for

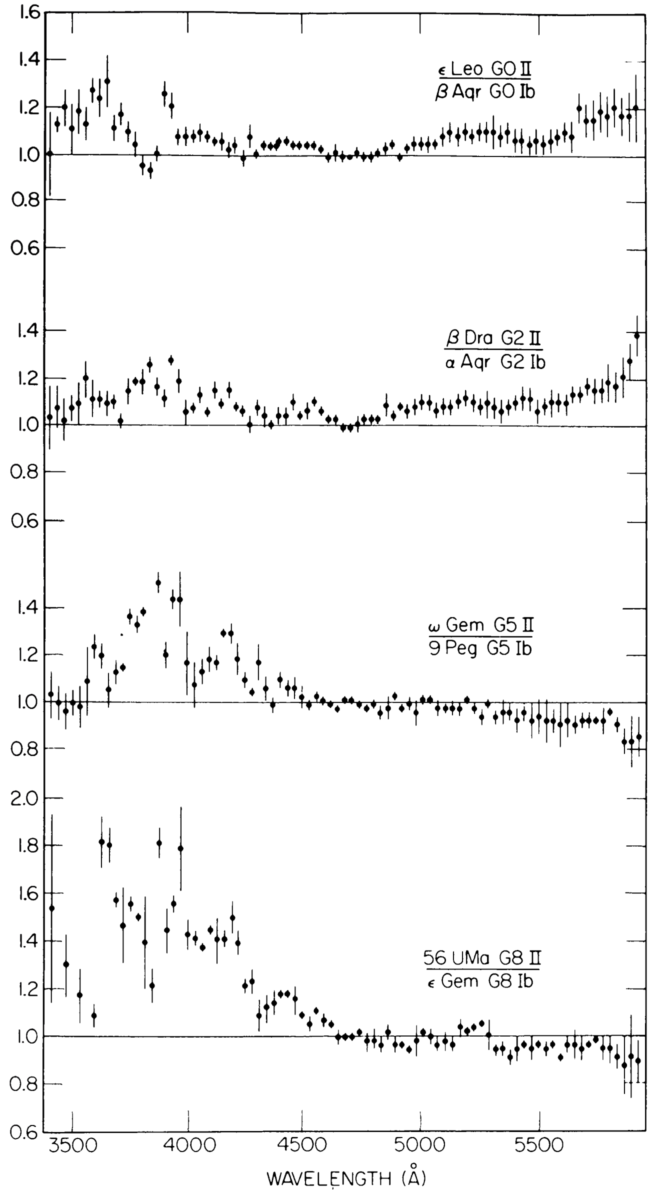

FIG. 7.—Ratio spectra of luminosity class II to Ib for four MK spectral types. Symbols same as in Fig. 5.

comparison. The absolute magnitudes and sources are listed in Tables 1 and 2. The M_V for the Cepheids at maximum and minimum were determined from light curves of Mitchell *et al.* (1964).

The adopted absolute magnitudes are plotted in Figure 10 as a function of G_B, the gradient of the intrinsic flux distribution in the blue region from 4400 to 4800 Å. This parameter was found to be a linear function of the intrinsic color index of the nonvariables listed in Table 4. The Cepheids DT Cyg, T Vul, δ Cep, and η Aql have absolute magnitudes near minimum which are significantly below those of luminosity class Ib supergiants. Conservative error bars are shown for α Lep in Figure 10. The star β Dra is suspect because of conflicting spectral type and M_V determinations.

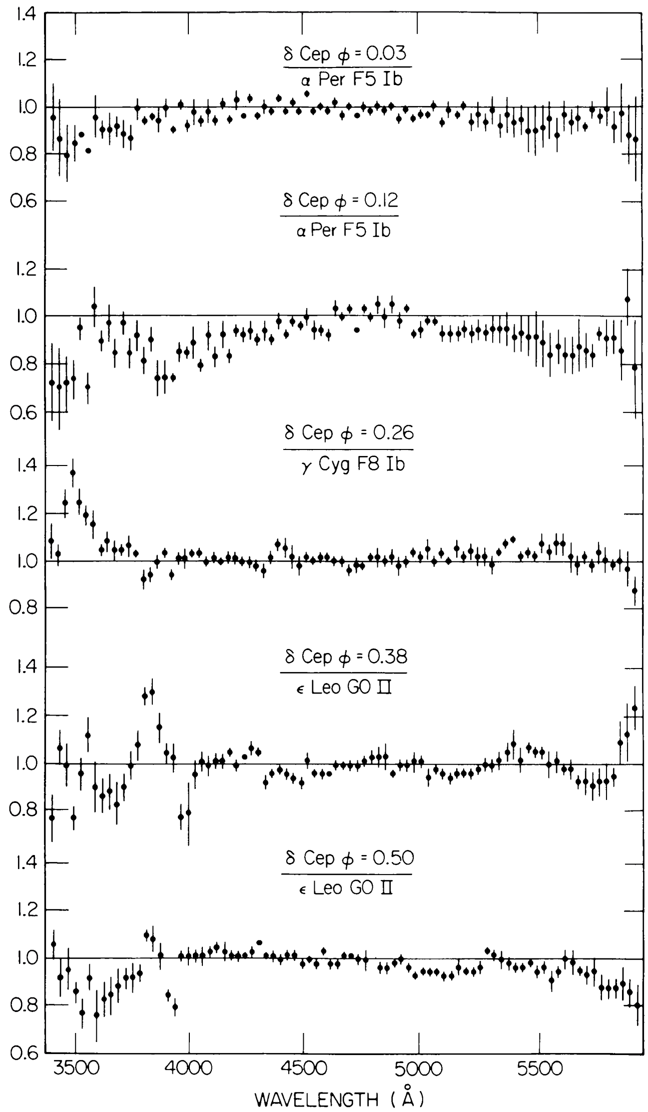

FIG. 8.—Ratio spectra of δ Cep with respect to nonvariables for phases φ = 0.03–0.50. Symbols same as in Fig. 5.

V. DISCUSSION

By comparing intrinsic flux distributions, a nonvariable with the same effective temperature could be found for most phases of the Cepheids to about ±0.2 spectral types. Near maximum, δ Cep and η Aql were matched by α Per within the errors of measurement. It should be noted that even though the effective temperatures are similar for two stars because their continua match, this does not guarantee that they have the same T-τ relation.

At phases other than maximum, real differences in the ratio spectra of these two Cepheids to nonvariables were found. It is not clear whether the deviations were the same as effects due to luminosity difference noted in the pairs of nonvariables (Fig. 7).

Real differences in the ratio spectra of δ Cep were found at certain phases. For example, there is an excess in flux relative to γ Cyg for wavelengths less

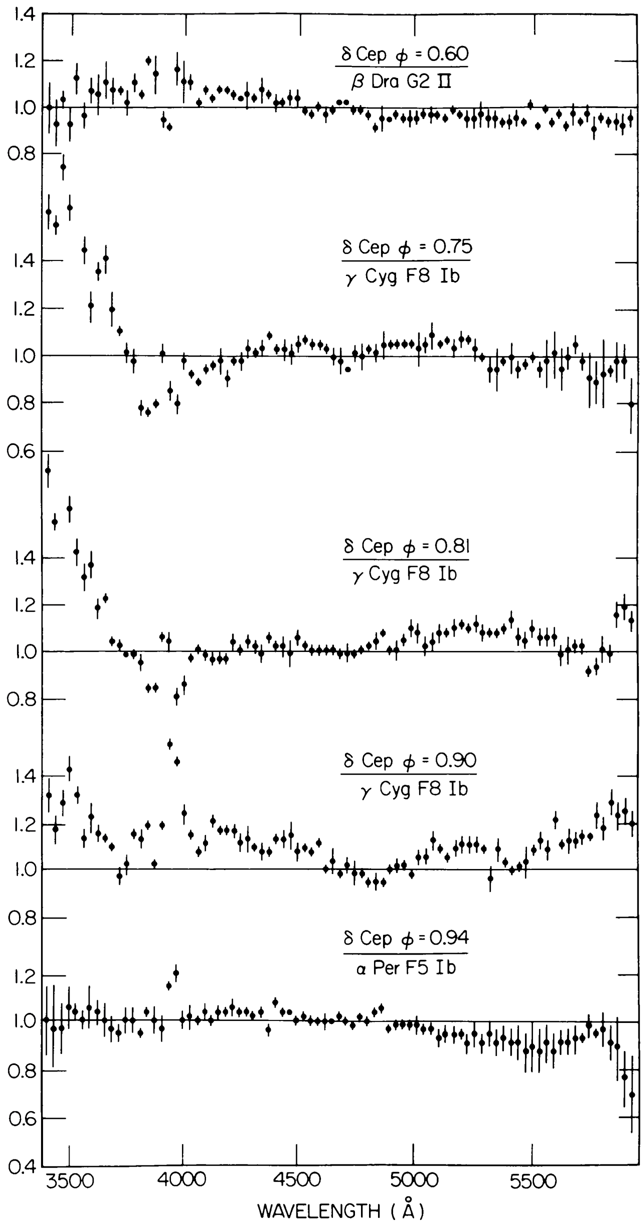

FIG. 9.—Ratio spectra of δ Cep with respect to nonvariables for phases ϕ = 0.60–0.94. Symbols same as in Fig. 5.

than 3650 Å at phase 0.26 shown in Figure 8. The rest of the spectrum is flat, indicating a good temperature match. The simplest explanation of this phenomenon is that the size of the Balmer discontinuity is different for the two stars at that phase of δ Cep. Since the Balmer discontinuity is gravity sensitive, it was hypothesized that changes in pulsational acceleration could

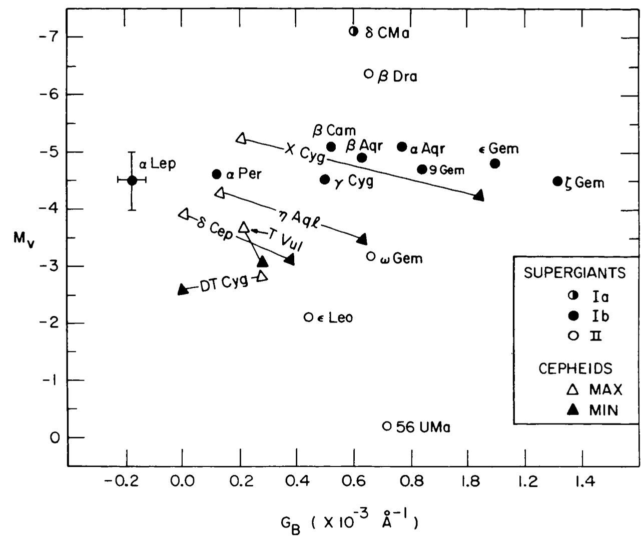

FIG. 10.—Absolute magnitudes of nonvariables and Cepheids versus the gradient of the intrinsic flux distribution G_B in the region 4400–4800 Å. Luminosity classes and Cepheid maxima and minima are indicated.

be responsible for differences in the ratio spectra for wavelengths less than 3650 Å. According to the radial velocity measurements of Shane (1958), the acceleration due to pulsation in δ Cep between phases 0.15 and 0.85 remains approximately constant. However, inspection of the ratio spectra for phase 0.26 in Figure 8 and phase 0.75 in Figure 9 shows that the relative flux for wavelengths less than 3650 Å increased by a factor of 2 during this phase interval relative to the same nonvariable. Pulsational acceleration is therefore not responsible for this change in ratio spectra. It is probably due to an increase in pressure in the atmosphere of δ Cep, which is consistent with the inward acceleration of the star's atmosphere during this phase interval.

Any differences in the chemical composition of the two types of stars as suggested by Cox, King, and Tabor (1973) are probably masked by differences in the temperature and pressure structure of the atmospheres of the Cepheids and nonvariables. Until the atmospheric structures of these high-luminosity stars are better understood, our data cannot be used to determine chemical composition differences between Cepheids and nonvariables.

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APPENDIX A

Table 5 lists the name of the star, the Bright Star Catalog number, and the MK spectral type for each nonvariable. N is the channel number whose central wavelength is λ. For each channel the observed normalized flux $F_\lambda/\lambda_{\lambda_0}$ and its standard deviation σ are given. The flux is normalized to the value at 4700 Å, and both F_λ/F_{λ_0} and σ have been multiplied by 1000. After the last entry for each star the log of the absolute flux in watts per square meter per angstrom at 4700 Å is given.

