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WAVELENGTH DEPENDENCE OF INTERSTELLAR POLARIZATION AND RATIO OF TOTAL TO SELECTIVE EXTINCTION

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ABSTRACT

Wavelength dependence of interstellar linear polarization has been observed for about 180 stars, mostly southern, in the *UBVR* spectral regions. A multichannel polarimeter-photometer, in which spectral regions are separated by dichroic filters, was used. Normalized wavelength dependence of interstellar linear polarization p follows closely a single empirical curve $p(\lambda)/p_{\max} = \exp[-1.15 \ln^2(\lambda_{\max}/\lambda)]$, where the wavelength $\lambda_{\max}$ at which the maximum interstellar linear polarization $p_{\max}$ occurs takes values from 0.45 μ to 0.8 μ.

Wavelength $\lambda_{\max}$ is well correlated with the ratios of color excesses E_{V-K}/E_{B-V}, E_{V-K}/E_{V-R}, and E_{V-I}/E_{V-R}. These correlations indicate that the ratio R of total to selective interstellar extinction can be found for any individual star from the relationship $R = 5.5\ \lambda_{\max}$. Polarimetry seems to be the most practical method of estimating R. A map of distribution of $\lambda_{\max}$ on the sky, based on values for about 350 stars, indicates several well defined regions with $\lambda_{\max}$, and hence R, clearly larger (or smaller) than the median value $\bar{\lambda}_{\max} = 0.545\ \mu$, corresponding to $R = 3.0$.

The predominance of larger than average values of $\lambda_{\max}$ among stars nearer than 0.4 kpc and the negative correlation between $\lambda_{\max}$ and E_{B-V} are explained by selection effects. There is evidence of negative correlation between $\lambda_{\max}$ and $p_{\max}/E_{B-V}$ suggested by Kruszewski. The lower limits for color excess of Praesepe, M67, and several globular clusters are set by their linear polarization. The largest known values of interstellar circular polarization, $|q| \cong 0.06$ percent, were found in near-infrared for two stars with exceptionally small $\lambda_{\max}$: star No. 12 in association VI Cygni and HD 204827.

Subject headings: instruments — interstellar extinction — interstellar matter — open clusters — photometry — polarization

I. INTRODUCTION

Several regions of the sky with the wavelength of maximum interstellar linear polarization either predominantly higher or predominantly lower than average have been found by Serkowski and Robertson (1969). This suggested that the wavelength dependence of interstellar polarization may be a good indicator of the variations in size of interstellar dust grains within the Galaxy. To accelerate collection of data on wavelength dependence of polarization, a new multichannel polarimeter-photometer has been constructed at Mount Stromlo Observatory. Polarimetric and photometric measurements are made with this instrument in several spectral regions simultaneously; therefore, the observing times required for attaining the desired precision of results are much shorter than with previous instruments. An observing program with this polarimeter-photometer, extending over 1 year, has almost doubled the amount of data on the wavelength dependence of interstellar polarization.

II. MULTICHANNEL POLARIMETER-PHOTOMETER

Most of the new polarimetric observations presented in this paper were made with the polarimeter-photometer constructed in the workshops of Mount Stromlo Observatory during the year 1969. The mechanical parts were designed and made under the supervision of Mr. Bela Bodor, and the electronic parts were designed by Mr. Peter Rudge. The instrument was used with the 61-cm (24 inch) rotatable tube telescope of Siding Spring Observatory.

The stellar light, after passing through a focal plane diaphragm, is split into two beams by a calcite Wollaston prism (fig. 1). The observations are made alternately with and without the Lyot depolarizer, consisting of two quartz plates, 2 mm and 4 mm thick, in optical contact, inserted in front of the Wollaston prism. The two beams emerging from the Wollaston prism fall on two fused silica Fabry lenses of 12 cm focal length, one of which is cemented to a quartz half-wave plate which rotates the plane of polarization by about 90° in the blue spectral region, so that both beams are polarized at approximately the same plane. Each of the two beams goes subsequently, at 45° incidence, through four dichroic filters made by Optical Coating Laboratory in Santa Rosa, California. The first filter reflects over 85 percent of wavelengths 3100–3900 Å, transmitting over 85 percent of wavelengths 4100–10,000 Å. The second filter reflects the wavelengths longer than 8200 Å, transmitting over 90 percent of the wavelengths shorter than 7800 Å. The third filter reflects $\lambda > 6500$ Å, transmitting over 90 percent of light with 3900 Å $< \lambda <$ 6300 Å. Finally, the last filter reflects $\lambda <$ 4900 Å, transmitting $\lambda >$ 5000 Å. The four filters split the light into the five spectral regions close to Johnson's (1965) *UBVRI* regions.

The cathodes of the photomultipliers are cooled by blowing a stream of cold nitrogen gas, evaporated

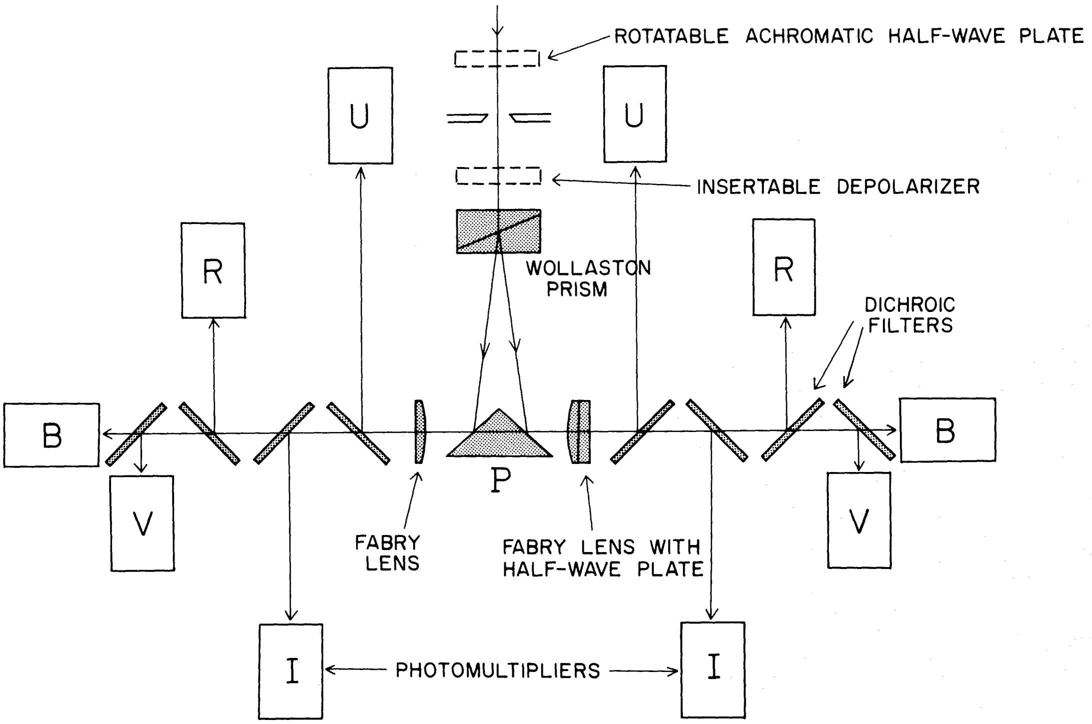

FIG. 1.—Schematic diagram of the polarimeter-photometer. Actually the axes of light beams incident on photomultipliers are in a plane perpendicular to this diagram.

from a bottle of liquid nitrogen, onto the front ends of the photomultipliers. The inside of the polarimeter is kept dry by continuous flushing with dry nitrogen. This cooling system, which is presently in operation, was not installed at the time when the observations for the present paper were made; therefore, the infrared spectral region was not used, and unrefrigerated photomultipliers were used for the remaining spectral regions: EMI 6256 (S11 cathode) for *U*, *B*, and *V*, EMI 9502 (S20 cathode) for *R*. The *U*, *B*, and *V* spectral regions approximate the standard *UBV* regions (Johnson 1965; Matthews and Sandage 1965) while the *R* region has an effective wavelength similar to Johnson's except that its half-width is only about 1000 Å (fig. 2). In an attempt to obtain better agreement with the standard photometric system and for reducing red leaks, Schott glass filters were cemented to the photomultiplier windows: 0.75 mm UG 1 for *U* photomultipliers, 0.5 mm GG 13 and 2.5 mm Corning 5-57 for *B*, 2 mm GG13 and 1 mm BG 38 for *V*, and 1 mm RG5 for *R* photomultipliers. The red leak in the *U* spectral regions, determined by observing

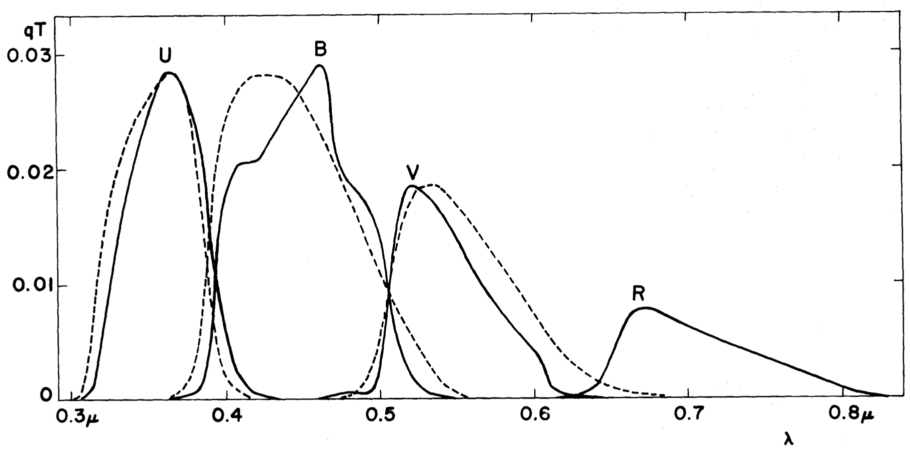

FIG. 2.—The wavelength dependence of the product of the photomultiplier quantum efficiency and the transmittance of the Earth atmosphere, telescope, and polarimeter (both channels) for the four spectral regions separated by the dichroic and glass filters. The dashed lines are the response curves for standard UBV spectral regions (Johnson 1965; Matthews and Sandage 1963), in arbitrary units.

carbon stars, has quantum efficiency not exceeding 10^{-3} percent. The dark current was negligibly small for EMI 6256 but was as large as the signal from a star of $R \approx 8$ mag in the R spectral region; therefore, the accuracy in the latter region for fainter stars is lower than in the other spectral regions.

The signal from each of the 10 photomultipliers is fed into a separate integrator. At the end of each integration the voltages at these integrators, designed by Mr. D. G. Thomas, are consecutively measured by a digital voltmeter and recorded on punched paper tape and by an electric typewriter. Usually 20-s integrations were used for stars with $V < 8.0$ mag, 40 s for the fainter stars. The measurements were made at four position angles of the tube of the rotatable telescope: 0°, 45°, 90°, and 135°. Only the nearby standard stars were observed at eight position angles, from 0° to 315°. At each position angle four integrations for a star were made (an integration without depolarizer, two integrations with depolarizer, and again without) and two for the sky background (with and without depolarizer). For bright stars the accuracy, independent of stellar magnitude, is limited by the residual atmospheric scintillation, by imperfect focusing of the Fabry lenses combined with imperfect guiding of the telescope, by a slightly wedge-shaped depolarizer, by photomultiplier fatigue, and by other instrumental errors. The atmospheric scintillation for the ratio of signals from two photomultipliers was found to amount to about 15 percent of the scintillation observed with a single photomultiplier. For the fainter stars the accuracy is limited by shot noise; for an observation consisting of sixteen 20-s integrations for a star, the mean error $\epsilon(p)$ of the degree of linear polarization $p[\gg\epsilon(p)]$ equals

$$\epsilon(p) = c \cdot 10^{m/5}\,, \tag{1}$$

where m is the stellar magnitude in the corresponding spectral region while $c = 0.0025$ percent for $U >$ 5 mag, 0.0016 percent for $B > 6$ mag, 0.0027 percent for $V > 5$ mag, and 0.0070 percent for 4 mag $< R <$ 7 mag. From these values of c and from spectrum scans with a monochromator the quantum efficiencies of the photomultiplier combined with the entire optical system, including the Earth's atmosphere, are derived (cf. Serkowski 1968) and are plotted in figure 2. Comparing these quantum efficiencies with the values supplied for the photomultipliers by the manufacturer, we find a joint transmittance of the telescope + polarimeter (both channels for each spectral region), including dichroic filters, close to 18 percent. The transmittance of all four dichroic filters for the B spectral region is about 60 percent.

The depolarizer correction factors were found by observing the stars with a Glan-Thompson prism placed at different position angles in front of the polarimeter. The adopted depolarizer correction factors D (as defined by Serkowski 1968) are listed in table 1.

There is provision for inserting a rotatable achromatic half-wave plate in front of the focal plane diaphragm of the polarimeter-photometer. With such a half-wave plate the depolarizer will no longer be necessary, and the observing time needed to achieve the desired polarimetric accuracy will be one-fourth as long (Serkowski 1974). The half-wave plate was not used in the present observing program because sufficiently achromatic plates were not known at the time when the observations were started. For circular polarization measurements an achromatic quarter-wave plate may be inserted instead of the half-wave plate.

TABLE 1

DEPOLARIZER CORRECTION FACTORS FOR MULTICHANNEL POLARIMETER

Spectral Type	Luminosity Class	D^U	D^B	D^V	D^R
O, B........	III, IV, V	1.000	1.002	1.002	1.010
Be..........	III, IV, V	1.000	1.002	1.002	1.025
WR, WN...	...	0.996	0.983	0.998	1.025
O, B........	I, II	1.001	1.004	1.003	1.010
A..........	I, II	1.003	1.004	1.003	1.007
F, G, K.....	I, II	1.002	1.006	1.000	1.009
M..........	I, II, III	1.000	1.000	0.985	1.018
N..........	...	...	1.025	1.020	1.004

The multichannel instrument can be used not only as a polarimeter but also as a star-sky photometer. For this application the Wollaston prism, together with the aluminized prism P (see fig. 1) and Fabry lenses, is removed as one unit. Another unit is substituted containing a right-angle aluminized prism and Fabry lenses cemented to quartz depolarizers. Such depolarizers are needed to avoid the effect of stellar polarization on transmittance of dichroic filters. Two focal-plane diaphragms with their centers separated by 19 mm are used. The star image is placed first in one diaphragm, then in the other; the sky background in another diaphragm is measured simultaneously. The fact that filters are in the same compartment as the photomultipliers and cooled with a stream of dry nitrogen is favorable for precise photometry, as the spectral properties of dichroic and glass filters may depend on temperature (Young 1967) and humidity (Schild, Steudel, and Walther 1967). The multichannel instrument here described was used for observing the wavelength dependence of extinction by terrestrial clouds (Serkowski 1970*b*). As this extinction was found to be nearly neutral, the measurements of color indices are not affected by presence of thin clouds.

III. OBSERVATIONS

The polarimetric observations of the nearby stars, which may be supposed to be unpolarized, are listed in table 2, where p is the percentage polarization and θ the position angle of the electric vector in the equatorial coordinate system. The mean values of p and θ obtained from the averages of the normalized Stokes parameters $p_x = p \cos 2\theta$ and $p_y = p \sin 2\theta$ in the blue and yellow spectral regions are also given; the observations in these two spectral regions are more accurate than those in the remaining ones. The

TABLE 2

POLARIZATION OF NEARBY STARS OBSERVED WITH 24-INCH TELESCOPE AT SIDING SPRING OBSERVATORY

HD	*	α_{1975}	δ_{1975}	MK	V	r pc	p^U %	p^B %	p^V %	p^R %	θ^U	θ^B	θ^V	θ^R	n Instr.	Mean of V and B p (%)	m.e.	θ
2151	β Hyi	$0^h24^m.3$	-77°24'	G1 IV	2.8	6	... 0.01	0.02 .02	0.03 .03	... ...	... 70°	160° 134	153° 151	... ...	3 T* 1 M	0.024*	±.009	152°
10476	107 Psc	1 41.2	+20 10	K1 V	5.2	7	... .02	.02 .02	.02 .02	... 0.05	... 166	0 8	179 153	... 68°	4 T* 1 M	.016*	.006	175
20794	82 Eri	3 18.8	-43 11	G5 V	4.3	6	.03	.03	.04	.05	145	149	134	104	1 M	.023*†	.014	144
23249	δ Eri	3 42.1	- 9 51	K0 IVe	3.5	9	.03	.03	.03	.02	37	80	83	84	1 M	.03	.02	82
26965	o^2 Eri	4 14.2	- 7 40	K1 Ve	4.4	5	.03	.05	.02	.08	159	152	16	21	1 M	.03	.02	162
38393	γ Lep A	5 43.5	-22 27	F6 V	3.6	8	.01	.01	.01	.06	42	107	0	54	1 M	.005†	.008	130
39587	χ^1 Ori	5 52.9	+20 16	G0 V	4.4	10	... .04	.01 .02	.03 .02	... .02	... 10	162 7	13 48	... 140	2 T 3 M	.013	.007	20
43834	α Men	6 11.0	-74 45	G5 V	5.1	9	.10	.04	.02	.07	104	131	151	90	1 M	.009*†	.010	142
48915	α CMa	6 44.1	-16 40	A1 V	-1.5	3	...	.02	.02	...	...	94	141	...	3 T†	.014†	.011	115
61421	α CMi	7 38.1	+ 5 19	F5 IV-V	0.3	4	...	.01	.01	...	...	45	160	...	3 T†	.005†	.009	145
100623	-32°8179	11 33.3	-32 43	K0 V	6.0	10	... .06	.03 .04	.02 .00	... .07	... 84	40 88	38 150	... 178	3 T* 2 M	.016*	.012	57
102365	-39°7301	11 45.4	-40 22	G5 V	4.9	10	.08	.06	.07	.02	31	91	58	108	1 M	.06*	.02	73
102870	β Vir	11 49.4	+ 1 55	F8 V	3.6	10	...	.02	.00	...	...	171	62	...	3 T*	.017*	.014	162
114710	β Com	13 10.8	+28 00	G0 V	4.3	8	...	.02	.01	...	...	123	97	...	2 T	.018	.014	116
115617	61 Vir	13 17.2	-18 08	G6 V	4.7	8	... .02	.02 .02	.02 .01	... .02	... 70	114 115	143 32	... 16	4 T*† 4 M	.010*†	.006	132
121370	η Boo	13 53.6	+18 46	G0 IV	2.7	10	...	.01	.02	...	...	50	95	...	3 T	.014 ‡	.013	87
128620	α Cen AB	14 38.1	-60 45	G2V+K0V	0.0	1	...	.02	.02	...	...	115	16	...	4 T†	.004†	.009	135
154417	+0°3629	17 04.0	+ 0 44	F8	6.0	21	...	.03	.03	...	...	116	78	...	3 T*	.03*	.04	116
156384	-34°11626	17 17.2	-34 57	K3V+K5V	5.9	7	...	.04	.06	...	...	168	139	...	2 T	.04	.03	150
197692	ψ Cap	20 44.6	-25 22	F5 V	4.1	12	...	.00	.01	...	...	130	18	...	3 T*	.004*	.012	10
209100	ε Ind	22 01.4	-56 53	K5 Ve	4.7	3	.06	.01	.01	.02	11	117	44	170	4 M	.006*†	.008	88
218045	α Peg	23 03.5	+15 04	B9.5 III	2.5	30	.06	.02	.03	.04	19	141	101	116	2 M	.017*	.010	112

* Average includes observations by Mathewson and Ford (1970a,b).

† Average includes observations by Serkowski (1968).

‡ Polarization p = 0.009 ± .014% (m.e.), θ =47° was found with the Yerkes rotatable telescope by Appenzeller (1968).

published observations of the nearby stars made with the same telescope (Serkowski 1968; Mathewson and Ford 1970*a*, *b*) are included in these averages and in the averages for individual filters. Similarly as in the earlier papers (Serkowski 1968, 1974), the values of p are followed by an average of the mean errors of the normalized Stokes parameters p_x and p_y for the blue and yellow spectral regions. The number n of observations with each filter is followed by letter M for the observations made with the multichannel polarimeter, by T for those with the two-channel polarimeter (Serkowski 1968). The results listed in table 2 indicate that the values of the normalized Stokes parameters averaged over all nearby stars are zero within the limits of error; the instrumental polarization, if any, was eliminated by rotation of the telescope tube.

The stars with large interstellar linear polarization have been chosen for the present study of its wavelength dependence from the catalogs by Hall (1958) and by Mathewson and Ford (1970*a*). Those stars have been selected for which a single observation with the multichannel polarimeter in the yellow spectral region could be expected to give a relative mean error of percentage polarization, $\epsilon(p)/p$, not exceeding ± 0.04. As can be seen from equation (1), this happens for percentage polarization

$$p > 10^{V/5}/15\,, \tag{2}$$

where $V \geq 5$ is a visual magnitude. A large percentage of southern stars with known polarization fulfilling this criterion have been included in the present survey.

To find more stars suitable for study of wavelength dependence of interstellar polarization, the polarization in the yellow or blue spectral regions have been observed with a two-channel polarimeter for a number of stars with large interstellar reddening. Since for interstellar polarization $p^V \leq 9\,E_{B-V}$ (Schmidt-Kaler 1958) and, on the average, $p^V \cong 4.5\,E_{B-V}$, our criterion (2) becomes

$$E_{B-V} > 10^{V/5}/67.5; \tag{3}$$

e.g., for $V = 7.5$ mag this gives $E_{B-V} > 0.47$ mag. In case of supergiants of absolute magnitude -7 and reddening $0.3 < E_{B-V} < 1.4$, limiting a survey to stars fulfilling condition (3) is equivalent[1] to limiting it to stars with a distance modulus less than 13.0. The polarimetric measurements of some stars fulfilling condition (3) are listed in Table A1 in the Appendix.

Table 3 gives the individual observations of the wavelength dependence of the interstellar polarization, most of them made with the multichannel polarimeter. Some observations made by Serkowski with the two-channel polarimeter (described by Visvanathan 1966 and Serkowski 1968) before the multichannel instrument was completed are also included and marked with an asterisk following the Julian Day; the depolarizer corrections for these observations were calculated as described earlier (Serkowski 1970*a*). Individual observations for which the mean error of percentage polarization is more than twice as large as is usual for a star of given magnitude are indicated by colons.

It was noticed recently (Serkowski 1973) that observations of interstellar polarization for all the stars follow the same curve when the ratio of polarizations $p(\lambda)/p(\lambda_{\max})$ is plotted against the ratio of the wavelength $\lambda_{\max}$ of the maximum polarization for a given star to the wavelength λ at which polarization is measured. This curve is well approximated by an empirical formula

$$p/p_{\max} = \exp\left[-K \ln^2 (\lambda_{\max}/\lambda)\right]\,, \tag{4}$$

where the constant K is the same for all stars. By taking the natural logarithm of both sides of equation (4), we obtain

$$\ln p + K(\ln \lambda)^2 = X_1 + X_2 \ln \lambda\,, \tag{5}$$

where

$$X_1 = \ln p_{\max} - K(\ln \lambda_{\max})^2\,, \tag{6}$$

$$X_2 = 2K \ln \lambda_{\max}\,. \tag{7}$$

Equations (5), with weights calculated from errors of individual observations, were solved for each star by least squares for the unknowns X_1 and X_2, and then $\lambda_{\max}$ and $p_{\max}$ were found from equations (6) and (7). The solutions were repeated for different values of the constant K. The value $K = 1.15$ was finally assumed, which fits both our observations and those made at the University of Arizona (Coyne, Gehrels, and Serkowski 1974). This value of K was used for calculating $\lambda_{\max}$ listed in tables 3 and 5. All stars observed with our multichannel polarimeter, except those suspected of having an intrinsic component of polarization (marked with an asterisk in the first column of table 5) and except those with $p_{\max}$ less than 1.0 percent, were used for calculating the normalized wavelength dependence of interstellar linear polarization plotted in figure 3.

All the observations of a star with a particular filter are averaged, and the averages for various stars are arranged in order of $\lambda_{\max}/\lambda$ in groups of 20. The mean value of $p/p_{\max}$ for each such group comprising 20 stars is denoted by an open circle in figure 3 while dots denote the averages for individual stars for which $\lambda_{\max}/\lambda > 1.70$. The curve shown in figure 3, calculated from equation (4), fits the observations well. Similar graphs, based on the observations made at the University of Arizona and covering a wider range of $\lambda_{\max}/\lambda$, were published by Coyne *et al.* (1974) and by Serkowski (1973, 1974).

The effective wavelengths λ entering equation (5) were calculated for the observations with the multichannel polarimeter from the response curves shown in figure 2. For calculating the inverse effective wavelengths, these response curves were multiplied,

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[1] The distance modulus fulfills $V - M_V - 3E_{B-V} < C - M_V$, where, as results from inequality (3), $C = 5 \log (67.5E_{B-V}) - 3E_{B-V} \cong 6.0 \pm 0.3$ for E_{B-V} in the interval quoted.