TABLE 5

OBSERVED NORMALIZED FLUX DISTRIBUTIONS FOR THE NONVARIABLES

		δ CMa HR 2693 F8 Ia		α Lep HR 1865 F0 Ib		α Per HR 1017 F5 Ib		γ Cyg HR 7796 F8 Ib		β Aqr HR 8232 G0 Ib	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	243	35	298	10	334	52	226	16	295	56
2	3440	199	0	302	8	340	61	257	8	268	7
3	3472	240	60	298	4	335	40	210	12	255	18
4	3503	208	7	302	3	315	25	233	13	303	34
5	3535	292	14	320	14	335	2	238	10	298	24
6	3566	236	14	317	2	347	0	261	9	264	17
7	3598	255	11	298	4	313	27	245	15	275	9
8	3629	216	19	303	4	340	15	291	7	304	18
9	3661	276	15	334	5	371	26	314	3	325	32
10	3692	361	42	391	9	427	17	381	2	393	22
11	3724	347	2	518	3	513	22	415	5	367	21
12	3755	375	17	620	1	552	30	447	2	385	13
13	3786	466	7	775	23	641	30	501	5	422	22
14	3818	442	21	893	19	710	12	531	13	367	9
15	3849	496	42	929	39	744	7	548	9	356	8
16	3880	497	14	970	17	776	38	583	4	390	8
17	3911	402	39	972	21	723	30	459	8	329	17
18	3942	329	11	868	14	574	5	366	5	296	13
19	3974	409	36	816	3	598	9	473	11	424	16
20	4005	627	20	1127	44	907	11	703	20	608	12
21	4036	688	14	1161	15	982	43	764	6	642	15
22	4067	685	18	1164	3	950	19	750	4	628	15
23	4098	724	0	1002	40	856	25	740	7	652	9
24	4129	727	9	1080	28	937	5	756	10	662	13
25	4160	726	12	1152	4	956	14	785	4	670	14
26	4191	733	12	1106	17	969	1	771	10	689	14
27	4222	751	2	1120	8	946	21	789	14	715	19
28	4253	791	6	1106	16	979	0	819	4	753	17
29	4284	741	11	1085	5	948	4	789	17	657	31
30	4314	719	1	1003	1	904	2	764	14	706	10
31	4345	790	19	866	12	850	15	795	23	781	9
32	4376	815	1	1015	6	969	5	840	12	788	12
33	4407	775	17	1024	3	921	3	810	17	780	11
34	4438	797	17	1031	1	940	8	833	20	800	13
35	4468	822	5	1019	1	934	2	860	37	849	9
36	4499	892	20	1011	4	989	4	926	25	902	16
37	4530	861	7	1025	3	957	15	895	6	884	12
38	4560	844	7	963	9	961	8	897	12	899	6
39	4591	910	18	985	21	984	1	927	14	916	12
40	4621	955	4	1023	11	1002	18	983	13	999	17
41	4652	959	8	1023	2	995	1	966	6	975	12
42	4682	1009	5	981	4	990	17	995	10	993	3
43	4713	1007	22	1013	9	1001	14	1015	19	1004	7
44	4743	1023	24	985	18	1014	3	1019	14	1022	6
45	4774	1010	0	963	3	1002	6	1024	10	1036	5
46	4804	1026	26	952	10	1017	3	1033	8	1064	16
47	4834	992	15	946	22	957	8	996	24	1017	13
48	4865	842	13	748	6	852	1	891	10	933	14
49	4895	939	1	840	8	905	5	945	6	973	11
50	4925	946	17	867	8	953	4	954	18	1003	10
51	4956	994	1	894	10	964	4	991	12	1015	13
52	4986	950	21	871	3	957	7	935	22	941	23
53	5016	892	4	818	2	917	16	892	9	906	16
54	5046	920	24	831	1	928	5	928	23	966	22
55	5076	966	7	841	2	924	3	931	18	968	16
56	5107	934	20	840	9	946	27	926	18	944	24
57	5137	896	9	836	8	918	30	906	9	911	26
58	5167	847	2	785	2	890	15	885	24	897	22
59	5197	827	11	784	16	864	13	861	18	895	16
60	5227	860	5	768	13	891	26	881	5	918	16
61	5257	821	15	782	6	864	40	872	22	900	21
62	5287	818	0	732	16	871	24	893	13	914	31
63	5317	845	16	732	16	864	43	911	18	941	43
64	5347	835	8	703	2	879	36	901	9	939	35
65	5377	839	4	724	20	861	43	883	10	925	37
66	5406	791	14	694	4	859	37	871	3	894	35
67	5436	816	10	666	3	848	48	895	7	919	38
68	5466	830	12	686	3	884	62	905	21	897	31
69	5496	806	3	675	1	867	85	870	17	910	41
70	5526	778	12	649	23	866	67	858	3	890	30
71	5555	830	7	658	1	873	57	864	16	901	32
72	5585	791	6	626	11	888	53	843	24	854	27
73	5615	818	23	630	21	835	46	856	16	861	37
74	5645	798	3	615	5	835	39	845	32	872	49
75	5674	791	2	624	8	817	41	827	19	823	49
76	5704	794	13	635	44	831	7	822	18	836	48
77	5733	824	21	631	5	828	28	876	4	874	60
78	5763	849	7	653	5	839	7	861	21	855	60
79	5792	859	5	655	18	809	48	882	34	875	65
80	5822	837	1	661	31	823	51	856	11	874	59
81	5851	851	15	645	24	792	88	819	26	847	63
82	5881	738	18	566	26	761	76	736	27	795	75
83	5910	649	43	463	21	718	107	674	25	698	92
Log F_{4700}		-12.05		-12.24		-12.06		-12.26		-12.50	

TABLE 5—*Continued*

		β Cam HR 1603 G0 Ib		α Aqr HR 8414 G2 Ib		9 Peg HR 8313 G5 Ib		ε Gem HR 2473 G8 Ib		ζ Cep HR 8465 K1 Ib	
N	λ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ
1	3408	217	12	252	37	190	13	90	48	43	2
2	3440	237	15	239	21	188	5	49	18	59	19
3	3472	224	14	224	22	175	15	124	22	61	16
4	3503	229	15	239	15	205	11	56	1	74	11
5	3535	258	15	243	21	199	11	147	22	82	13
6	3566	237	14	213	15	174	27	77	18	53	8
7	3598	248	9	241	20	170	6	150	5	60	8
8	3629	276	9	267	10	202	5	114	14	88	9
9	3661	318	10	299	11	251	3	133	34	109	13
10	3692	351	9	326	8	278	9	154	5	118	1
11	3724	346	11	338	9	274	2	173	36	115	8
12	3755	354	5	318	13	240	10	147	4	79	19
13	3786	367	13	302	6	237	8	151	2	114	4
14	3818	331	10	266	14	190	3	114	28	88	4
15	3849	318	7	240	7	162	1	123	11	78	4
16	3880	348	9	293	8	186	8	108	21	90	11
17	3911	336	22	291	9	242	11	166	20	129	4
18	3942	317	9	250	6	201	7	131	4	98	10
19	3974	433	29	341	11	244	24	168	39	120	2
20	4005	574	6	504	8	378	43	302	19	224	3
21	4036	609	8	541	6	478	27	344	11	261	8
22	4067	609	7	547	17	477	26	348	4	259	4
23	4098	644	5	586	8	492	14	357	3	299	8
24	4129	648	2	556	13	481	12	336	37	273	8
25	4160	661	3	571	11	448	7	331	10	267	12
26	4191	663	1	566	16	450	19	324	24	262	2
27	4222	699	9	625	11	517	30	396	21	327	1
28	4253	720	14	651	7	581	25	472	11	391	0
29	4284	675	11	614	16	592	6	466	15	400	2
30	4314	712	11	632	18	544	32	504	24	405	10
31	4345	782	5	728	15	657	30	618	32	552	5
32	4376	795	8	738	15	717	13	620	33	586	1
33	4407	793	4	746	21	695	22	610	2	535	5
34	4438	817	10	770	26	735	23	639	3	595	12
35	4468	861	25	799	18	774	32	695	40	623	26
36	4499	929	9	879	8	849	36	802	3	747	16
37	4530	894	11	853	16	881	7	817	33	781	3
38	4560	912	18	856	16	879	3	817	7	777	3
39	4591	943	17	908	13	915	19	880	16	850	6
40	4621	979	9	971	14	970	5	952	6	942	1
41	4652	971	8	954	9	999	18	969	11	949	2
42	4682	977	8	992	9	969	4	978	2	952	3
43	4713	1022	8	1010	10	989	8	1003	7	1008	1
44	4743	1038	5	1032	15	1040	6	1035	13	1080	6
45	4774	1057	7	1069	5	1082	7	1126	37	1119	9
46	4804	1056	22	1097	15	1119	5	1161	35	1172	2
47	4834	1038	10	1063	10	1130	24	1173	20	1210	5
48	4865	963	20	949	7	1074	21	1064	34	1139	4
49	4895	1033	18	1020	15	1044	9	1140	33	1160	1
50	4925	1033	9	999	18	1103	8	1159	10	1245	5
51	4956	1057	8	1044	17	1124	2	1232	13	1291	13
52	4986	1002	20	963	18	1122	29	1161	51	1262	9
53	5016	1009	31	935	15	1052	10	1094	17	1168	13
54	5046	1042	33	983	24	1088	2	1181	31	1237	20
55	5076	1067	34	1007	18	1146	9	1266	32	1320	36
56	5107	1064	29	980	22	1130	3	1233	2	1297	42
57	5137	1045	34	973	18	1128	22	1238	25	1274	58
58	5167	1021	33	925	24	1096	15	1131	29	1207	48
59	5197	1022	43	928	24	1077	3	1159	5	1209	30
60	5227	1063	54	967	32	1127	4	1174	5	1280	40
61	5257	1032	29	959	27	1150	20	1188	10	1384	70
62	5287	1085	57	1003	35	1145	15	1270	72	1431	68
63	5317	1088	50	1020	31	1246	22	1389	28	1578	87
64	5347	1078	63	1029	33	1243	15	1385	33	1589	77
65	5377	1100	45	1034	37	1261	16	1436	31	1661	86
66	5406	1068	69	980	20	1232	7	1334	54	1553	64
67	5436	1093	77	990	35	1229	18	1358	4	1606	29
68	5466	1099	61	976	36	1253	24	1376	40	1652	33
69	5496	1078	63	986	30	1237	16	1344	6	1604	24
70	5526	1102	77	984	25	1258	30	1355	19	1653	29
71	5555	1129	86	958	30	1313	10	1413	5	1742	12
72	5585	1102	74	979	30	1277	8	1399	17	1697	34
73	5615	1115	79	968	34	1251	23	1381	2	1712	39
74	5645	1096	57	933	20	1280	13	1354	54	1735	101
75	5674	1120	100	946	32	1270	11	1399	38	1778	120
76	5704	1144	71	935	33	1259	19	1392	6	1856	114
77	5733	1190	51	957	47	1293	17	1489	29	1990	95
78	5763	1193	68	965	38	1329	12	1497	63	1998	138
79	5792	1248	108	955	66	1361	7	1603	56	2021	119
80	5822	1235	97	1000	52	1449	15	1711	14	2156	101
81	5851	1140	72	964	70	1490	36	1761	146	2138	73
82	5881	1005	78	877	53	1464	74	1642	202	1903	106
83	5910	901	72	798	60	1386	68	1549	89	1607	23
Log F_{4700}		-13.05		-12.58		-13.24		-12.67		-12.52	