TABLE 3

OBSERVATIONS OF THE WAVELENGTH DEPENDENCE OF LINEAR POLARIZATION

HD	V	B-V	MK	JD 24...	p^U	p^B	p^V	p^R	θ^V	$\theta^V-\theta^U$	$\theta^V-\theta^B$	$\theta^V-\theta^R$	λ_{max}	p_{max}
17543	5.34	-0.12		40914	0.06	0.19	0.29	0.28	116.2	-8.4	1.5	-0.5	1.04	0.45
			B6 IV	40917	0.12	0.18	0.26	0.33	119.3	21.9	3.7	6.9	1.01	0.40
				40918	0.12	0.16	0.25	0.26	119.5	8.3	2.4	-7.0	0.94	0.34
				40920	0.15	0.19	0.21	0.20	111.2	-12.6	-3.6	-3.3	0.61	0.21
23466	5.34	-0.12		40914	0.30	0.33	0.34	0.38:	170.2	-10.2	-0.8	-1.2	0.55	0.35
			B3 V	40917	0.30	0.32	0.34	0.34	172.8	-6.7	1.7	2.2	0.53	0.34
				40918	0.33	0.37	0.35	0.37	174.2	2.4	1.9	5.9	0.50	0.37
				40920	0.26	0.34	0.35	0.33	165.9	-11.9	-6.1	-1.1	0.58	0.36
24398	2.85	0.12		39496*	...	1.15:	1.19	...	61.6	...	-0.8	...	0.53	1.19
			B1 Ibe	40267*	...	1.20	1.22	...	61.7	...	-0.1	...	0.51	1.23
				40565	1.09	1.20	1.23	1.16	61.4	-3.1	-0.4	-0.7	0.52	1.25
				40595	1.09	1.27	1.23	1.15	62.7	-0.1	0.1	0.8	0.51	1.27
				40625	1.09	1.25	1.19	1.16	62.6	0.7	1.1	2.2	0.51	1.26
25558	5.32	-0.08		40914	0.39	0.45	0.51	0.41	117.0	4.1	-1.7	-2.9	0.53	0.47
			B3 V	40918	0.34	0.47	0.50	0.55	118.3	5.5	1.0	0.7	0.67	0.55
				40920	0.38	0.48	0.58	0.45:	117.3	-3.4	-2.4	-4.2	0.59	0.53
				40979	0.45	0.53	0.61	0.50	116.4	-2.7	0.4	0.4	0.53	0.55
30836	3.68	-0.17		40914	0.38	0.40	0.40	0.42	39.4	5.9	6.7	0.0	0.52	0.43
			B2 III	40918	0.38	0.43	0.42	0.37	38.5	-0.2	2.8	3.6	0.48	0.43
				40920	0.32	0.40	0.42	0.38	38.3	0.5	0.8	2.4	0.56	0.41
				40979	0.34	0.40	0.47	0.48	36.9	5.1	0.1	-0.6	0.63	0.48
30870	6.10	0.08		40914	1.13	1.31	1.32	1.27	69.0	4.4	1.0	-0.5	0.52	1.34
			B5 V	40918	1.16	1.31	1.40	1.39	68.4	3.7	0.9	2.0	0.56	1.40
				40920	1.28	1.32	1.40	1.27	69.0	3.9	1.4	-1.6	0.50	1.38
				40979	1.10	1.30	1.35	1.43:	67.5	-1.9	-2.2	-1.0	0.57	1.39
32990	5.50	0.06		40914	1.22	1.46	1.57	1.53:	83.9	1.4	0.5	0.0	0.58	1.58
			B2 V	40920	1.20	1.49	1.55	1.52	84.1	0.9	0.7	0.1	0.57	1.58
				40920	1.22	1.53	1.53	1.48	84.2	5.4	1.2	0.1	0.55	1.57
				40983	1.30	1.50	1.58	1.52	82.7	-0.7	-1.0	0.2	0.55	1.58
36371	4.77	0.35		39877*	1.75	1.95	2.11	...	176.8	1.9	0.6	...	0.55	2.10
			B5 Iab	39911*	1.70	2.01	2.15	...	175.5	-0.6	-0.9	...	0.57	2.16
				40256*	1.75	1.99	2.13	...	179.1	2.0	0.9	...	0.55	2.13
				40565	1.65	2.02	2.12	2.07	177.5	0.8	0.4	0.9	0.58	2.14
				40592	1.64	2.01	2.17	2.05	176.1	1.0	0.5	0.3	0.58	2.17
				40604	1.66	2.05	2.18	2.07	176.7	0.8	0.1	0.6	0.58	2.19
36629	7.65	0.02		39832*	1.68	1.88	2.01	...	94.6	-0.9	0.9	...	0.54	2.00
			B2 V	39886*	1.66	1.90	1.99	...	95.8	2.9	2.0	...	0.54	2.00
				40282*	1.70	1.91	1.98	...	93.7	-0.4	1.1	...	0.52	1.99
36673	2.57	0.21		40914	0.34	0.35	0.30	0.26	66.3	7.4	2.1	-1.9	0.41	0.35
			F0 Ib	40920	0.47	0.36	0.36	0.30	67.4	6.0	3.0	-2.8	0.36	0.44
				40920	0.40	0.33	0.36	0.31	65.3	2.7	-0.9	8.2	0.42	0.38
				40983	0.32	0.33	0.32	0.34	66.5	7.7	0.4	-2.4	0.52	0.35
37061	6.8v	0.27		39773*	0.99	1.16	1.40	...	63.9	-4.4	0.3	...	0.65	1.43
			B1 V	39823*	0.88:	1.22:	1.49:	...	63.3	-11.4	-4.4	...	0.76	1.69
			var. p	39883*	...	1.08	1.37:	...	68.4	...	-9.1	...	0.78	1.58
				39884*	1.14:	1.23	1.52:	...	64.2	-8.8	-0.9	...	0.62	1.51
				40281*	0.96	1.29	1.36	...	62.6	-7.1	-3.1	...	0.62	1.41
				40300*	1.03	1.19	1.43	...	62.2	-8.1	-4.5	...	0.64	1.45
37350	3.7v	0.8		40569	0.33	0.44	0.38	0.38	24.1	0.7	4.6	9.5	0.53	0.41
			F6-G2 Iab	40593	0.37	0.41	0.44	0.39	20.1	3.3	-1.6	0.9	0.53	0.43
				40600	0.36	0.43	0.43	0.44	21.0	1.5	1.0	-2.9	0.57	0.45
				40622	0.41	0.45	0.42	0.44	20.6	4.6	0.5	3.2	0.52	0.46
				40635	0.30	0.43	0.40	0.43	20.3	-5.2	-1.7	-1.2	0.61	0.44
				40637	0.40	0.41	0.43	0.43	22.7	1.7	2.8	0.5	0.53	0.45
				40690	0.41	0.37	0.40	0.38	21.1	-1.2	-2.3	0.1	0.48	0.42
37805	8.7	...		40625	0.07	0.04	0.12	...	17.7	-61.1	-43.7	...	...	...
			A5											
37903	7.84	0.10		39832*	1.08	1.45	1.85	...	118.5	-7.0	-2.4	...	0.78	2.13
			B1.5 V	40277*	1.10	1.60	1.74	...	120.9	2.1	3.5	...	0.68	1.88
			var. p?	40283*	1.39	1.64	1.74	...	120.5	5.2	0.4	...	0.56	1.75
				40304*	1.06:	1.58	1.78:	...	120.3	7.4	-0.3	...	0.72	1.98
37903				40564	1.14	1.58	1.76	...	119.6	1.3	-0.5	...	0.69	1.91
(cont.)				40570	1.22	1.63	1.86	2.22	120.3	1.4	-0.9	-0.5	0.75	2.19
				40599	1.27	1.57	1.85	2.25	121.3	2.1	0.0	-8.2	0.75	2.21
				40604	1.12	1.53	1.84	1.97	120.3	-2.0	0.8	-2.4	0.72	1.99
				40622	1.06	1.58	1.97	...	120.0	2.5	-0.8	...	0.77	2.34
				40914	0.87	1.54	1.66	1.96	118.8	-1.7	-1.2	-2.0	0.75	1.98
				40920	1.09	1.52	1.90	2.24	121.7	2.3	1.3	-1.3	0.81	2.29
38087	8.30	0.13		39910*	2.09	2.49	2.66	...	115.9	2.9	-0.4	...	0.57	2.67
			B3	39911*	1.79	2.47	2.68	...	116.8	0.6	0.6	...	0.60	2.76
				40282*	2.26	2.41	2.61	...	117.9	1.8	1.2	...	0.54	2.61
				40624	1.88	2.44	2.76	3.46:	116.8	0.8	1.4	-7.4	0.72	3.18
38771	2.06	-0.18		40099*	0.44	0.48	0.50	...	37.1	1.8	1.0	...	0.52	0.50
			B0.5 Iae	40100*	0.49	0.52	0.57	...	39.3	0.8	0.6	...	0.54	0.56
				40302*	0.50	0.54	0.57	...	36.3	-4.5	-3.4	...	0.52	0.57
				40598	0.45	0.48	0.54	0.41	41.1	-0.9	-1.3	-3.3	0.48	0.51
				40624	0.42	0.50	0.50	0.48	38.7	2.8	0.7	-5.7	0.54	0.51
42087	5.74	0.20		40635	1.70	1.94	2.08	1.96	169.8	0.3	0.2	1.5	0.55	2.06
			B2.5 Ibe	40637	1.79	2.02	2.14	2.11	170.1	1.4	0.4	7.2	0.55	2.14
42379	7.40	0.35		40568	2.63	2.89	2.94	2.80	171.7	1.1	-0.4	2.8	0.51	2.97
			B1 IIe	40593	2.54	2.93	2.86	2.86	172.4	3.0	2.0	-0.9	0.51	2.95
42400	6.82	0.18		40914	1.89	2.17	2.22	1.94	168.0	-0.3	-0.3	0.8	0.52	2.21
			B5 II											
43384	6.25	0.44		40564	2.47	2.84	2.87	...	170.3	1.4	0.6	...	0.52	2.89
			B3 Iab	40595	2.37	2.85	2.90	2.76	169.4	1.9	0.3	-2.8	0.54	2.93
				40622	2.58	3.04	3.11	2.93	168.8	-0.7	-1.0	-4.2	0.54	3.13
46769	5.79	0.00		40914	0.91	0.93	0.95	0.85	120.4	-1.2	0.2	0.9	0.47	0.96
			B8 Ib	40920	0.81	0.92	0.95	0.93	121.0	-2.0	0.8	-4.9	0.53	0.96
				40920	0.79	0.96	0.97	0.90	119.3	-1.2	0.1	1.5	0.54	0.98
47240	6.15	0.14		39890*	0.99	1.13	1.25	...	174.4	1.0	0.4	...	0.57	1.25
			B1 II	39908*	1.11	1.16	1.19	...	173.8	-2.6	0.8	...	0.50	1.20
				40301*	1.15	1.19	1.23	...	173.9	-2.5	-0.1	...	0.50	1.23
				40593	1.00	1.21	1.21	1.12	174.6	-1.0	0.1	6.0	0.53	1.23
				40625	1.10	1.24	1.23	1.12	173.9	-3.5	0.5	0.7	0.50	1.25
47432	6.20	0.15		39954*	1.28	1.45	1.50	...	154.5	1.2	1.3	...	0.52	1.50
			O9.7 Ib	40281*	1.18	1.28	1.37	...	157.2	1.1	0.6	...	0.55	1.37
				40301*	1.28	1.45	1.50	...	154.9	0.4	-0.9	...	0.52	1.50
				40593	1.16	1.38	1.42	1.64	155.5	1.7	0.4	2.1	0.59	1.50
49336	6.21	-0.14		40570	0.79	1.18	1.17	1.21	3.5	0.9	1.5	-2.2	0.61	1.25
			B4 Vne	40600	0.67	1.16	1.13	0.92	2.3	-2.9	-1.0	-4.1	0.58	1.17
				40604	0.86	1.20	1.16	1.10	4.0	-1.2	2.2	3.0	0.56	1.21
				40634	0.79	1.20	1.15	1.06	4.0	0.3	0.5	3.0	0.57	1.22
51309	4.38	-0.07		40569	0.46	0.50	0.54	0.40	139.2	0.4	0.0	-1.6	0.49	0.52
			B3 II	40595	0.47	0.51	0.54	0.42	137.0	-3.3	-1.4	-1.0	0.49	0.53
				40605	0.45	0.49	0.55	0.53	138.3	-4.5	-2.6	-1.8	0.56	0.54
				40634	0.39	0.49	0.48	0.49	140.0	-0.6	0.4	-1.0	0.56	0.50
				40637	0.46	0.50	0.52	0.41	137.0	-3.0	-3.4	-6.9	0.48	0.51
52721	6.59	0.06		39835*	1.20	1.11	1.20	...	18.5	0.9	0.5	...	0.47	1.15
			B2 Vne	39907*	1.06	1.10	1.23	...	20.6	2.2	1.7	...	0.52	1.22
				39953*	1.09	1.15	1.23	...	19.3	-0.2	-1.8	...	0.52	1.23
54893	4.82	-0.19		40595	0.15	0.13	0.12	0.21	36.5	5.0	-3.2	-2.8	...	...
			B3 V											
57150	4.67	-0.12		40600	0.27	0.44	0.43	0.33	82.8	-4.8	-6.6	-3.2	0.54	0.42
			B3 Ve	40914	0.10:	0.38	0.38	0.30	83.0	4.0	-2.7	5.6	0.61	0.39
				40920	0.28	0.43	0.40	0.31	82.2	-8.9	-3.0	-1.9	0.55	0.41
				40920	0.26	0.48	0.45	0.42	87.1	-14.6	-2.5	13.7	0.62	0.48
57623	3.97	0.78		40569	0.28	0.32	0.36	0.28	9.4	2.9	0.2	2.4	0.54	0.34
			F8 II	40601	0.32	0.33	0.35	...	10.2	2.3	0.6	...	0.49	0.35
				40623	0.29	0.31	0.34	0.27	10.5	-0.2	1.2	3.1	0.50	0.33
				40634	0.28	0.32	0.35	0.29	8.9	2.4	-0.7	-1.7	0.54	0.34
				40637	0.34	0.31	0.33	0.26	9.1	1.8	-1.3	-1.4	0.43	0.34

TABLE 3 (continued)

HD	V MK	B−V	JD 24...	p^U	p^B	p^V	p^R	θ^V	$\theta^V-\theta^U$	$\theta^V-\theta^B$	$\theta^V-\theta^R$	λ_{max}	p_{max}
58439	6.27	...	40603	1.10	1.18	1.19	1.11	2.5	1.0	−0.5	−2.4	0.49	1.20
	A3 Ib		40605	1.09	1.18	1.19	1.28	0.5	−0.1	−1.6	−0.9	0.53	1.23
			40622	0.99	1.16	1.16	1.00	2.8	−0.4	0.6	3.8	0.51	1.17
			40626	0.98	1.13	1.21	1.08	1.2	0.7	−2.1	−2.1	0.55	1.19
			40634	1.00	1.18	1.12	1.19	179.6	−3.4	−2.9	0.5	0.56	1.24
			40637	1.02	1.10	1.14	1.35	0.8	−0.9	−2.0	3.7	0.57	1.20
60325	6.21	−0.04	39835*	1.15	1.21	1.30	...	13.3	1.0	−0.1	...	0.52	1.30
	B2 IIIp		39908*	0.98	1.11	1.27	...	11.6	−0.8	−1.0	...	0.60	1.27
			39949*	1.10	1.21	1.24	...	13.5	−1.5	1.7	...	0.50	1.24
			40280*	1.08	1.19	1.24	...	9.7	−1.8	−3.8	...	0.52	1.24
			40624	1.06	1.18	1.16	1.22	12.9	−0.6	−0.3	−4.3	0.51	1.20
61827	7.65	0.62	39952*	1.30	1.73	1.91	...	2.2	−2.9	1.0	...	0.63	1.98
	O8e		40300*	1.36	1.56	1.62	...	1.9	1.5	−0.1	...	0.54	1.62
			40390*	1.42	1.64	1.73	...	2.4	−6.7	−0.2	...	0.55	1.73
			40624	1.25	1.57	1.77	1.95	3.5	2.2	−2.0	−1.1	0.67	1.87
62150	7.67	0.53	39907*	1.96	2.14	2.33	...	149.0	−1.2	0.3	...	0.56	2.32
	B3 Ia		39910*	1.94	2.30	2.20	...	149.8	−0.1	−1.1	...	0.50	2.29
			39949*	1.78	2.02	2.17	...	148.6	−3.3	−1.2	...	0.54	2.12
			40282*	1.75	2.20	2.20	...	149.1	−2.7	−2.8	...	0.58	2.25
			40570	1.72	2.04	2.17	1.66	152.3	3.6	0.8	1.4	0.54	2.11
			40593	1.72	2.19	2.23	1.95	151.0	−3.3	−2.1	1.5	0.55	2.24
63804	7.60	...	40598	1.17	1.40	1.41	1.40	36.3	3.7	0.2	9.0	0.55	1.44
	Be		40603	0.97	1.52	1.64	1.66	32.1	−3.2	−3.0	−1.9	0.68	1.77
			40620	1.34	1.41	1.61	1.81	32.6	1.8	1.1	−1.6	0.60	1.65
			40626	1.25	1.42	1.60	1.92	32.7	0.0	1.6	0.4	0.65	1.72
			40690	1.49	1.51	1.64	2.08:	31.4	−0.9	2.6	−6.2	0.59	1.75
64760	4.23	−0.15	40605	0.34	0.43	0.47	0.44	63.3	5.0	2.7	1.4	0.59	0.47
	B0.5 Ib		40623	0.35	0.43	0.46	0.37	61.3	−0.7	−0.8	−9.5	0.54	0.44
			40635	0.33	0.43	0.49	0.41	60.6	−0.9	1.6	0.6	0.60	0.47
			40636	0.28	0.37	0.41	0.37	58.7	−1.0	−2.3	−7.5	0.61	0.41
65228	4.20	0.72	40569	0.31	0.36	0.38	0.28	141.2	7.4	1.0	1.1	0.51	0.36
	F8 II		40592	0.42	0.47	0.40	0.37	143.8	4.1	4.1	6.0	0.44	0.45
			40604	0.24	0.36	0.37	0.37	139.7	−1.5	0.4	3.3	0.65	0.39
			40635	0.28	0.37	0.38	0.37	140.1	0.5	−0.9	−0.7	0.60	0.39
			40636	0.34	0.38	0.39	0.36	141.1	1.2	2.1	1.5	0.52	0.39
			40637	0.47	0.37	0.40	0.35	140.7	0.0	1.0	−3.5	0.39	0.44
69882	7.15	0.39	39908*	1.29	1.49	1.51	...	46.8	−0.4	0.0	...	0.52	1.52
	B1 III:k		39911*	1.26	1.51	1.62	...	47.7	1.2	−1.7	...	0.58	1.64
			39953*	1.25	1.49	1.51	...	47.0	1.6	−1.7	...	0.52	1.52
			40395*	1.27	1.51	1.49	...	49.3	0.4	1.6	...	0.51	1.51
			40563	1.15	1.52	1.68	...	49.5	1.0	4.0	...	0.65	1.76
			40625	1.27	1.62	1.67	1.40	47.7	−1.4	0.9	−6.3	0.55	1.66
73882	7.19	0.40	40570	1.07	1.59	1.89	2.17	164.4	−3.5	−1.0	1.3	0.78	2.22
	O8 V		40593	1.11	1.61	1.89	2.13	164.6	−0.1	0.3	−0.4	0.76	2.16
			40604	1.22	1.60	1.80	2.05	163.4	−3.3	−1.2	2.6	0.69	1.96
			40620	1.09	1.55	1.92	2.18	164.6	−4.3	0.2	0.8	0.80	2.26
74180	3.85	0.71	40603	1.52	1.55	1.50	1.34	19.3	−2.8	−2.0	1.3	0.46	1.58
	F2 Ia		40623	1.48	1.56	1.42	1.35	19.8	−3.1	−2.2	2.0	0.46	1.55
			40634	1.49	1.54	1.48	1.31	20.3	−2.4	−1.1	2.1	0.46	1.56
74272	4.76	0.12	40718	0.37	0.50	0.54	0.54	148.2	−7.5	−2.0	−0.5	0.64	0.56
	A5 II												
74375	4.32	−0.12	40605	0.35	0.50	0.55	0.47	112.6	3.2	1.9	2.0	0.62	0.54
	B1.5 III		40623	0.41	0.51	0.53	0.52	110.0	−5.2	−0.6	−1.6	0.57	0.54
			40635	0.41	0.51	0.51	0.42	110.4	−2.3	−1.3	2.5	0.52	0.50
			40636	0.41	0.53	...	0.52	...	...	...	...	0.58	0.56
			40649	0.39	0.52	0.55	0.49	108.6	−2.0	−1.6	−5.9	0.58	0.55
74575	3.70	−0.18	40570	0.46	0.52	0.56	0.49	117.1	4.0	4.0	5.5	0.52	0.55
	B1.5 III		40593	0.48	0.53	0.61	0.49	114.1	−0.1	−1.1	1.4	0.52	0.57
			40635	0.49	0.56	0.56	0.51	115.6	0.7	0.0	2.3	0.51	0.57
			40636	0.47	0.55	0.54	0.52	113.5	0.0	−1.6	−1.7	0.52	0.56
			40690	0.48	0.54	0.60	0.55	114.5	0.7	1.0	1.2	0.55	0.59
74956	1.94	0.04	40637	0.03	0.02	0.02	0.01	169.4	66.7	33.2	19.4	...	...
	A0 V												
77581	6.88	0.56	39906*	3.15	3.64	3.68	...	82.5	−0.3	−0.6	...	0.52	3.74
	B0.5 Ib		40303*	3.33	3.54	3.76	...	83.1	0.4	−0.5	...	0.51	3.77
			40395*	3.32	3.71	3.82	...	83.8	0.5	−0.5	...	0.52	3.83
78785	8.60	0.52	40570	3.12	3.72	4.01	3.99	9.8	0.3	−0.4	0.8	0.58	4.04
	B1 II		40593	3.08	3.67	4.02	3.76	9.8	0.0	−0.4	0.8	0.58	3.99
			40621	2.97	3.82	3.99	4.15	9.9	−0.4	−0.6	0.5	0.60	4.13
79186	5.00	0.22	40498*	...	2.49	2.55	...	48.0	...	−0.2	...	0.51	2.58
	B5 Ia		40592	2.33	2.57	2.63	2.46	48.2	0.2	−0.6	−0.5	0.50	2.63
	var. p		40624	2.27	2.56	2.59	2.34	46.9	0.2	−0.2	−1.1	0.51	2.61
80007	1.67	0.01	40620	0.04	0.02	0.03	0.07	134.8	77.4	83.6	53.5	...	...
	A0 III												
80057	6.03	0.29	40593	1.34	1.50	1.54	1.62	59.5	−1.0	0.3	0.9	0.54	1.58
	A1 Ib		40623	1.21	1.55	1.54	1.60:	57.5	−3.8	−2.6	−13.5	0.57	1.61
			40637	1.28	1.47	1.54	1.55	59.8	1.1	0.6	−2.3	0.56	1.56
80077	7.7	...	40570	2.97	3.75	3.97	3.87	143.5	−0.3	−0.2	−1.1	0.60	4.02
	B2 Iape		40595	3.51	4.25	4.45	4.31	143.8	0.6	−0.3	−0.8	0.58	4.47
			40622	3.72:	4.33	4.46	4.12	142.3	1.2	−0.9	−1.5	0.54	4.45
80558	5.90	0.55	40569	2.32	2.93	3.26	3.13	162.2	−2.6	−1.3	0.2	0.62	3.29
	B6 Iae		40593	2.48	3.06	3.33	3.31	162.4	−0.7	0.4	1.4	0.60	3.37
			40635	2.31	3.09	3.23	3.11	160.9	−1.9	−0.7	−0.6	0.60	3.31
298383	9.7	...	40598	4.40	5.09	5.44	3.94:	148.1	5.3	0.4	1.0	0.53	5.26
	A0 Ib		40603	3.81	4.87	5.21	4.58:	149.4	−3.0	3.6	−2.9	0.59	5.20
			40621	4.04	4.58	5.12	4.03:	148.2	4.4	1.3	−3.3	0.55	4.91
			40626	3.82	4.63	5.24	4.57:	146.6	−0.2	0.9	−11.1	0.60	5.15
81471	6.09	0.57	40593	1.24	1.55	1.71	1.70	155.4	−1.7	0.4	2.6	0.62	1.74
	A7 Iab		40623	1.26	1.59	1.73	1.68	153.8	−1.3	−0.6	−0.3	0.61	1.76
			40637	1.25	1.59	1.71	1.66	153.1	1.3	−1.0	−0.7	0.61	1.74
83183	4.08	0.01	39934*	0.92	1.11	1.17	...	119.1	−0.9	−0.9	...	0.57	1.18
	B5 II		40391*	1.01	1.07	1.16	...	119.8	−0.5	−0.6	...	0.52	1.15
			40403*	0.95:	1.08	1.19	...	119.7	1.5	−0.2	...	0.57	1.19
			40740	0.89	1.10	1.16	1.18	119.8	−1.7	0.5	−1.4	0.59	1.19
			40742	...	1.08	1.14	1.13	119.6	...	−1.3	−0.3	0.58	1.15
			40744	0.94	1.08	1.17	1.06	120.3	0.0	0.6	1.6	0.55	1.15
			40746	0.90	1.11	1.16	1.13	119.6	−0.4	0.5	0.2	0.57	1.18
300214	8.6	...	40598	4.40	5.13	4.93	4.96	148.5	2.0	0.5	−2.2	0.52	5.13
	cB9		40620	4.49	5.01	5.18	4.46	148.2	0.8	0.6	1.2	0.51	5.13
			40626	4.83	5.22	5.34	4.29:	148.2	−2.6	−0.1	1.9	0.48	5.30
84810	3.7v	1.2	39954*	1.26	1.49	1.61	...	99.4	−0.8	−0.2	...	0.59	1.62
	F8–K0 Ib		40303*	...	1.52	1.56	...	100.2	...	0.4	...	0.52	1.56
			40391*	...	1.56	1.61	...	99.6	...	−0.6	...	0.52	1.61
			40409*	...	1.58	1.59	...	99.6	...	−0.4	...	0.50	1.61
			40563	1.28	1.55	1.59	...	100.2	−0.1	0.7	...	0.56	1.60
			40592	1.32	1.58	1.60	1.59	100.3	−0.4	1.3	1.6	0.57	1.64
			40624	1.31	1.54	1.61	1.53	99.7	−0.8	−0.3	−0.1	0.56	1.61
			40636	1.25	1.56	1.59	1.54	100.2	0.3	0.5	0.2	0.58	1.61
84861	8.7	...	40603	2.75	3.19	3.32	2.49	155.1	−0.7	0.3	−0.6	0.51	3.25
	B2		40604	2.86	3.00	3.22	3.25	153.4	−1.5	−0.5	−5.5	0.53	3.21
			40620	2.68	3.15	3.22	2.76	153.6	−1.2	−0.3	4.8	0.52	3.21
			40624	2.54	3.11	3.00:	2.31:	154.1	−1.1	1.3	3.2	0.49	3.04
85123	2.96	0.28	40605	0.33	0.38	0.43	0.43	53.7	7.4	5.2	3.5	0.61	0.44
	A7 II		40634	0.33	0.43	0.41	0.48	50.3	2.6	0.8	0.7	0.63	0.47
			40635	0.34	0.42	0.43	0.45	51.9	3.2	3.2	−0.8	0.60	0.45
			40636	0.30	0.38	0.45	0.53	48.7	3.6	−1.2	−3.8	0.75	0.52
			40637	0.32	0.38	0.44	0.48	49.9	1.1	−0.6	−3.0	0.67	0.47
			40649	0.30	0.37	0.45	0.49	50.9	0.4	2.5	0.2	0.71	0.49
85656	5.55	1.31	40595	0.83	1.15	1.20	1.22	95.1	−6.2	−1.6	0.2	0.64	1.26
	gG9		40605	1.00	1.14	1.16	1.18	96.0	−3.2	0.3	1.6	0.54	1.18
			40635	0.69:	1.16	1.15	1.15	96.2	−1.2	−0.7	−0.3	0.65	1.25
			40740	0.87	1.06	1.15	1.13	95.7	4.5	0.9	0.7	0.61	1.16
			40744	0.96	1.10	1.19	1.12	96.7	−1.0	0.7	0.7	0.57	1.17
			40745	0.93	1.07	1.11	1.20	96.3	5.0	−0.2	0.2	0.58	1.14
			40746	0.95	1.09	1.16	1.11	95.4	−1.9	0.2	−1.1	0.56	1.15

TABLE 3 (continued)