TABLE 5—*Continued*

		ε Leo		β Dra		ω Gem		56 UMa	
		HR 3873		HR 6536		HR 2630		HR 4392	
		G0 II		G2 II		G5 II		G8 II	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	298	21	252	31	225	80	189	43
2	3440	300	24	251	27	214	63	191	27
3	3472	304	27	223	4	192	29	217	16
4	3503	337	13	251	17	234	37	206	21
5	3535	353	23	257	17	220	69	229	21
6	3566	297	15	249	15	215	11	198	12
7	3598	346	38	260	15	235	51	215	45
8	3629	373	28	290	24	270	52	266	49
9	3661	421	35	317	30	296	57	328	17
10	3692	435	33	351	24	347	47	306	19
11	3724	427	20	335	9	348	10	318	19
12	3755	424	23	355	20	356	20	285	9
13	3786	440	16	348	11	342	29	280	9
14	3818	349	12	310	4	285	18	196	12
15	3849	333	20	295	5	279	14	183	5
16	3880	395	18	337	27	302	25	247	36
17	3911	410	7	317	11	315	28	286	20
18	3942	353	11	311	1	309	4	240	17
19	3974	454	9	397	33	375	44	358	71
20	4005	653	17	526	48	470	94	502	41
21	4036	696	15	570	14	553	73	564	8
22	4067	689	15	602	10	576	19	553	23
23	4098	699	12	607	3	617	39	586	9
24	4129	703	12	628	6	594	6	537	18
25	4160	713	23	611	6	606	1	527	12
26	4191	711	10	634	8	608	6	541	38
27	4222	748	11	658	12	640	25	614	33
28	4253	754	4	683	4	667	17	632	20
29	4284	709	9	608	30	649	19	633	36
30	4314	709	1	666	7	658	0	604	43
31	4345	814	10	740	31	726	39	752	30
32	4376	819	0	732	11	731	21	767	20
33	4407	837	5	766	5	783	20	772	25
34	4438	850	14	791	0	806	3	808	1
35	4468	890	17	860	27	851	28	853	39
36	4499	949	10	900	19	895	31	923	15
37	4530	921	14	894	16	891	12	902	4
38	4560	941	1	929	10	914	0	940	9
39	4591	953	11	946	1	941	5	963	17
40	4621	993	1	987	7	976	16	1018	21
41	4652	982	14	972	11	979	2	984	21
42	4682	982	4	977	0	986	7	973	11
43	4713	1001	4	998	4	1001	7	999	19
44	4743	1030	15	1037	16	1028	13	1033	14
45	4774	1042	10	1085	20	1051	13	1075	21
46	4804	1054	3	1108	10	1094	16	1118	28
47	4834	1030	13	1074	15	1077	1	1087	34
48	4865	962	11	1020	45	1029	39	1030	4
49	4895	1025	22	1061	4	1058	2	1047	12
50	4925	1004	10	1065	11	1054	7	1061	12
51	4956	1049	17	1093	15	1099	31	1095	16
52	4986	994	11	1040	33	1056	30	1058	51
53	5016	962	18	1019	22	1032	24	1031	4
54	5046	1028	11	1064	13	1060	4	1090	20
55	5076	1023	3	1067	14	1072	17	1115	18
56	5107	1025	1	1057	16	1066	8	1099	26
57	5137	1006	6	1044	16	1054	4	1068	28
58	5167	966	14	1018	22	1023	21	1035	27
59	5197	986	18	1030	13	1048	3	1047	3
60	5227	994	8	1051	27	1044	16	1063	14
61	5257	998	16	1035	24	1039	13	1084	10
62	5287	1009	13	1093	53	1082	3	1099	9
63	5317	1021	13	1091	23	1102	3	1130	13
64	5347	1029	6	1099	24	1108	30	1120	16
65	5377	1020	25	1114	2	1135	27	1124	7
66	5406	964	6	1082	2	1083	49	1076	4
67	5436	990	15	1111	38	1120	15	1107	3
68	5466	949	7	1080	12	1095	57	1091	44
69	5496	970	12	1046	1	1094	61	1083	3
70	5526	940	1	1077	5	1087	75	1066	15
71	5555	972	27	1064	14	1122	45	1116	17
72	5585	938	17	1068	1	1078	77	1037	8
73	5615	962	18	1056	10	1077	55	1085	32
74	5645	959	35	1064	16	1068	36	1060	34
75	5674	995	15	1079	6	1079	29	1071	19
76	5704	979	27	1096	9	1073	24	1074	10
77	5733	1019	48	1106	11	1097	5	1161	5
78	5763	1024	44	1112	27	1122	53	1125	10
79	5792	1034	46	1129	14	1189	17	1186	41
80	5822	1070	35	1170	21	1197	23	1219	43
81	5851	1008	11	1167	32	1145	40	1206	56
82	5881	935	38	1126	42	1113	68	1156	64
83	5910	848	41	1112	32	1078	58	1076	32
Log F_{4700}		-12.52		-12.53		-13.47		-13.50	

APPENDIX B

Table 6 is the same as Table 5 except that the modified Julian date MJD and phase in the light cycle φ are given instead of an MK spectral type. The modified Julian date equals the Julian date minus 2,440,000. The fluxes are listed for the Cepheids in order of increasing period and for each Cepheid in order of increasing phase.

1979ApJS...41..215P

TABLE 6
Observed Normalized Flux Distributions for the Cepheids

		SU Cas		DT Cyg		DT Cyg		DT Cyg		DT Cyg	
		HR 829		HR 8084		HR 8084		HR 8084		HR 8084	
		M.J.D. 3,185.592		2,997.717		3,420.573		3,360.698		3,433.580	
		φ 0.95		0.01		0.20		0.24		0.40	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	276	20	293	10	398	41	296	12	367	18
2	3440	290	7	321	3	352	8	341	24	343	23
3	3472	267	4	291	7	337	13	312	40	304	4
4	3503	258	9	372	31	320	8	321	10	337	19
5	3535	293	5	360	19	353	15	344	18	339	10
6	3566	325	0	310	11	341	8	408	6	380	5
7	3598	264	11	310	3	342	9	379	0	352	14
8	3629	288	11	299	6	378	5	401	16	346	3
9	3661	313	12	386	18	397	27	409	13	404	4
10	3692	313	13	409	34	457	6	465	10	434	20
11	3724	396	22	423	25	473	9	533	5	506	6
12	3755	441	18	483	15	546	1	560	7	477	14
13	3786	508	8	559	5	603	23	646	11	602	25
14	3818	587	9	614	6	556	6	610	21	608	6
15	3849	582	34	644	34	677	15	608	31	577	15
16	3880	701	4	645	1	597	2	626	6	633	15
17	3911	633	14	631	31	521	16	614	14	620	12
18	3942	580	7	528	12	460	12	415	5	426	13
19	3974	563	26	494	4	587	27	496	20	484	15
20	4005	763	37	723	51	837	7	808	29	712	21
21	4036	897	13	868	15	866	14	870	6	844	18
22	4067	875	6	885	5	826	0	833	8	836	26
23	4098	805	14	795	8	822	4	810	24	790	18
24	4129	830	46	822	35	881	3	866	5	817	17
25	4160	939	12	885	25	910	28	882	26	892	11
26	4191	927	3	884	30	920	14	858	15	874	2
27	4222	941	35	857	4	952	18	901	12	867	6
28	4253	920	17	932	37	956	16	933	5	882	13
29	4284	947	19	914	32	884	28	888	29	890	7
30	4314	876	19	900	16	847	23	856	1	796	8
31	4345	834	7	832	12	867	8	828	17	822	5
32	4376	898	11	866	28	919	25	922	15	897	8
33	4407	920	28	891	23	919	21	901	4	903	10
34	4438	923	3	905	17	940	21	925	12	898	11
35	4468	945	24	887	18	960	5	937	11	908	14
36	4499	962	11	921	30	987	13	988	4	952	23
37	4530	995	5	956	2	955	4	962	42	974	17
38	4560	972	7	948	26	974	13	952	9	937	8
39	4591	965	13	939	9	996	5	976	16	964	5
40	4621	955	46	957	17	993	18	1005	21	992	21
41	4652	984	12	975	10	996	8	1000	35	999	16
42	4682	1003	12	994	23	1011	2	989	23	985	3
43	4713	1010	18	1006	1	972	7	994	15	1012	4
44	4743	1002	2	1020	18	993	4	1017	24	1005	8
45	4774	1004	51	1014	26	1026	17	1027	8	996	6
46	4804	1015	2	1031	10	1001	8	1034	15	1026	10
47	4834	1040	20	1020	6	971	1	989	17	1003	14
48	4865	909	9	945	22	878	9	919	16	903	2
49	4895	942	42	914	6	965	9	953	17	892	22
50	4925	960	17	940	1	969	8	996	13	972	20
51	4956	1015	2	963	6	992	4	1017	15	993	19
52	4986	976	6	959	22	925	1	979	24	963	7
53	5016	957	8	921	29	921	17	926	9	931	6
54	5046	980	11	930	5	947	2	963	1	942	11
55	5076	997	14	939	1	962	3	971	1	966	12
56	5107	1027	15	928	6	927	12	968	21	955	20
57	5137	1025	8	912	11	914	11	967	11	949	13
58	5167	977	14	904	12	886	8	936	7	920	15
59	5197	1023	22	889	1	879	2	915	23	892	13
60	5227	1022	7	868	9	877	5	940	17	913	13
61	5257	1025	2	862	11	903	17	944	15	908	20
62	5287	994	13	849	6	895	17	921	12	904	6
63	5317	998	30	850	18	908	15	922	7	951	7
64	5347	981	11	886	13	879	19	891	17	936	4
65	5377	988	9	878	7	876	21	875	7	977	9
66	5406	933	8	827	13	840	16	848	27	969	10
67	5436	940	25	826	12	894	9	852	34	950	7
68	5466	972	3	811	15	893	13	852	18	938	21
69	5496	970	27	844	8	837	0	824	5	960	29
70	5526	910	18	825	13	814	15	802	2	950	15
71	5555	959	2	839	1	851	31	789	4	947	8
72	5585	923	18	909	25	806	43	803	32	946	9
73	5615	950	34	907	24	795	57	794	6	916	16
74	5645	942	19	827	6	767	11	799	5	908	22
75	5674	914	23	814	59	781	30	820	7	914	45
76	5704	959	19	811	8	772	22	807	4	905	30
77	5733	997	5	802	15	803	41	820	38	919	28
78	5763	1020	27	842	12	795	7	805	46	917	30
79	5792	1038	5	866	29	846	44	839	5	915	14
80	5822	1014	29	863	51	842	1	835	25	907	21
81	5851	973	9	784	55	825	33	799	9	935	8
82	5881	867	1	750	39	757	44	730	26	890	50
83	5910	763	3	586	72	756	16	646	17	878	28
Log F_{4700}		-13.70		-13.87		-13.72		-13.74		-13.73	

TABLE 6—*Continued*

		DT Cyg		DT Cyg		DT Cyg		DT Cyg		DT Cyg	
		HR 8084		HR 8084		HR 8084		HR 8084		HR 8084	
		M.J.D. 3,443.658		2,991.633		3,131.598		2,976.811		3,026.816	
		φ 0.44		0.58		0.58		0.65		0.65	
N	λ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ
1	3408	296	38	373	27	311	12	309	21	421	30
2	3440	361	33	384	47	316	29	335	30	366	43
3	3472	333	19	312	41	328	28	287	16	395	26
4	3503	334	26	383	37	327	6	320	9	369	2
5	3535	331	21	399	43	337	6	328	27	400	12
6	3566	391	20	406	24	337	0	360	25	376	3
7	3598	313	12	351	14	348	12	380	21	389	27
8	3629	323	16	406	25	335	12	396	28	382	26
9	3661	398	17	417	43	395	13	378	43	432	20
10	3692	461	18	502	29	452	8	414	11	437	4
11	3724	488	36	500	18	501	1	492	2	478	12
12	3755	481	16	603	30	567	3	522	19	497	12
13	3786	531	26	638	27	592	13	615	10	606	18
14	3818	607	26	659	14	599	4	697	13	628	32
15	3849	623	15	723	20	657	12	694	31	661	28
16	3880	653	32	641	8	599	16	682	25	668	11
17	3911	593	46	616	26	510	1	651	16	639	7
18	3942	432	31	541	30	545	21	550	14	498	11
19	3974	489	23	641	40	725	25	576	22	543	2
20	4005	816	31	898	30	845	9	868	21	834	11
21	4036	853	21	916	19	862	5	916	8	910	20
22	4067	845	16	900	14	818	7	874	23	884	14
23	4098	770	20	840	31	847	1	809	14	786	4
24	4129	845	12	943	31	906	12	882	18	874	27
25	4160	898	23	932	6	885	12	905	7	924	13
26	4191	891	21	957	26	888	16	869	26	898	16
27	4222	897	12	963	28	923	9	827	25	926	2
28	4253	924	23	981	19	922	6	857	19	953	2
29	4284	885	26	886	32	876	23	845	15	908	21
30	4314	839	29	936	14	853	46	820	27	871	18
31	4345	819	32	890	33	918	39	769	4	798	15
32	4376	929	24	947	11	941	42	900	22	919	5
33	4407	879	18	926	22	934	24	894	15	902	4
34	4438	958	12	942	8	953	23	883	13	960	20
35	4468	906	24	991	6	996	23	913	29	906	5
36	4499	988	30	1040	13	1004	36	984	39	977	14
37	4530	957	21	935	4	950	49	924	4	962	20
38	4560	969	10	995	21	925	64	976	25	952	19
39	4591	943	17	999	28	980	24	945	24	963	20
40	4621	1044	28	1028	28	1006	3	990	37	1007	13
41	4652	990	16	944	24	1011	9	999	28	997	10
42	4682	1000	21	1008	12	1011	2	1009	10	1001	26
43	4713	984	10	1001	15	992	6	982	14	1014	1
44	4743	1028	10	1040	13	988	10	1011	13	990	17
45	4774	995	12	1009	8	979	28	1010	22	986	15
46	4804	1039	14	1031	17	975	37	1019	18	988	3
47	4834	951	7	969	12	943	53	963	9	989	38
48	4865	887	10	908	34	881	21	870	5	842	17
49	4895	939	24	938	31	943	5	916	18	899	16
50	4925	979	19	989	16	934	40	981	29	929	12
51	4956	998	30	985	6	920	10	1027	20	952	6
52	4986	989	31	941	12	907	3	947	32	907	17
53	5016	922	24	893	28	927	23	871	15	841	18
54	5046	932	3	925	13	989	38	942	11	860	17
55	5076	932	17	940	16	1030	40	916	15	853	22
56	5107	955	27	932	16	1001	25	931	24	841	9
57	5137	900	23	927	14	954	24	882	30	834	24
58	5167	906	44	910	7	947	3	859	20	808	19
59	5197	870	21	887	7	963	19	854	12	819	7
60	5227	907	24	915	3	995	1	884	10	822	2
61	5257	894	11	871	10	946	29	847	21	811	3
62	5287	891	22	849	27	970	9	865	36	836	7
63	5317	894	7	879	25	969	23	831	32	817	29
64	5347	906	22	877	24	974	22	842	27	804	30
65	5377	880	10	850	3	936	27	856	19	818	17
66	5406	841	18	840	12	940	6	872	15	788	6
67	5436	880	26	864	20	971	18	883	11	781	5
68	5466	901	45	868	17	910	29	883	13	803	6
69	5496	829	28	835	12	978	36	852	5	783	5
70	5526	849	21	842	18	944	6	822	16	752	15
71	5555	848	47	905	12	921	54	803	25	735	27
72	5585	850	73	876	14	932	59	789	21	747	45
73	5615	858	34	899	35	1014	25	806	24	772	40
74	5645	888	53	869	33	939	13	799	50	746	3
75	5674	794	15	858	21	873	3	815	39	695	13
76	5704	754	31	863	22	927	38	779	34	681	16
77	5733	812	34	866	40	975	15	877	13	707	12
78	5763	873	34	744	56	955	22	849	11	703	22
79	5792	885	30	805	37	978	13	826	30	668	31
80	5822	869	53	877	32	1019	11	723	27	664	21
81	5851	787	6	857	29	1005	23	801	62	622	30
82	5881	734	20	752	39	886	7	766	65	512	8
83	5910	605	47	694	30	786	11	895	43	481	38
Log F_{4700}		-13.80		-13.70		-13.81		-13.60		-13.48	