HD	V MK	B−V	JD 24...	p^U	p^B	p^V	p^R	θ^V	$\theta^V-\theta^U$	$\theta^V-\theta^B$	$\theta^V-\theta^R$	λ_{max}	p_{max}
85871	6.48	−0.15	40766	0.71	0.81	0.86	0.77	138.1	1.8	2.3	3.3	0.53	0.85
	B1 IV		40767	0.72	0.91	0.78	0.80	138.0	2.7	2.0	0.8	0.48	0.87
			40769	0.77	0.81	0.82	0.93	135.4	−1.0	−1.9	−0.2	0.52	0.86
			40772	0.71	0.80	0.81	0.72	138.9	1.2	1.0	2.3	0.50	0.81
89104	6.16	−0.18	40718	0.52	0.60	0.61	0.46	148.8	1.9	−1.7	11.4	0.49	0.60
	B2 IV-V												
90177	8.9v	...	40603	3.30	3.37	3.63	3.50	128.5	2.6	1.0	1.0	0.53	3.69
	B2eq		40625	3.10	3.55	3.60	3.75	125.8	−1.1	1.3	−0.9	0.57	3.80
90706	7.06	0.47	40595	2.08	2.47	2.61	2.55	151.5	−0.6	0.4	−1.6	0.57	2.62
	B3 Ib		40620	2.11	2.51	2.61	2.56	150.6	0.7	0.0	−1.1	0.56	2.64
90772	4.68	0.50	39934*	1.31	1.40	1.41	...	152.3	0.6	0.9	...	0.49	1.43
	F0 Ia		40069*	1.17	1.27	1.37	...	150.4	1.1	0.8	...	0.54	1.35
			40281*	1.32	1.42	1.41	...	152.1	0.0	1.1	...	0.48	1.44
			40391*	...	1.33	1.39	...	153.0	...	0.2	...	0.54	1.39
			40625	1.18	1.40	1.31	1.32	151.8	0.3	0.7	−3.6	0.52	1.38
91969	6.51	0.01	40599	1.37	1.60	1.65	1.50	113.9	0.5	0.4	−0.6	0.53	1.65
	B0 Ib		40622	1.52	1.67	1.64	1.57	114.0	−0.6	1.4	−0.2	0.49	1.69
			40635	1.34	1.52	1.59	1.43	111.4	−1.7	−0.2	−1.8	0.52	1.58
92060	8.7	...	40622	2.85	3.55	3.83	3.17:	123.3	−2.0	0.2	5.6	0.57	3.76
	B3		40624	2.88	3.57	4.06	3.69:	122.9	−0.6	−0.1	3.6	0.62	4.04
			40626	2.86	3.66	3.92	3.90:	123.8	0.5	−0.1	0.0	0.61	4.01
92740	6.41	0.08	40598	1.57	1.81	1.85	1.93	101.4	−2.6	−1.5	0.0	0.57	1.99
	WN 7		40621	1.67	1.90	2.05	2.11	102.3	−0.4	−0.4	1.2	0.57	2.07
			40648	1.61	1.89	1.95	2.01	102.0	−1.3	−0.1	1.0	0.56	1.99
			40740	1.65	1.82	1.93	1.89	102.7	−1.7	−0.3	0.8	0.54	1.93
			40742	1.51	1.68	1.98	1.98	102.4	−0.9	−0.1	0.3	0.61	1.97
			40744	1.62	1.79	2.06	2.10	101.8	0.9	−1.3	1.2	0.59	2.05
			40746	1.57	1.81	1.98	1.93	101.0	−1.2	−0.4	0.9	0.57	1.97
92964	5.42	0.27	40600	1.51	1.85	2.01	1.95	107.0	0.1	0.8	−1.5	0.59	2.02
	B2.5 Iae		40622	1.48	1.87	1.97	1.92	108.9	−0.6	−0.8	−0.6	0.58	2.00
			40634	1.54	1.90	1.97	...	107.7	2.3	−2.3	...	0.56	1.99
93131	6.48	−0.05	40742	1.83	2.08	2.26	2.28	116.2	1.5	0.4	2.2	0.57	2.27
	WN 7		40744	1.93	2.17	2.32	2.31	116.8	0.9	0.5	1.5	0.55	2.32
			40745	1.84	2.05	2.31	2.21	116.7	1.0	−0.1	0.3	0.57	2.27
			40746	1.91	2.19	2.36	2.17	116.2	−0.1	−0.7	2.0	0.55	2.33
93206	6.3v	0.12	40746	2.22	2.54	2.67	2.58	124.8	1.9	1.3	0.1	0.54	2.67
	O9.7 Ib:n		40747	2.16	2.56	2.71	2.68	123.2	2.6	1.3	−1.1	0.56	2.73
			40749	1.96	2.35	2.60	2.41	125.1	1.3	1.0	−0.2	0.58	2.58
			40750	2.03	2.47	2.74	2.69	123.5	0.8	0.6	−0.8	0.60	2.76
94909	7.3	...	40622	4.02	4.75	4.97	5.26	123.2	0.8	0.5	−2.8	0.58	5.09
	B0 Ib		40624	4.12	4.73	5.04	5.21	121.6	1.6	−0.4	−3.1	0.57	5.10
96706	5.56	−0.06	40599	1.16	1.47	1.56	1.30	122.0	−1.9	0.1	1.8	0.56	1.54
	B2 V		40622	1.11	1.44	1.56	1.61	121.4	0.9	−0.9	0.2	0.62	1.62
			40637	1.04	1.38	1.52	1.50	122.9	0.3	0.6	3.3	0.63	1.57
96918	3.94	1.22	40623	0.46	0.51	0.53	0.47	123.7	0.5	−2.2	0.6	0.52	0.52
	G0 Ia+		40625	0.49	0.46	0.51	0.45	125.1	−1.7	0.2	1.7	0.48	0.51
			40635	0.43:	0.49	0.51	0.46	123.3	−11.3	−1.7	−1.1	0.53	0.50
			40649	0.39	0.53	0.53	0.50	125.5	−3.3	0.1	−0.1	0.59	0.54
98695	6.40	0.05	40600	1.68	1.99	2.22	2.05	118.4	−0.1	0.7	1.8	0.57	2.17
	B4 V		40620	1.56	1.95	2.09	2.14	117.6	−1.8	0.7	−0.5	0.60	2.15
			40744	1.55	2.03	2.13	2.04	117.7	−1.5	−1.2	−0.1	0.59	2.17
			40746	1.61	1.98	2.18	2.17	117.6	−1.3	−1.2	−1.5	0.61	2.21
			40747	1.59	1.98	2.16	2.33	117.4	−1.0	−1.3	−1.1	0.63	2.26
			40749	1.53	2.03	2.17:	2.09	117.9	−0.6	−0.3	−0.5	0.61	2.22
99953	6.44	0.32	40599	1.84	2.14	2.16	1.99	104.6	0.7	−0.2	0.5	0.52	2.18
	B2 Ia		40621	1.78	2.15	2.24	2.24	105.7	−1.1	0.8	−1.7	0.57	2.27
			40746	1.81	1.98	2.07	1.95	104.7	1.2	−0.1	−0.6	0.52	2.06
			40747	1.75	2.02	2.08	1.90	106.1	1.0	0.7	−1.0	0.53	2.08
			40749	1.69	1.86	1.95	1.73	108.7	1.5	0.5	0.9	0.51	1.93
			40750	1.48	1.82	1.88	1.72	109.6	1.7	0.3	0.8	0.55	1.89
100198	6.37	0.52	39567*	...	...	1.27	...	98.2	...	...	...	...	...
	A3 Iae		40409*	0.87	0.98	1.03	...	93.6	−1.0	0.9	...	0.53	1.03
	var. p		40599	0.84	0.96	1.08	0.82	95.3	−1.9	−0.9	−0.5	0.51	1.00
			40623	0.99	1.22	1.21	1.10	94.3	−0.8	−1.2	−0.5	0.53	1.21
102839	4.96	1.41	40599	1.24	1.46	1.46	1.52	118.9	−1.8	2.2	1.2	0.56	1.50
	cG5		40621	1.50:	1.46	1.44	1.43	118.2	−2.6	1.7	−0.6	0.46	1.52
102997	6.52	0.31	40744	1.06	1.27	1.29	1.27	76.0	3.2	−1.7	−0.3	0.55	1.31
	B5 Iab		40746	1.05	1.33	1.43	1.32	75.5	−1.2	−1.6	0.8	0.59	1.43
			40747	0.98	1.24	1.31	1.29	76.7	0.5	−0.1	−2.3	0.59	1.33
			40749	1.06	1.29	1.32	1.30	74.2	0.6	0.0	−3.9	0.56	1.34
105071	6.32	0.22	40604	1.55	1.87	1.93	1.90	103.7	−0.7	−0.8	2.3	0.56	1.96
	B8		40623	1.45	1.82	2.02	2.04	104.1	1.5	0.8	2.4	0.63	2.07
			40636	1.46	1.83	1.91	1.85	103.2	0.3	−0.1	3.2	0.58	1.94
			40652	1.56	1.93	2.04	1.98	103.9	−0.9	0.0	1.6	0.58	2.06
106343	6.23	0.10	40600	1.16	1.47	1.47	1.52	87.9	−3.1	−2.8	0.1	0.56	1.52
	B1.5 Ia		40621	1.22	1.44	1.53	1.43:	89.3	−0.2	0.7	1.5	0.55	1.52
			40636	1.29	1.45	1.49	1.49	87.5	−1.4	−1.1	3.1	0.53	1.51
109867	6.24	0.06	40767	0.67	0.87	0.87	0.98	112.0	−0.7	0.3	7.6	0.60	0.93
	B1 Ia		40769	0.78	0.91	0.95	0.87	111.1	−3.3	−0.5	−1.3	0.54	0.95
			40770	0.70	0.84	0.86	0.85	114.2	1.2	2.4	2.0	0.55	0.87
			40774	0.69	0.77	0.85	0.80	113.8	0.3	0.4	2.1	0.56	0.84
111193	7.96	0.22	40622	2.82:	3.59	3.65	3.41:	83.0	0.2	1.3	4.2	0.56	3.71
	B0		40624	2.91	3.50	3.77	3.66:	82.7	−0.3	0.7	4.5	0.58	3.80
			40626	2.84	3.47	3.79	3.33	82.9	−1.0	−0.3	0.2	0.58	3.75
111579	9.2	...	40604	5.38	6.22	6.29	6.39:	101.7	−1.8	0.1	0.3	0.54	6.43
	B6 V		40620	5.34	6.42	6.42	5.68:	101.8	−0.7	−1.1	−0.5	0.53	6.47
			40625	5.27	6.23	6.67	6.93:	102.5	0.2	−0.2	3.2	0.59	6.80
111613	5.74	0.38	40600	2.57	2.96	3.06	3.15	81.5	0.8	0.3	1.4	0.56	3.12
	A2 Iab		40620	2.53	3.02	3.15	3.05	80.6	−0.6	−0.1	−0.1	0.56	3.18
NGC4755	10.19	0.24	40634	2.19	2.37	2.46	...	82.5	2.8	0.9	...	0.49	2.45
III-6	Bnne ‡												
NGC4755	9.76	0.26	40634	1.88	2.52	2.51	...	83.5	−1.4	−1.9	...	0.59	2.60
IV-17	Bnne ‡		40636	2.20	2.46	2.68	...	82.9	3.0	−3.0	...	0.54	2.64
112244	5.42	0.04	40595	0.64	0.78	0.89	0.88	64.3	−2.7	1.1	4.9	0.62	0.90
	O9 Ibe		40605	0.52	0.68	0.77	0.94	61.5	−4.5	−2.3	3.0	0.71	0.87
			40626	0.58	0.73	0.83	0.84	59.1	−0.5	−0.9	2.1	0.64	0.85
			40636	0.51	0.72	0.88	0.89	56.5	−1.1	−2.5	−3.9	0.74	0.96
			40767	0.52	0.67	0.81	0.91	59.6	−3.4	0.2	0.1	0.72	0.89
			40769	0.52	0.75	0.89	0.93	63.4	−4.3	−0.4	3.7	0.73	0.98
			40770	0.51	0.75	0.84	0.89	60.2	−3.0	−2.5	−2.3	0.70	0.92
114886	6.87	0.12	40600	1.52	1.97	2.05	1.85	75.0	0.7	0.8	4.0	0.57	2.06
	O9 V		40620	1.61	1.94	1.97	1.94	74.1	1.1	−0.8	0.0	0.55	2.01
			40625	1.53	1.96	1.91	2.05	73.8	−0.6	−0.5	−2.3	0.56	2.02
116084	6.10	...	40767	0.74	0.85	0.89	0.89	76.1	2.6	2.1	−0.3	0.55	0.90
	B2.5 Ib		40769	0.89	0.98	0.97	0.85	76.6	1.1	0.9	−0.4	0.48	0.99
			40770	0.81	1.00	1.00	0.85	72.4	−0.7	−1.4	−3.5	0.52	1.00
118522	6.58	1.30	40746	2.13:	2.98	3.09	2.99	100.7	2.0	0.6	0.5	0.62	3.20
	gK0		40761	2.63	3.07	3.12	3.14	99.7	−2.2	−0.6	−0.5	0.55	3.17
			40761	2.56	3.08	3.15	2.98	100.5	0.8	0.6	0.8	0.56	3.17
			40761	2.88:	3.08	3.18	3.13	100.2	1.0	0.0	0.5	0.52	3.20
			40767	2.42	3.08	3.16	3.06	99.7	1.1	−1.0	0.4	0.58	3.22
118978	5.37	−0.03	40718	0.50	0.58	0.64	0.54	50.0	−0.4	−1.3	−1.6	0.56	0.62
	B9 IV		40762	0.48	0.63	0.65	0.64	49.9	−3.9	−1.4	1.2	0.59	0.67
			40765	0.50	0.63	0.63	0.62	50.1	0.6	−1.2	−2.2	0.56	0.65
			40766	0.50	0.60	0.67	0.62	50.7	−1.0	−2.9	−2.4	0.60	0.67
119159	6.3	...	40653	0.98	1.28	1.37	1.41	69.7	−0.3	−0.9	−1.0	0.62	1.42
	B0.5 III		40653	1.03	1.25	1.37	1.40	72.3	1.3	2.2	2.2	0.60	1.40
			40742	1.04	1.25	1.40	1.32	70.6	0.1	0.0	0.6	0.60	1.40
			40750	1.07	1.29	1.39	1.30	71.1	1.5	0.7	1.0	0.57	1.39

TABLE 3 (continued)

HD	V B−V MK	JD 24...	p^U	p^B	p^V	p^R	θ^V	$\theta^V-\theta^U$	$\theta^V-\theta^B$	$\theta^V-\theta^R$	λ_{max}	p_{max}
119796	6.2 1.84	40744	2.92:	4.66	5.38	5.44	34.1	−9.2	−1.9	0.5	0.77	6.04
	cG5p	40745	3.58	4.85	5.20	5.44	33.9	−10.7	−2.0	0.1	0.66	5.46
	var. p?	40751	3.06:	4.87	5.33	5.53	34.2	−11.9	−1.4	1.4	0.73	5.90
		40752	3.91	4.92	5.49	5.49	33.8	−7.1	−0.7	0.7	0.64	5.58
120908	5.89 0.02	40653	0.81	1.04	1.16	1.20	108.5	0.3	0.1	−2.0	0.64	1.21
	B5 III	40720	0.88	1.13	1.14	1.16	108.8	−0.7	0.3	−0.4	0.57	1.18
		40739	0.81	1.06	1.09	1.15	107.4	−2.0	−0.7	−2.3	0.60	1.14
		40750	0.89	1.06	1.15	1.21	108.5	−1.3	0.6	−0.1	0.60	1.18
120913	5.70 1.49	40749	1.20:	1.47	1.49	1.44	79.8	2.7	−1.0	−0.7	0.56	1.51
	gK1	40761	1.07	1.46	1.49	1.39	79.9	−0.7	−0.3	0.5	0.60	1.52
		40761	1.05	1.44	1.47	1.42	80.7	−3.3	0.4	0.0	0.61	1.52
		40761	1.07	1.47	1.50	1.39	81.5	−3.7	−1.0	2.2	0.60	1.54
		40773	1.06	1.41	1.54:	1.36	79.1	1.3	−1.2	−1.3	0.63	1.55
122879	6.41 0.12	40678	1.38	1.74	1.86	1.88	67.8	−2.2	−2.1	−2.1	0.60	1.90
	B0 Ia	40744	1.58	1.90	1.98	2.03	72.5	0.3	1.0	0.5	0.57	2.02
		40745	1.50	1.72	1.90	1.98	68.4	0.2	−1.5	−0.2	0.59	1.92
		40751	1.44	1.81	1.84	1.81	69.4	−1.2	−0.8	0.1	0.56	1.88
123335	6.33 0.04	40772	0.80	1.01	1.06	1.08	72.5	−1.2	0.9	1.2	0.59	1.09
	B5 IV	40773	0.86	1.02	1.05	1.05	71.6	−1.5	−1.0	0.2	0.55	1.07
		40774	0.79	1.03	1.04	1.10	71.1	−0.5	−0.5	−0.3	0.59	1.09
		40801	0.92	1.05	1.08:	1.12	69.8	−2.4	−0.4	−1.6	0.55	1.10
124195	6.23 0.05	40720	1.01	1.25	1.38	1.28	57.7	0.6	−0.8	−1.0	0.60	1.38
	A9	40744	1.05	1.30	1.40	1.41	57.8	0.6	−0.2	3.5	0.60	1.43
		40745	0.99	1.26	1.39	1.37	57.9	0.4	0.4	−1.9	0.62	1.42
		40751	1.02	1.25	1.43:	1.38	57.3	−1.4	0.8	2.0	0.63	1.45
124314	6.64 0.21	40679	1.93	2.21	2.25	2.26	71.6	1.7	1.6	0.1	0.53	2.29
	O8nk	40744	1.93	2.23	2.36	2.30	71.4	0.8	−0.4	0.0	0.55	2.36
		40745	1.90	2.21	2.26	2.27	71.1	0.8	0.3	−0.6	0.54	2.30
		40751	1.89	2.23	2.30	2.27	71.8	1.2	0.9	0.0	0.55	2.33
124771	5.05 −0.11	40679	0.55	0.64	0.65	0.82	110.2	0.7	0.5	−9.7	0.60	0.71
	B4 V	40751	0.50	0.65	0.64	0.62	109.5	−3.8	−0.3	3.8	0.56	0.66
		40752	0.51	0.67	0.64	0.66	111.9	0.3	−0.3	−1.4	0.56	0.67
		40760	0.58	0.64	0.67	0.69	109.7	−2.4	0.8	−0.3	0.54	0.68
125288	4.32 0.12	40654	1.22	1.50	1.57	1.46	69.2	0.1	0.2	2.8	0.56	1.57
	B6 Ib	40720	1.35	1.56	1.60	1.48	69.7	0.8	−0.2	−1.5	0.53	1.60
129557	6.09 −0.06	40681	1.04	1.27	1.42	1.30	81.8	0.7	0.2	−1.0	0.60	1.41
	B2 III	40722	1.01:	1.23	1.40	1.61:	82.6	1.5	0.1	6.5	0.66	1.50
		40744	1.11	1.32	1.40	1.35	81.3	−1.6	0.7	−0.1	0.56	1.40
		40751	1.08	1.32	1.40	1.32	82.3	0.0	1.2	−0.3	0.57	1.40
129954	5.90 −0.07	40681	0.85	1.02	1.18	1.18	68.5	0.7	−0.2	4.0	0.63	1.20
	B2.5 Ve	40739	0.78	1.05	1.12	1.02	70.1	1.1	0.2	2.6	0.60	1.13
		40745	0.87	1.08	1.14	1.09	69.4	−1.0	1.3	−0.8	0.57	1.15
		40751	0.87	1.05	1.12	1.05	68.4	−0.9	−0.7	−0.9	0.57	1.12
131058	6.08 −0.06	40682	0.96	1.22	1.35	1.16:	69.0	−3.1	−0.7	0.6	0.60	1.34
	B3 Vn	40739	0.98	1.20	1.26	1.24	71.7	3.3	1.4	1.7	0.57	1.28
		40751	0.94	1.17	1.28	1.16	69.6	−0.2	−1.2	0.9	0.59	1.28
		40752	0.91	1.21	1.25	1.21	68.3	−0.5	−0.6	0.5	0.59	1.28
131918	5.46 1.49	40682	0.77	0.78	0.76	0.75:	69.2	3.8	1.4	−1.1	0.47	0.80
	K4 III	40751	0.70	0.70	0.86	0.67	68.6	−0.5	−1.6	−4.0	0.56	0.80
		40752	0.64:	0.74	0.75	0.71	70.3	6.9	−0.9	−0.8	0.54	0.76
		40760	0.63	0.77	0.81	0.75	68.2	−3.3	−2.1	−0.3	0.58	0.81
135160	5.73 −0.08	40739	1.00	1.23	1.36	1.30	55.2	2.3	0.2	−3.9	0.60	1.36
	B0.5 Ve	40745	1.01	1.17	1.25	1.29	56.5	2.2	0.5	1.2	0.57	1.27
		40751	0.99	1.16	1.31	1.36:	55.1	1.4	−0.7	−1.3	0.61	1.33
		40767	1.03	1.20	1.30	1.21	56.3	3.6	0.8	−4.2	0.56	1.29
135240	5.08 −0.06	40744	1.23	1.44	1.57	1.55	48.5	3.3	1.7	0.8	0.58	1.58
	O7.5 IIIf	40745	1.22	1.46	1.55	1.43	47.5	1.2	0.1	0.0	0.56	1.54
		40761	1.25	1.47	1.54	1.53	47.3	2.9	1.2	0.8	0.56	1.56
		40767	1.23	1.47	1.53	1.48	46.7	0.8	0.0	−2.0	0.55	1.54
135591	5.43 −0.09	40739	1.14	1.43	1.52	1.44	63.9	0.6	0.3	−1.5	0.58	1.53
	O7.5 IIIf	40751	1.15	1.38	1.56	1.33	62.9	0.7	−2.0	−0.4	0.58	1.52
		40752	1.14	1.39	1.56	1.52	63.9	1.2	−0.2	0.7	0.61	1.57
		40760	1.14	1.41	1.47	1.56	64.4	2.2	0.9	−1.3	0.58	1.52
135737	6.27 −0.10	40769	0.68	0.88	0.98	0.86	56.5	0.9	0.5	−0.8	0.61	0.98
	B3 V	40770	0.72	0.83	0.88	0.85	57.0	2.3	−0.4	−5.3	0.55	0.88
		40772	0.63	0.85	0.90	0.89	58.6	0.1	1.1	8.2	0.61	0.93
		40805	0.71	0.86	0.94	0.89	58.2	2.9	1.0	1.3	0.59	0.94
137709	5.23 1.75	40720	1.28	1.26	1.21	1.15	49.7	−7.8	−0.3	−0.9	0.44	1.29
	cK?	40723	0.91	1.25	1.25	1.13	51.4	−1.2	−0.3	−1.4	0.59	1.27
		40739	1.09	1.18	1.25	1.16	51.7	6.4	−0.6	0.4	0.53	1.24
		40751	1.02	1.27	1.26	1.18	50.8	4.5	−2.4	−0.6	0.55	1.28
139137	6.50 0.72	40766	0.93	1.04	1.09	1.16:	71.8	0.1	−0.8	−0.6	0.56	1.11
	dF5	40769	0.87	1.08	1.05	1.02	71.4	−7.8	−1.4	−1.2	0.54	1.08
		40770	1.00	1.02	1.10	1.05	73.3	4.4	0.8	1.3	0.52	1.08
		40772	0.90	1.05	1.14	1.11	71.2	0.4	0.3	−3.7	0.58	1.14
139160	6.19 −0.01	40722	0.75	0.85	0.83	0.83	155.4	−3.0	−1.6	−7.6	0.51	0.86
	B7 IV	40723	0.70	0.85	0.91	0.96	157.8	1.6	2.4	4.2	0.60	0.94
		40752	0.73	0.82	0.83	0.83	157.0	0.3	1.0	−3.8	0.52	0.85
		40762	0.72	0.81	0.90	0.79:	158.3	1.8	2.5	−3.3	0.56	0.88
140873	5.40 −0.04	40766	0.78	0.90	0.93	0.96	87.1	1.2	0.9	1.7	0.55	0.95
	B8	40769	0.75	0.90	0.97	0.96	85.8	−2.2	−0.8	−4.3	0.58	0.98
		40770	0.74	0.91	0.98	1.14	85.9	0.4	0.6	−2.5	0.64	1.05
		40802	0.73	0.83:	0.92:	0.93:	86.4	1.1	0.6	−3.0	0.59	0.92
141637	4.65 −0.06	40739	0.60	0.72	0.77	0.76	26.7	−3.5	−1.1	1.2	0.58	0.78
	B1.5 Vn	40744	0.61	0.74	0.76	0.77	27.0	−3.0	−2.7	1.2	0.56	0.78
		40752	0.59	0.74	0.83	0.71	29.3	−0.3	1.7	2.4	0.59	0.81
		40770	0.64	0.75	0.78	0.78:	29.3	2.6	1.7	5.5	0.55	0.79
142919	6.10 0.00	40739	1.50	1.85	1.96	1.82	46.4	0.1	−0.3	0.6	0.57	1.96
	B5 IV	40752	1.51	1.86	2.01	1.87	46.5	1.2	−0.2	−1.0	0.58	2.01
		40765	1.58	1.86	2.00	1.81	46.0	−0.4	−0.4	1.3	0.56	1.98
		40765	1.51	1.86	1.98	1.78	46.8	1.3	0.9	1.7	0.57	1.97
144217	2.63 −0.08	40762	0.57	0.70	0.82	0.79	93.4	1.1	1.1	−0.6	0.62	0.81
	B1 V	40762	0.61	0.75	0.82	0.82	94.0	1.7	0.8	2.0	0.60	0.84
		40762	0.57	0.70	0.83	0.83	93.0	1.8	1.7	−0.4	0.64	0.84
		40802	0.57	0.75:	0.78:	0.86:	92.8	1.4	−1.1	−2.1	0.64	0.85
144470	3.96 −0.04	40762	0.83	1.02	1.12	1.12	117.5	0.0	0.1	−0.6	0.60	1.14
	B1 V	40763	0.83	1.04	1.14	1.06	117.4	1.4	0.1	−0.8	0.59	1.13
		40765	0.84	1.04	1.16	1.16	117.9	1.2	0.5	0.1	0.62	1.18
		40802	0.85	1.06:	1.13:	1.05:	117.6	0.4	−0.9	−0.9	0.57	1.12
145206	5.36 1.45	40722	0.81	1.09	1.17	1.21	103.1	−8.7	−1.2	2.0	0.65	1.22
	K4 III	40745	0.92	1.16	1.21	1.09	103.4	−0.9	0.3	−0.6	0.58	1.21
		40762	1.04	1.15	1.23	1.11	103.7	−2.7	−1.0	−0.1	0.54	1.21
		40805	0.88	1.12	1.14	1.08:	103.5	−0.3	0.0	0.9	0.58	1.16
145502	4.01 0.03	41510†	0.74	0.97	1.21	1.21	140.4	−2.4	−0.6	0.7	0.70	1.25
	B2 IVp											
146323	6.4v 0.9	40762	1.43	1.81	1.86	1.77	42.5	0.3	−0.5	−1.5	0.58	1.89
	F8−G2 Ib	40765	1.44	1.76	1.87	1.88	41.6	−2.0	−0.8	−2.2	0.60	1.90
		40765	1.49	1.82	1.81	1.91	42.8	−7.3	−1.8	−1.3	0.56	1.88
147084	4.54 0.84	40331*	...	3.51	4.10	...	32.4	...	0.5	...	0.67	4.26
	A5 II	40351*	2.83	3.46	4.06	...	32.4	0.5	0.3	...	0.66	4.20
		40453*	2.91	3.53	4.02	...	32.2	−0.5	0.2	...	0.63	4.10
		40498*	...	3.56	3.97:	...	32.3	...	0.3	...	0.61	4.01
		40637	2.78	3.53	4.11	4.51	32.1	−1.2	−0.1	−0.2	0.70	4.42
		40681	2.88	3.67	4.05	4.45	31.5	−0.3	−0.2	−0.6	0.66	4.32
147889	7.89 0.86	41510†	1.93	2.86	3.51	3.90	176.7	−3.8	−1.8	1.3	0.80	4.00
	B2 V											
147932	7.27 0.32	41510†	1.75	2.33	2.99	3.18	58.9	1.7	1.1	−0.6	0.76	3.30
	B5 V											
147933	4.61 0.23	41510†	1.66	2.17	2.58	2.69	48.8	0.0	0.2	−0.4	0.69	2.73
	B2 IV + B2 V											

TABLE 3 (continued)

HD	V MK	B-V	JD 24...	p^U	p^B	p^V	p^R	θ^V	$\theta^V-\theta^U$	$\theta^V-\theta^B$	$\theta^V-\theta^R$	λ_{max}	p_{max}
147977	5.67	0.00	40722	0.87	1.03	1.11	1.06	38.4	0.2	-0.4	-4.1	0.57	1.11
	B8 IV:		40744	0.90	0.99	1.07	0.97	40.6	0.7	1.0	-1.3	0.54	1.05
			40745	0.86	1.01	1.05	1.03	39.0	1.1	-0.4	0.1	0.56	1.06
			40751	0.88	0.99	1.13	1.06	38.8	0.3	-1.1	-4.4	0.59	1.11
148379	5.38	0.56	40389*	1.42	1.68	1.78	...	24.6	3.6	2.4	...	0.56	1.79
	B1.5 Iape		40403*	1.20	1.38	1.56	...	22.3	4.0	2.1	...	0.59	1.56
	var. p		40420*	1.13	1.32	1.52	...	23.6	4.7	4.3	...	0.61	1.53
			40452*	1.16	1.40	1.58	...	21.5	6.4	1.3	...	0.62	1.60
			40626	1.23	1.52	1.64	1.56	23.3	2.6	1.7	-0.4	0.58	1.63
			40742	1.02	1.35	1.47	1.46	27.7	4.8	1.4	-0.1	0.63	1.51
			40763	1.18	1.42	1.55	1.58	25.5	4.0	1.7	-2.0	0.60	1.57
			40770	1.35	1.63	1.77	1.79	26.7	4.7	0.9	-0.8	0.60	1.79
148688	5.32	0.33	40742	1.09	1.20	1.26	1.24	20.7	5.9	1.6	-2.3	0.53	1.26
	B1 Ia+e		40764	1.00:	1.13	1.28	1.10	22.7	6.9	7.0	1.9	0.56	1.24
	var. p?		40765	1.09	1.23	1.28	1.18	16.6	6.0	3.2	-2.5	0.52	1.28
			40772	1.14	1.32	1.38	1.17	20.0	5.8	1.6	-2.7	0.52	1.36
149711	6.14	...	40742	1.34	1.54	1.58	1.52	171.8	-1.9	0.2	-1.4	0.53	1.59
	B2.5 IV		40764	1.34	1.51	1.62	1.56	171.1	-0.6	-0.9	-2.7	0.55	1.61
			40772	1.33	1.53	1.60	1.47	172.0	-0.8	0.0	0.3	0.53	1.59
			40803	1.28	1.50	1.56:	1.53	172.4	0.1	1.0	0.0	0.55	1.58
149757	2.57	0.02	41510†	1.10	1.32	1.44	1.40	126.0	-1.6	-2.3	1.8	0.59	1.44
	O9.5 Vnn												
150168	5.64	-0.03	40773	0.83	0.98	1.02	0.87	35.2	-1.1	-0.9	4.5	0.53	1.01
	B1 Ia		40774	0.78	0.92	0.98	0.96	36.6	1.1	-0.2	-0.1	0.56	0.98
			40775	0.79	0.91	0.94	0.98	36.3	0.7	0.8	-1.4	0.55	0.96
			40777	0.82	0.94	1.01	0.91	36.7	1.8	0.5	0.4	0.54	1.00
150416	4.94	1.11	40722	1.46	1.85	1.95	1.94	53.4	-1.4	0.0	0.1	0.60	1.99
	G8 II		40742	1.43	1.81	1.93	2.00	53.4	-0.5	0.7	0.1	0.62	1.99
			40765	1.34	1.80	1.93	1.92	53.5	2.0	0.4	0.6	0.64	2.00
			40805	1.43	1.81	1.89:	1.94:	53.4	-0.2	0.0	-0.1	0.61	1.94
150421	6.23	0.85	40765	1.75	2.04	2.13	2.06	26.1	-1.3	-0.3	0.1	0.56	2.14
	F2 Ib		40773	1.78	2.09	2.21	2.15	25.9	1.0	0.3	-0.3	0.57	2.22
			40774	1.73	2.09	2.21	2.07	27.1	1.5	1.0	0.6	0.57	2.21
150745	5.94	...	40766	0.82	1.01	1.03	0.90	17.1	1.1	0.6	3.6	0.54	1.03
	BI IV-V		40772	0.88	1.01	1.09	1.00	16.6	1.2	-1.5	0.8	0.55	1.08
			40773	0.86	0.99	1.10	1.02	17.4	2.1	0.7	0.1	0.57	1.08
			40775	0.90	1.04	1.02	1.11	17.0	0.6	0.1	-0.4	0.53	1.07
150798	1.94	1.46	40634	0.07	0.03	0.07	0.02	101.7	16.3	-11.0	-9.2	...	...
	K3 III												
150898	5.56	-0.09	40773	0.85	1.03	1.09	1.08	23.7	2.1	1.6	1.5	0.57	1.10
	B0.5 Ia		40774	0.85	1.05	1.17	1.05	23.4	1.2	1.2	-1.1	0.59	1.16
			40775	0.85	1.04	1.13	1.08	22.0	0.0	-1.4	2.3	0.58	1.13
			40779	0.87	1.02	1.05	1.10	22.1	0.2	1.2	-2.3	0.55	1.08
			40780	0.88	1.06	1.09	1.14	22.4	0.9	-0.1	-1.2	0.56	1.12
			40780	0.88	1.04	1.08	1.10	22.1	-0.4	-2.1	-2.4	0.56	1.10
151804	5.22	0.08	40395*	...	1.13	1.27	...	46.3	...	1.5	...	0.62	1.30
	O8 Iaf		40456*	...	1.13	1.19	...	45.2	...	-0.4	...	0.54	1.19
152235	6.30	0.55	40766	0.85	0.92	0.94	0.80	110.4	-5.3	-0.4	10.4	0.49	0.94
	BI Iae		40772	0.78	0.85	0.74	0.79	104.5	-11.1	-6.8	1.0	0.45	0.83
			40773	0.89	1.02	0.91	0.82	109.5	-2.1	0.4	2.2	0.45	0.99
			40775	0.80	0.89	0.86	0.71	110.7	-3.9	-3.3	7.7	0.47	0.88
152478	6.32	-0.02	40774	1.08	1.30	1.37	1.28	19.8	-3.3	1.0	0.1	0.55	1.37
	B3 Vnep		40775	1.09	1.35	1.38	1.30	17.2	-4.6	-1.3	-5.6	0.54	1.40
			40777	1.00	1.26	1.38	1.38	20.4	-1.3	2.8	2.7	0.61	1.41
			40802	1.01	1.22	1.33:	1.45:	20.6	-1.3	0.1	-3.2	0.64	1.42
153261	6.10	-0.03	40751	1.37	1.78	1.83	1.90	22.6	1.0	1.1	0.7	0.60	1.95
	B2 IVne		40752	1.33	1.70	1.79	1.75	22.9	0.4	1.2	0.1	0.59	1.83
			40762	1.32	1.65	1.73	1.76	23.9	1.2	0.2	-1.2	0.59	1.80
			40803	1.37	1.76	1.83:	1.78:	23.1	-0.2	-0.3	-0.9	0.58	1.90
154204	6.17	0.05	40742	1.25	1.51	1.66	1.72	56.1	-2.0	-0.6	-0.1	0.61	1.70
	B6 IV		40744	1.33	1.57	1.64	1.49	58.4	3.4	1.7	1.3	0.54	1.63
			40745	1.35	1.57	1.63	1.61	57.6	2.5	2.4	1.5	0.55	1.65
			40751	1.33	1.57	1.64	1.70	57.1	1.4	0.5	0.7	0.57	1.68
154445	5.63	0.16	40389*	...	3.44	3.70	...	90.4	...	0.1	...	0.57	3.70
	B1 V		40409*	...	3.39	3.66	...	90.8	...	0.7	...	0.57	3.66
			40452*	...	3.43	3.62	...	90.2	...	0.0	...	0.54	3.62
155195	7.90	...	40807	1.86	2.32	2.43	2.13:	92.9	1.3	0.2	-0.2	0.56	2.42
	A0		40807	2.00	2.32	2.48	2.38	93.5	0.4	1.4	1.5	0.56	2.48
			40807	1.89	2.22	2.31	2.25	91.9	-3.6	0.3	-1.8	0.56	2.33
155603	6.55	2.20	40752	2.30:	2.66	2.69	2.56	149.2	1.2	1.7	-0.3	0.54	2.71
	G5 Ia		40763	2.13:	2.70	2.74	2.59	149.0	9.1	2.2	-1.8	0.58	2.77
			40774	2.30	2.74	2.82	2.60	148.4	3.1	0.9	-0.7	0.55	2.81
155806	5.53	-0.01	40765	0.68	0.74	0.82	0.80	151.2	1.9	-1.3	-1.3	0.55	0.81
	O8 Ve		40774	0.70	0.77	0.86	0.86	154.9	2.4	1.7	2.2	0.57	0.85
			40775	0.69	0.76	0.83	0.93	154.0	3.0	1.1	3.1	0.58	0.85
			40777	0.71	0.81	0.82	0.82	152.4	1.1	0.0	-1.7	0.52	0.84
156325	6.38	0.14	40774	1.68	2.05	2.17	2.04	155.4	0.7	-0.9	-0.1	0.56	2.16
	B5 Vne		40775	1.74	2.10	2.32	2.21	156.0	0.8	-0.3	-3.3	0.59	2.30
			40777	1.76	2.06	2.22	2.27	156.2	0.1	0.2	0.9	0.58	2.24
			40805	1.82	2.13	2.20:	2.27	155.7	1.7	-0.1	-1.9	0.58	2.32
157244	2.84	1.46	40796	0.67	...	0.87	0.83	19.1	3.7	...	5.5	0.58	0.87
	K3 Ib		40801	0.75	0.87	0.88	0.84	20.1	2.0	-2.3	-1.3	0.54	0.89
			40805	0.61	0.83	0.88	0.76	21.9	-2.6	0.1	-0.8	0.58	0.84
			40805	0.64	0.86	0.85	0.89	20.5	-4.0	-0.4	-1.1	0.62	0.90
157246	3.33	-0.13	40490*	0.75	0.82	0.91	...	22.6	-2.6	-0.8	...	0.55	0.90
	B1 Ibe												
157599	6.19	-0.03	40722	1.15	1.34	1.35	1.43	14.0	0.0	0.5	-0.3	0.55	1.40
	B8		40743	1.08	1.23	1.34	1.33	15.6	-0.5	1.2	3.6	0.57	1.34
			40751	1.10	1.30	1.37	1.29	14.5	-0.2	1.1	2.0	0.56	1.37
			40752	1.13	1.27	1.38	1.42	15.6	1.4	0.6	-0.3	0.57	1.39
157999	4.34	1.50	40772	0.81	1.03	1.08	0.98	84.9	-5.1	-1.5	-0.6	0.58	1.07
	K3 II		40774	1.03	1.09	1.11	1.04	85.4	-2.1	0.7	-0.2	0.50	1.13
			40775	0.73	1.03	1.09	0.99	85.0	-0.1	-1.1	-2.3	0.63	1.10
			40803	0.78	0.99	1.06	1.02	85.7	-3.3	1.3	0.0	0.61	1.07
159176	5.7v	0.03	41510†	1.50	1.78	1.83	1.58	167.0	2.7	0.1	-0.7	0.52	1.81
	O7 V+O7 V												
159975	4.62	0.12	41510†	0.76	0.81	0.82	0.87	82.8	3.8	1.2	-1.8	0.55	0.87
	B8 V												
160335	7.4	...	40443*	1.33	1.65	1.68	...	163.8	-1.1	-0.8	...	0.56	1.71
	B8												
161306	8.3	...	40807	3.00	3.63	3.90	4.14	69.2	2.1	1.6	1.0	0.60	4.01
	B0 Ve		40807	3.12	3.67	4.05	3.95	67.0	-0.8	-0.1	-0.5	0.58	4.04
			40807	3.15:	3.66	3.80	3.68	67.6	-0.1	1.1	-1.6	0.54	3.82
161592	4.2v	0.7	40765	1.16	1.45	1.57	1.43	177.5	1.2	1.9	1.0	0.59	1.55
	F5-G9 Ib		40772	1.13	1.44	1.50	1.48	176.4	1.1	0.8	-1.8	0.60	1.53
			40773	1.26	1.44	1.53	1.40	176.4	0.4	-0.2	-2.5	0.54	1.51
			40804	1.16	1.41	1.40:	1.64:	178.9	3.3	3.6	4.1	0.61	1.54
161840	4.82	-0.04	40722	1.35	1.64	1.75	1.66	164.4	-0.8	-0.4	1.0	0.58	1.76
	B8 V		40723	1.40	1.66	1.79	1.68	164.3	-1.1	-0.3	-0.9	0.57	1.78
			40763	1.39	1.71	1.76	1.67	164.7	-0.9	0.0	-0.5	0.56	1.78
			40803	1.41	1.66	1.79:	1.72:	165.2	0.1	1.2	0.9	0.57	1.79
161912	4.80	0.27	40722	1.77	2.10	2.17	2.06	4.6	-0.7	-0.4	-0.8	0.55	2.18
	cA3												
161941	6.18	0.15	40775	0.97	1.06	1.18	1.17	77.8	-0.1	0.3	0.3	0.57	1.17
	B9.5 V		40777	0.86	1.04	1.11	1.05	76.7	-1.3	-3.0	-1.0	0.58	1.11
			40780	0.86	1.05	1.19	1.13	78.6	2.1	0.0	0.5	0.62	1.20
			40780	0.85	1.05	1.13	1.17	79.3	2.9	1.3	2.4	0.61	1.16