TABLE 6—*Continued*

		DT Cyg		DT Cyg		T Vul		T Vul		T Vul	
		HR 8084		HR 8084		HR 7988		HR 7988		HR 7988	
		M.J.D. 3,099.650		3,329.869		3,524.510		3,360.781		3,329.798	
		φ 0.80		0.91		0.12		0.20		0.22	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	366	16	422	0	537	61	231	3	420	0
2	3440	355	16	422	0	642	14	295	14	420	0
3	3472	344	17	422	56	613	6	319	11	420	0
4	3503	348	24	438	25	557	51	344	19	363	11
5	3535	369	28	409	29	464	29	360	11	398	25
6	3566	376	19	355	37	528	4	347	18	370	41
7	3598	383	24	360	37	546	17	366	12	304	16
8	3629	390	30	362	24	578	13	333	12	327	8
9	3661	416	24	357	15	531	23	382	13	383	15
10	3692	468	21	455	22	582	25	466	12	408	4
11	3724	514	9	496	35	652	13	498	12	447	7
12	3755	584	21	555	25	679	44	510	22	464	16
13	3786	653	10	618	30	813	29	535	7	528	34
14	3818	687	8	693	20	844	19	577	5	537	5
15	3849	744	18	706	30	783	1	522	17	552	10
16	3880	758	21	748	25	896	19	589	26	576	8
17	3911	677	9	740	33	805	16	572	9	575	27
18	3942	604	5	602	33	631	20	394	13	448	13
19	3974	711	53	532	4	615	36	448	8	441	39
20	4005	896	41	824	50	918	30	721	9	659	11
21	4036	962	18	927	32	1097	3	801	16	806	41
22	4067	921	4	950	14	1078	26	762	20	806	23
23	4098	892	9	832	24	1015	5	772	21	777	16
24	4129	945	13	963	36	977	57	814	19	775	14
25	4160	975	12	957	13	1087	6	831	18	856	28
26	4191	970	20	974	21	1027	42	846	6	841	0
27	4222	983	12	933	18	1014	30	841	16	840	14
28	4253	987	17	999	20	1005	66	886	13	866	6
29	4284	947	2	909	17	1047	19	821	31	875	18
30	4314	893	8	911	16	939	60	806	10	834	2
31	4345	904	13	825	22	903	9	802	8	834	28
32	4376	943	1	945	26	969	39	932	21	908	14
33	4407	967	2	901	40	973	9	840	5	906	21
34	4438	964	10	967	36	983	46	891	16	900	19
35	4468	965	7	926	22	949	21	884	4	881	34
36	4499	987	9	1008	40	996	47	980	15	956	1
37	4530	986	10	939	31	1000	12	928	23	926	15
38	4560	985	5	992	36	959	45	955	11	932	10
39	4591	999	10	916	16	975	3	933	21	943	29
40	4621	1004	11	986	18	1023	40	996	1	991	8
41	4652	999	8	936	9	1022	42	975	14	1004	14
42	4682	996	10	1045	21	983	48	1006	18	985	21
43	4713	1006	2	978	10	997	34	993	6	1000	4
44	4743	1001	11	1025	21	1003	40	1026	9	1011	6
45	4774	994	3	971	21	971	25	1000	7	1037	37
46	4804	1012	17	1010	42	992	34	1083	17	1075	2
47	4834	964	11	1011	18	988	10	1001	21	1025	44
48	4865	875	6	914	35	883	60	943	5	931	6
49	4895	879	24	856	8	892	13	968	12	929	36
50	4925	931	18	925	29	891	76	1048	16	974	2
51	4956	942	18	917	14	869	19	1017	4	997	37
52	4986	913	13	952	22	814	168	1013	14	996	14
53	5016	879	6	854	22	795	77	962	13	959	18
54	5046	886	15	869	22	818	86	1003	20	946	18
55	5076	898	18	927	28	877	13	990	14	979	36
56	5107	875	18	972	32	827	54	1007	9	988	16
57	5137	856	19	920	22	882	13	982	22	986	23
58	5167	842	14	930	21	795	86	973	16	964	18
59	5197	827	1	877	15	802	11	932	26	924	1
60	5227	824	3	818	17	824	52	966	22	932	19
61	5257	816	1	836	15	814	11	935	10	959	21
62	5287	804	6	860	22	783	47	920	0	959	27
63	5317	812	13	881	22	843	24	931	12	967	6
64	5347	791	4	861	20	800	60	904	16	959	5
65	5377	779	13	812	20	826	6	885	11	944	4
66	5406	760	5	776	11	812	56	879	3	938	5
67	5436	755	8	746	15	801	15	862	6	893	4
68	5466	753	11	758	14	788	57	869	14	902	7
69	5496	718	4	778	17	798	7	851	10	920	10
70	5526	730	5	740	20	814	70	857	27	885	8
71	5555	738	12	739	48	827	22	848	23	857	10
72	5585	724	1	764	31	780	41	825	12	862	43
73	5615	732	2	748	36	770	16	804	22	858	39
74	5645	744	6	662	57	747	29	803	18	838	61
75	5674	715	4	754	23	795	9	818	33	841	14
76	5704	739	9	666	67	718	58	848	16	794	27
77	5733	768	7	658	71	742	21	871	14	821	20
78	5763	772	1	639	40	753	47	855	10	842	34
79	5792	724	13	667	43	779	30	869	27	814	2
80	5822	687	6	646	34	785	9	868	42	769	55
81	5851	658	36	679	56	848	5	803	24	851	5
82	5881	574	12	636	10	647	116	723	34	755	17
83	5910	574	12	569	67	600	41	591	5	692	21
Log F_{4700}		-13.59		-13.64		-13.68		-13.71		-13.74	

TABLE 6—*Continued*

		T Vul		T Vul		T Vul		T Vul		T Vul	
		HR 7988		HR 7988		HR 7988		HR 7988		HR 7988	
		M.J.D. 2,997.671		3,459.555		2,998.701		2,976.789		3,043.704	
		φ 0.34		0.47		0.57		0.63		0.72	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	328	14	268	15	295	25	272	14	344	1
2	3440	308	68	285	33	259	28	244	17	337	21
3	3472	390	80	302	7	318	13	216	26	294	24
4	3503	367	36	276	10	241	38	312	5	312	6
5	3535	393	47	323	10	357	18	276	34	333	15
6	3566	323	68	338	53	244	17	337	23	325	22
7	3598	359	44	293	18	339	11	279	18	311	6
8	3629	389	77	310	18	297	16	316	18	336	12
9	3661	384	42	347	28	432	36	336	17	384	20
10	3692	429	59	388	3	346	32	409	19	419	6
11	3724	451	22	416	2	454	9	394	7	440	11
12	3755	467	34	409	2	385	41	450	36	464	22
13	3786	486	18	476	15	431	1	439	34	502	2
14	3818	478	11	447	15	419	27	418	11	489	16
15	3849	539	59	401	5	451	16	407	1	485	7
16	3880	509	117	443	8	415	26	456	10	532	7
17	3911	562	98	469	28	469	45	415	4	472	5
18	3942	445	115	338	1	319	14	370	30	399	24
19	3974	506	94	377	5	452	11	420	23	551	42
20	4005	707	57	644	8	653	16	704	34	740	37
21	4036	776	18	709	3	726	19	708	16	781	32
22	4067	731	49	727	10	662	28	688	16	750	27
23	4098	774	57	722	7	735	23	710	11	743	13
24	4129	744	17	733	23	669	24	739	23	803	14
25	4160	802	10	797	1	760	14	701	7	808	12
26	4191	756	49	743	12	730	22	707	17	787	20
27	4222	801	20	791	33	758	14	703	31	834	29
28	4253	804	23	796	14	738	18	769	47	838	2
29	4284	787	27	783	21	730	44	710	21	804	1
30	4314	753	39	697	9	735	14	697	39	806	22
31	4345	818	61	795	2	806	12	776	5	859	19
32	4376	833	25	851	22	797	1	810	21	886	13
33	4407	833	18	850	5	830	9	826	53	880	27
34	4438	848	36	837	12	776	24	844	12	887	21
35	4468	861	11	835	2	848	2	852	33	911	5
36	4499	900	24	900	12	869	7	951	27	949	16
37	4530	912	18	939	21	882	6	929	29	932	4
38	4560	914	12	919	15	887	42	941	8	942	2
39	4591	950	1	971	10	953	2	952	20	974	13
40	4621	979	14	991	13	948	4	991	14	978	16
41	4652	1000	21	997	15	975	11	968	10	976	7
42	4682	992	8	987	9	977	4	997	27	995	5
43	4713	1002	28	998	8	1034	6	996	16	1012	6
44	4743	998	11	1014	10	987	1	1028	12	1016	5
45	4774	1022	28	1062	22	1074	10	1051	44	1021	7
46	4804	1056	21	1090	47	1026	9	1083	6	1020	7
47	4834	1033	2	1083	22	1043	2	1073	55	964	26
48	4865	926	11	985	35	874	26	949	17	915	17
49	4895	973	2	1008	2	938	9	986	21	989	5
50	4925	987	6	1037	21	923	10	1004	23	1006	16
51	4956	1000	1	1083	5	987	31	1043	23	978	17
52	4986	985	21	1040	15	928	52	980	3	939	10
53	5016	950	4	990	25	908	34	938	16	918	31
54	5046	931	31	1057	23	922	3	1039	34	927	12
55	5076	943	34	1119	13	928	7	1015	21	941	20
56	5107	918	21	1073	18	911	3	1025	21	920	21
57	5137	925	12	1060	22	901	8	947	26	896	3
58	5167	918	12	1052	25	913	18	960	7	909	10
59	5197	892	30	1064	4	954	41	937	13	924	37
60	5227	900	36	1061	20	940	7	980	44	940	11
61	5257	879	15	1081	13	883	16	943	22	946	2
62	5287	878	10	1102	28	920	7	946	25	975	18
63	5317	907	38	1172	21	940	3	946	45	972	17
64	5347	897	55	1140	1	911	26	979	40	971	10
65	5377	883	39	1158	23	979	18	1001	12	917	11
66	5406	854	29	1126	2	961	26	978	22	911	24
67	5436	830	19	1091	16	896	51	946	22	932	53
68	5466	851	18	1103	19	952	14	972	28	920	64
69	5496	812	8	1092	6	898	42	990	30	936	40
70	5526	851	41	1071	13	928	21	966	36	861	16
71	5555	889	33	1094	41	922	7	947	36	885	43
72	5585	911	16	1066	36	908	11	971	34	882	13
73	5615	908	7	1049	26	901	1	970	47	894	13
74	5645	919	35	1088	28	933	34	877	27	843	9
75	5674	881	13	1125	2	823	61	910	9	846	15
76	5704	835	71	1155	4	896	85	945	24	870	26
77	5733	828	58	1180	23	871	106	990	21	921	12
78	5763	873	74	1237	6	921	36	973	17	887	22
79	5792	869	126	1231	43	918	22	968	57	839	24
80	5822	834	180	1209	75	1011	14	978	32	836	41
81	5851	888	181	1313	94	881	57	980	33	831	25
82	5881	819	148	1261	83	898	4	901	104	726	20
83	5910	689	86	1214	77	762	75	844	175	635	7
Log F_{4700}		-13.78		-13.61		-13.80		-13.79		-13.82	

TABLE 6—*Continued*

		T Vul		T Vul		δ Cep		δ Cep		δ Cep	
		HR 7988		HR 7988		HR 8571		HR 8571		HR 8571	
		M.J.D. 3,274.788		3,053.767		3,443.637		2,998.718		2,961.866	
		φ 0.82		0.99		0.03		0.12		0.26	
N	λ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ	F_λ/F_{λ_o}	σ
1	3408	287	32	421	12	324	13	243	61	239	26
2	3440	382	66	431	24	299	10	240	37	258	31
3	3472	341	38	362	0	275	30	241	29	253	7
4	3503	289	17	393	17	271	2	232	30	309	26
5	3535	349	6	376	19	302	6	318	28	292	17
6	3566	352	4	362	14	290	3	247	29	305	1
7	3598	338	24	378	5	306	19	322	13	276	14
8	3629	326	24	365	34	313	5	301	19	300	3
9	3661	388	19	387	6	340	10	358	36	336	26
10	3692	419	15	490	29	398	8	363	23	392	35
11	3724	471	4	488	18	465	9	492	29	429	4
12	3755	468	17	567	26	488	8	468	29	471	31
13	3786	557	10	672	34	640	14	585	38	508	5
14	3818	597	20	691	18	680	16	574	39	493	4
15	3849	621	8	846	6	719	12	664	36	510	17
16	3880	695	18	714	23	741	11	584	21	573	21
17	3911	668	9	665	18	732	5	542	37	471	10
18	3942	532	5	606	6	524	7	429	10	347	8
19	3974	546	8	718	19	610	10	509	22	473	0
20	4005	805	6	917	18	856	4	763	19	714	9
21	4036	899	11	969	7	981	31	874	37	782	1
22	4067	908	7	921	7	912	3	753	18	771	19
23	4098	806	1	806	5	856	33	787	39	738	12
24	4129	868	10	922	9	905	1	787	24	765	6
25	4160	932	16	956	10	978	13	882	37	780	1
26	4191	925	26	936	11	937	15	802	20	790	4
27	4222	942	33	926	11	974	24	891	3	807	2
28	4253	957	8	987	19	953	4	899	26	824	5
29	4284	937	34	879	7	990	28	887	33	792	4
30	4314	859	15	841	7	881	7	817	17	759	1
31	4345	821	0	844	1	854	26	799	23	768	7
32	4376	945	34	892	19	957	16	883	12	865	9
33	4407	942	14	915	7	962	15	908	22	867	8
34	4438	968	3	898	1	939	10	865	21	878	33
35	4468	942	19	902	3	967	13	915	12	878	7
36	4499	1021	8	947	27	982	5	945	16	920	15
37	4530	969	12	925	23	1021	9	957	27	920	6
38	4560	953	16	947	49	951	2	896	31	909	8
39	4591	950	4	957	34	993	9	933	13	960	6
40	4621	988	5	976	1	1003	6	920	14	1005	5
41	4652	1008	3	1000	14	1018	21	1027	26	985	8
42	4682	997	7	1003	12	973	12	977	8	1007	10
43	4713	988	5	1018	10	1010	4	1024	17	995	11
44	4743	1010	2	983	10	1000	2	956	4	1011	17
45	4774	997	8	1025	13	1020	11	1038	19	1024	6
46	4804	1013	6	996	19	1008	6	1018	6	1063	12
47	4834	1007	17	926	21	980	8	999	35	1037	5
48	4865	883	7	869	16	844	2	854	24	915	11
49	4895	918	1	935	7	917	1	951	28	970	28
50	4925	955	33	958	10	922	7	934	33	966	14
51	4956	966	6	957	14	955	10	987	31	1018	21
52	4986	969	8	925	7	928	24	884	10	994	1
53	5016	889	16	890	13	899	3	870	14	932	7
54	5046	911	2	915	6	909	5	913	19	1004	9
55	5076	958	1	931	10	949	3	902	8	964	3
56	5107	964	5	918	6	908	8	871	13	985	8
57	5137	939	2	884	12	922	2	853	12	929	10
58	5167	924	12	847	8	880	4	816	24	957	7
59	5197	883	3	816	17	874	4	829	21	908	10
60	5227	877	6	831	36	842	4	834	14	949	26
61	5257	898	6	853	17	855	6	815	4	918	16
62	5287	855	9	865	4	828	10	810	14	938	33
63	5317	905	11	884	8	869	3	817	20	927	34
64	5347	886	7	898	3	826	3	836	26	962	2
65	5377	887	2	864	3	853	21	820	26	978	12
66	5406	859	4	832	4	820	7	787	22	976	9
67	5436	833	20	819	8	816	9	792	12	954	9
68	5466	853	8	810	3	815	8	811	12	972	11
69	5496	863	6	816	20	800	7	785	34	925	6
70	5526	823	3	804	31	808	1	771	44	954	31
71	5555	829	15	802	9	841	25	738	31	927	12
72	5585	827	22	772	7	799	10	777	20	936	20
73	5615	781	8	751	19	818	6	709	23	952	28
74	5645	832	5	705	8	797	12	708	43	895	43
75	5674	795	16	710	19	788	6	724	74	856	3
76	5704	792	4	737	6	782	7	716	59	874	7
77	5733	853	8	742	2	836	7	696	22	895	32
78	5763	845	8	745	46	822	20	780	24	932	40
79	5792	857	16	745	36	819	35	740	5	927	36
80	5822	915	22	685	7	767	1	750	15	879	12
81	5851	859	5	769	42	789	2	682	10	856	23
82	5881	803	3	739	27	685	40	823	42	752	45
83	5910	674	12	683	20	635	57	564	85	626	31
Log F_{4700}		-13.69		-13.60		-12.80		-12.79		-12.98	

TABLE 6—*Continued*

		δ Cep		δ Cep		δ Cep		δ Cep		δ Cep	
		HR 8571		HR 8571		HR 8571		HR 8571		HR 8571	
		M.J.D. 3,053.739		3,043.649		3,258.876		3,420.645		3,329.750	
		φ 0.38		0.50		0.60		0.75		0.81	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	226	55	307	4	260	8	335	59	379	0
2	3440	310	29	270	5	240	19	373	21	379	0
3	3472	295	37	283	27	237	34	352	12	379	12
4	3503	255	15	284	20	237	36	351	21	356	15
5	3535	328	17	269	0	293	10	451	36	327	4
6	3566	323	56	269	4	246	10	355	35	325	6
7	3598	306	21	260	19	282	11	279	15	322	12
8	3629	317	25	304	24	308	15	369	36	337	2
9	3661	366	4	350	2	358	1	419	55	373	4
10	3692	358	20	380	1	379	25	429	83	385	16
11	3724	381	2	385	21	365	8	434	19	415	4
12	3755	416	14	381	15	366	3	434	27	433	0
13	3786	464	57	408	9	395	0	469	42	484	5
14	3818	436	9	373	2	328	6	401	12	496	12
15	3849	422	7	353	1	359	0	409	5	458	12
16	3880	445	29	394	1	387	4	449	3	487	14
17	3911	425	27	345	3	303	1	450	24	480	0
18	3942	356	41	282	13	288	6	301	25	377	17
19	3974	352	36	453	5	465	1	372	16	384	13
20	4005	514	106	655	12	591	3	659	4	606	19
21	4036	661	35	692	8	632	2	679	11	733	12
22	4067	690	18	691	13	617	12	651	4	748	11
23	4098	691	28	707	13	655	7	675	7	722	15
24	4129	701	22	732	4	652	6	702	3	725	15
25	4160	708	5	734	2	660	20	749	40	763	4
26	4191	732	3	717	6	683	20	686	24	750	10
27	4222	739	9	745	18	698	4	749	5	809	15
28	4253	772	1	752	11	712	1	779	34	817	17
29	4284	744	14	727	2	649	3	796	17	813	19
30	4314	738	19	749	4	697	4	754	3	779	13
31	4345	744	16	816	3	802	2	804	20	785	3
32	4376	779	7	828	7	775	1	884	19	885	14
33	4407	810	16	834	6	789	20	818	4	825	3
34	4438	809	1	856	6	808	22	841	2	859	2
35	4468	833	4	896	3	901	3	852	7	856	3
36	4499	877	16	932	10	928	2	950	18	979	4
37	4530	923	25	910	3	885	6	936	10	923	11
38	4560	906	20	923	8	901	24	926	5	910	3
39	4591	913	8	976	2	943	12	953	5	941	6
40	4621	958	1	977	6	957	25	991	9	1003	1
41	4652	982	10	966	7	958	8	944	37	980	5
42	4682	977	7	989	11	992	4	958	57	998	6
43	4713	1006	18	1015	2	1016	3	953	2	1005	8
44	4743	1030	1	1030	8	1024	2	1013	29	1012	9
45	4774	1063	10	1051	21	1061	8	1009	44	1037	15
46	4804	1090	0	1054	1	1062	14	1052	1	1069	6
47	4834	1064	34	996	14	974	11	1006	26	1057	7
48	4865	1003	41	931	6	961	1	920	55	967	4
49	4895	1000	10	1013	1	1005	2	990	4	959	10
50	4925	1008	15	1010	1	1027	10	995	7	985	1
51	4956	1047	1	1009	12	1037	7	1029	4	1043	13
52	4986	1014	42	928	6	988	2	976	7	1038	27
53	5016	974	19	919	13	966	9	911	57	982	27
54	5046	977	26	990	13	1018	4	963	17	970	11
55	5076	1011	14	974	10	1021	25	1011	42	998	4
56	5107	1004	5	967	14	1017	1	974	2	1024	15
57	5137	966	9	944	17	986	6	964	3	995	16
58	5167	943	6	936	25	991	10	913	22	985	7
59	5197	961	9	940	6	989	4	926	6	979	1
60	5227	970	9	950	10	980	7	947	17	996	13
61	5257	996	5	969	22	967	2	902	35	993	28
62	5287	1014	19	1050	2	1050	9	887	2	984	19
63	5317	1027	24	1049	14	1015	19	869	35	1011	4
64	5347	1068	20	1050	33	1032	11	862	83	997	3
65	5377	1085	40	1015	10	1019	10	870	0	991	18
66	5406	1057	62	953	4	1004	27	869	55	1011	27
67	5436	1028	47	977	3	1043	0	862	31	973	31
68	5466	1028	28	945	18	1000	8	886	2	968	24
69	5496	1030	13	936	9	1028	8	874	1	978	11
70	5526	1012	8	927	17	973	1	828	25	936	23
71	5555	988	41	899	11	1031	4	856	93	943	4
72	5585	975	27	903	11	986	7	862	96	917	3
73	5615	967	3	983	20	1003	7	819	78	883	21
74	5645	962	6	968	7	964	5	854	17	888	8
75	5674	937	12	966	4	1021	39	879	4	875	9
76	5704	933	36	929	4	1005	12	821	33	869	0
77	5733	949	17	985	10	1045	28	804	103	842	5
78	5763	980	14	923	6	986	24	789	76	838	25
79	5792	975	46	920	13	1057	1	836	130	923	26
80	5822	1031	10	962	8	1072	8	822	8	881	27
81	5851	1129	94	930	59	1075	7	811	66	984	29
82	5881	1074	127	826	2	1018	9	735	45	905	38
83	5910	1067	88	706	51	1042	0	552	83	791	21
Log F_{4700}		-13.01		-13.09		-13.13		-13.23		-13.12	