TABLE 3 (concluded)

HD	V	B−V	MK	JD 24...	p^U	p^B	p^V	p^R	θ^V	$\theta^V-\theta^U$	$\theta^V-\theta^B$	$\theta^V-\theta^R$	λ_{max}	p_{max}
162496	6.12	...	K1 III	40750	0.83:	1.02	1.07	1.02	144.5	3.0	−2.9	−1.4	0.58	1.08
				40774	0.72	0.99	1.00	0.95	147.0	2.1	0.3	−0.6	0.60	1.03
				40775	0.58	0.93	0.91	0.93	146.6	2.3	3.0	1.7	0.64	0.98
				40777	0.74	1.00	1.01	0.92	144.6	−6.0	2.0	−0.4	0.58	1.03
				40780	1.00	0.92	0.98	1.02	146.4	−0.7	−0.9	2.0	0.48	0.99
162714	6.2v	1.3	F8−G3 Ib	40775	1.37:	1.45	1.43	1.33	19.5	−0.6	−0.3	−0.7	0.48	1.47
				40777	1.53	1.46	1.48	1.49	20.7	2.8	2.4	2.3	0.46	1.53
				40780	1.34	1.44	1.51	1.47	18.9	0.4	0.4	−0.1	0.53	1.51
				40804	1.31	1.49	1.48:	1.37	19.9	0.9	1.0	1.1	0.51	1.50
162978	6.20	0.04	O7.5 IIf	40774	0.87	1.14	1.34	1.37	179.6	−1.9	−2.0	2.4	0.68	1.41
				40775	0.87	1.18	1.37	1.47	179.6	−0.2	0.4	0.2	0.70	1.48
				40777	0.80	1.22	1.36	1.32	178.1	−2.7	−1.7	−0.6	0.68	1.45
				40802	0.91:	1.22:	1.41:	1.44	0.1	−2.0	−1.3	0.9	0.68	1.49
163181	6.5v	...	B1 Iab var. p	40739	1.37	1.59	1.58	1.36	177.0	4.8	3.6	−2.7	0.48	1.58
				40742	1.32	1.44	1.35	1.30	180.3	6.0	3.5	0.2	0.49	1.46
				40743	1.25	1.33	1.29	1.24	176.5	1.1	1.9	−5.2	0.48	1.36
				40751	1.50	1.62	1.55	1.56	176.4	5.3	3.3	−2.6	0.50	1.69
163472	5.81	0.09	B2 IV−V	40774	1.34	1.71	1.83	1.88	76.4	−0.4	1.3	0.1	0.61	1.89
				40775	1.31	1.65	1.71	1.78	75.4	0.7	−0.3	1.8	0.59	1.77
				40777	1.33	1.66	1.81	1.80	75.8	0.5	1.4	0.7	0.61	1.84
				40803	1.35	1.61	1.78	1.80	75.3	0.4	0.5	0.1	0.60	1.80
163800	7.02	0.30	O7 IIIf	41510†	1.18	1.51	1.67	1.53	18.1	−0.7	−0.2	0.2	0.60	1.64
164284	4.68	−0.04	B2 Ve	40775	0.78	1.09	1.08	0.95	93.5	1.6	0.0	1.3	0.56	1.10
				40776	0.75	1.07	1.09	0.97	92.7	1.6	−0.1	0.4	0.56	1.09
				40777	0.74	1.19	1.12	1.03	93.0	1.5	−0.2	1.0	0.65	1.28
				40805	0.82	1.19	1.16:	1.00	93.1	1.5	−1.4	−1.7	0.54	1.16
165024	3.67	−0.08	B2 Ib	40352*	0.79	0.98	1.02	...	4.2	−1.4	0.1	...	0.57	1.04
166197	6.15	−0.16	B1 V	40780	0.68	0.85	0.96	0.82	135.3	1.9	0.2	−2.3	0.60	0.95
				40780	0.72	0.90	0.89	0.89	135.3	2.1	−2.1	−2.0	0.54	0.92
				40780	0.74	0.88	0.94	0.87	136.0	2.7	1.1	0.0	0.56	0.94
				40796	0.73	0.91	0.97:	0.85	136.4	2.0	0.1	1.2	0.56	0.96
167128	5.34	−0.06	B3 IIIep	40722	0.79	0.97	1.02	0.96	4.4	0.1	0.2	−0.1	0.57	1.02
168021	6.6:	0.29	B0 Ib	40739	1.55	1.91	2.12	1.93	46.0	−0.5	−0.4	0.3	0.60	2.10
				40745	1.49	2.07	2.11	2.15:	46.0	−1.2	−0.4	0.3	0.61	2.21
				40750	1.66	1.92	2.14	2.04	46.1	−0.5	−1.0	−1.9	0.58	2.12
				40751	1.68	1.91	2.14	1.91	45.4	1.0	0.0	−3.4	0.56	2.08
169033	5.73	0.01	B7 Ve	40744	0.72	0.88	0.98	0.92	105.5	1.6	−0.5	1.0	0.60	0.98
				40761	0.67	0.87	0.94	1.01	107.5	0.4	0.0	1.6	0.64	0.99
				40763	0.76	0.93	0.97	0.98	108.7	3.5	2.8	6.0	0.58	0.99
				40802	0.74	0.88	0.96:	0.87:	108.0	2.4	0.7	−0.7	0.57	0.95
169110	5.49	...	gK5	40761	1.01:	0.92	1.07	0.99	173.8	−2.0	−2.3	0.1	0.57	1.04
169420	4.81	1.31	K2 II−III	40801	0.57	0.79	0.95	0.98	109.1	−0.2	−1.9	−0.8	0.74	1.04
				40804	0.65:	0.78	0.96	0.88	108.4	−3.0	−1.3	−2.2	0.66	0.96
				40807	0.58	0.82	0.86	0.96	109.8	−6.4	−1.1	0.3	0.68	0.94
				40807	0.60	0.79	0.90	0.95	110.2	6.5	2.7	0.3	0.69	0.95
170740	5.91	0.27	B2 IV−V	40763	1.79	1.97	2.03	1.99	79.5	1.6	0.7	0.6	0.52	2.05
				40770	1.69	2.04	2.13	2.10	78.7	−0.4	0.3	−0.6	0.56	2.16
				40773	1.71	1.99	2.10	2.11	79.3	0.0	0.5	0.9	0.56	2.12
				40803	1.68	1.91	2.07	1.88:	78.4	0.7	0.0	−0.1	0.55	2.04
170764	6.7v	1.1	F5−G1.5 Ib	40765	1.83	2.03	2.10	1.92	23.1	−2.1	0.8	−0.6	0.52	2.09
				40767	2.00:	2.10	2.04	2.01:	22.4	2.4	−0.3	−3.4	0.48	2.12
				40770	1.71	1.99	2.19	1.97	23.5	−0.8	0.2	0.5	0.58	2.15
				40775	1.67	1.93	2.07	1.98	23.9	2.3	0.2	−0.2	0.57	2.06
176162	5.36	...	B5 IV	40772	0.63	0.84	0.88	0.87	116.6	−3.7	−2.0	−2.3	0.60	0.91
				40780	0.72	0.82	0.91	0.83	118.2	−0.8	−0.8	−0.1	0.55	0.87
				40780	0.66	0.88	0.91	0.88	120.2	−1.2	0.8	2.7	0.59	0.93
				40801	0.68	0.88	0.87	0.89	118.3	−3.4	−1.6	1.7	0.56	0.91
				40802	0.66	0.85	0.91	0.90	116.8	−2.0	−3.4	−4.0	0.60	0.93
180968	5.4v	...	B0.5 IV	40428*	0.30	0.43	0.52	...	25.9	−4.3	1.6	...	0.78	0.61
183143	6.87	1.22	B7 Iae	40762	4.88	5.75	6.10	5.82	179.9	0.1	0.4	0.8	0.57	6.08
				40776	5.01	5.97	6.23:	5.77	179.2	1.3	−0.2	−0.1	0.56	6.21
				40779	5.22	5.78	6.18	5.92	179.0	0.3	−0.2	−0.8	0.55	6.12
				40779	4.83	5.82	6.17	5.80	178.8	−0.3	−0.6	−0.6	0.57	6.15
183344	6.5v	1.1	F5−G3 Ib	40762	2.27	2.68	2.78	2.54	1.3	2.6	0.8	−0.9	0.55	2.77
				40767	2.19	2.68	2.67	2.62:	1.2	−1.9	0.7	−1.9	0.55	2.73
				40769	2.36	2.66	2.72	2.60	0.9	1.5	0.5	0.4	0.53	2.74
				40770	2.43:	2.72	2.74	2.66	1.0	1.2	0.0	−0.4	0.52	2.78
184915	4.95	−0.01	B0.5 IIIn	40746	1.06	1.29	1.35	1.37	171.4	0.7	1.2	−0.8	0.57	1.38
				40767	1.04	1.30	1.35	1.22	171.5	0.8	0.2	−0.6	0.56	1.35
				40769	1.01	1.28	1.32	1.32	170.3	0.4	0.1	−1.0	0.58	1.35
				40770	1.01	1.26	1.32	1.34	171.5	2.2	1.3	−0.9	0.58	1.35
185859	6.49	0.39	B0.5 Iae	40762	2.02	2.37	2.30	2.10	3.8	−1.8	−1.7	−0.2	0.50	2.36
				40775	2.04	2.32	2.36	2.02	5.2	−0.7	−0.2	−0.5	0.50	2.35
				40779	2.00	2.36	2.32	2.04	5.3	−0.7	−0.7	−0.4	0.50	2.35
				40780	2.05	2.34	2.30	1.93	5.5	0.6	0.4	0.2	0.49	2.33
185915	6.60	0.00	B6 IV	40762	0.97	1.17	1.12	1.12	26.4	0.5	1.6	2.9	0.52	1.17
				40774	0.99	1.14	1.12	1.00:	24.5	1.0	0.6	−1.9	0.50	1.14
				40775	0.99	1.17	1.13	1.22	24.2	−1.8	−1.2	−3.4	0.53	1.19
				40780	0.93	1.10	1.17	1.22	26.4	−0.1	0.5	−0.2	0.58	1.20
187929	3.9v	0.8	F6−G2 Ib	40744	1.47	1.70	1.81	1.70	93.1	−0.9	−0.6	−0.3	0.56	1.80
				40745	1.43	1.73	1.78	1.70	92.8	−1.6	−1.0	−0.5	0.56	1.79
				40746	1.42	1.71	1.78	1.70	94.2	1.1	0.6	1.7	0.57	1.79
				40751	1.52	1.72	1.85	1.65	93.3	−1.4	−0.8	0.3	0.54	1.81
188001	6.22	0.01	O7.5 Iaf	40762	0.90	1.12	1.18	1.18	28.0	−0.9	−0.4	0.0	0.58	1.20
				40765	0.95	1.20	1.21	1.17	27.8	0.1	0.3	−1.1	0.55	1.24
				40774	0.99	1.12	1.20	1.26	26.9	4.9	2.6	0.1	0.56	1.22
				40780	0.86	1.11	1.08	1.05	28.4	−0.8	1.5	2.9	0.54	1.12
190299	5.67	1.30	gK4	40769	0.85	0.72	0.84	0.89	83.3	−12.4	−1.1	−2.9	0.49	0.83
				40770	0.59	0.78	0.81	0.87	85.0	−2.8	1.5	0.9	0.63	0.85
				40772	0.80	0.81	0.82	0.75	83.5	1.6	−1.1	1.3	0.47	0.83
				40801	0.69	0.75	0.89	0.78	85.2	0.1	−1.3	2.5	0.59	0.85
				40802	0.62	0.76	0.83:	0.83:	83.2	−4.1	−1.9	−1.5	0.62	0.84
193150	5.28	1.40	K3 II	40770	0.59	0.75	0.77	0.76	12.1	4.4	2.6	0.4	0.59	0.79
				40772	0.58	0.76	0.79	0.74	11.4	−4.1	1.6	−3.0	0.60	0.80
				40773	0.64	0.74	0.87	0.76	10.6	−9.3	−0.5	−1.8	0.61	0.85
194953	6.20	0.90	G8 III	40779	0.33	0.51	0.50	0.52	89.1	−5.7	5.5	0.6	0.63	0.54
				40780	0.36	0.42	0.55	0.48	90.2	5.8	4.1	7.1	0.70	0.55
				40802	0.42	0.46	0.62:	0.59:	85.0	1.7	0.7	−5.2	0.70	0.63
				40803	0.46	0.47	0.57	0.61	89.1	−2.8	−2.7	3.3	0.62	0.57
200644	5.61	1.65	gK5	40769	0.87	0.78	0.88	0.83	78.5	−4.1	−0.1	0.1	0.48	0.86
				40770	0.63	0.86	0.86	0.80	78.6	−0.1	−1.8	−1.8	0.59	0.88
				40772	0.80	0.70	0.87	0.85	79.1	−8.2	2.5	2.5	0.53	0.82
				40796	0.73	0.61:	0.71:	0.84	76.7	−0.7	1.0	−2.4	0.51	0.74
203532	6.37	0.13	B3 IV	40762	1.19	1.26	1.36	1.18	127.6	−0.5	0.3	−2.3	0.51	1.33
				40772	1.07	1.31	1.34	1.31	126.8	−1.3	0.0	−2.4	0.56	1.36
				40773	1.07	1.28	1.35	1.34	126.2	−0.2	0.2	0.1	0.57	1.37
				40775	1.09	1.23	1.43	1.37	127.2	−0.8	0.0	−2.6	0.60	1.41
207089	5.29	1.40	G8 II:	40802	0.38	0.56	0.57	0.50	41.4	7.6	2.3	−3.6	0.62	0.58
				40803	0.52	0.64	0.58	0.50	40.2	8.5	−2.6	−3.7	0.49	0.61
				40804	0.60:	0.58	0.53	0.47	41.8	−1.9	2.0	1.4	0.40	0.60
				40804	0.44	0.54	0.53	0.47	41.5	−17.5	1.3	1.7	0.53	0.54
209409	4.74	−0.08	B7 IVe	40804	0.33	0.46	0.47	0.46	175.6	1.1	−0.5	1.0	0.61	0.49
211924	5.36	−0.02	B5 IV	40802	1.11	1.15	1.10	1.01	138.7	−0.7	−0.1	−3.0	0.45	1.16
				40803	1.14	1.14	1.11	0.93	138.6	−0.4	−1.3	−1.9	0.43	1.16
				40804	1.14	1.14	1.09	1.01	140.3	1.5	0.8	−1.1	0.44	1.16

* Observation with a two-channel polarimeter.

† Average of observations on JD 2441510 and 2441511.

‡ Star numbers in NGC 4755 are from Arp and van Sant(1958), spectral types by Feast(1963).

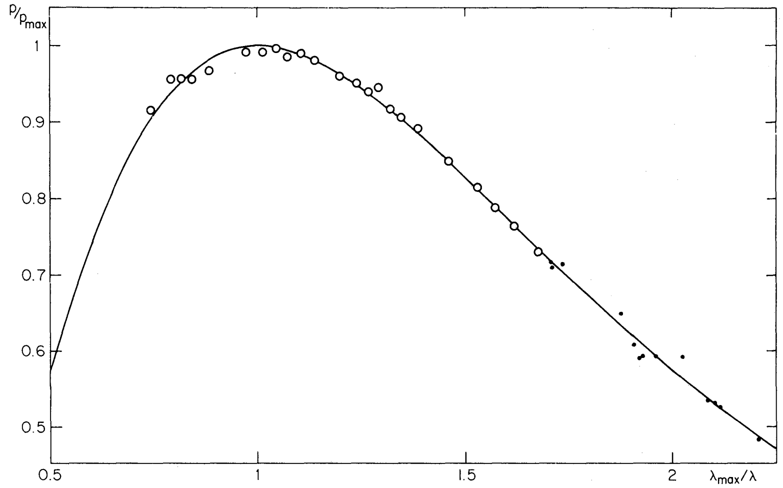

FIG. 3.—The normalized wavelength dependence of interstellar linear polarization derived from the observations with the Siding Spring multichannel polarimeter-photometer. The solid line is calculated from eq. (4) for $K = 1.15$. Every open circle is based on 20 stars, while each dot represents the observations of an individual star with a particular filter.

before plotting as a function of inverse wavelength, by the number of photons of stellar light per unit frequency interval per cm^2, $n_\nu = \text{const.} \cdot \lambda^3 F_\lambda$. The flux F_λ was calculated for several representative stars of different reddening and spectral type from the results of the intermediate-band photometry by Mitchell and Johnson (1969), making use of the absolute calibration given in their table 2. An assumption was made that $p(\lambda)$ is a linear function of λ^{-1} over each of the spectral regions. We have found that the dependence of inverse effective wavelength on stellar color index can be approximated by a linear expression

$$\lambda_{\text{eff}}^{-1} = \lambda_0^{-1} - (B - V)\, k_B\,, \tag{8}$$

for the B, V, and R spectral regions, and by

$$\lambda_{\text{eff}}^{-1} = \lambda_0^{-1} - (U - B)\, k_U\,, \tag{9}$$

for the U spectral region. The assumed coefficients λ_0^{-1}, k_B, and k_U for the polarimeters which were used for observing the wavelength dependence of interstellar polarization are given in table 4; the values for the *UBV* system are based on response curves by Johnson (1965) and by Matthews and Sandage (1963). For each star the effective wavelengths have been calculated using these coefficients and the color indices for that particular star.

IV. SUMMARY OF DATA ON WAVELENGTH OF MAXIMUM INTERSTELLAR POLARIZATION

All the available data on the wavelength $\lambda_{\max}$ at which interstellar linear polarization takes the maximum value $p_{\max}$ are listed in table 5. The only stars with mean error of $\lambda_{\max}$ not exceeding $\pm 0.03\ \mu$ which are omitted are those 104 stars for which $\lambda_{\max}$ is given by Coyne *et al.* (1974) in their table 2 and which were observed only at the University of Arizona.

The stars are listed in table 5 in order of increasing right ascension. The MK spectral types are taken from Hiltner, Garrison, and Schild (1969), Lesh (1968), or Walborn (1972), if available; otherwise the MK type is taken from the compilations by Jaschek, Conde, and de Sierra (1964) or by Kennedy (1971). Photometry is taken from compilations by Blanco *et al.* (1968) or by Jaschek *et al.* (1972). The color excesses E_{B-V} and distance moduli $m - M$ are calculated using the intrinsic colors and luminosity calibration by Schmidt-Kaler (1965) and assuming that visual extinction equals $A_V = 3E_{B-V}$. For Cepheids

TABLE 4

THE INVERSE EFFECTIVE WAVELENGTHS FOR VARIOUS POLARIMETERS

	U			*B*		*V*		*R*		*I*	
INSTRUMENT	λ_0^{-1}	k_U $(U - B < 0)$	k_U $(U - B > 0)$	λ_0^{-1}	k_B	λ_0^{-1}	k_B	λ_0^{-1}	k_B	λ_0^{-1}	k_B
Siding Spring multichannel.	2.760	0.060	0.015	2.235	0.060	1.865	0.025	1.446	0.012	...	...
Siding Spring two-channel..	2.720	0.060	0.015	2.310	0.060	1.825	0.025	...	...	...	...
Visvanathan 1966.........	2.644	0.060	0.015	2.240	0.060	1.860	0.025	1.434	0.020	1.148	0.020
Lowell Observatory 1968...	2.700	0.060	0.015	2.240	0.060	1.790	0.015	...	...	...	...
UBV.....................	2.740	0.060	0.015	2.295	0.060	1.835	0.025	...	...	...	...
Polaroid polarimetry (S11 cathode)...........	...	...	...	2.260	0.035	1.835	0.025	...	...	...	...