TABLE 6—*Continued*

N	λ	δ Cep HR 8571 M.J.D. 3,131.654 φ 0.90 F_λ/F_{λ_0}	σ	δ Cep HR 8571 3,099.703 0.94 F_λ/F_{λ_0}	σ	Y Sgr HR 6863 2,976.688 0.55 F_λ/F_{λ_0}	σ	Y Sgr HR 6863 3,053.551 0.87 F_λ/F_{λ_0}	σ	Y Sgr HR 6863 2,955.712 0.92 F_λ/F_{λ_0}	σ
1	3408	280	22	327	10	137	34	179	163	341	19
2	3440	287	31	326	18	205	49	214	18	194	7
3	3472	254	9	318	12	200	30	226	41	215	32
4	3503	315	1	325	21	186	5	223	22	265	13
5	3535	297	5	345	25	171	8	359	13	361	31
6	3566	281	8	341	32	217	10	203	1	273	9
7	3598	285	22	325	27	174	31	238	23	308	31
8	3629	319	24	345	21	209	37	254	35	335	39
9	3661	343	19	368	10	262	31	298	42	359	2
10	3692	398	8	404	16	301	18	293	35	386	37
11	3724	388	24	480	6	297	19	304	1	440	25
12	3755	444	22	547	2	298	11	389	50	546	28
13	3786	557	14	630	9	323	9	417	79	501	54
14	3818	581	23	663	1	263	11	420	37	538	18
15	3849	622	14	760	2	290	11	491	5	619	12
16	3880	580	11	769	10	307	26	455	5	526	11
17	3911	525	7	695	19	311	26	427	12	458	25
18	3942	537	2	652	1	277	38	371	13	512	18
19	3974	665	12	705	25	357	50	471	55	694	1
20	4005	843	12	892	16	540	31	652	22	803	7
21	4036	850	10	985	1	536	11	710	23	844	13
22	4067	789	21	940	5	561	7	667	13	756	4
23	4098	795	21	876	16	564	23	704	49	769	14
24	4129	889	8	926	15	590	15	655	31	803	23
25	4160	897	6	978	4	577	18	724	54	809	36
26	4191	871	3	988	5	586	11	719	12	818	29
27	4222	901	11	984	9	613	21	782	35	835	19
28	4253	884	20	1001	4	664	12	765	12	793	5
29	4284	878	54	970	8	601	7	699	54	796	2
30	4314	819	18	912	9	645	53	683	9	852	19
31	4345	837	20	876	6	675	22	779	33	874	32
32	4376	884	9	932	6	744	24	808	6	864	10
33	4407	902	4	972	7	721	2	813	24	894	5
34	4438	920	15	963	4	767	35	768	32	888	15
35	4468	973	14	964	3	775	26	833	33	958	7
36	4499	987	5	987	6	909	34	908	5	944	14
37	4530	967	17	974	5	861	24	896	2	939	23
38	4560	956	8	962	9	933	10	854	16	936	13
39	4591	1013	1	972	5	908	19	931	12	990	29
40	4621	983	16	989	1	1021	7	923	6	957	13
41	4652	995	53	991	1	950	18	942	8	979	55
42	4682	974	14	999	1	1025	22	987	5	996	3
43	4713	1026	25	1005	2	990	22	1041	2	1042	7
44	4743	1004	54	1000	1	1026	28	1021	1	1011	41
45	4774	1016	6	1012	5	1038	24	1060	22	1070	44
46	4804	990	9	1020	13	1080	39	1036	14	1035	4
47	4834	943	6	980	3	1062	39	1019	6	963	10
48	4865	851	12	887	1	969	13	921	23	930	59
49	4895	948	20	878	7	1026	10	1027	5	1029	59
50	4925	971	3	935	10	1065	18	1038	21	1025	52
51	4956	1011	11	948	10	1090	10	1071	31	995	86
52	4986	928	3	931	12	1046	23	1008	3	967	22
53	5016	943	20	892	10	1004	12	981	43	995	77
54	5046	994	22	888	6	1078	39	977	39	1024	25
55	5076	1056	31	899	4	1112	10	1025	27	1007	20
56	5107	1022	2	881	5	1077	16	1017	31	996	4
57	5137	967	4	867	15	1066	13	1013	4	955	31
58	5167	970	24	838	11	1062	34	965	6	976	40
59	5197	969	15	818	13	1034	16	969	12	1013	1
60	5227	997	38	821	1	1065	23	1001	21	968	25
61	5257	979	17	821	2	1023	27	1017	9	890	6
62	5287	991	8	803	6	1049	5	1045	8	921	1
63	5317	902	34	815	10	1047	23	1097	13	975	13
64	5347	996	44	802	13	1114	12	1096	9	926	20
65	5377	936	13	797	8	1133	28	1077	58	874	42
66	5406	894	17	786	20	1109	37	1062	45	868	9
67	5436	936	13	772	30	1112	16	1033	5	930	28
68	5466	953	61	776	21	1141	13	1041	21	874	30
69	5496	967	10	773	22	1118	34	1047	33	885	10
70	5526	991	39	766	7	1093	14	1035	19	938	25
71	5555	966	20	792	19	1125	14	1023	2	902	7
72	5585	1050	13	782	3	1107	40	1015	8	890	25
73	5615	975	11	763	5	1089	14	954	16	936	31
74	5645	974	26	764	7	1096	14	957	68	906	7
75	5674	959	35	757	14	1094	32	929	4	876	46
76	5704	963	1	777	14	1095	2	957	40	901	6
77	5733	1022	8	811	12	1094	64	992	23	985	8
78	5763	1087	62	801	14	1078	43	1020	19	1020	83
79	5792	1064	16	784	12	1199	14	1041	28	1020	0
80	5822	1127	68	751	17	1237	6	1129	37	1020	0
81	5851	1044	24	707	48	1164	40	1152	17	1020	0
82	5881	948	24	587	6	1031	6	1136	27	1020	0
83	5910	837	44	587	6	1097	39	1085	60	1020	0
Log F_{4700}		-12.98		-12.77		-13.82		-13.90		-13.72	

TABLE 6—*Continued*

		Y Sgr		η Aql		η Aql		η Aql		η Aql	
		HR 6863		HR 7570		HR 7570		HR 7570		HR 7570	
		M.J.D. 2,961.714		3,433.548		3,053.659		2,961.823		2,976.737	
		φ 0.96		0.03		0.09		0.30		0.38	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	305	12	342	12	344	31	218	33	165	12
2	3440	297	8	329	12	298	30	239	52	227	39
3	3472	205	42	306	31	352	62	214	29	221	29
4	3503	266	0	289	29	376	69	265	0	309	35
5	3535	330	3	326	6	372	19	270	0	272	27
6	3566	294	11	303	16	300	26	268	15	289	14
7	3598	319	34	303	25	319	39	258	10	242	14
8	3629	325	9	327	3	350	19	291	24	283	16
9	3661	360	13	361	17	348	7	317	16	346	10
10	3692	401	22	387	13	442	38	356	7	405	36
11	3724	441	41	476	0	446	15	388	10	364	5
12	3755	486	15	507	10	512	35	411	11	412	30
13	3786	556	6	628	20	549	26	427	17	421	10
14	3818	592	9	649	0	623	17	461	12	454	23
15	3849	620	18	655	37	692	8	448	2	401	24
16	3880	626	13	710	12	676	55	445	9	458	33
17	3911	554	17	686	26	588	18	386	9	365	37
18	3942	485	13	506	7	479	5	329	16	359	34
19	3974	608	5	540	12	539	15	436	26	443	48
20	4005	793	6	854	26	834	7	643	22	657	30
21	4036	795	9	921	19	875	12	711	9	652	7
22	4067	780	28	875	5	827	8	694	17	689	34
23	4098	743	1	831	3	769	37	700	8	663	7
24	4129	832	3	873	20	806	4	729	1	716	10
25	4160	858	14	914	5	853	7	738	3	702	16
26	4191	873	15	891	5	835	6	751	0	721	15
27	4222	887	25	917	1	861	17	766	15	713	25
28	4253	873	23	924	15	877	9	770	6	789	5
29	4284	832	8	928	2	794	5	758	8	691	21
30	4314	801	11	837	3	827	9	731	1	733	16
31	4345	821	3	815	0	800	2	765	9	755	17
32	4376	894	5	929	9	860	13	790	2	820	22
33	4407	854	1	900	10	821	8	797	28	824	3
34	4438	868	8	914	6	857	6	809	26	833	21
35	4468	873	4	923	3	889	3	828	5	827	47
36	4499	947	4	957	22	941	6	868	16	905	51
37	4530	927	3	962	3	921	16	882	11	899	26
38	4560	942	7	944	8	921	4	879	3	942	42
39	4591	951	2	957	1	933	6	922	13	913	18
40	4621	969	29	1000	7	997	1	973	13	1016	47
41	4652	983	5	1003	2	962	6	959	10	965	19
42	4682	984	10	983	8	990	4	980	18	1007	7
43	4713	989	13	1005	1	1002	17	996	11	983	15
44	4743	1047	3	1009	9	1036	21	1025	1	1043	9
45	4774	1004	24	1012	1	1016	8	1023	1	1014	24
46	4804	1063	19	1022	0	1036	11	1060	10	1106	5
47	4834	1001	25	974	7	984	13	1046	44	1020	25
48	4865	876	4	870	20	910	17	915	35	1008	13
49	4895	946	26	920	22	969	8	967	16	1012	35
50	4925	968	15	962	3	1002	8	999	45	1052	38
51	4956	1035	15	989	6	1033	18	1027	17	1090	5
52	4986	970	1	953	16	989	1	994	5	1047	27
53	5016	912	8	913	7	939	23	907	12	984	24
54	5046	944	5	939	5	957	37	989	26	1060	56
55	5076	951	12	961	9	968	8	956	6	1031	39
56	5107	1012	17	946	5	962	9	1024	12	1055	22
57	5137	917	1	946	18	939	11	970	23	1000	39
58	5167	953	9	931	1	921	23	967	25	1018	24
59	5197	953	28	907	8	918	2	971	29	999	18
60	5227	955	8	926	4	920	7	989	11	1035	17
61	5257	902	25	932	0	912	20	961	29	977	9
62	5287	961	1	923	6	927	11	1015	17	998	13
63	5317	895	32	951	2	960	11	973	18	1011	13
64	5347	919	12	938	1	978	19	989	19	1050	38
65	5377	883	39	963	4	955	9	997	16	1044	47
66	5406	866	27	948	5	931	8	1040	26	1037	33
67	5436	907	37	970	4	941	21	999	10	1036	20
68	5466	899	10	984	21	948	7	992	2	1050	32
69	5496	911	17	959	6	938	16	974	1	1044	45
70	5526	949	9	938	13	904	7	986	5	1021	44
71	5555	908	13	943	9	885	4	959	5	1026	48
72	5585	901	3	982	2	898	7	942	34	993	25
73	5615	878	3	948	8	878	11	960	1	978	29
74	5645	913	7	904	3	846	1	991	35	983	21
75	5674	919	14	902	16	847	10	948	6	956	25
76	5704	845	10	890	8	886	30	935	24	979	53
77	5733	864	27	901	1	878	17	940	16	1082	58
78	5763	912	17	908	6	923	10	947	7	1033	18
79	5792	913	21	882	6	858	9	990	8	1102	15
80	5822	925	23	938	30	885	51	974	13	1048	58
81	5851	848	6	911	40	910	23	910	43	1098	90
82	5881	759	35	894	27	966	31	808	36	909	54
83	5910	700	51	899	3	827	67	740	2	820	52
Log F_{4700}		-13.62		-12.74		-12.89		-12.88		-12.89	

TABLE 6—*Continued*

		η Aql		η Aql		η Aql		η Aql		η Aql	
		HR 7570		HR 7570		HR 7570		HR 7570		HR 7570	
		M.J.D. 3,099.562		3,329.847		3,043.567		3,352.751		3,360.740	
		φ 0.49		0.58		0.69		0.77		0.88	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	215	32	290	34	212	29	239	6	231	2
2	3440	227	37	290	34	216	42	238	27	295	35
3	3472	233	31	290	34	219	27	227	27	312	53
4	3503	242	12	252	28	224	32	190	18	303	10
5	3535	243	5	234	0	216	50	210	5	337	7
6	3566	242	24	225	2	223	18	202	3	319	1
7	3598	252	24	201	19	248	6	195	4	326	7
8	3629	304	3	251	8	256	12	207	15	370	19
9	3661	330	8	289	18	292	6	232	6	380	7
10	3692	352	20	316	33	337	10	293	12	404	5
11	3724	335	14	315	15	328	17	318	7	433	25
12	3755	323	17	338	13	309	7	301	17	435	1
13	3786	345	5	341	30	309	2	313	6	491	26
14	3818	322	5	342	16	289	4	334	3	490	6
15	3849	313	1	296	16	269	4	307	6	460	13
16	3880	334	15	295	4	285	7	302	11	498	19
17	3911	301	0	339	3	272	6	343	12	466	14
18	3942	208	73	268	24	223	18	275	11	372	2
19	3974	355	52	266	6	328	18	246	6	440	17
20	4005	564	12	455	12	478	9	462	27	670	12
21	4036	602	2	558	7	546	5	570	16	725	9
22	4067	599	23	586	1	551	3	602	4	705	11
23	4098	625	11	628	19	572	6	574	9	715	25
24	4129	658	6	631	5	602	11	614	2	737	20
25	4160	666	2	614	12	597	10	631	3	767	9
26	4191	671	1	648	16	607	2	622	13	783	5
27	4222	682	3	657	30	639	8	638	11	788	2
28	4253	720	6	717	1	663	8	726	15	781	18
29	4284	697	21	691	17	626	2	666	15	769	2
30	4314	699	22	621	11	630	1	647	8	732	19
31	4345	754	3	732	14	752	2	687	8	786	2
32	4376	783	1	804	28	783	2	787	6	847	8
33	4407	795	23	750	13	757	2	740	3	812	3
34	4438	812	28	804	4	769	1	815	22	811	6
35	4468	852	9	787	20	843	37	758	12	845	7
36	4499	900	2	877	18	940	52	913	3	923	2
37	4530	899	12	856	4	917	24	883	19	898	4
38	4560	907	10	882	12	877	2	923	21	891	2
39	4591	934	1	888	13	910	7	900	11	920	12
40	4621	963	13	949	32	967	3	991	10	971	4
41	4652	972	3	958	3	958	1	948	0	978	13
42	4682	968	8	1007	5	984	3	1002	6	986	6
43	4713	997	1	990	1	1021	4	976	8	1018	3
44	4743	1027	7	1034	2	1038	7	1058	0	1010	9
45	4774	1033	23	1022	3	1065	34	1023	4	1058	9
46	4804	1034	28	1066	10	1122	48	1112	4	1059	11
47	4834	1014	7	1050	24	1093	50	1095	0	1025	40
48	4865	978	19	1003	12	1010	68	1017	24	940	11
49	4895	988	3	948	31	1024	32	993	15	969	1
50	4925	1018	2	1010	22	1015	2	1026	12	1015	5
51	4956	1022	4	1041	9	1053	12	1042	21	1078	4
52	4986	1007	13	1060	25	996	10	1079	9	1044	1
53	5016	978	18	955	23	993	26	988	7	988	10
54	5046	986	6	942	21	1098	76	1030	24	1010	11
55	5076	1001	1	992	31	1094	28	1065	9	1026	1
56	5107	994	1	1048	10	1132	87	1080	11	1026	12
57	5137	974	8	1047	4	1027	2	1066	20	1024	1
58	5167	944	5	1024	8	1039	59	1050	25	970	23
59	5197	945	2	993	2	1033	27	1018	11	955	12
60	5227	934	19	1017	25	998	25	1042	10	998	14
61	5257	942	6	1054	23	994	1	1059	5	1021	3
62	5287	934	17	1034	18	1098	8	1062	14	994	14
63	5317	957	6	1032	23	1193	47	1102	21	1010	20
64	5347	934	7	1059	3	1182	29	1135	5	1000	9
65	5377	941	25	1069	9	1196	23	1144	2	1002	8
66	5406	921	14	1058	7	1141	101	1135	12	963	15
67	5436	933	26	996	17	1201	53	1123	17	948	8
68	5466	937	15	978	8	1156	61	1119	4	937	9
69	5496	944	16	1081	27	1038	51	1150	6	911	33
70	5526	944	13	1017	20	1009	36	1089	4	914	1
71	5555	966	39	1001	21	1039	28	1105	10	946	16
72	5585	957	4	960	5	1035	12	1093	1	918	11
73	5615	911	11	971	55	1019	26	1099	6	909	7
74	5645	963	4	963	35	1030	13	1055	1	928	8
75	5674	970	7	978	16	1022	54	1099	11	929	12
76	5704	974	3	912	25	1061	9	1092	30	975	2
77	5733	1058	35	970	28	1028	19	1182	23	997	13
78	5763	1031	19	1003	47	1012	45	1133	4	988	2
79	5792	1020	10	1002	20	1038	4	1244	26	995	19
80	5822	949	21	987	1	1116	26	1144	7	993	43
81	5851	889	54	956	56	1105	80	1203	12	898	13
82	5881	799	50	919	55	1110	144	1091	36	797	28
83	5910	799	50	820	41	1145	148	1110	96	719	5
Log F_{4700}		-13.05		-13.14		-13.16		-13.23		-13.04	

TABLE 6—*Continued*

		η Aql		X Cyg		X Cyg		X Cyg		X Cyg	
		HR 7570		HR 7932		HR 7932		HR 7932		HR 7932	
		M.J.D. 3,131.520		3,258.845		2,998.819		3,360.813		3,099.603	
		φ 0.94		0.10		0.23		0.33		0.38	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	140	42	203	18	216	15	382	18	120	29
2	3440	216	65	173	30	125	61	416	46	138	12
3	3472	229	39	205	16	129	24	399	30	130	5
4	3503	220	28	191	61	165	55	439	23	138	8
5	3535	230	32	208	25	190	9	405	32	139	10
6	3566	206	31	177	10	104	18	361	26	135	4
7	3598	190	6	211	3	121	24	327	24	144	3
8	3629	230	41	211	15	175	29	384	8	162	18
9	3661	300	35	277	17	289	20	372	14	191	26
10	3692	405	50	333	16	293	47	413	18	205	14
11	3724	400	41	313	17	321	27	394	12	213	8
12	3755	371	67	363	2	236	10	386	17	198	10
13	3786	428	57	361	8	242	1	385	27	193	3
14	3818	457	42	318	8	233	34	338	19	167	8
15	3849	486	78	362	10	201	39	304	18	141	1
16	3880	477	48	351	12	256	25	300	18	162	14
17	3911	395	17	233	4	219	10	332	17	178	10
18	3942	417	56	240	11	170	29	254	5	164	15
19	3974	578	95	415	9	236	2	275	49	181	28
20	4005	714	67	547	25	443	47	438	23	276	62
21	4036	734	43	583	22	493	28	498	12	365	36
22	4067	733	29	578	4	479	17	496	18	410	15
23	4098	740	46	601	1	503	28	470	11	427	5
24	4129	791	48	615	9	484	11	534	10	432	3
25	4160	736	75	634	26	540	12	524	24	431	4
26	4191	742	89	638	1	500	5	503	8	521	68
27	4222	738	56	683	21	554	12	554	21	522	39
28	4253	764	34	714	15	625	2	590	18	520	4
29	4284	730	19	648	18	566	16	587	9	537	28
30	4314	724	50	702	10	584	9	571	38	550	10
31	4345	791	51	772	29	675	21	670	31	598	6
32	4376	862	29	739	3	675	13	735	11	640	24
33	4407	829	52	738	21	681	7	702	19	648	11
34	4438	849	42	788	15	713	12	708	21	673	11
35	4468	850	44	855	15	741	23	696	14	725	13
36	4499	855	60	886	7	848	12	819	12	805	12
37	4530	826	78	855	2	836	56	864	39	829	23
38	4560	870	102	878	9	803	20	853	9	854	18
39	4591	893	84	941	1	879	23	898	14	894	14
40	4621	978	57	988	5	957	31	939	2	946	21
41	4652	983	11	977	2	969	1	945	12	978	36
42	4682	1039	21	972	28	967	15	959	13	984	35
43	4713	956	11	1001	21	990	21	1021	16	1013	26
44	4743	1037	40	1041	1	1028	8	1062	5	1020	22
45	4774	1007	14	1085	5	1180	21	1112	28	968	128
46	4804	1064	24	1080	6	1140	2	1120	17	1058	90
47	4834	918	26	980	4	1090	1	1157	53	1156	26
48	4865	929	15	996	8	991	4	1079	27	1095	50
49	4895	1027	45	1059	3	1063	22	1109	16	1080	37
50	4925	1070	36	1075	11	1057	3	1179	24	1116	14
51	4956	1024	30	1103	4	1140	28	1213	16	1153	19
52	4986	997	46	1036	0	1064	36	1201	26	1153	41
53	5016	960	26	1035	7	1040	11	1145	30	1108	35
54	5046	1040	55	1100	12	1100	18	1145	10	1102	9
55	5076	1034	51	1116	6	1126	31	1282	51	1172	4
56	5107	1072	35	1102	29	1104	6	1239	35	1195	24
57	5137	1017	31	1091	5	1107	13	1212	33	1188	49
58	5167	1047	47	1074	10	1087	5	1227	37	1156	42
59	5197	1041	47	1070	13	1089	23	1213	30	1137	34
60	5227	1054	19	1093	6	1116	31	1245	24	1125	32
61	5257	1000	66	1107	14	1085	7	1287	44	1153	6
62	5287	1130	58	1149	5	1128	20	1294	31	1180	13
63	5317	1076	71	1130	6	1179	9	1399	19	1256	7
64	5347	1067	52	1195	15	1142	2	1341	43	1273	60
65	5377	1093	48	1144	17	1189	6	1369	41	1320	58
66	5406	1025	56	1130	14	1211	25	1325	46	1299	69
67	5436	1067	61	1224	24	1173	14	1321	23	1280	86
68	5466	1090	60	1155	11	1194	31	1353	49	1283	64
69	5496	1049	53	1179	40	1162	32	1296	47	1329	73
70	5526	1119	67	1166	16	1204	19	1311	26	1329	19
71	5555	1088	81	1189	29	1176	14	1406	48	1372	10
72	5585	1135	82	1188	9	1194	6	1414	48	1412	77
73	5615	1115	68	1159	40	1220	2	1349	32	1393	57
74	5645	1085	96	1129	1	1239	16	1375	37	1370	67
75	5674	1043	62	1187	54	1161	15	1471	54	1456	84
76	5704	1063	26	1211	16	1155	115	1497	53	1438	41
77	5733	1059	54	1220	9	1221	18	1503	26	1545	15
78	5763	1161	61	1225	48	1279	72	1646	74	1560	60
79	5792	1241	73	1238	38	1308	116	1570	60	1550	96
80	5822	1293	128	1321	40	1380	35	1611	35	1483	50
81	5851	1232	80	1191	21	1316	2	1719	87	1549	108
82	5881	1206	111	1138	7	1282	95	1515	129	1318	187
83	5910	1042	96	1173	61	1118	122	1257	57	1138	187
Log F_{4700}		-12.94		-13.90		-14.04		-14.11		-14.13	

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TABLE 6—*Continued*

		X Cyg		X Cyg		X Cyg		X Cyg		X Cyg	
		HR 7932		HR 7932		HR 7932		HR 7932		HR 7932	
		M.J.D. 3,461.601		3,053.698		3,448.602		3,433.642		3,352.778	
		φ 0.48		0.58		0.68		0.77		0.83	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	76	10	121	46	78	20	143	34	119	1
2	3440	107	10	165	39	110	2	201	36	146	22
3	3472	112	11	128	37	93	36	150	13	157	39
4	3503	103	5	68	67	122	17	190	57	167	37
5	3535	108	1	114	30	103	2	194	3	177	5
6	3566	105	2	102	22	101	22	180	18	178	19
7	3598	128	18	90	15	115	3	151	27	168	12
8	3629	121	11	143	17	140	5	189	13	185	11
9	3661	125	26	187	25	189	16	217	13	201	3
10	3692	154	33	144	8	184	11	266	1	220	2
11	3724	168	29	177	1	157	12	238	5	254	9
12	3755	171	1	180	1	159	27	246	27	262	16
13	3786	179	16	197	12	183	23	247	13	246	9
14	3818	150	5	124	29	125	8	261	28	243	4
15	3849	144	33	121	1	122	1	210	18	232	4
16	3880	131	13	129	3	160	18	248	20	242	13
17	3911	142	1	163	3	167	18	277	14	289	10
18	3942	116	12	134	13	131	20	219	4	212	4
19	3974	158	1	165	7	171	9	230	6	220	1
20	4005	191	54	313	18	320	9	371	18	347	12
21	4036	239	76	349	9	361	16	470	19	454	23
22	4067	286	66	356	1	336	6	510	9	460	11
23	4098	360	8	408	8	414	16	454	10	489	17
24	4129	355	15	360	21	378	2	505	13	486	1
25	4160	368	9	354	6	396	5	511	15	512	20
26	4191	371	7	396	10	401	5	555	2	529	12
27	4222	339	58	437	10	495	7	542	1	533	8
28	4253	426	34	487	8	514	4	586	6	585	1
29	4284	476	20	433	18	491	5	587	30	605	32
30	4314	481	17	522	2	514	21	569	8	542	6
31	4345	561	18	633	3	637	15	670	6	633	13
32	4376	580	88	618	19	635	9	768	5	719	14
33	4407	616	3	621	1	610	11	656	14	689	10
34	4438	642	6	619	12	654	22	700	9	684	15
35	4468	652	34	652	16	702	10	677	24	715	36
36	4499	719	68	813	1	824	11	830	33	825	17
37	4530	749	63	766	17	811	2	826	7	833	4
38	4560	792	51	827	10	804	20	824	24	854	16
39	4591	896	57	872	4	873	35	850	8	854	44
40	4621	894	63	959	4	987	23	946	28	934	18
41	4652	970	25	951	4	962	8	948	15	966	31
42	4682	960	27	963	4	956	1	964	4	1002	33
43	4713	1029	71	1000	23	1004	23	1018	18	983	25
44	4743	1030	75	1069	24	1069	14	1064	1	1038	14
45	4774	1093	42	1181	51	1124	42	1051	11	1051	34
46	4804	1126	50	1156	25	1163	32	1129	20	1093	6
47	4834	1213	10	1147	37	1102	8	1115	21	1116	56
48	4865	1151	50	1059	28	1021	2	1067	9	1032	23
49	4895	1193	115	1172	18	1107	3	986	14	995	22
50	4925	1228	32	1212	50	1162	29	1103	6	1034	9
51	4956	1154	10	1297	63	1217	3	1112	38	1101	66
52	4986	1180	59	1161	41	1140	31	1167	26	1146	15
53	5016	1197	91	1113	34	1086	31	1030	1	1070	25
54	5046	1236	16	1250	45	1206	19	1112	20	1053	6
55	5076	1282	12	1275	18	1213	9	1175	5	1150	39
56	5107	1262	69	1215	24	1182	4	1187	36	1164	29
57	5137	1361	95	1179	31	1155	8	1134	27	1167	17
58	5167	1354	8	1188	20	1133	9	1156	6	1146	15
59	5197	1302	89	1231	16	1195	25	1117	14	1093	7
60	5227	1331	38	1269	5	1207	4	1155	26	1099	2
61	5257	1397	75	1268	25	1230	52	1190	20	1146	8
62	5287	1423	24	1332	28	1247	13	1252	57	1169	14
63	5317	1569	67	1466	7	1356	9	1331	18	1262	21
64	5347	1466	50	1551	29	1360	23	1325	35	1304	11
65	5377	1730	143	1561	44	1410	30	1348	24	1261	2
66	5406	1632	93	1492	34	1318	1	1408	8	1305	10
67	5436	1715	213	1465	40	1416	33	1388	20	1297	21
68	5466	1675	23	1501	62	1454	23	1485	29	1299	33
69	5496	1629	81	1513	51	1442	43	1483	9	1310	2
70	5526	1663	13	1535	7	1403	29	1502	4	1277	61
71	5555	1736	171	1550	61	1477	46	1474	40	1293	17
72	5585	1692	54	1591	87	1474	71	1534	4	1305	12
73	5615	1752	170	1525	5	1526	73	1453	23	1325	20
74	5645	1720	81	1501	45	1469	57	1562	24	1314	15
75	5674	1856	132	1519	14	1459	49	1446	7	1342	59
76	5704	1772	41	1507	68	1506	38	1555	12	1296	43
77	5733	1784	69	1648	21	1580	29	1503	22	1313	55
78	5763	1858	36	1769	84	1631	28	1546	34	1414	86
79	5792	1913	192	1737	96	1683	41	1518	33	1455	57
80	5822	2011	84	1728	36	1737	17	1704	87	1361	17
81	5851	2212	238	1716	75	1667	42	1593	5	1477	35
82	5881	2333	262	1695	32	1485	83	1625	106	1493	21
83	5910	2595	498	1514	41	1321	28	1583	24	1397	16
Log F_{4700}		-14.27		-14.31		-13.79		-14.15		-14.24	