TABLE 5

SUMMARY OF DATA ON WAVELENGTH DEPENDENCE OF INTERSTELLAR POLARIZATION

HD	Name	l	b	V	MK	E_{B-V}	m-M	λ_{max}	m.e.	p_{max}	m.e.	Source of polarimetry	Mean	
								μ		%			λ_{max}	p_{max}
2083†	+71°16	121°	+ 9°	6.89	B1 V	0.31	9.5	0.52	± .04::	1.35	±.04	Kruszewski 1962	0.52	1.35
3940	+63°81	122	+ 1	7.26	A1 Ia	0.76	12.4	0.50:	± .02::	4.88	±.08	Kruszewski 1962	0.48	4.99
								0.48	± .01:	5.02	±.15	Serkowski 1968, 1-ch.		
4841	+62°160	123	+ 1	6.86	B5 Ia	0.65	11.9	0.55	± .02::	4.56	±.07	Kruszewski 1962	0.53	4.48
								0.53	± .01	4.46	±.17	Coyne et al. 1974		
5776†	+62°181	124	0	8.05	A0 Ib	0.56	11.5	0.51	± .04::	5.29	±.16	Serkowski 1965b	0.51	5.29
7252	+60°188	126	- 2	7.14	B1 V	0.37	9.6	0.48	± .06::	3.62	±.20	Serkowski 1965b	0.50	3.74
								0.51	± .01	3.77	±.21	Coyne et al. 1974		
7902	+57°257. in NGC 457	127	- 4	6.93	B6 Ibe	0.51	11.1	0.59	± .03::	3.18	±.11	Kruszewski 1962	0.53	3.32
								0.51	± .01	3.35	±.13	Coyne et al. 1974		
7927	φ Cas,	127	- 4	4.95	F0 Ia	0.51:	11.9	0.51	± .03::	3.43	±.07	Kruszewski 1962	0.51	3.40
	in NGC 457							0.52	± .04::	3.23	±.08	Serkowski 1965a		
								0.51	± .02::	...	...	Serkowski et al. 1967		
								0.52	± .02:	3.46	±.05	Serkowski 1968, 1-ch.		
								0.51	± .01	3.40	±.14	Coyne et al. 1974		
8965	+59°260	128	- 2	7.27	B0.5 V	0.31	10.2	0.51	± .07::	2.91	±.13	Serkowski 1965b	0.51	3.01
								0.51	± .01	3.04	±.11	Coyne et al. 1974		
11606*	+58°331	131	- 3	7.03	B2 Vne	0.33	8.5	0.60	± .03::	3.14	±.12	Kruszewski 1962	0.54	3.19
								0.52	± .01	3.20	±.19	Coyne et al. 1974		
12301	53 Cas, in cl. Stock 5	131	+ 3	5.58	B8 Ib	0.44	9.9	0.57	± .02::	2.92	±.06	Kruszewski 1962	0.55	2.89
								0.54	± .01	2.88	±.16	Coyne et al. 1974		
12953	BS 618	133	- 3	5.71	A1 Iae	0.65	11.1	0.51	± .02::	3.58	±.05	Kruszewski 1962	0.50	3.55
								0.50	± .01	3.54	±.11	Coyne et al. 1974		
13267	5 Per	133	- 4	6.39	B5 Ia	0.41	12.2	0.53	± .03::	4.02	±.08	Kruszewski 1962	0.53	4.01
								0.53	± .01	4.01	±.10	Coyne et al. 1974		
...	cl. Stock 2 (10 stars)	133	- 2	...	...	0.38	7.5	0.59	± .04::	2.32	...	Krzemiński et al.1967	0.59	2.32
13402†	+58°396	133	- 2	8.08	B0.5 Ib	0.82	11.4	0.53:	± .05::	5.31	±.18	Krzemiński et al.1967	0.53	5.31
236954	+58°400	133	- 2	9.40	B3 Ib-II	0.82	12.0	0.52	± .03::	6.55	±.14	Krzemiński et al.1967	0.52	6.55
...†	+59°451	133	- 2	9.29	B1 II	0.95	11.4	0.54:	± .07::	4.45	±.22	Krzemiński et al.1967	0.54	4.45
13476	BS 641	134	- 3	6.46	A3 Iab	0.58	11.5	0.53:	± .04::	4.25	±.12	Serkowski 1965b	0.53	4.16
								0.53	± .01	4.15	±.13	Coyne et al. 1974		
13854	BS 654, in NGC 869	134	- 4	6.49	B1 Iabe	0.47	11.3	0.51:	± .05::	3.72	±.13	Serkowski 1965b	0.54	3.84
								0.54	± .01	3.86	±.08	Coyne et al. 1974		
14010	+63°315	132	+ 3	7.11	B9 Ia	0.60	12.3	0.43:	± .07::	4.48	±.64	Serkowski 1965b	0.50	4.58
								0.53:	± .02:	4.63	±.30	Coyne et al. 1974		
14134	+56°522, in NGC 869	135	- 4	6.55	B3 Iae	0.59	11.6	0.56:	± .05::	3.75	±.16	Serkowski 1965b	0.54	3.76
								0.54	± .01	3.76	±.08	Coyne et al. 1974		
14143	+56°530,	135	- 4	6.66	B2 Ia	0.65	11.5	0.53:	± .04::	3.90	±.11	Serkowski 1965b	0.50	3.83
	in NGC 869							0.49	± .01:	3.81	±.23	Serkowski 1968, 1-ch.		
14322	+55°588	135	- 5	6.79	B8 Ib	0.38	11.3	0.49	± .03:	3.04	±.32	Serkowski 1968, 1-ch.	0.50	3.07
								0.51	± .01	3.09	±.20	Coyne et al. 1974		
14433	+56°568, in NGC 884	135	- 4	6.38	A1 Ia	0.61	11.9	0.49	± .01:	3.77	±.05	Serkowski 1968, 1-ch.	0.51	3.86
								0.52	± .01	3.91	±.11	Coyne et al. 1974		
14818	10 Per	136	- 4	6.30	B2 Iae	0.45	11.8	0.53	± .02:	3.70	±.06	Serkowski 1968, 1-ch.	0.53	3.72
								0.53	± .01	3.73	±.06	Coyne et al. 1974		
15316	+57°576	136	- 3	7.24	A3 Iab	0.76	11.8	0.48:	± .06::	4.87	±.35	Serkowski 1965b	0.52	4.70
								0.55:	± .01:	4.61	±.12	Coyne et al. 1974		
15497	+57°582, in NGC 957	136	- 3	7.03	B6 Ia	0.84	11.5	0.49:	± .04::	4.48	±.18	Serkowski 1965b	0.49	4.41
								0.49:	± .02:	4.38	±.38	Coyne et al. 1974		
15558	+60°502, in IC 1805	135	+ 1	7.81	O5 IIIf	0.91	10.9	0.52	± .03:	4.98	±.28	Serkowski 1968, 1-ch.	0.53	5.27
								0.53	± .01	5.41	±.22	Coyne et al. 1974		

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TABLE 5 (continued)

HD	Name	l	b	V	MK	E_{B-V}	m-M	λ_{max} μ	m.e.	p_{max} %	m.e.	Source of polarimetry	Mean λ_{max}	Mean p_{max}
17088†	+57°632	138	- 2	7.50	B9 Ia	0.82	12.0	0.51	± .04:	3.95	±.09	Serkowski 1968, 1-ch.	0.51	3.95
17378	BS 825	138	- 2	6.26	A5 Ia	0.82	11.5	0.55	± .02::	4.56	±.07	Kruszewski 1962	0.54	4.55
								0.57:	± .04::	...	...	Serkowski et al. 1967		
								0.54	± .01:	4.55	±.10	Coyne et al. 1974		
21291	BS 1035	141	+ 3	4.21	B9 Iae	0.42	10.0	0.51	± .02::	3.51	±.05	Kruszewski 1962	0.52	3.50
								0.50	± .02::	3.39	±.05	Serkowski 1965a		
								0.51	± .02:	3.47	±.17	Serkowski 1968, 1-ch.		
								0.54	± .01	3.54	±.07	Coyne et al. 1974		
21389	BS 1040	142	+ 2	4.55	A0 Iae	0.56	10.0	0.57	± .02::	3.60	±.07	Kruszewski 1962	0.52	3.74
								0.50:	± .05::	...	...	Serkowski et al. 1967		
								0.51	± .01	3.77	±.06	Coyne et al. 1974		
23466	29 Tau	181	-36	5.34	B3 V	0.10	6.7	0.54	± .02	0.35	±.01	Table 3, Mul-ch.	0.54	0.35
23512	+23°524	167	-24	8.11	A0 V	0.38	6.0	0.61	± .03:	2.30	±.23	Serkowski 1968, 1-ch.	0.60	2.32
	in Pleiades,							0.62	± .03:	2.36	±.14	Serkowski 1968, 2-ch.		
	Hertzsprung 371							0.58	± .03	2.31	±.20	Coyne et al. 1974		
24398	ζ Per	162	-17	2.85	B1 Ibe	0.32	7.6	0.59	± .02	1.20	±.08	Coyne et al. 1974	0.54	1.23
								0.52	± .01::	1.21	±.02	Table 3, Two-ch.		
								0.51	± .01	1.26	±.02	Table 3, Mul-ch.		
24431	+52°726	149	- 1	6.72	O9 IV-V	0.68	9.6	0.48	± .02:	2.12	±.18	Serkowski 1968, 1-ch.	0.49	2.15
								0.50	± .03	2.16	±.32	Coyne et al. 1974		
25330	BS 1243	181	-31	5.66	B8	0.2:	5:	0.55	± .02:	1.68	±.03	Serkowski et al. 1969	0.55	1.68
25443	+61°669,	144	+ 7	6.74	B0.5 III	0.61	9.6	0.49:	± .02::	5.31	±.10	Kruszewski 1962	0.50	5.25
	in NGC 1502							0.48:	± .03::	...	...	Serkowski et al. 1967		
								0.49	± .02:	5.24	±.11	Serkowski 1968, 1-ch.		
								0.50	± .01	5.24	±.19	Coyne et al. 1974		
25558	40 Tau	185	-33	5.32	B3 V	0.14	6.6	0.58	± .03	0.52	±.02	Table 3, Mul-ch.	0.58	0.52
25914	+56°884	147	+ 4	7.99	B6 Ia	0.66	13.0	0.50	± .02:	4.71	±.39	Serkowski 1968, 1-ch.	0.53	4.71
								0.54	± .01	4.71	±.19	Coyne et al. 1974		
30836	π^4 Ori	193	-24	3.68	B2 III	0.08	7.0	0.55	± .03	0.44	±.01	Table 3, Mul-ch.	0.55	0.44
30870	BS 1553	189	-21	6.10	B5 V	0.26	6.3	0.54	± .02	1.38	±.02	Table 3, Mul-ch.	0.54	1.38
32990	103 Tau	179	-10	5.50	B2 V	0.32	7.0	0.51	± .01	1.67	±.07	Coyne et al. 1974	0.54	1.62
								0.56	± .01	1.58	±.02	Table 3, Mul-ch.		
34921*	+37°1160	170	+ 1	7.43	B0 IVpe	0.44	10.9	0.58	± .11:	3.54	±1.46	Serkowski 1968, 1-ch.	0.58	3.27
	var. p?							0.58	± .02	3.13	±.23	Coyne et al. 1974		
...	NGC 1893	174	- 2	...	...	0.64	12.9	0.52	± .04::	2.58	...	Serkowski 1965a	0.52	2.58
	(19 stars)													
36371	χ Aur	176	- 1	4.77	B5 Iab	0.45	9.7	0.57	± .03::	2.16	±.07	Kruszewski 1962	0.56	2.17
								0.53	± .01	2.18	±.10	Coyne et al. 1974		
								0.56	± .01:	2.13	±.02	Table 3, Two-ch.		
								0.58	± .01	2.17	±.01	Table 3, Mul-ch.		
36629	-4°1164	208	-20	7.66	B2 V	0.28	9.3	0.45:	± .03:	2.09	±.05	Appenzeller 1966	0.50	2.07
					(weak He)			0.50	± .02:	1.90	±.10	Serkowski 1968, 1-ch.		
								0.50	± .01	2.19	±.13	Coyne et al. 1974		
								0.53	± .01:	2.00	±.02	Table 3, Two-ch.		
36673†	α Lep	221	-25	2.57	F0 Ib	0.01:	7.3	0.43	± .04	0.38	±.02	Table 3, Mul-ch.	0.43	0.38
37061	NU Ori,	209	-19	6.8v	B1 V	0.55	8.8	0.63:	± .12:	1.24	±.47	Appenzeller 1966	0.64	1.54
	var. p							0.66	± .02:	1.50	±.19	Serkowski 1968, 2-ch.‡		
								0.63	± .04	1.63	±.19	Coyne et al. 1974		
37350	β Dor,	272	-33	3.7v	F6-G2 Iab	0.19	7.1	0.54	± .02	0.44	±.01	Table 3, Mul-ch.	0.54	0.44
	cepheid													
37356	BS 1923	209	-19	6.20	B2 IV-V	0.22	8.3	0.61	± .05::	...	...	Serkowski et al. 1967	0.55	1.48
								0.56	± .02:	1.39	±.13	Serkowski 1968, 1-ch.		
								0.55	± .01:	1.42	±.02	Serkowski et al. 1969		
								0.52	± .01	1.56	±.10	Coyne et al. 1974		
37903	-2°1345,	207	-17	7.84	B1.5 V	0.37	9.7	0.69	± .02	1.99	±.11	Coyne et al. 1974	0.71	2.04
	in NGC 2024,							0.68	± .05:	1.94	±.08	Table 3, Two-ch.		
	var. p?							0.75	± .02	2.13	±.06	Table 3, Mul-ch.		
...	No. 1 in	206	-17	12.17	B0.5 Vp	1.69	10.9	0.75	...::	11.42	...	Hall et al.1964	0.69	10.81
	NGC 2024							0.68:	± .03:	10.37	±.99	Serkowski 1968, 1-ch.		
								0.68	...	10.77	...	Carrasco et al. 1973		
38087	-2°1350,	207	-16	8.30	B3	0.3	...	0.57	± .02:	2.68	±.04	Table 3, Two-ch.	0.64	2.93
	in NGC 2024							0.72:	± .05	3.18	±.41	Table 3, Mul-ch.		

TABLE 5 (continued)

HD	Name	l	b	V	MK	E_{B-V}	m-M	λ_{max} m.e. μ	p_{max} .m.e. %	Source of polarimetry	Mean λ_{max}	Mean p_{max}
38771	κ Ori	215	-18	2.06	B0.5 Iae	0.02	8.4	0.52 ± .01:	0.54 ±.02	Table 3, Two-ch.	0.51	0.52
								0.51 ± .03	0.51 ±.04	Table 3, Mul-ch.		
250290	in NGC 2129	187	0	7.38	B3 Ib	0.76	10.8	0.60 ± .01:	3.34 ±.08	Serkowski 1968, 1-ch.	0.58	3.29
								0.57 ± .01	3.27 ±.15	Coyne et al. 1974		
41117	χ^2 Ori,	190	- 1	4.63	B2 Iae	0.42	10.2	0.59:± .05::	... ...	Serkowski et al. 1967	0.54	2.84
	var. p							0.56 ± .02:	2.69 ±.10	Serkowski 1968, 1-ch.		
								0.52 ± .01	2.92 ±.09	Coyne et al. 1974		
42087	3 Gem	188	+ 2	5.74	B2.5 Ibe	0.38	10.3	0.55 ± .01	2.10 ±.10	Table 3, Mul-ch.	0.55	2.10
42379	+21°1143	189	+ 1	7.40	B1 IIe	0.61	10.6	0.48 ± .01	3.14 ±.20	Coyne et al. 1974	0.50	3.05
								0.51 ± .01	2.96 ±.19	Table 3, Mul-ch.		
42400	+20°1302	190	+ 1	6.82	B5 II	0.34	10.2	0.52:± .01	2.21 ±.08	Table 3, Mul-ch.	0.52	2.21
43384	9 Gem, in	188	+ 4	6.25	B3 Iab	0.57	10.8	0.54:± .05::	2.76 ±.10	Kruszewski 1962	0.53	2.97
	cluster Cr 89							0.58 ± .02::	2.96 ±.06	Serkowski 1965a		
								0.56:± .02:	2.88 ±.17	Appenzeller 1966		
								0.52 ± .03::	... ...	Serkowski et al. 1967		
								0.53 ± .02:	2.99 ±.18	Serkowski 1968, 1-ch.		
								0.53 ± .02	2.98 ±.23	Coyne et al. 1974		
								0.53 ± .01	2.98 ±.07	Table 3, Mul-ch.		
46769	BS 2409	210	- 3	5.79	B8 Ib	0.06	11.2	0.51 ± .02	0.96 ±.01	Table 3, Mul-ch.	0.51	0.96
47240	BS 2432, in	207	- 1	6.15	B1 II	0.40	10.0	0.59 ± .03	1.02 ±.08	Coyne et al. 1974	0.54	1.15
	cluster Cr 107							0.52 ± .02:	1.22 ±.01	Table 3, Two-ch.		
								0.51 ± .02	1.24 ±.05	Table 3, Mul-ch.		
47432	BS 2442	210	- 2	6.20	O9.7 Ib	0.44	10.7	0.53 ± .01:	1.46 ±.05	Table 3, Two-ch.	0.56	1.48
								0.59:± .05	1.50 ±.25	Table 3, Mul-ch.		
49336*	BS 2510	247	-17	6.21	B4 Vne	0.06:	7.4	0.58 ± .01	1.21 ±.02	Table 3, Mul-ch.	0.58	1.21
51309	ι CMa	229	- 7	4.38	B3 II	0.13	8.6	0.51 ± .02	0.52 ±.01	Table 3, Mul-ch.	0.51	0.52
52721*	-11°1747	224	- 3	6.59	B2 Vne	0.30	8.2	0.50 ± .05:	1.20 ±.20	Table 3, Two-ch.	0.50	1.20
57623	δ Vol	279	-23	3.97	F8 II	0.20:	5.6	0.50 ± .02	0.34 ±.01	Table 3, Mul-ch.	0.50	0.34
58439	BS 2831	234	- 2	6.27	A3 Ib	...	10:	0.53 ± .01	1.20 ±.01	Table 3, Mul-ch.	0.53	1.20
60325	BS 2897	230	+ 3	6.21	B2 IIIp	0.20	9.2	0.54 ± .02:	1.26 ±.01	Table 3, Two-ch.	0.53	1.23
								0.51:± .03	1.20 ±.18	Table 3, Mul-ch.		
61827	-32°4266	247	- 5	7.65	O8e	0.94	10.5	0.57 ± .03:	1.78 ±.10	Table 3, Two-ch.	0.62	1.82
								0.67:± .02	1.87 ±.12	Table 3, Mul-ch.		
62150	-32°4287	247	- 5	7.67	B3 Ia	0.65	12.4	0.54 ± .02:	2.24 ±.04	Table 3, Two-ch.	0.54	2.19
								0.54 ± .02	2.17 ±.14	Table 3, Mul-ch.		
63804*	-33°4186AB	249	- 4	7.6	Be	...	...	0.62 ± .02	1.67 ±.06	Table 3, Mul-ch.	0.62	1.67
64760	BS 3090	262	-10	4.23	B0.5 Ib	0.07	9.7	0.58 ± .02	0.45 ±.02	Table 3, Mul-ch.	0.58	0.45
65228	11 Pup	241	+ 3	4.20	F8 II	0.14:	6.0	0.52 ± .03	0.40 ±.01	Table 3, Mul-ch.	0.52	0.40
69882	-42°4090	260	- 4	7.15	B1 III:k	0.66	9.6	0.53 ± .02:	1.55 ±.03	Table 3. Two-ch.	0.55	1.58
								0.56 ± .02	1.60 ±.04	Table 3, Mul-ch.		
73882	-39°4631	260	+ 1	7.19	O8 V	0.72	10.0	0.75 ± .02	2.15 ±.07	Table 3, Mul-ch.	0.75	2.15
74180	BS 3445	265	- 3	3.85	F2 Ia	0.46:	10.8	0.47 ± .01:	1.51 ±.03	Serkowski 1968, 2-ch.	0.46	1.54
								0.46 ± .01	1.56 ±.04	Table 3, Mul-ch.		
74272†	BS 3452	266	- 3	4.76	A5 II	0.00:	7.5	0.64:± .03	0.56 ±.05	Table 3, Mul-ch.	0.64	0.56
74375	BS 3457	276	-11	4.32	B1.5 III	0.14	7.9	0.57 ± .01	0.54 ±.01	Table 3, Mul-ch.	0.57	0.54
74575	α Pyx	255	+ 6	3.70	B1.5 III	0.07	7.5	0.52 ± .01	0.57 ±.01	Table 3, Mul-ch.	0.52	0.57
75149	-45°4526	265	- 2	5.48	B4 Ia	0.34	11.5	0.51 ± .01:	1.96 ±.03	Serkowski 1968, 2-ch.	0.51	1.96
77581	Vela XR-1	263	+ 4	6.88	B0.5 Ib	0.78	10.2	0.55 ± .02	3.92 ±.24	Visvanathan 1966	0.54	3.87
								0.52 ± .01:	3.78 ±.03	Table 3, Two-ch.		
78785	-45°4889	268	+ 1	8.60	B1 II	0.78	11.3	0.56 ± .02	4.00 ±.27	Visvanathan 1966	0.58	4.03
								0.59 ± .01	4.05 ±.04	Table 3, Mul-ch.		
79186	BS 3654,	267	+ 2	5.00	B5 Ia	0.30	11.1	0.51 ± .01:	2.62 ±.03	Serkowski 1970a‡	0.50	2.62
	var. p							0.50 ± .01	2.62 ±.01	Table 3, Mul-ch.		
80057	BS 3688	268	+ 3	6.03	A1 Ib	0.32	10.2	0.56 ± .01	1.58 ±.01	Table 3, Mul-ch.	0.56	1.58
80077	-49°4264	272	- 1	7.7	B2 Iape	...	10:	0.53 ± .01	4.21 ±.17	Visvanathan 1966	0.55	4.26
								0.57 ± .02	4.31 ±.15	Table 3, Mul-ch.		
80558	BS 3708	273	- 1	5.90	B6 Iae	0.61	11.1	0.61 ± .01:	3.33 ±.07	Serkowski et al. 1969	0.61	3.32
								0.61 ± .01	3.32 ±.02	Table 3, Mul-ch.		
298383	...	274	- 2	9.7	A0 Ib	...	12:	0.61 ± .01	5.14 ±.20	Visvanathan 1966	0.59	5.13
								0.57 ± .02	5.13 ±.08	Table 3, Mul-ch.		
81471	BS 3739	274	- 1	6.09	A7 Iab	0.45	11.5	0.62 ± .01	1.74 ±.01	Table 3, Mul-ch.	0.62	1.74
83183	BS 3825	280	- 5	4.08	B5 II	0.17	7.9	0.55 ± .02:	1.17 ±.01	Table 3, Two-ch.	0.56	1.17
								0.57 ± .01	1.17 ±.02	Table 3, Mul-ch.		
300214	...	278	- 1	8.6	cB9	...	12:	0.55 ± .05	5.34 ±1.01	Visvanathan 1966	0.53	5.26
								0.50 ± .01	5.19 ± .06	Table 3, Mul-ch.		
84810	ℓ Car,	283	- 7	3.7v	F8-K0 Ib	0.34	8.5	0.58 ± .02:	1.61 ± .04	Serkowski 1968, 2-ch‡	0.57	1.62
	cepheid							0.57 ± .01	1.62 ± .01	Table 3, Mul-ch.		

TABLE 5 (continued)

HD	Name	l	b	V	MK	E_{B-V}	m-M	λ_{max} m.e.	p_{max} m.e.	Source of polarimetry	Mean	
								μ	%		λ_{max}	p_{max}
84861	-53°2865	278	0	8.7	B2	...	...	0.51 ± .01	3.18 ± .04	Table 3, Mul-ch.	0.51	3.18
85123-4	υ Car	285	- 9	2.96	A7 II	0.10	5.3	0.66 ± .02	0.47 ± .01	Table 3, Mul-ch.	0.66	0.47
85656	BS 3914	284	- 7	5.55	gG9	...	...	0.59 ± .02	1.19 ± .02	Table 3, Mul-ch.	0.59	1.19
85871	BS 3920	279	- 1	6.48	B1 IV	0.13	10.1	0.51 ± .01	0.84 ± .01	Table 3, Mul-ch.	0.51	0.84
89104^{+}	-54°3356	282	+ 1	6.16	B2 IV-V	0.08	8.7	0.49:± .03	0.60 ± .09	Table 3, Mul-ch.	0.49	0.60
90177*	HR Car	285	- 2	8.9v	B2eq	...	...	0.54 ± .02	3.74 ± .15	Table 3, Mul-ch.	0.54	3.74
90706	-56°3343	285	0	7.06	B3 Ib	0.62	10.9	0.56 ± .01	2.63 ± .03	Table 3, Mul-ch.	0.56	2.63
90772	BS 4110	285	0	4.68	FO Ia	0.33:	12.2	0.50 ± .02:	1.40 ± .03	Table 3, Two-ch.	0.51	1.39
								0.52:± .03	1.38 ± .20	Table 3, Mul-ch.		
91619	BS 4147	286	0	6.15	B7 Ia	0.40	12.0	0.55 ± .01:	2.96 ± .07	Serkowski et al. 1969	0.55	2.96
91969	in NGC 3293	286	0	6.51	BO Ib	0.24	11.7	0.51 ± .01	1.64 ± .03	Table 3, Mul-ch.	0.51	1.64
92060	-57°3545A	286	0	8.7	B3	...	10:	0.60 ± .04	3.72 ± .47	Visvanathan 1966	0.60	3.83
								0.60 ± .01	3.94 ± .09	Table 3, Mul-ch.		
92207	BS 4169, in	286	0	5.46	AO Iae	0.50	11.0	0.50 ± .02	3.58 ± .29	Visvanathan 1966	0.51	3.55
	NGC 3324							0.52 ± .01:	3.49 ± .01	Serkowski 1968, 2-ch.		
92740*	BS 4188	287	- 1	6.41	WN7	0.38	7.8	0.57 ± .01	1.99 ± .02	Table 3, Mul-ch.	0.57	1.99
92964	BS 4198, in	287	0	5.42	B2.5 Iae	0.40	10.9	0.58 ± .03:	1.92 ± .04	Serkowski et al. 1969	0.58	1.97
	cl. Cr 228							0.58 ± .01	2.00 ± .04	Table 3, Mul-ch.		
93131*	-59°2548	288	- 1	6.48	WN7	0.25	8.2	0.52 ± .01	2.21 ± .03	Visvanathan 1966	0.54	2.25
								0.56 ± .01	2.30 ± .02	Table 3, Mul-ch.		
93206	-59°2572	288	- 1	6.3v	09.7 Ib:n	0.37	11.1	0.56 ± .01	2.76 ± .12	Visvanathan 1966	0.57	2.72
	ecl. binary							0.57 ± .01	2.68 ± .04	Table 3, Mul-ch.		
94367†	BS 4250,	287	+ 2	5.26	B9 Ia	0.16	11.9	0.52 ± .04::	1.45 ± .02	Serkowski 1970a	0.52	1.45
	var. p											
94909	-56°4016	288	+ 2	7.3	BO Ib	...	11:	0.59 ± .01	4.92 ± .21	Visvanathan 1966	0.58	5.01
								0.57 ± .02	5.10 ± .17	Table 3, Mul-ch.		
96706	BS 4329	295	-10	5.56	B2 V	0.20	7.5	0.61 ± .02	1.58 ± .02	Table 3, Mul-ch.	0.61	1.58
96918	BS 4337	290	+ 1	3.94	GO Ia+	0.55:	11.3	0.53 ± .02	0.52 ± .01	Table 3, Mul-ch.	0.53	0.52
97534	BS 4352	291	0	4.60	FO Iae	0.36:	12.0	0.53 ± .03:	1.21 ± .06	Serkowski et al. 1969	0.53	1.21
98695	BS 4389	296	-10	6.40	B4 V	0.25	7.0	0.60 ± .01	2.20 ± .02	Table 3, Mul-ch.	0.60	2.20
99264	BS 4406	296	-11	5.58	B2 IV-V	0.32	7.4	0.55 ± .01:	2.60 ± .04	Serkowski et al. 1969	0.55	2.60
99872	BS 4425 AB	297	-11	6.08	B3 V	0.38	7.3	0.56 ± .01:	3.20 ± .05	Serkowski et al. 1969	0.56	3.20
99953	-62°2039	294	- 2	6.44	B2 Ia	0.46	11.9	0.53 ± .01	2.07 ± .06	Table 3, Mul-ch.	0.53	2.07
100198	BS 4438,	293	0	6.37	A3 Iae	0.52	12.4	0.53: ...:	1.03 ...	Table 3, Two-ch.	0.52	1.08
	var. p							0.52 ± .02	1.10 ± .13	Table 3, Mul-ch.		
100261†	o^1 Cen	293	+ 2	5.11	GO Ia	0.45:	11.8	0.57 ± .05:	1.94 ± .10	Serkowski et al. 1969	0.57	1.94
100262	o^2 Cen	293	+ 2	5.15	A3 Ia	0.49	11.3	0.56 ± .01:	1.68 ± .06	Serkowski et al. 1969	0.56	1.68
102839†	BS 4538	298	- 8	4.96	cG5	...	...	0.50 ± .05	1.51 ± .09	Table 3, Mul-ch.	0.50	1.51
102997	-61°2691	296	0	6.52	B5 Iab	0.41	11.6	0.57 ± .01	1.36 ± .03	Table 3, Mul-ch.	0.57	1.36
105071	BS 4611	298	- 3	6.32	B8	...	...	0.58 ± .01	2.01 ± .03	Table 3, Mul-ch.	0.58	2.01
106343	BS 4653	299	- 2	6.23	B1.5 Ia	0.26	12.2	0.55 ± .01	1.52 ± .01	Table 3, Mul-ch.	0.55	1.52
109867	BS 4806	302	- 4	6.24	B1 Ia	0.24	12.1	0.56 ± .01	0.90 ± .02	Table 3, Mul-ch.	0.56	0.90
110432*	BS 4830, in	302	0	5.39	B2pe	0.50	7:	0.59 ± .02:	2.02 ± .09	Serkowski 1968, 2-ch.	0.59	2.02
	Coalsack											
110984	-60°4285	302	+ 2	8.5	BO IV	...	11:	0.58 ± .02	5.65 ± .50	Visvanathan 1966	0.58	5.65
111193	-59°4460	303	+ 3	7.96	BO	...	...	0.58 ± .01	3.75 ± .02	Table 3, Mul-ch.	0.58	3.75
111579	-60°4320	303	+ 2	9.2	B6 V	...	8:	0.52 ± .01	6.41 ± .15	Visvanathan 1966	0.54	6.48
								0.55 ± .02	6.56 ± .12	Table 3, Mul-ch.		
111613	BS 4876, in	303	+ 3	5.74	A2 Iab	0.40	11.2	0.55: ...:	3.12 ± ...	Serkowski 1968, 2-ch.	0.56	3.14
	NGC 4755							0.56 ± .01	3.15 ± .06	Table 3, Mul-ch.		
111904	BS 4887, in	303	+ 3	5.76	B9 Ia	0.34	11.7	0.59 ± .02:	3.12 ± .08	Serkowski 1968, 2-ch.	0.59	3.12
	NGC 4755											
111973	κ Cru, in	303	+ 2	5.94	B5 Ia	0.32	12.0	0.58 ± .01:	2.84 ± .10	Serkowski 1968, 2-ch.	0.58	2.84
	NGC 4755											
111990	in NGC 4755	303	+ 3	6.78	B3 Ib	0.41	11.3	0.58 ± .02:	3.16 ± .07	Serkowski 1968, 2-ch.	0.58	3.16
112244	BS 4908	304	+ 6	5.42	09 Ibe	0.31	10.7	0.69 ± .02	0.91 ± .02	Table 3, Mul-ch.	0.69	0.91
113034	-61°3421	304	+ 1	9.3	B1 I:	...	11:	0.65 ± .01	5.46 ± .08	Visvanathan 1966	0.65	5.46
113422	-61°3439	305	+ 1	8.2	B1 Ia	...	12:	0.57 ± .01	6.15 ± .14	Visvanathan 1966	0.57	6.15
113823	-59°4740 AB	305	+ 3	5.98	B9 I:	0.75	10:	0.56 ± .02:	2.40 ± .08	Serkowski et al. 1969	0.56	2.40
113904	θ Mus,	305	- 2	5.50	BO Ia+WC5	0.20	11.3	0.55 ± .01:	1.48 ± .03	Serkowski 1970a	0.55	1.48
	var. p											
114340	-59°4804	305	+ 3	8.09	B1 Ia+	0.69	14.2	0.55 ± .01	5.48 ± .21	Visvanathan 1966	0.55	5.48
114886	-62°3096 AB	306	- 1	6.87	09 V	0.43	10.4	0.56 ± .01	2.03 ± .02	Table 3, Mul-ch.	0.56	2.03
115363	-63°2684	306	- 1	7.8	B1 Ia+	...	13:	0.58 ± .02	3.11 ± .17	Visvanathan 1966	0.58	3.11
116084	BS 5036	308	+10	6.10	B2.5 Ib	...	11:	0.52 ± .02	0.96 ± .03	Table 3, Mul-ch.	0.52	0.96
118522	BS 5125	307	- 8	6.58	gKO	...	...	0.57 ± .02	3.19 ± .01	Table 3, Mul-ch.	0.57	3.19
118978	BS 5140	309	+ 3	5.37	B9 IV	0.05	5.4	0.58 ± .01	0.65 ± .01	Table 3, Mul-ch.	0.58	0.65
119159	BS 5151	310	+ 5	6.30	BO.5 III	...	10:	0.60 ± .01	1.40 ± .01	Table 3, Mul-ch.	0.60	1.40
119796†	BS 5171	309	0	6.2	cG5p	0.80:	10:	0.51 ± .02::	4.42 ± .08	Serkowski et al. 1969	0.66	5.48
	var. p?							0.70 ± .03	5.74 ± .13	Table 3, Mul-ch.		