TABLE 6—*Continued*

		X Cyg		X Cyg		Y Oph		Y Oph		Y Oph	
		HR 7932		HR 7932		HR 6661		HR 6661		HR 6661	
		M.J.D. 3,026.739		3,043.679		2,955.674		2,991.676		2,976.645	
		φ 0.94		0.97		0.20		0.30		0.42	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	284	19	269	20	126	5	285	21	113	50
2	3440	267	11	263	3	116	10	215	47	160	66
3	3472	241	18	244	1	68	23	181	45	86	56
4	3503	266	34	228	3	112	17	220	105	126	59
5	3535	279	17	245	6	185	23	217	59	111	24
6	3566	324	59	259	5	125	9	193	72	153	20
7	3598	300	53	250	7	109	25	155	19	133	38
8	3629	274	13	261	14	169	9	184	19	164	43
9	3661	315	32	297	12	205	12	189	56	122	19
10	3692	385	75	337	16	226	21	238	15	183	35
11	3724	370	19	349	5	257	30	213	11	198	40
12	3755	339	41	382	7	253	18	221	18	202	28
13	3786	509	96	440	22	305	32	335	20	198	10
14	3818	481	4	457	7	315	23	234	45	221	10
15	3849	455	12	498	20	366	10	272	1	170	12
16	3880	480	13	527	3	266	10	252	42	269	23
17	3911	458	29	439	6	208	16	236	6	160	22
18	3942	320	7	398	11	260	11	204	26	175	28
19	3974	395	25	550	12	435	9	308	63	237	20
20	4005	609	12	712	1	494	3	402	40	381	36
21	4036	682	23	752	7	511	15	490	6	370	27
22	4067	673	24	733	28	502	22	516	7	410	42
23	4098	718	82	716	24	528	34	541	33	410	5
24	4129	719	17	774	3	559	22	539	27	458	46
25	4160	716	36	801	17	549	7	560	10	450	9
26	4191	709	31	767	16	585	13	494	32	500	33
27	4222	728	42	781	9	631	11	570	41	532	15
28	4253	762	37	799	26	600	7	527	31	552	13
29	4284	744	57	762	17	610	6	553	27	561	18
30	4314	701	18	738	19	650	11	519	32	595	61
31	4345	750	42	813	4	714	16	701	29	625	34
32	4376	800	4	840	40	672	13	630	35	634	17
33	4407	754	42	824	38	723	7	677	35	586	13
34	4438	786	10	851	30	724	13	673	26	648	29
35	4468	845	49	885	16	814	7	739	3	694	14
36	4499	859	16	931	17	836	25	841	47	859	51
37	4530	860	22	908	14	845	29	853	9	781	24
38	4560	889	39	890	16	842	18	828	5	829	45
39	4591	892	16	932	6	933	11	867	25	875	43
40	4621	948	13	997	12	920	22	947	29	943	45
41	4652	962	28	979	20	993	17	963	17	931	40
42	4682	994	32	1004	4	951	22	988	6	971	43
43	4713	1014	38	1005	5	1025	16	1032	42	1001	18
44	4743	1023	35	1011	10	1018	28	984	27	1078	10
45	4774	1017	29	1025	10	1112	55	1123	59	1084	16
46	4804	1024	28	1024	22	1083	16	1063	27	1112	57
47	4834	1011	54	949	20	1040	6	1120	17	1053	15
48	4865	830	1	871	16	1058	20	979	10	994	15
49	4895	906	30	986	3	1081	7	1095	48	1191	28
50	4925	926	29	988	17	1113	5	1107	20	1139	18
51	4956	1005	45	1023	2	1192	30	1196	12	1248	5
52	4986	954	22	955	31	1054	20	1136	53	1193	65
53	5016	909	36	915	6	1187	41	1160	33	1167	51
54	5046	964	24	968	9	1184	51	1223	26	1312	53
55	5076	976	39	993	6	1240	23	1203	24	1267	22
56	5107	953	17	1017	33	1184	33	1203	32	1353	63
57	5137	940	38	959	15	1309	32	1243	24	1273	42
58	5167	908	21	901	23	1177	5	1260	21	1286	46
59	5197	903	40	925	18	1277	27	1287	25	1272	3
60	5227	920	23	963	37	1227	16	1345	26	1348	71
61	5257	948	44	965	11	1271	26	1261	32	1299	58
62	5287	941	23	1026	20	1283	36	1268	9	1396	25
63	5317	966	50	1000	43	1410	47	1322	18	1419	11
64	5347	986	6	1066	15	1390	23	1361	9	1514	35
65	5377	996	17	1050	7	1285	25	1396	5	1524	25
66	5406	948	34	998	29	1276	16	1362	10	1525	35
67	5436	962	32	979	20	1369	38	1459	27	1580	36
68	5466	1015	36	938	64	1358	24	1509	20	1638	11
69	5496	1016	31	929	48	1320	9	1474	23	1599	20
70	5526	1079	38	946	26	1302	41	1548	69	1555	41
71	5555	1152	21	949	55	1342	64	1511	90	1605	56
72	5585	1137	29	920	15	1399	11	1609	67	1643	54
73	5615	1101	22	986	18	1360	23	1582	38	1719	59
74	5645	1062	36	964	25	1375	15	1680	55	1670	34
75	5674	995	20	1012	47	1424	35	1597	62	1597	71
76	5704	931	24	991	4	1478	12	1564	42	1729	50
77	5733	954	10	1057	19	1606	47	1490	84	1888	129
78	5763	992	25	1007	28	1618	89	1651	56	1849	13
79	5792	957	15	973	46	1615	89	1700	38	1802	31
80	5822	968	13	904	52	1615	89	1736	96	1887	62
81	5851	958	36	894	23	1615	89	1563	177	1921	27
82	5881	840	107	816	35	1615	89	1631	54	1729	60
83	5910	598	52	743	5	1615	89	1111	111	1772	56
Log F_{4700}		-13.77		-13.78		-13.96		-14.03		-14.02	

TABLE 6—*Continued*

		Y Oph		Y Oph		Y Oph		T Mon	
		HR 6661		HR 6661		HR 6661		HR 2310	
		M.J.D. 2,961.673		2,997.624		2,998.665		3,185.695	
		φ 0.55		0.65		0.71		0.89	
N	λ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ	F_λ/F_{λ_0}	σ
1	3408	83	21	62	76	277	56	122	20
2	3440	57	20	69	13	117	51	168	57
3	3472	108	53	143	19	213	135	146	12
4	3503	50	15	80	15	147	101	143	14
5	3535	122	36	194	40	188	15	163	29
6	3566	151	10	115	54	117	25	146	6
7	3598	240	9	163	10	193	31	146	32
8	3629	199	22	125	12	112	13	183	3
9	3661	201	21	158	9	223	27	211	5
10	3692	188	6	199	4	166	36	232	2
11	3724	227	38	175	36	227	94	209	34
12	3755	223	29	215	13	229	4	182	19
13	3786	254	14	199	4	306	34	243	22
14	3818	213	16	211	1	225	1	207	6
15	3849	232	23	190	30	260	15	163	27
16	3880	235	15	242	12	167	42	215	9
17	3911	205	13	212	22	295	3	230	5
18	3942	216	39	193	10	116	25	183	6
19	3974	314	36	267	33	262	24	212	2
20	4005	386	20	395	6	401	8	360	2
21	4036	399	17	460	22	457	3	447	6
22	4067	427	47	421	11	392	41	408	6
23	4098	473	32	448	10	487	0	450	8
24	4129	476	11	473	20	435	3	469	17
25	4160	466	23	488	4	529	17	441	13
26	4191	476	26	466	5	464	16	421	30
27	4222	502	11	517	12	601	50	485	0
28	4253	487	7	598	5	531	28	536	17
29	4284	538	13	542	11	546	2	567	26
30	4314	513	33	590	21	588	70	537	22
31	4345	543	38	598	21	680	8	632	9
32	4376	594	37	619	17	633	3	683	28
33	4407	613	12	666	67	657	19	686	25
34	4438	641	10	674	25	635	5	694	33
35	4468	749	41	734	2	738	26	730	36
36	4499	779	12	783	7	777	14	862	1
37	4530	812	16	753	17	787	4	814	7
38	4560	825	19	810	29	828	39	826	17
39	4591	881	32	845	17	897	14	869	1
40	4621	910	40	914	15	917	3	999	14
41	4652	958	24	943	1	958	23	965	15
42	4682	966	20	976	1	971	38	948	13
43	4713	1025	13	1012	21	1060	21	1024	19
44	4743	1042	22	1057	16	1010	4	1042	28
45	4774	1063	35	1125	15	1154	1	1129	29
46	4804	1060	22	1093	75	1112	32	1160	40
47	4834	1004	62	1188	35	1112	10	1131	8
48	4865	1034	25	1099	15	1012	14	1043	61
49	4895	1060	23	1139	2	1115	3	1081	15
50	4925	1088	30	1167	17	1125	12	1091	45
51	4956	1155	30	1262	7	1233	31	1149	9
52	4986	1151	24	1182	20	1123	17	1114	64
53	5016	1159	48	1183	10	1148	1	998	19
54	5046	1200	15	1282	8	1184	20	1066	53
55	5076	1230	64	1331	45	1276	8	1208	49
56	5107	1218	17	1341	56	1240	12	1179	73
57	5137	1247	83	1364	19	1224	4	1217	36
58	5167	1327	99	1363	18	1241	15	1144	3
59	5197	1327	67	1362	1	1294	35	1144	38
60	5227	1295	72	1380	4	1332	39	1159	43
61	5257	1376	90	1385	13	1330	3	1183	24
62	5287	1339	18	1421	27	1359	24	1150	55
63	5317	1417	24	1474	47	1428	29	1230	43
64	5347	1416	27	1493	26	1426	10	1217	11
65	5377	1472	93	1506	41	1395	18	1273	36
66	5406	1434	74	1490	41	1370	1	1157	27
67	5436	1542	58	1461	26	1356	12	1281	66
68	5466	1525	58	1544	46	1487	30	1271	43
69	5496	1598	95	1560	30	1465	68	1139	40
70	5526	1534	69	1637	70	1515	29	1286	47
71	5555	1582	101	1729	17	1521	10	1296	26
72	5585	1569	93	1744	68	1581	36	1245	24
73	5615	1539	92	1808	63	1529	19	1331	75
74	5645	1562	104	1853	37	1639	148	1349	32
75	5674	1573	33	1674	12	1435	78	1393	15
76	5704	1611	61	1904	32	1583	19	1347	7
77	5733	1708	62	1920	49	1481	8	1498	10
78	5763	1714	119	2004	52	1760	57	1425	20
79	5792	1657	135	2063	95	1634	13	1338	47
80	5822	1680	142	2219	33	1826	92	1551	75
81	5851	1756	168	2091	34	1651	83	1402	6
82	5881	1728	176	2031	112	1658	158	1270	34
83	5910	1391	194	1671	78	1358	83	1032	106
Log F_{4700}		-13.92		-14.12		-14.08		-14.09	

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