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TABLE 5 (continued)

HD	Name	l	b	V	MK	E_{B-V}	m-M	λ_{max} m.e.	p_{max} m.e.	Source of polarimetry	Mean	
								μ	%		λ_{max}	p_{max}
120678	-62°3703	310	- 1	7.89	Ope	0.41	12:	0.53 ± .02:	1.90 ± .04	Serkowski 1968, 2-ch.	0.53	1.90
120908	BS 5217	312	+ 8	5.89	B5 III	0.20	7.5	0.60 ± .01	1.18 ± .01	Table 3, Mul-ch.	0.60	1.18
120913	BS 5218	309	- 6	5.70	gK1	...	...	0.60 ± .01	1.53 ± .01	Table 3, Mul-ch.	0.60	1.53
122879	BS 5281	312	+ 2	6.41	B0 Ia	0.34	11.6	0.58 ± .01	1.93 ± .03	Table 3, Mul-ch.	0.58	1.93
123335	BS 5292	313	+ 2	6.33	B5 IV	0.22	7.5	0.57 ± .01	1.09 ± .01	Table 3, Mul-ch.	0.57	1.09
124195	BS 5311	315	+ 6	6.23	A9	0.2:	...	0.61 ± .01	1.42 ± .01	Table 3, Mul-ch.	0.61	1.42
124314	-61°4431	313	0	6.64	O8nk	0.53	10.0	0.54 ± .01	2.32 ± .02	Table 3, Mul-ch.	0.54	2.32
124771	ε Aps	307	-18	5.05	B4 V	0.09	6.1	0.56 ± .01	0.68 ± .01	Table 3, Mul-ch.	0.56	0.68
125288	BS 5358	315	+ 4	4.32	B6 Ib	0.21	9.4	0.57 ± .01:	1.64 ± .03	Serkowski et al. 1969	0.55	1.61
								0.54 ± .02	1.59 ± .02	Table 3, Mul-ch.		
125835	BS 5379	311	- 7	5.60	A3 Ib	0.47	9.0	0.55 ± .01:	2.91 ± .08	Serkowski et al. 1969	0.55	2.91
129557	BS 5488	319	+ 4	6.09	B2 III	0.18	9.2	0.60 ± .02	1.43 ± .02	Table 3, Mul-ch.	0.60	1.43
129954*	BS 5500	314	- 6	5.90	B2.5 Ve	0.17	7.5	0.59 ± .01	1.15 ± .02	Table 3, Mul-ch.	0.59	1.15
131058	ζ_2Cir	315	- 6	6.08	B3 Vn	0.16	7.3	0.58 ± .01	1.29 ± .01	Table 3, Mul-ch.	0.58	1.29
131918	ξ^2 Lib	345	+41	5.46	K4 III	0.09:	5.0	0.53 ± .02	0.79 ± .01	Table 3, Mul-ch.	0.53	0.79
134959	in cl. Pis 20	321	- 1	8.1	B2 Ia	1.25	11.2	0.52 ± .01	6.26 ± .33	Visvanathan 1966	0.52	6.26
135160*	BS 5661	320	- 3	5.73	B0.5 Ve	0.16	9.2	0.58 ± .01	1.31 ± .02	Table 3, Mul-ch.	0.58	1.31
135240	δ Cir	320	- 3	5.08	O7.5 IIIf	0.26	10.4	0.55 ± .01:	1.52 ± .02	Serkowski 1968, 2-ch.	0.56	1.54
								0.56 ± .01	1.55 ± .01	Table 3, Mul-ch.		
135591	BS 5680	320	- 3	5.43	O7.5 IIIf	0.23	10.8	0.59 ± .01	1.54 ± .01	Table 3, Mul-ch.	0.59	1.54
135737	BS 5684AB	317	- 9	6.27	B3 V	0.12	7.7	0.59 ± .01	0.93 ± .02	Table 3, Mul-ch.	0.59	0.93
136003	-55°6509	322	+ 1	6.8	B2 III	...	8:	0.57 ± .01:	3.28 ± .02	Serkowski et al. 1969	0.57	3.28
136239	-58°5897	321	- 2	8.0	B2 Ia+	...	12:	0.52 ± .02	4.83 ± .33	Visvanathan 1966	0.52	4.83
137709	BS 5742	329	+ 8	5.23	cK2	...	...	0.53 ± .03	1.27 ± .01	Table 3, Mul-ch.	0.53	1.27
139137	14 Ser	5	+42	6.50	dF5	0.30	3:	0.55 ± .01	1.10 ± .01	Table 3, Mul-ch.	0.55	1.10
139160	BS 5801	343	+23	6.19	B7 IV	0.13	7.0	0.55 ± .02	0.88 ± .02	Table 3, Mul-ch.	0.55	0.88
140873	25 Ser	6	+39	5.40	B8	0.08:	6:	0.59 ± .02	0.98 ± .03	Table 3, Mul-ch.	0.59	0.98
141318	BS 5873	327	- 1	5.72	B2 II	0.29	9.7	0.57 ± .01:	2.42 ± .08	Serkowski 1968, 2-ch.	0.57	2.42
141637	1 Sco	346	+22	4.65	B1.5 Vn	0.21	6.9	0.51 ± .03	0.82 ± .11	Coyne et al. 1974	0.54	0.81
								0.57 ± .01	0.79 ± .01	Table 3, Mul-ch.		
142919	BS 5937	328	- 1	6.10	B5 IV	0.18	7.4	0.57 ± .01	1.98 ± .01	Table 3, Mul-ch.	0.57	1.98
144217	β^1 Sco	353	+24	2.63	B0.5 V	0.21	5.9	0.59 ± .01	0.84 ± .04	Coyne et al. 1974	0.61	0.84
								0.63 ± .01	0.83 ± .01	Table 3, Mul-ch.		
144470	ω^1 Sco	353	+23	3.96	B1 V	0.24	6.8	0.59 ± .01	1.14 ± .01	Table 3, Mul-ch.	0.59	1.14
144969	-48°10587	333	+ 2	8.28	B0.5 Ia:	1.14	11.3	0.55 ± .02	3.42 ± .19	Visvanathan 1966	0.55	3.42
145206	BS 6016	8	+33	5.36	K4 III	0.05:	5.0	0.59 ± .02	1.20 ± .01	Table 3, Mul-ch.	0.59	1.20
145502	ν^1 Sco AB	355	+23	4.01	B2 IVp	0.30	6.3	0.68 ± .04:	1.26 ± .06	Serkowski et al. 1969	0.70	1.24
								0.70 ± .02	1.21 ± .06	Coyne et al. 1974		
								0.70 ± .04	1.25 ± .13	Table 3, Mul-ch.		
145664	-52°9393	331	- 1	8.3	B5	...	...	0.59 ± .02	3.76 ± .26	Visvanathan 1966	0.59	3.76
146143	γ Nor	333	0	4.98	F8 Iab	0.22:	10.7	0.58 ± .03:	1.45 ± .04	Serkowski et al. 1969	0.58	1.45
146323	S Nor, cepheid in NGC 6087	328	- 5	6.4v	F8-G2 Ib	0.23	9.8	0.50 ± .05::	1.87 ± .03	Serkowski et al. 1969	0.56	1.89
								0.58 ± .01	1.89 ± .01	Table 3, Mul-ch.		
147084	o Sco	352	+18	4.54	A5 II	0.72	5.1	0.66 ± .01:	4.17 ± .03	Serkowski 1968, 2-ch‡	0.67	4.30
								0.68 ± .02	4.37 ± .12	Table 3, Mul-ch.		
147165	σ Sco, β CMa type	351	+17	2.89	B1 III	0.41	6.1	0.57:± .02	1.46 ± .14	Treanor 1963	0.56	1.55
								0.57 ± .01:	1.49 ± .06	Serkowski 1968, 2-ch.		
								0.54 ± .01	1.63 ± .09	Coyne et al. 1974		
147550	BS 6096	12	+31	6.23	B9 V	0.16	5.2	0.56 ± .03:	1.16 ± .01	Serkowski et al. 1969	0.56	1.16
147888	ρ Oph D	354	+18	6.75	B5 V	0.49	6.3	0.73 ± .03:	3.71 ± .07	Serkowski et al. 1969	0.73	3.71
147889	-24°12684	353	+17	7.89	B2 V	1.12	7.0	0.84 ± .08:	4.50 ± .36	Serkowski 1968, 1-ch.	0.80	4.06
								0.75 ± .02:	3.73 ± .14	Serkowski 1968, 2-ch.		
								0.81 ± .01	4.07 ± .04	Coyne et al. 1974		
								0.80 ± .01	4.00 ± .10	Table 3, Mul-ch.		
...	SR 3	353	+17	12.0	A0	1.35	7:	0.80 ...	5.3 ...	Carrasco et al. 1973	0.80	5.3
147932	ρ Oph C	354	+18	7.27	B5 V	0.50	6.8	0.67 ± .02	3.07 ± .14	Coyne et al. 1974	0.72	3.18
								0.76 ± .04	3.30 ± .30	Table 3, Mul-ch.		
147933-4	ρ Oph AB	354	+18	4.61	B2 IV + B2 V	0.49	6.6	0.65:± .05	2.44 ± .36	Treanor 1963	0.68	2.65
								0.70 ± .01:	2.68 ± .06	Serkowski 1968, 2-ch.		
								0.68 ± .01	2.66 ± .10	Coyne et al. 1974		
								0.69 ± .02	2.73 ± .11	Table 3, Mul-ch.		
147977	BS 6114	328	- 7	5.67	B8 IV:	0.12	5.9	0.56 ± .01	1.08 ± .02	Table 3, Mul-ch.	0.56	1.08
148379	BS 6131, var. p.	337	+ 2	5.38	B1.5 Iape	0.72	9.9	0.60 ± .01:	1.61 ± .03	Serkowski 1970a‡	0.60	1.62
								0.60 ± .01	1.63 ± .06	Table 3, Mul-ch.		
148688	BS 6142	341	+ 4	5.32	B1 Ia+e	0.51	12.0	0.53 ± .01	1.28 ± .03	Table 3, Mul-ch.	0.53	1.28
148937	in I Ara	336	0	6.71	O6.5f?p	0.64	10.9	0.60 ± .02:	1.77 ± .08	Serkowski et al. 1969	0.60	1.77
149019	in NGC 6167	335	- 1	7.45	A1 Ia	0.91	12.0	0.54 ± .01:	2.94 ± .08	Serkowski et al. 1969	0.54	2.94
149038	μ Nor, in NGC 6169	339	+ 3	4.91	O9.7 Iab	0.30	10.2	0.59 ± .02:	1.19 ± .06	Serkowski 1968, 2-ch.	0.59	1.19
149404	BS 6164	341	+ 3	5.46	O9 Ia	0.65	9.6	0.55 ± .01:	3.18 ± .06	Serkowski 1968, 2-ch.	0.55	3.18
149711	BS 6174	340	+ 2	6.14	B2.5 IV	...	8:	0.54 ± .01	1.59 ± .01	Table 3, Mul-ch.	0.54	1.59

TABLE 5 (continued)

HD	Name	l	b	V	MK	E_{B-V}	m-M	λ_{max} m.e. μ	p_{max} m.e. %	Source of polarimetry	Mean λ_{max}	Mean p_{max}
149757	ζ Oph	6	+24	2.57	09.5 Vnn	0.33	6.1	0.57:± .04	1.28 ± .17	Treanor 1963	0.59	1.43
								0.58 ± .01:	1.41 ± .04	Serkowski et al. 1969		
								0.60 ± .01	1.50 ± .05	Coyne et al. 1974		
								0.59 ± .01	1.44 ± .06	Table 3, Mul-ch.		
150135-6†	BS 6187, in NGC 6193	337	- 2	5.34	06.5 Vf + 05 III:nf	0.50	9.7	0.56 ± .04:	1.16 ± .03	Serkowski et al. 1969	0.56	1.16
150168	BS 6188	336	- 2	5.64	B1 Ia	0.15	11.8	0.55 ± .01	0.99 ± .01	Table 3, Mul-ch.	0.55	0.99
150416	BS 6196	1	+18	4.94	G8 II	0.16:	6.5	0.62 ± .01	1.98 ± .01	Table 3, Mul-ch.	0.62	1.98
150421	BS 6197, in I Ara	339	0	6.23	F2 Ib	0.58:	9.2	0.58 ± .03::	2.19 ± .03	Serkowski et al. 1969	0.56	2.19
								0.56 ± .01	2.19 ± .02	Table 3, Mul-ch.		
150745	BS 6215	330	- 9	5.94	B2 IV-V	...	8:	0.55 ± .01	1.06 ± .01	Table 3, Mul-ch.	0.55	1.06
150898	BS 6219	330	- 8	5.56	BO.5 Ia	0.11	11.6	0.57 ± .01	1.12 ± .01	Table 3, Mul-ch.	0.57	1.12
151804	in NGC 6231	344	+ 2	5.22	08 Iaf	0.38	10.3	0.60 ± .02:	1.20 ± .04	Serkowski et al. 1969‡	0.60	1.20
152235	in NGC 6231	343	+ 1	6.30	B1 Iae	0.73	10.7	0.46 ± .01	0.91 ± .03	Table 3, Mul-ch.	0.46	0.91
152236	ζ^1 Sco, in NGC 6231	343	+ 1	4.74	B1.5 Ia+pe	0.65	11.0	0.58 ± .01:	2.44 ± .03	Serkowski et al. 1969	0.58	2.44
152478*	BS 6274	337	- 5	6.32	B3 Vnep	0.20	7.4	0.59 ± .02	1.40 ± .01	Table 3, Mul-ch.	0.59	1.40
153261*	BS 6304	331	-10	6.10	B2 IVne	0.21	8.6	0.59 ± .01	1.87 ± .03	Table 3, Mul-ch.	0.59	1.87
154204	BS 6340	2	+12	6.17	B6 IV	0.21	7.0	0.55 ± .02	1.58 ± .15	Coyne et al. 1974	0.56	1.62
								0.57 ± .02	1.66 ± .02	Table 3, Mul-ch.		
154445	BS 6353	19	+23	5.63	B1 V	0.44	7.9	0.71 ± .02::	4.15 ± .17	Serkowski 1965a	0.57	3.74
								0.65 ± .02::	4.11 ± .13	Serkowski 1965b		
								0.56 ± .02::	... ...	Serkowski et al. 1967		
								0.55 ± .01	3.69 ± .11	Visvanathan 1966		
								0.54: ...:	3.82 ...	Serkowski 1968, 1-ch.		
								0.55 ± .01	3.63 ± .12	Coyne et al. 1974		
								0.56 ± .02:	3.76 ± .05	Table 3, Two-ch.		
155195	-0°3234	20	+22	7.90	A0	...	...	0.56 ± .01	2.41 ± .04	Table 3, Mul-ch.	0.56	2.41
155603	BS 6392	347	- 1	6.55	G5 Ia	1.12:	11.2	0.50 ± .02::	2.94 ± .06	Serkowski et al. 1969	0.54	2.80
								0.55 ± .01	2.76 ± .03	Table 3, Mul-ch.		
155806	BS 6397	353	+ 3	5.53	08 Ve	0.31	9.6	0.56 ± .01	0.84 ± .01	Table 3, Mul-ch.	0.56	0.84
156247	U Oph, ecl. binary	23	+22	5.7v	B4 V+B5V	0.26	6.9	0.54 ± .02:	2.05 ± .03	Serkowski 1970a	0.55	2.03
								0.55 ± .01	2.02 ± .09	Coyne et al. 1974		
156325*	BS 6422	354	+ 3	6.38	B5 Vne	0.32	6.4	0.58 ± .01	2.25 ± .04	Table 3, Mul-ch.	0.58	2.25
157038	BS 6450	350	- 1	6.40	B3 Ia	0.87	10.6	0.54 ± .03:	2.64 ± .10	Serkowski 1968, 2-ch.	0.54	2.64
157244	β Ara	335	-11	2.84	K3 Ib	-0.04:	6.9	0.58 ± .01	0.88 ± .01	Table 3, Mul-ch.	0.58	0.88
157246†	γ Ara	335	-11	3.33	B1 Ibe	0.07	8.8	0.55: ...:	0.90 ...	Table 3, Two-ch.	0.55	0.90
157599	BS 6475	339	- 9	6.19	B8	...	...	0.56 ± .01	1.37 ± .01	Table 3, Mul-ch.	0.56	1.37
157999	σ Oph	27	+21	4.34	K3 II	0.10:	6.2	0.58 ± .03	1.09 ± .01	Table 3, Mul-ch.	0.58	1.09
159176	BS 6535, in NGC 6383	356	0	5.7v	07 V + 07 V	0.36	10.5	0.54 ± .01:	1.74 ± .04	Serkowski et al. 1969	0.52	1.82
								0.52 ± .02	1.87 ± .13	Coyne et al. 1974		
								0.52 ± .02	1.81 ± .16	Table 3, Mul-ch.		
159975†	μ Oph	17	+12	4.62	B8 V	0.24	3.9	0.45 ± .04	1.04 ± .24	Coyne et al. 1974	0.50	0.96
								0.55 ± .04	0.87 ± .15	Table 3, Mul-ch.		
160335†	in NGC 6405	357	- 1	7.4	B8	...	9:	0.56: ...:	1.71 ...	Table 3, Two-ch.	0.56	1.71
160529	-33°12361	356	- 2	6.22	A2.5 Ia+e	1.29	10.8	0.58:± .04	6.98 ± .60	Treanor, 1963	0.53	7.20
								0.54 ± .02::	7.47 ± .10	Serkowski 1965a		
								0.50 ± .01	7.26 ± .33	Visvanathan 1966		
								0.55 ± .01::	7.17 ± .36	Serkowski 1968, 2-ch.		
161056	BS 6601	19	+12	6.28	B1.5 V	0.65	7.3	0.64 ± .05::	4.08 ± .31	Serkowski 1965a	0.59	4.08
								0.55 ± .03::	4.00 ± .10	Serkowski 1965b		
								0.61 ± .03::	... ...	Serkowski et al. 1967		
								0.60 ± .03	4.08 ± .49	Visvanathan 1966		
								0.59 ± .02:	4.28 ± .24	Serkowski 1968, 1-ch.		
								0.57 ± .01	4.00 ± .10	Coyne et al. 1974		
161291	-27°11899	1	+ 1	8.89	B1 Iab	0.94	12.3	0.53 ± .01	6.77 ± .12	Visvanathan 1966	0.53	6.77
161306*	-9°4598	16	+10	8.3	BO Ve	...	11:	0.58 ± .02	3.96 ± .07	Table 3, Mul-ch.	0.58	3.96
161471	ι^1 Sco	351	- 6	3.02	F2 Iae	0.27:	10.6	0.56 ± .01:	2.28 ± .03	Serkowski et al. 1969	0.56	2.28
161592	X Sgr, ceph.	1	0	4.2v	F5-G9 Ib	0.20:	6.4	0.58 ± .01	1.53 ± .01	Table 3, Mul-ch.	0.58	1.53
161840	BS 6628	358	- 2	4.82	B8 V	0.08	4.6	0.57 ± .01	1.78 ± .01	Table 3, Mul-ch.	0.57	1.78
161912	ι^2 Sco	351	- 7	4.80	cA3	0.26	11:	0.54 ± .01:	2.13 ± .04	Serkowski et al. 1969	0.55	2.15
								0.55:± .01	2.18 ± .05	Table 3, Mul-ch.		
161941	BS 6633	29	+16	6.18	B9.5 V	0.20	4.9	0.59 ± .01	1.16 ± .02	Table 3, Mul-ch.	0.59	1.16
162496	BS 6651	356	- 4	6.12	K1 III	...	5:	0.57 ± .02	1.02 ± .02	Table 3, Mul-ch.	0.57	1.02
162714	Y Oph, ceph.	21	+10	6.2v	F8-G3 Ib	0.62	9.1	0.49 ± .01	1.50 ± .01	Table 3, Mul-ch.	0.49	1.50
162978	BS 6672	5	0	6.20	07.5 IIf	0.36	10.8	0.68 ± .01	1.46 ± .02	Table 3, Mul-ch.	0.68	1.46
163181	V453 Sco, ecl. bin.,var.p	358	- 4	6.5v	B1 Iab + Be	...	11:	0.47 ± .02:	1.52 ± .09	Serkowski 1970a	0.48	1.52
								0.49 ± .01	1.52 ± .07	Table 3, Mul-ch.		
163472	BS 6684	27	+13	5.81	B2 IV-V	0.35	7.6	0.58 ± .02	1.72 ± .10	Coyne et al. 1974	0.59	1.77
								0.60 ± .01	1.82 ± .02	Table 3, Mul-ch.		

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TABLE 5 (continued)

HD	Name	l	b	V	MK	E_{B-V}	m-M	λ_{max} m.e. μ	p_{max} m.e. %	Source of polarimetry	Mean λ_{max}	Mean p_{max}
163800	-22°4474	7	+ 1	7.02	07 IIIf	0.62	11.2	0.76 ± .03:	1.88 ± .15	Serkowski 1968, 1-ch.	0.66	1.69
								0.70 ± .04:	1.82 ± .07	Serkowski 1968, 2-ch.		
								0.65 ± .02	1.59 ± .06	Coyne et al. 1974		
								0.60 ± .02	1.64 ± .13	Table 3, Mul-ch.		
164284*	66 Oph	31	+13	4.68	B2 Ve	0.20	6.6	0.58 ± .02	1.16 ± .04	Table 3, Mul-ch.	0.58	1.16
164740	in NGC 6530, Herschel 36	6	- 1	10.30	07	0.90	11:	0.67 ...	7.35 ...	Carrasco et al. 1973	0.67	7.35
165024	θ Ara	343	-14	3.67	B2 Ib	0.10	9.1	0.57 ± .01:	1.02 ± .01	Serkowski et al. 1969‡	0.57	1.02
165174	V986 Oph, β CMa type	29	+11	6.14	B0 IIIn	0.28	10.3	0.53 ± .01:	1.60 ± .03	Serkowski et al. 1969	0.53	1.60
166197	BS 6788	358	- 7	6.15	B1 V	0.12	9.4	0.57 ± .01	0.94 ± .01	Table 3, Mul-ch.	0.57	0.94
166734	-10°4625	19	+ 4	8.42	08 f	1.38	10.4	0.48 ± .03:	3.38 ± .46	Serkowski 1968, 1-ch.	0.50	3.36
								0.53 ± .03:	3.34 ± .02	Serkowski 1968, 2-ch.		
167128*	BS 6819	338	-18	5.34	B3 IIIep	0.15	8.0	0.55 ± .01:	1.03 ± .05	Serkowski et al. 1969	0.56	1.02
								0.57:± .01	1.02 ± .04	Table 3, Mul-ch.		
168021	BS 6848AB	13	- 1	6.6:	B0 Ib	0.52	11.2	0.59 ± .01	2.13 ± .03	Table 3, Mul-ch.	0.59	2.13
169033*	BS 6881	19	+ 1	5.73	B7 Ve	0.15	5.7	0.60 ± .02	0.98 ± .01	Table 3, Mul-ch.	0.60	0.98
169110†	BS 6882	51	+16	5.49	gK5	...	...	0.57:± .04	1.04 ± .12	Table 3, Mul-ch.	0.57	1.04
169420	21 Sgr AB	12	- 4	4.81	K2 II-III	0.08:	5.2	0.69 ± .02	0.97 ± .02	Table 3, Mul-ch.	0.69	0.97
169454	-14°5039	18	- 1	6.61	B1 Ia+e	1.12	11.4	0.56 ± .02:	1.98 ± .08	Serkowski et al. 1969	0.55	1.93
								0.55 ± .02	1.90 ± .14	Coyne et al. 1974		
170740	BS 6946	21	- 1	5.91	B2 IV-V	0.53	7.1	0.55 ± .01	2.09 ± .03	Table 3, Mul-ch.	0.55	2.09
...	M25 (77 stars)	14	- 4	...	...	0.48	9.4	0.52 ± .02::	2.49 ...	Serkowski 1965a	0.52	2.49
170764	U Sgr, ceph. in M25	14	- 4	6.7v	F5-G1.5 Ib	0.55	9.8	0.47 ± .06::	2.03 ± .09	Serkowski 1965a	0.53	2.09
								0.54 ± .02	2.10 ± .02	Table 3, Mul-ch.		
170836†	in M25	14	- 4	8.95	B6 III	0.47	9.4	0.54 ± .04::	2.96 ± .09	Serkowski 1965a	0.54	2.96
176162	BS 7166	22	- 8	5.36	B5 IV	...	7:	0.58 ± .01	0.91 ± .01	Table 3, Mul-ch.	0.58	0.91
179406	20 Aql	28	- 8	5.34	B3 V	0.36	6.0	0.51 ± .02:	1.22 ± .12	Serkowski 1968, 2-ch.§	0.51	1.32
								0.51 ± .01	1.36 ± .09	Coyne et al. 1974		
180968†	ES Vul, β CMa type	56	+ 5	5.4v	B0.5 IV	...	8:	0.78:± .08	0.61 ± .12	Table 3, Two-ch.	0.78	0.61
182835	ν Aql	37	- 8	4.66	F2 Ib	0.33:	8.3	0.67 ± .03:	1.14 ± .10	Serkowski et al. 1969	0.67	1.14
183143	+18°4085	53	+ 1	6.87	B7 Iae	1.26	10.2	0.53 ± .02::	5.72 ± .08	Kruszewski 1962	0.56	6.07
								0.60:± .02	5.92 ± .28	Treanor 1963		
								0.57 ± .02::	6.27 ± .11	Serkowski 1965a		
								0.57 ± .02::	6.31 ± .11	Serkowski 1965b		
								0.55:± .03:	6.16 ± .68	Appenzeller 1966		
								0.59 ± .02::	... ...	Serkowski et al. 1967		
								0.56 ± .01:	6.32 ± .12	Serkowski 1968, 1-ch.		
								0.57 ± .02:	6.04 ± .14	Serkowski 1968, 2-ch.		
								0.54 ± .01	5.94 ± .14	Coyne et al. 1974		
								0.56 ± .01	6.14 ± .03	Table 3, Mul-ch.		
183344	U Aql, cepheid	31	-12	6.5v	F5-G3 Ib	0.42	9.4	0.50 ± .03::	2.72 ± .04	Serkowski et al. 1969	0.53	2.75
								0.54 ± .01	2.76 ± .01	Table 3, Mul-ch.		
184915	κ Aql	32	-13	4.95	B0.5 III	0.27	8.8	0.54 ± .02	1.42 ± .09	Coyne et al. 1974	0.56	1.39
								0.57 ± .01	1.36 ± .01	Table 3, Mul-ch.		
185859	BS 7482	57	- 1	6.49	B0.5 Iae	0.59	11.1	0.56 ± .04::	2.26 ± .08	Serkowski 1965b	0.51	2.35
								0.50 ± .01	2.38 ± .11	Coyne et al. 1974		
								0.50 ± .01	2.35 ± .01	Table 3, Mul-ch.		
185915	BS 7485	59	+ 1	6.60	B6 IV	0.16	7.6	0.53 ± .02	1.17 ± .01	Table 3, Mul-ch.	0.53	1.17
...	+23°3745, in NGC 6823	59	0	8.73	B0.5 Ib	0.88	11.9	0.62: ...:	6.61 ...	Serkowski 1968, 1-ch.	0.62	6.61
...	NGC 6823 (16 stars)	59	0	...	...	0.82	12.0	0.58 ± .02::	5.38 ...	Serkowski 1965a	0.58	5.38
187459	BS 7551	69	+ 4	6.46	B0.5 II	0.47	10.2	0.55 ± .03::	2.76 ± .07	Kruszewski 1962	0.55	2.76
187929	η Aql, cepheid	41	-13	3.9v	F6.5-G2 Ib	0.18	7.5	0.53 ± .01::	1.77 ± .02	Serkowski et al. 1969	0.56	1.75
								0.56 ± .03	1.70 ± .18	Coyne et al. 1974		
								0.56 ± .01	1.80 ± .02	Table 3, Mul-ch.		
...	+30°3980	70	- 3	8.28	B9 Ib-II	0.82	10.3	0.57: ...:	4.64 ...	Serkowski 1968, 1-ch.	0.57	4.64
188001	9 Sge	56	- 4	6.22	07.5 Iaf	0.31	11.4	0.56 ± .01	1.19 ± .03	Table 3, Mul-ch.	0.56	1.19
190299	62 Aql	41	-16	5.67	gK4	...	...	0.56 ± .03	0.84 ± .01	Table 3, Mul-ch.	0.56	0.84
193150	σ Cap	24	-28	5.28	K3 II	0.00:	7.3	0.60 ± .01	0.81 ± .02	Table 3, Mul-ch.	0.60	0.81
193237*	P Cyg	76	+ 1	4.8v	B2pe	0.66	6.8	0.42 ± .05::	... ...	Serkowski et al. 1967	0.46	1.45
								0.44: ...:	1.31 ...	Serkowski 1968, 1-ch.		
								0.47 ± .01	1.48 ± .07	Coyne et al. 1974		
194057†	+44°3439	82	+ 5	7.51	B1 Ib	1.06	10.0	0.62 ± .06::	3.66 ± .29	Serkowski 1965b	0.54	3.68
								0.51 ± .04::	... ...	Serkowski et al. 1967		
								0.44: ...::	3.72 ...	Serkowski 1968, 1-ch.		
194279	+40°4150, in NGC 6910	79	+ 2	7.02	B1.5 Iae	1.18	10.1	0.61:± .06::	3.01 ± .25	Serkowski 1965b	0.58	2.77
								0.54 ± .03::	... ...	Serkowski et al. 1967		
								0.60 ± .02:	2.71 ± .20	Serkowski 1968, 1-ch.		

TABLE 5 (concluded)

HD	Name	l	b	V	MK	E_{B-V}	m-M	λ_{max} m.e. μ	p_{max} m.e. %	Source of polarimetry	Mean λ_{max}	Mean p_{max}
194953	BS 7824	47	-20	6.20	G8 III	-0.01:	4.6	0.66 ± .02	0.57 ± .02	Table 3, Mul-ch.	0.66	0.57
...	VI Cyg (27 stars)	80	+ 1	...	...	1.98	10.5	0.42 ± .02::	4.38 ...	Serkowski 1965a	0.42	4.38
...	No. 12, in	80	+ 1	11.5	B8 Ia+	3.20	10.2	0.49: ...::	8.44 ...	Serkowski 1968, 1-ch.	0.45	9.48
	VI Cyg							0.45 ± .02	9.61 ± .58	Coyne et al. 1974		
...	+40°4220=	80	+ 1	9.2v	07f	1.98	9.4	0.43:± .07::	4.58 ± .23	Serkowski 1965a	0.42	4.04
	V729 Cyg, in							0.42 ± .02:	3.91 ± .34	Serkowski 1968, 1-ch.		
	VI Cyg											
197770	BS 7940	94	+ 9	6.32	B2 III	0.57	8.2	0.52 ± .04::	3.57 ± .10	Kruszewski 1962	0.51	3.83
								0.50 ± .03::	... ...	Serkowski et al. 1967		
								0.51 ± .01	3.90 ± .16	Coyne et al. 1974		
198478	55 Cyg	86	+ 1	4.83	B3 Iae	0.53	10.0	0.57 ± .04::	2.73 ± .11	Kruszewski 1962	0.53	2.75
								0.46:± .02	2.56 ± .19	Treanor 1963		
								0.49 ± .04::	2.75 ± .08	Serkowski 1965a		
								0.57 ± .02::	2.91 ± .06	Serkowski 1965b		
								0.51 ± .03::	... ...	Serkowski et al. 1967		
								0.53 ± .01:	2.87 ± .08	Serkowski 1968, 1-ch.		
								0.53 ± .01	2.74 ± .14	Coyne et al. 1974		
199478†	BS 8020	88	+ 1	5.69	B8 Iae	0.48	11.4	0.51 ± .04::	1.62 ± .04	Serkowski 1965b	0.51	1.62
200644	3 Equ	55	-26	5.61	gK5	...	...	0.53 ± .02	0.82 ± .04	Table 3, Mul-ch.	0.53	0.82
203532	BS 8176	309	-32	6.37	B3 IV	0.35	7.8	0.56 ± .02	1.37 ± .02	Table 3, Mul-ch.	0.56	1.37
204710	+44°3832	90	- 4	6.95	B8 Ib	0.32	11.6	0.48 ± .02::	2.09 ± .05	Serkowski 1968, 1-ch.	0.48	2.09
204827	+58°2272	99	+ 6	7.95	B0 V	1.11	8.8	0.43:± .05::	6.00 ± .21	Serkowski 1965b	0.46	5.62
								0.46 ± .02::	... ...	Serkowski et al. 1967		
								0.44 ± .01:	5.78 ± .25	Serkowski 1968, 1-ch.		
								0.48 ± .01	5.50 ± .32	Coyne et al. 1974		
205196	+56°2589	99	+ 4	7.45	B0 Ib	0.80	10.8	0.57 ± .03::	2.82 ± .08	Kruszewski 1962	0.57	2.82
207089	12 Peg	77	-23	5.29	G8 II:	0.4:	6:	0.51 ± .04	0.58 ± .02	Table 3, Mul-ch.	0.51	0.58
207260	ν Cep	102	+ 6	4.29	A2 Ia	0.54	10.2	0.52 ± .04::	1.65 ± .04	Serkowski 1965b	0.51	1.59
								0.45 ± .04::	... ...	Serkowski et al. 1967		
								0.52 ± .01	1.58 ± .08	Coyne et al. 1974		
208501	13 Cep	100	+ 2	5.80	B8 Ib	0.80	9.0	0.53 ± .04::	1.84 ± .05	Serkowski 1965b	0.55	1.82
								0.56 ± .01	1.81 ± .06	Coyne et al. 1974		
209481	14 Cep	102	+ 2	5.53	09 Vn	0.38	9.1	0.46 ± .04::	1.70 ± .04	Serkowski 1965b	0.48	1.86
								0.49 ± .01	1.90 ± .13	Coyne et al. 1974		
211924	30 Peg	69	-41	5.36	B5 IV	0.16	6.7	0.48 ± .02	1.14 ± .02	Serkowski 1968, 2-ch.	0.46	1.15
								0.44 ± .01	1.16 ± .01	Table 3, Mul-ch.		
213470	+56°2794	105	- 1	6.65	A3 Ia	0.56	12.6	0.59 ± .02::	3.18 ± .07	Kruszewski 1962	0.52	3.43
								0.52 ± .04::	... ...	Serkowski et al. 1967		
								0.50 ± .01	3.49 ± .19	Coyne et al. 1974		
216411	+58°2492	108	0	7.20	B1 Iae	0.78	11.5	0.50 ± .06::	2.69 ± .11	Serkowski 1965b	0.52	2.72
								0.52 ± .01	2.73 ± .16	Coyne et al. 1974		
217476	BS 8752	108	- 3	5.13	G0 Ia	0.74:	10.9	0.49 ± .02::	2.86 ± .04	Kruszewski 1962	0.49	2.77
								0.48 ± .02	2.82 ± .30	Treanor 1963		
								0.50 ± .02::	2.80 ± .13	Serkowski 1968, 1-ch.		
								0.50 ± .03	2.70 ± .36	Coyne et al. 1974		
223960	+60°2636	116	- 1	6.91	A0 Ia+e	0.71	13.2	0.64 ± .03::	3.55 ± .16	Kruszewski 1962	0.60	3.45
								0.57:± .01:	3.35 ± .04	Coyne et al. 1974		
224014	ρ Cas	115	- 5	4.4v	F8 Iap	0.54:	10.8	0.60 ± .06::	1.41 ± .06	Serkowski 1965a	0.55	1.46
								0.54 ± .01	1.47 ± .04	Coyne et al. 1974		
224055	+61°2562	116	0	7.17	B3 Iae	0.83	11.5	0.59 ± .02::	4.09 ± .09	Kruszewski 1962	0.57	3.99
								0.54: ...:	3.89 ...	Serkowski 1968, 1-ch.		
225094	BS 9097	118	+ 1	6.24	B3 Iab	0.46	11.2	0.49 ± .05::	2.65 ± .10	Serkowski 1965b	0.52	2.61
								0.53 ± .02	2.60 ± .23	Coyne et al. 1974		

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[*] Intrinsic polarization possible, star not used in discussion of interstellar polarization.

[†] Wavelength dependence of polarization inaccurate, not used in discussion.

[‡] Also in Table 3.

§ Θ^V in Serkowski (1968) on J.D. 2439773 should read $5\overset{\circ}{.}5$ instead of $4\overset{\circ}{.}1$.

the period-luminosity relation of Sandage and Tammann (1968) was used.

The values of $\lambda_{\max}$ and $p_{\max}$ listed for each instrument in table 5 are the straight averages of the values of these quantities calculated for each observing night separately whenever such data are available. They are followed by the mean errors derived from the scatter of values obtained on various nights. In cases when a star was observed with a particular instrument on one or two nights only, the mean errors are derived from the fit of the measurements at different spectral regions to the curve described by equation (4). The mean errors of $\lambda_{\max}$ referring to values derived from polarimetry at three or two spectral regions only are followed by a colon or a double colon, respectively, to indicate that these errors are determined less accurately and may be underestimated. A colon following $\lambda_{\max}$ denotes a value based on observations from a single night. When calculating the weighted mean values of $\lambda_{\max}$ and $p_{\max}$, listed in table 5, the values without colons are given full weight; those with a colon following $\lambda_{\max}$ or its error, half weight; those with two colons, quarter weight. The mean errors listed do not influence these weights. The daggers in the first column of table 5 denote the stars for which the mean error of $\lambda_{\max}$ exceeds $\pm 0.03\ \mu$; they are not used in the further discussion of interstellar polarization. The depolarization corrections described by Serkowski (1968) were applied to the observations made with the Belgrade refractor (Kruszewski 1962; Serkowski 1965*b*).

If a star was observed in *B* and *V* spectral regions only, the values of $\lambda_{\max}$ were found from the following formula, resulting from equation (4),

$$\lambda_{\max} = (\lambda^V \lambda^B)^{1/2} \exp\left\{\frac{\ln (p^V/p^B)}{2K \ln (\lambda^V/\lambda^B)}\right\} . \quad (10)$$

Substituting $K = 1.15$ and the effective wavelengths $\lambda^B = 0.44\ \mu$ and $\lambda^V = 0.55\ \mu$, we get

$$\lambda_{\max} = 0.49(p^V/p^B)^{1.95} . \quad (11)$$

This relationship between $\lambda_{\max}$ and p^V/p^B is shown in figure 4 while comparison between the values of $\lambda_{\max}$ obtained for the same stars with different instruments is shown in figure 5. No systematic differences in $\lambda_{\max}$ between various instruments were found.

The stars for which the observed wavelength dependence of polarization may be a superposition of the effects of interstellar and intrinsic polarization have an asterisk in the first column of table 5 and are not included in the further discussion of interstellar polarization. They include the Wolf-Rayet stars and those B and A-type stars of luminosity class III, IV, or V which have emission lines in their spectra according to Bertiau and McCarthy (1969), Jaschek, Ferrer, and Jaschek (1971), or Wackerling (1970); among such stars only those for which variability of polarization with time has not been proven and polarization is not smaller than 1 percent are listed in table 5. On the other hand, the Of stars and the early-type supergiants with emission lines in their spectra are not marked with an asterisk in table 5. Among the latter stars, many show evidence of variable intrinsic polarization (Serkowski 1970*a*, Coyne 1971) which in all known cases is small compared with interstellar polarization and has rather flat wavelength dependence. Therefore, distortion of the wavelength dependence of interstellar polarization by this intrinsic component seems to be small. Evidence of small variations in polarization with time has been found also among some early-type supergiants without emission lines. For these reasons separating the early-type supergiants without any intrinsic component of polarization is not, at this time, possible. We decided to include all the observed early-type supergiants and Of stars in our discussion of interstellar polarization.

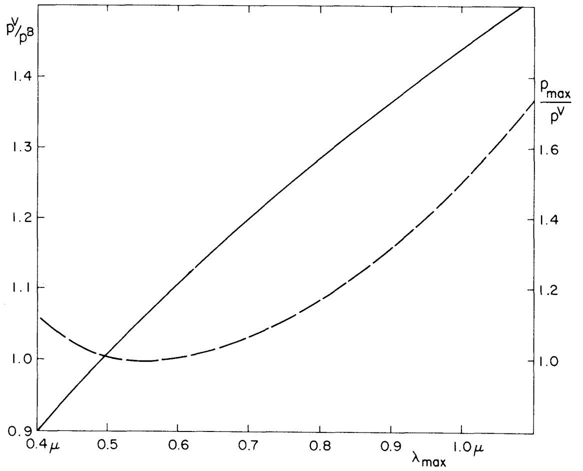

FIG. 4.—The relationships between the ratios of polarizations p^V/p^B in *V* and *B* spectral regions (*solid curve* and *left scale*) or $p_{\max}/p^V$ (*dashed curve* and *right scale*) and the wavelength $\lambda_{\max}$ of maximum interstellar polarization, calculated for $\lambda^V = 0.55\ \mu$ and $\lambda^B = 0.44\ \mu$.

V. DISCUSSION

There are 364 stars listed either in table 5 of the present paper or in table 2 of Coyne *et al.* (1974) which are not marked with an asterisk in the first column of these tables and for which the mean error of $\lambda_{\max}$ does not exceed $\pm 0.03\ \mu$. Distribution of the stars for which galactic latitude is $|b| \leq 25°$ is shown in figure 6. Filled symbols represent the stars with wavelength $\lambda_{\max}$ of maximum polarization less than the median value of $0.545\ \mu$, open symbols represent those with $\lambda_{\max} > 0.545\ \mu$. The obvious conclusion from inspecting this figure is that there are some well-defined regions on the sky within which $\lambda_{\max}$ is smaller than the median value and other regions with $\lambda_{\max}$ larger than the median value. In figure 6 these two types of regions are surrounded by dashed and solid lines, respectively. The largest and best defined region of low $\lambda_{\max}$ lies along the galactic

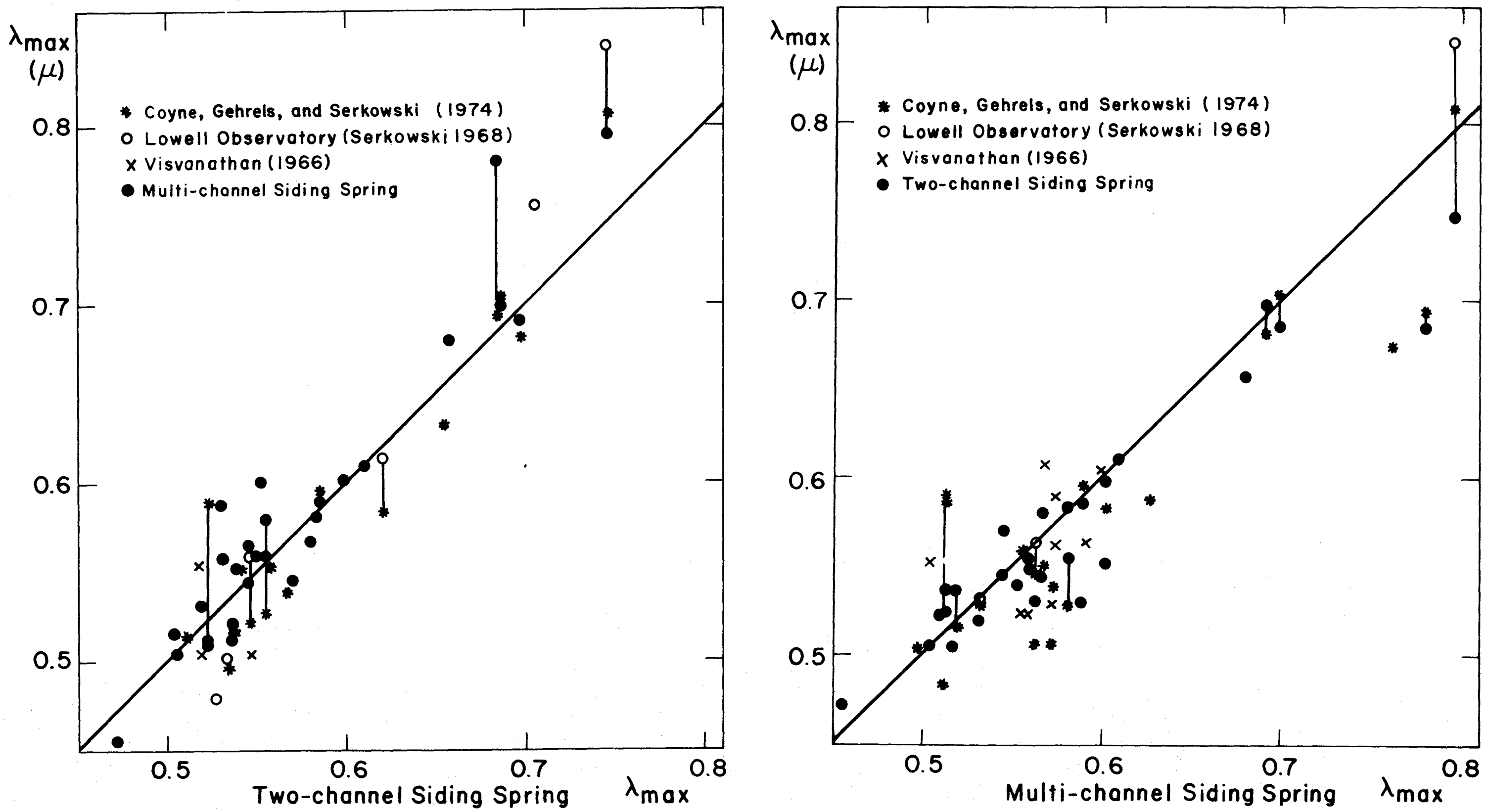

FIG. 5.—The comparison between values of the wavelength of maximum interstellar linear polarization, $\lambda_{\max}$, determined with the Siding Spring two-channel (*a*) and multichannel (*b*) polarimeters with those obtained for the same stars with other instruments on the basis of polarimetry at three or more spectral regions. Vertical lines join the observations of the same star.

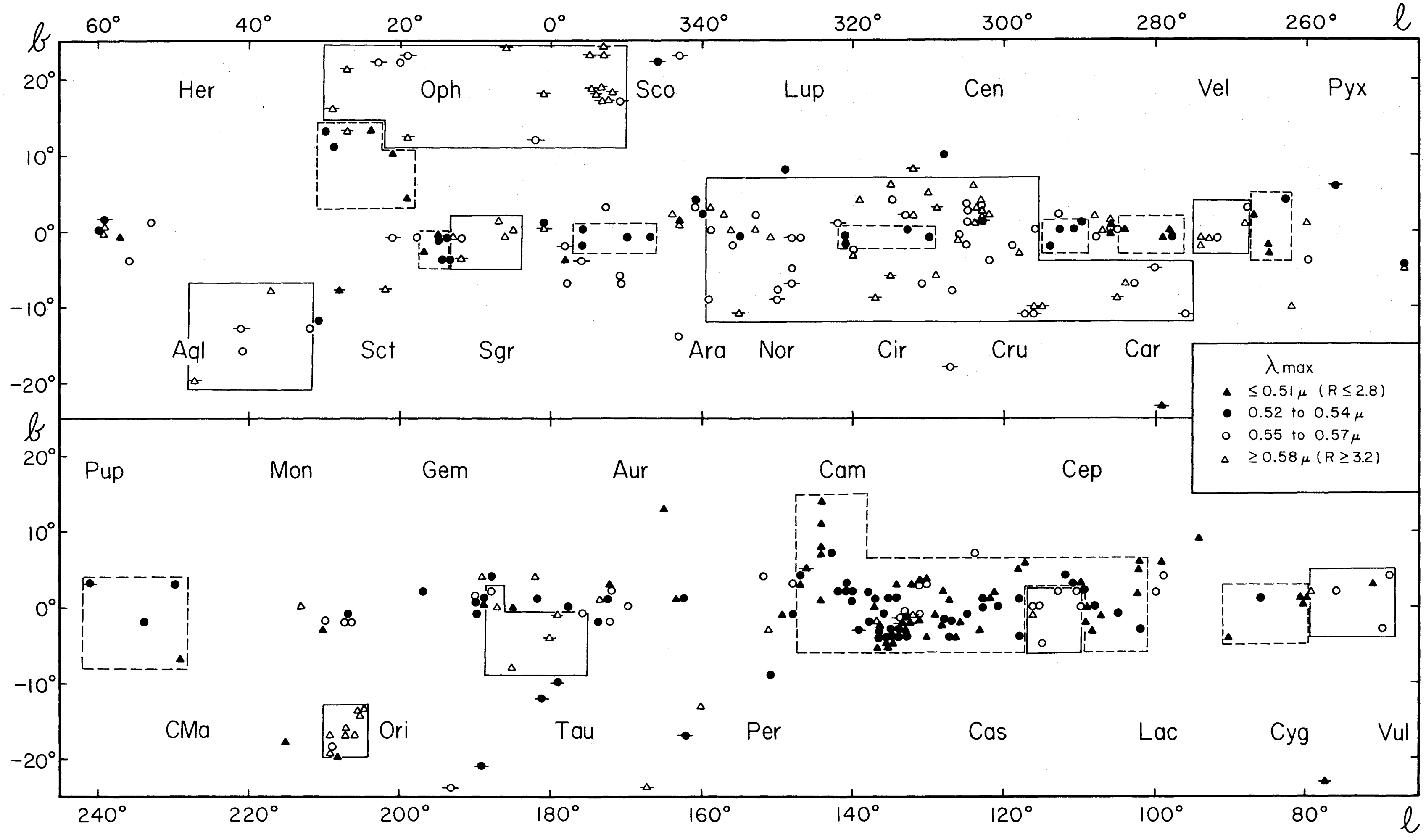

FIG. 6.—The wavelength of maximum interstellar polarization, $\lambda_{\max}$, which is proportional to ratio R of total to selective extinction, plotted in galactic coordinates. Filled symbols denote the stars with $\lambda_{\max}$ (and R) smaller than the median value $\lambda_{\max} = 0.545\ \mu$ (corresponding to $R = 3.0$); open symbols, those with $\lambda_{\max}$ (and R) larger than the median value. The regions in which the stars of any of these groups predominate are surrounded by dashed or solid lines, respectively. Symbols for stars nearer than 0.4 kpc ($m - M \leq 8.0$) are crossed with a horizontal bar.

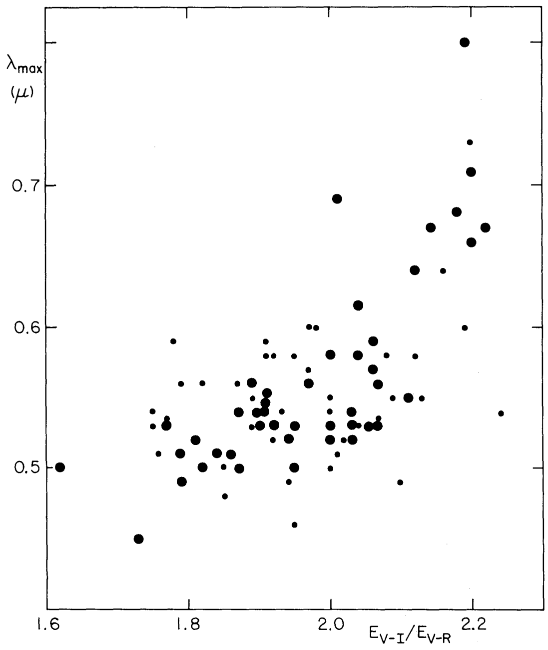

FIG. 7.—The correlation between the wavelength $\lambda_{\max}$ of maximum interstellar polarization and the color excess ratio E_{V-I}/E_{V-R}. Large symbols denote observations from references 1, 2, 3, 6, and 7 in table 6. Small symbols denote less accurate photometry from other sources.

equator at longitudes 120°–145°; that of high $\lambda_{\max}$ lies at longitudes 295°–340°.

Symbols for stars nearer than 0.4 kpc ($m - M \leq 8.0$) are crossed in figure 6 with a horizontal bar. We can see clearly that high values of $\lambda_{\max}$ predominate for nearby stars. The median value of $\lambda_{\max}$ for stars nearer than 0.4 kpc is 0.570 μ as compared with 0.536 μ for more distant stars. For each of these distance intervals a histogram of $\lambda_{\max}{}^{-1}$ is well approximated by a Gaussian probability function with rms deviation $\pm 0.14\,\mu^{-1}$; a small deviation from the Gaussian function is caused by too many stars with $\lambda_{\max} > 0.66\,\mu$, particularly among nearby stars.

Larger $\lambda_{\max}$ for nearby stars may be explained by a selection effect: nearby stars for which polarization is so large that $\lambda_{\max}$ can be determined are often seen through a relatively dense dust cloud. As shown by Carrasco, Strom, and Strom (1973), the size of dust grains and $\lambda_{\max}$ seem to be larger in denser dust clouds. There is no correlation between $\lambda_{\max}$ and distance for stars more distant than 0.4 kpc.

It is likely that the wavelength $\lambda_{\max}$ of maximum polarization is proportional to the average size of interstellar dust grains producing both extinction and polarization. This is indicated by the correlations between $\lambda_{\max}$ and various ratios of color excesses (cf. Serkowski 1968, 1973). The correlation is particularly pronounced for the ratio E_{V-I}/E_{V-R} shown in figure 7 and the ratios E_{V-K}/E_{B-V} and E_{V-K}/E_{V-R} shown in figure 8. Only the stars with E_{V-R} or E_{B-V} no smaller than 0.30 mag are plotted in these figures; we believe that inaccurate photometry and intrinsic colors are mainly responsible for large scatter seen in figures 7 and 8. There seems to be no correlation between $\lambda_{\max}$ and E_{V-R}/E_{B-V} and very little between $\lambda_{\max}$ and E_{V-K}/E_{V-J}.

Since the ratio of total to selective extinction, $R = A_V/E_{B-V}$, equals approximately 1.1 E_{V-K}/E_{B-V} (Carrasco *et al.* 1973), the straight line $E_{V-K}/E_{B-V} = 5.0\,\lambda_{\max}$ in figure 8*a* indicates that

$$R = 5.5\,\lambda_{\max}\,; \qquad (12)$$

the median value $\lambda_{\max} = 0.545\,\mu$ corresponds to $R = 3.0$. Measuring $\lambda_{\max}$ may be the best method for finding the local values of the ratio of total to selective extinction.

The observational data for figures 7 and 8 are listed in table 6. New *VRI* photometry listed in this table was obtained by Serkowski with the Mount Stromlo 127-cm (50 inch) telescope in 1969 June and

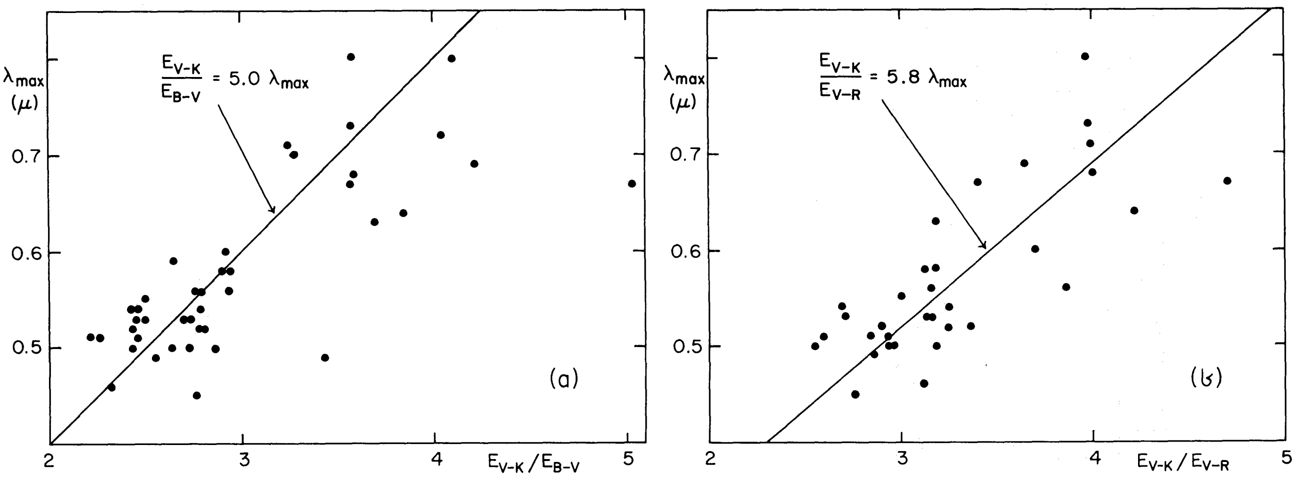

FIG. 8.—The correlation between $\lambda_{\max}$ and the color excess ratios E_{V-K}/E_{B-V} (graph *a*), and E_{V-K}/E_{V-R} (graph *b*). The two stars falling far below the straight line in graph *a* are HD 164740 and 215835 (Johnson 1967).

TABLE 6

STARS WITH KNOWN λ_{max} AND VRI OR K PHOTOMETRY AVAILABLE

HD	V-R	V-I	V-K	E_{V-R}	$\frac{E_{V-I}}{E_{V-R}}$	$\frac{E_{V-K}}{E_{B-V}}$	Source of photom.*	λ_{max}
2905	0.14	0.20	0.24	0.22	...	2.71	2	0.53
3940	0.66	1.24	...	0.61	1.85	...	9	0.48
6675	0.28	0.46	...	0.40	2.13	...	9	0.55
7927	0.64	1.20	1.89	0.43	1.84	2.47	2	0.51
12301	0.37	0.68	...	0.35	1.89	...	9	0.55
12953	0.59	1.09	1.74	0.54	1.82	2.43	2	0.50
13267	0.34	0.60	...	0.32	2.03	...	2	0.53
Stock 2	...	...	...	0.37	1.91	...	5	0.59
13476	0.55	1.06	...	0.46	1.89	...	2	0.53
13854	0.34	0.53	...	0.42	1.90	...	2	0.54
14010	0.56	1.05	...	0.54	1.85	...	9	0.50
14134	0.52	0.87	1.09	0.54	1.87	2.46	1	0.54
14143	0.55	1.08	1.32	0.60	1.87	2.72	1	0.50
14322	0.41	0.65	0.97	0.39	1.62	2.63	1	0.50
14433	0.57	1.04	1.51	0.52	1.79	2.21	1,9	0.51
14489	0.40	0.72	...	0.33	1.76	...	9	0.51
14535	0.73	1.31	2.01	0.66	1.77	2.45	1	0.53
14818	0.34	0.54	0.78	0.39	1.90	2.73	2,9	0.53
15316	0.71	1.38	...	0.62	1.92	...	4	0.52
15497	0.71	1.31	...	0.69	1.94	...	4	0.49
15558	0.52	0.92	...	0.67	2.07	...	9	0.53
15570	0.68	1.24	1.66	0.83	2.06	2.50	3	0.53
17378	0.82	1.58	...	0.70	1.90	...	2	0.54
21291	0.37	0.75	1.21	0.35	2.00	2.81	2	0.52
21389	0.51	1.01	1.66	0.48	1.94	2.79	2	0.52
22253	0.34	0.55	...	0.45	2.01	...	9	0.51
23512	0.32	0.59	1.08	0.30	1.97	2.92	4,9	0.60
24398	0.14	0.23	0.18	0.22	...	2.44	2	0.54
24431	0.38	0.64	...	0.53	2.10	...	9	0.49
24912	0.16	0.15	0.03	0.31	2.00	2.94	2	0.58
25443	0.33	0.51	...	0.45	2.00	...	9	0.50
31964	0.52	0.97	1.53	0.31	1.81	2.43	2	0.52
34078	...	...	0.65	...	...	2.94	10	0.56
36371	0.37	0.64	...	0.35	1.97	...	2	0.56
37061	0.39	0.70	1.30	0.50	2.12	3.84	6	0.64
37903	0.19	0.31	0.42	0.30	2.20	3.23	6	0.71
38563A	0.66	1.25	1.82	0.72	2.04	3.69	6	0.63
NGC2024 *1	1.80	3.46	6.24	1.92	2.01	4.21	1,6	0.69
250290	0.59	1.10	...	0.61	2.04	...	9	0.58
41117	0.31	0.53	0.72	0.36	2.03	2.79	2,6	0.54
43384	0.47	0.87	...	0.49	2.06	...	2	0.53
43753	0.35	0.59	...	0.47	2.08	...	9	0.58
50064	0.78	1.43	...	0.76	1.92	...	9	0.58
92964	0.30	0.54	...	0.34	2.12	...	8	0.58
96918	0.87	1.47	...	0.36	1.75	...	4	0.53
97534	0.57	1.02	...	0.30	1.77	...	4	0.53
"	0.46	0.86	...				12	
99264	0.16	0.16	...	0.21	...	...	4	0.55
"	0.06	0.04	...				12	
100262	0.54	1.00	...	0.42	1.82	...	4	0.56
"	0.47	0.87	...				12	
111613	0.37	0.70	...	0.30	1.87	...	12	0.56
111904	0.34	0.62	...	0.32	1.78	...	7,12	0.59
111990	0.25	0.43	...	0.27	...	...	7,12	0.58
120678	0.34	0.51	...	0.49	2.00	...	7	0.53
125835	0.44	0.91	...	0.35	2.09	...	12	0.55
135240	-0.01	-0.07	...	0.14	...	...	12	0.56
136239	0.81	1.54	...	0.86	2.02	...	12	0.52
145502	0.11	0.14	0.24	0.21	...	3.27	2,11	0.70
147084	0.88	1.82	2.93	0.75	2.14	3.56	7,11	0.67
147165	0.20	0.31	0.45	0.30	2.07	2.80	2.11	0.56
147888	0.38	0.75	1.28	0.44	2.20	3.57	11,12	0.73
147889	0.91	1.90	3.27	1.01	2.19	3.58	7,11	0.80
"	0.92	1.86	...				12	
SR 3	...	...	5.50	...	...	4.10	11	0.80
147932	...	...	1.54	...	...	4.02	11	0.72
147933/4	0.34	0.64	1.02	0.44	2.18	3.59	7,11	0.68
148379	0.56	1.03	...	0.61	1.98	...	8	0.60
"	0.53	0.92	...				12	
148688	0.39	0.69	...	0.47	2.04	...	8	0.53
148937	0.32	0.56	...	0.47	2.19	...	12	0.60
149019	0.79	1.54	...	0.74	1.93	...	12	0.54
149404	0.47	0.84	...	0.61	2.11	...	7	0.55
"	0.44	0.79	...				8	
149757	0.10	0.06	-0.07	0.24	...	2.64	2,10	0.59
150135/6	0.21	0.33	...	0.36	2.22	...	12	0.56:
150421	0.68	1.22	...	0.42	1.79	...	12	0.56
151804	0.12	0.14	...	0.27	...	...	12	0.60
152236	0.49	0.84	...	0.55	1.95	...	12	0.58
154445	0.20	0.28	...	0.31	2.06	...	7,9	0.57
155603	1.63	2.79	...	0.96	1.75	...	12	0.54
157038	0.68	1.26	...	0.70	2.00	...	12	0.54
160529	1.22	2.40	...	1.16	1.95	...	7	0.53
161056	0.38	0.65	...	0.48	2.06	...	7,9	0.59
163800	0.30	0.52	...	0.45	2.20	...	7,9	0.66
164740	0.81	1.66	3.58	0.96	2.22	5.02	3	0.67
166734	1.09	1.95	3.01	1.24	1.95	2.86	1	0.50
169454	0.84	1.57	...	0.92	2.00	...	12	0.55
182835	0.52	1.01	...	0.26	...	...	12	0.67
183143	1.12	2.07	3.38	1.10	1.89	2.76	1	0.56
VI Cyg *12	3.22	5.54	8.82	3.20	1.73	2.77	1	0.45
194279	1.02	1.83	2.90	1.08	1.91	2.90	9,12	0.58
198478	0.45	0.76	...	0.47	1.92	...	2	0.53
204827	0.69	1.18	1.63	0.82	1.95	2.31	9,12	0.46
207260	0.50	0.94	1.44	0.43	1.86	2.26	2	0.51
208501	0.68	1.28	...	0.66	1.91	...	2	0.55
215835	...	...	1.35	...	...	3.42	3	0.49
217476	1.17	2.02	3.33	0.66	1.79	2.55	2	0.49
218342	0.37	0.70	...	0.50	2.24	...	9	0.54
224014	0.96	1.70	2.56	0.45	1.91	2.50	2	0.55
224055	0.67	1.22	...	0.69	1.97	...	9	0.57
225094	0.32	0.55	...	0.34	2.03	...	9	0.52

*Sources of photometry: 1. Johnson 1965; 2. Johnson et al. 1966; 3. Johnson 1967; 4. Mendoza 1967; 5. Krzemiński and Serkowski 1967; 6. Lee 1968; 7. Serkowski 1968; 8. Feinstein 1969; 9. Serkowski, Gehrels, and Wiśniewski 1969; 10. Allen 1973; 11. Carrasco, Strom, and Strom 1973; 12. present paper.

TABLE 7

DEPENDENCE OF $\lambda_{\max}$ ON $p_{\max}/E_{B-V}$, FOR $m - M \geq 8.0$

$p_{\max}(\%)/E_{B-V}$	< 3.0	3.0 to 4.9	5.0 to 6.9	≥ 7.0
Mean $p_{\max}/E_{B-V}$	2.32	3.97	5.82	8.23
Number of stars	33	71	70	30
Median $\lambda_{\max}$ (μ)	0.544	0.548	0.527	0.526
Mean $\lambda_{\max}$ (μ)	0.542	0.546	0.534	0.537
rms deviation of $\lambda_{\max}$ (μ)	± 0.060	± 0.047	± 0.042	± 0.040
Mean E_{B-V}	0.84	0.67	0.65	0.52
rms deviation of E_{B-V}	± 0.41	± 0.32	± 0.27	± 0.18
Median ($\lambda_{\max} + 0.03\, E_{B-V}$) ($\mu$)	0.567	0.569	0.547	0.542
Mean ($\lambda_{\max} + 0.03\, E_{B-V}$) ($\mu$)	0.568	0.565	0.553	0.552
rms deviation of ($\lambda_{\max} + 0.03\, E_{B-V}$) ($\mu$)	± 0.054	± 0.044	± 0.044	± 0.042

July using equipment similar to that described in an earlier paper (Serkowski 1968); each star was observed on two or three nights. The mean errors of average $V - R$ and $V - I$ are about ± 0.01 and ± 0.03 mag, respectively. The photometry in the K spectral region for the stars HD 194279 and 204827 was obtained in 1972 by Serkowski using the Steward Observatory infrared photometer (Johnson and Mitchell 1962) and 229-cm (90 inch) telescope. The $V - R$, $V - I$, and $V - K$ intrinsic colors by Johnson (1966) are used.

There seems to be some correlation of $\lambda_{\max}$ with E_{B-V} and with the ratio of polarization to interstellar reddening, $p_{\max}/E_{B-V}$. To avoid the dependence on distance, the correlations were studied only for stars more distant than 0.4 kpc. The median values of $\lambda_{\max}$ for intervals of E_{B-V} follow the relationship

$$\lambda_{\max} = 0.555\,\mu - 0.03\, E_{B-V}\,, \qquad (13)$$

where the correlation coefficient is -0.19 ± 0.07 (m.e.). This correlation may be caused by selection effects, similar to those explaining larger $\lambda_{\max}$ for nearby stars: a large proportion of strongly reddened stars are distant stars with small ratio of E_{B-V} to distance. The light of such stars passes predominantly

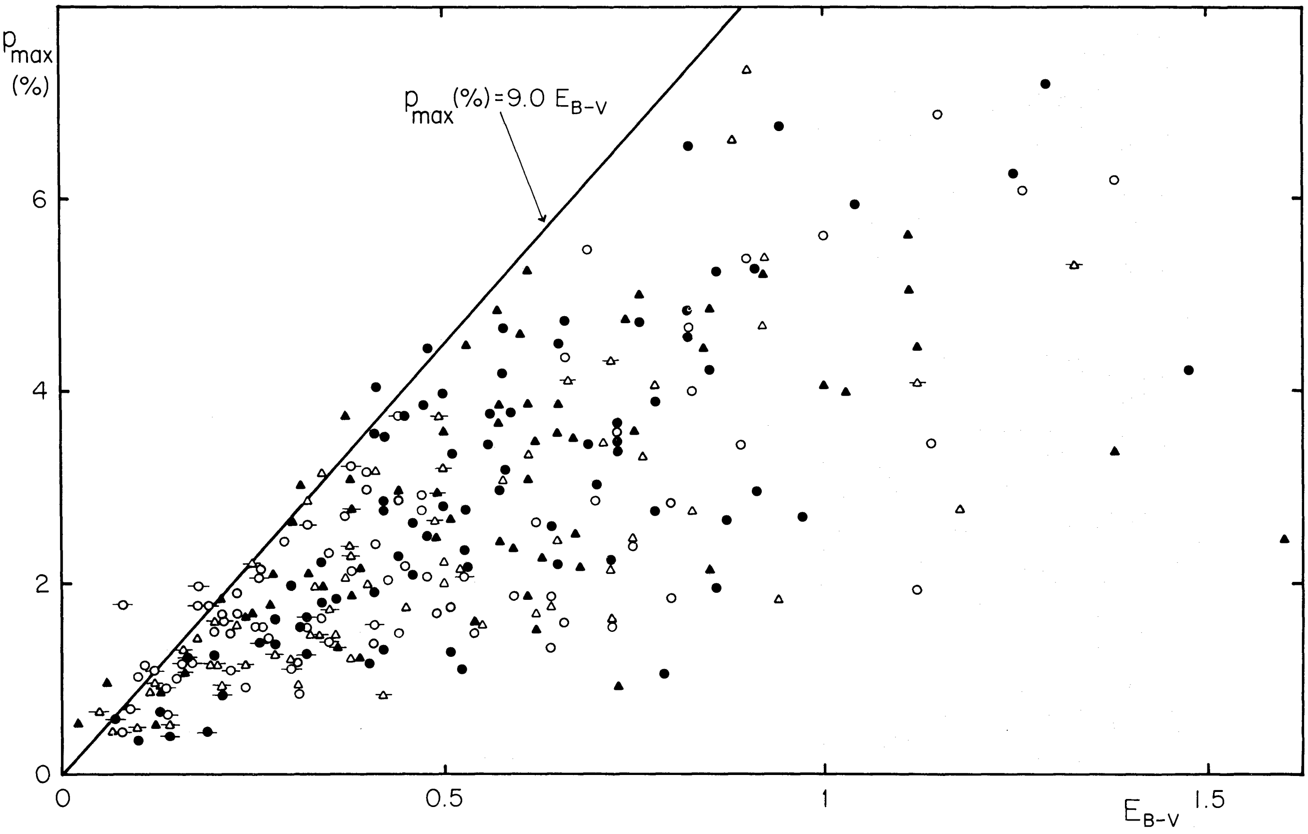

FIG. 9.—The relationship between the maximum interstellar polarization $p_{\max}$ (%) and color excess E_{B-V}. A straight line corresponds to $p_{\max}/E_{B-V} = 9.0$. The symbols are the same as in fig. 6.

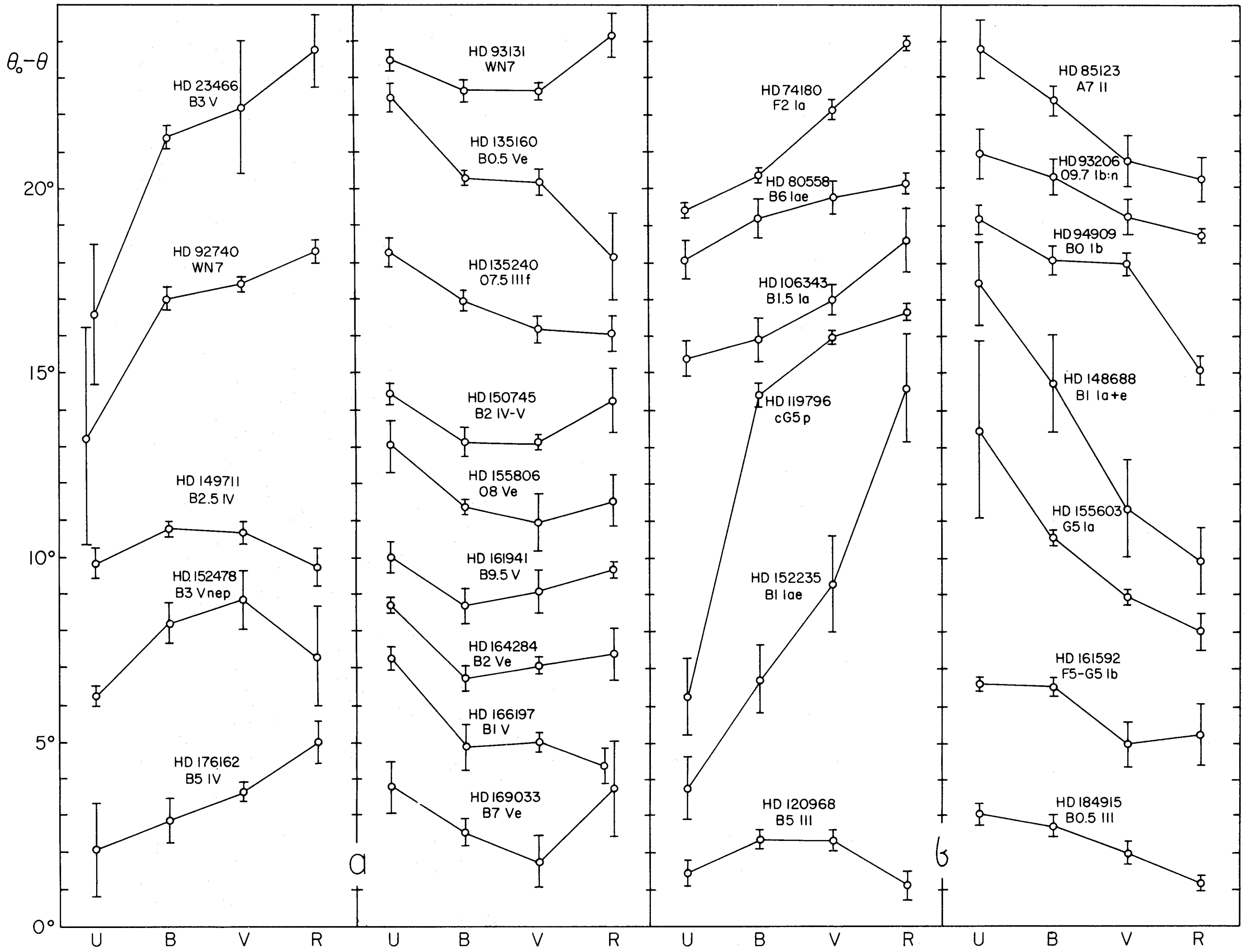

FIG. 10.—The wavelength dependence of the polarization position angle θ observed with the multichannel polarimeter-photometer for some early-type main-sequence stars (*a*) and for supergiants and giants (*b*). The mean errors are indicated. The zero points θ_0 of the position angle scale are arbitrary.

through low-density dust clouds, characterized by small $\lambda_{\max}$ (Carrasco *et al.* 1973).

The relationship between $\lambda_{\max}$ and $p_{\max}/E_{B-V}$ is illustrated in table 7. Only stars with $E_{B-V} \geq 0.30$ mag (≥ 0.40 mag if E_{B-V} is followed by a colon in table 5) were used. The coefficient of correlation between $p_{\max}/E_{B-V}$ and E_{B-V} is -0.29 while that between $p_{\max}/E_{B-V}$ and $\lambda_{\max}$ is -0.05. Therefore, the coefficient of partial correlation between $p_{\max}/E_{B-V}$ and $\lambda_{\max}$ relative to E_{B-V} is -0.12 ± 0.07. The reality of this correlation is indicated more convincingly by the dependence of median values of $\lambda_{\max} + 0.03\, E_{B-V}$ (cf. eq. [13]) on $p_{\max}/E_{B-V}$ shown in table 7: for $p_{\max}/E_{B-V} < 5.0$ the median value of $\lambda_{\max} + 0.03\, E_{B-V}$ is larger by $0.023\,\mu$ than for $p_{\max}/E_{B-V} > 5.0$. The negative correlation between p^V/p^B and p^V/E_{B-V} was discovered by Kruszewski (1962) as a result of the earliest systematic search for variations in wavelength dependence of interstellar polarization, which were first noticed by Behr (1959).

The ratio p/E_{B-V} is a measure of alignment of interstellar dust grains by galactic magnetic field. If alignment is not complete, $\lambda_{\max}$ is expected to be larger in a stronger magnetic field, capable of aligning larger grains (Davis 1959). This is contrary to the present observations which indicate a very poor *negative* correlation between $\lambda_{\max}$ and $p_{\max}/E_{B-V}$. We may therefore conclude that magnetic field has negligible influence on $\lambda_{\max}$ which, like R, is determined mainly by the average size of dust grains. How little influence the magnetic alignment has on wavelength dependence of light scattering by dust grains is also indicated by lack of correlation between the ratio of color excesses E_{U-B}/E_{B-V} and the ratio p/E_{B-V} (Serkowski 1963).

The relationship between the maximum percentage polarization $p_{\max}$ and the color excess E_{B-V} is shown in figure 9. The stars with uncertain E_{B-V}, followed by a colon in table 5 or having spectral type F or later, are not plotted. The ratio $p_{\max}/E_{B-V}$

TABLE 8

MEASUREMENTS OF CIRCULAR POLARIZATION*

HD or DM	*	$10^4 q^I$	$10^4 q^B$	$10^4 q^U$
145502.......	ν_1 Sco AB	-0.4 ± 0.5	...	...
147084.......	o Sco	$+1.5 \pm 0.4$	...	...
147889.......	...	-1.9 ± 1.1	$+2.2 \pm 0.6$	...
183143.......	...	$+1.0 \pm 0.8$	...	...
193237.......	P Cyg	0.0 ± 1.2	...	...
+40°4220....	VI Cyg No. 5	-1.9 ± 1.2	...	...
....	VI Cyg No. 12	-6.5 ± 1.0	...	...
204827.......	...	-5.6 ± 1.2	-0.8 ± 0.9	$+3.4 \pm 1.2$

* Our circular polarization q is equivalent to V/I of Martin 1974.

rarely exceeds 9.0, which value is represented as a straight line in figure 9. The stars lying slightly to the left of this line suggest that the intrinsic colors by Schmidt-Kaler (1965), used for calculating E_{B-V}, should be diminished for B-type stars by at least 0.02 mag. The intrinsic colors of B-type supergiants would thus become close to those derived by Serkowski (1963). To clarify this point, repeating the MK classification and photometry of the most strongly deviating stars, HD 7252, 8965, 13267, 38771, 46769, 142919, and 161840, would be desirable.

The position angles of polarization show a pronounced wavelength dependence for a number of stars observed with a multichannel polarimeter. Such wavelength dependence is expected when the light traverses regions with various values of $\lambda_{\max}$ and with various orientation of dust grains (cf. Coyne 1974). In many cases, however, wavelength dependence of position angle is caused by superposition of intrinsic and interstellar polarization (Serkowski 1970*a*). We may see in figure 10, showing some examples of this wavelength dependence, that early-type main-sequence stars have often an extreme value of position angle around the blue spectral region where the intrinsic polarization of Be stars has its maximum. On the other hand, supergiants usually show monotonic change in position angle, as wavelength dependence of their intrinsic polarization does not have a sharp peak.

The wavelength $\lambda_{\max}$ seems to coincide with the wavelength at which the wavelength dependence of interstellar circular polarization changes sign (Martin 1974). This is supported by the observations of circular polarization, listed with their mean errors in table 8, made by Serkowski during 1973 July with the 152-cm telescope on Mount Palomar. The near-infrared spectral region ($\lambda_{\text{eff}} \approx 0.845\,\mu$) was defined by a Schott RG 8 filter 1.5 mm thick and S1 photomultiplier. The quarter-wave plate was manually rotated by 90° in front of a rapidly rotating achromatic half-wave plate in a polarimeter described by Serkowski (1974).

The largest known values of the interstellar circular polarization were found in the near-infrared for two stars with exceptionally low values of $\lambda_{\max}$: star No. 12 in the VI Cygni association ($\lambda_{\max} = 0.45\,\mu$), and HD 204827 ($\lambda_{\max} = 0.46\,\mu$). The observations of circular polarization for the latter star in the *B* and *U* spectral regions of the *UBV* system suggest that circular polarization changes its sign around $0.43\,\mu$.

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APPENDIX

ADDITIONAL POLARIMETRIC OBSERVATIONS

Polarimetric observations of a number of southern stars, many of them in open clusters, are listed in table A1. They were made with a two-channel polarimeter in a search for stars suitable for a study of wavelength dependence of interstellar polarization. Table A1 contains also polarimetry of Sco X-1 and the open clusters Praesepe and M67. Assuming the maximum ratio of degree of polarization to color excess given by Schmidt-Kaler (1958), we find the lower limits of reddening:

$$E_{B-V} \geq 0.009 \text{ mag for Praesepe},$$

$$E_{B-V} \geq 0.019 \text{ mag for M67}.$$

Similar estimates for several globular clusters are given in table A2. All the observations in table A2 were made with a two-channel polarimeter without filter, using an aperture 80″ in diameter for globular clusters, and about 20″ for galaxies which were observed in 1969 July. A small but significant linear polarization was found for some galaxies, in particular for NGC 7041. (See note added in proof.)

TABLE A1

POLARIMETRY OF SOUTHERN STARS AND OPEN CLUSTERS.

HD or other name	V	Sp	JD 24...	Filter	p (%)	θ_{eq}
50877, o^1 CMa	3.8	K3 Iab	39538	V	0.05	65°
58131	7.4	B2	39834	V	0.87	26
59890, BS 2881	4.6	G1 Ib	40303	V	0.06	84
CPD-44°2920	8.5	...	39953	V	0.66	66
CPD-45°3218	8.9	...	39953	V	2.32	179.1
63302, BS 3026	6.3	G8 Iab	39537	V	0.47	174
63323, BS 3027	6.3	M2 II-III	...	V	0.23	152
66194, in NGC 2516	5.8	B3 Ve	39910	V	0.65	138
66342, in NGC 2516	5.2	M0 II	39911	V	0.37	148
68860, ceph. RS Pup	7v	F8-K5	39539	V	0.18	136
68808, ceph. AH Vel	5v	F8p	39599	V	0.10	66
71129, ε Car	1.8	K0 II:+B	39940	V	0.11	158
Praesepe, average of 4 stars*	...	...	...	none	0.08 ±.015	57 ±6
74194	7.5	09k	39602	V	0.81	12
75211	7.5	B5	39832	V	1.55	114.9
75222	7.4	B0 Ik	39832	V	1.51	122.6
75387, in cl.Tr.10	6.4	B8	39911	V	0.12	41
No. 81 in M67 †	10.0	B8-9 V	...	none	0.25	39
No. 108 in M67	9.7	K4 III	...	none	0.30	41
No. 170 in M67	9.7	K3 III	...	none	0.15	90
No. 223 in M67	10.6	...	...	none	0.18	81
No. 244 in M67	10.8	...	...	none	0.07	61
No. 266 in M67	10.6	...	...	none	0.29	69
M67, average of 6 stars*	...	...	...	none	0.17 ±.05	60 ±8
91943, in NGC 3293	6.7	B0.5 Ib	39541	V	1.11	106.8
-57°3502 in NGC 3293	7.2	M0 Iab	39911	V	1.22	115.6
92449, BS 4180	4.3	G2 II	40013	B	0.20	143
93163, BS 4204	5.8	B3:V	39545	V	0.51	111
93737, BS 4228	6.0	A0 Ia	39604	V	1.12	122.1
95018	9.0	B8	39528	B	0.67	116
"			39594	B	0.98	122
95109, ceph. U Car	6v	G0	39597	V	0.56	128
No. 174 in NGC 3532 †	7.4	B9	39911	V	0.34	99
2'W of No. 150 "	7.6	...	39911	V	0.14	75
No. 129 in NGC 3532	7.4	...	39950	B	0.18	100
No. 156 in NGC 3532	...	...	39950	B	0.30	104
97253 in NGC 3572	7.3	O6	39546	V	1.10	99.9
97950 in NGC 3603	9.1	WN5+O	...	V	1.51	126
No. 20 in NGC 3680 †	10.2	...	40352	B	0.18	98
No. 34 in NGC 3680	10.7	...	40352	B	0.48	78
No. 56 in NGC 3680	10.9	...	40352	B	0.22	155
98430, δ Crt	3.6	G8 III-IV	39602	V	0.01	34
100930 in NGC 3766 †	7.2	cM0	39541	V	1.28	86.2
No. T64 in NGC 3766 †	8.6	OB	39600	V	1.51	82°.3
No. 19 in NGC 3766	8.5	OB	39600	V	1.21	91.3
101205 in IC 2948 §	6.5	O8	39541	V	1.54	93
103516, BS 4563	5.9	A2 I	40390	V	0.76	88
No. 5 in NGC 4103 ‡	9.7	...	39598	V	0.65	79
No. 6 in NGC 4103	...	...	39598	V	0.42	88
106111, ceph. S Mus	6v	F8p	40390	V	2.54	104.5
No. 4 in NGC 4609 ‡	...	...	39541	V	0.32	86
112374, BS 4912	6.6	cF6	40390	V	0.27	48
119699 in NGC 5281	8.3	A0	39594	V	1.81	70.2
134959 in cl.Pis.20	8.1	B2 Ia	39700	V	6.36	62.7
135345, BS 5667	5.2	G5 Ia+B	40391	V	0.29	51
136415, γ Cir	4.5	B5+F8	39953	V	0.56	83
140662	9.2	A0 I	40086	B	1.89	48.6
CoD-38°10980	9.8	DA	40440	none	0.15	68
Sco X-1 ‖	12.6	Pec	39531	B	0.81	119
"			39533	B	0.67	109
"			39536	B	0.72	121
"			39542	B	0.76	118
"			39570	B	0.56	121
"			39571	B	0.47	127
146646= -15°4293	9.8	A5	39590	B	0.78	56
" , near Sco X-1			39600	B	0.85	52
146795= -16°4265	8.8	A2	39590	B	0.37	66
" ,near Sco X-1			39600	B	0.36	59
146935= -15°4300	8.5	A0	39531	B	0.68	106
" ,near Sco X-1			39532	V	0.72	109
"			39570	B	0.60	107
146950= -15°4301	9.9	A0	39600	B	0.31	124
147295,near Sco X-1	9.3	A0	39590	B	0.81	106
147889B	10	...	39699	V	0.28	173
147930,near Sco X-1	9.0	A0	39590	B	1.93	142.9
star in NGC 6134	10.6	...	40439	V	1.29	50.0
150958 in I Ara	7.3	O6ek	39600	V	1.78	46.4
151932	6.5	WN7	40320	V	1.04	36.5
328856 in NGC 6204	8.5	...	39912	V	2.32	40.6
152234 in NGC 6231	5.5	B0.5 I	39951	V	0.70	148
152248 in NGC 6231	6.1	O8f	...	V	0.66	112
152408 in NGC 6231	5.8	O7-8fp	39951	V	0.83	42
152677 in clus. H12	6.5	K0	40320	V	0.30	53
160202 in NGC 6405	6.8	B8	39593	V	1.35	160.3
160221 in NGC 6405	7.3	B8	39592	V	1.44	162
No. 37 in NGC 6405 †	8.8	B6	39707	V	1.37	166.6
No. 130 in NGC 6405	10.9	A5	39707	V	1.13	151
175156, BS 7119	5.1	B4 III	40017	V	0.62	40

*Calculated from an average of Stokes parameters.

†Star numbers according to Johnson and Sandage (1955) for M67, Koelbloed (1959) for NGC 3532, Eggen (1969) for NGC 3680, Sher (1965) for NGC 3766 (HD 100930 is No. 34), and Rohlfs, Schriek, and Stock (1959) for NGC 6405 (=M6).

‡Positions of stars indicated by horizontal (X) and vertical (Y) scales on Hogg (1965) charts are the following:

No. 5 in NGC 4103 X = 24.0, Y = 19.5 ,
No. 6 in NGC 4103 X = 24.1, Y = 18.6 ,
No. 4 in NGC 4609 X = 22.9, Y = 19.9 .

§No. 2 on Hogg (1965) chart.

‖Observations of Sco X-1 by Hiltner et al. (1967) on JD 2439538 and following nights without filter gave p = 0.67%, θ = 115°.

TABLE A2

POLARIMETRY OF GLOBULAR CLUSTERS AND GALAXIES

NGC	p (%)	m.e.	θ_{eq}	E_{B-V} (mag)
Globular clusters:				
104=47 Tuc*.....	0.36	±0.09	123°	≥0.04
362*..............	0.30	0.16	126	≥0.03
5024=M53........	0.17	0.08	53	≥0.02
5139=ω Cen	0.79	0.06	67	≥0.09
5272=M3.........	0.14	0.06	56	≥0.016
5904=M5	0.42	0.06	74	≥0.05
6121=M4	2.83	0.15	3	≥0.31
Galaxies:				
4696..............	0.30	0.25	90	...
5044..............	0.43	0.22	96	...
5077..............	0.16	0.29	132	...
Galaxies *contd.*:				
5236..............	0.38	0.15	48	...
5898..............	0.61	0.46	42	...
6861..............	0.48	0.22	176	...
7041..............	0.68	0.12	140	...
7049..............	0.26	0.16	139	...
7144..............	0.42	0.17	9	...
7196..............	0.25	0.31	97	...
7619..............	0.44	0.25	96	...
7626..............	0.34	0.27	121	...
7629..............	0.34	0.21	167	...
IC 4296...........	0.24	0.26	143	...

* See also Mathewson and Ford 1970*b*.

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Note added in proof.—Our results for Praesepe agree with those of T. Markkanen (*Astr. and Ap.*, **35**, 297 [1974]), who obtained $p = 0.13 \pm 0.04\%$, $\theta = 55°$ as an average for 17 stars.

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