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CCD *UBVRI* PHOTOMETRY OF THE GALACTIC OPEN CLUSTERS[1]: BE 89, RU 135, AND BE 10

İnci Akkaya,[2] William J. Schuster,[3] Raúl Michel,[3] Carlos Chavarría-K,[3] André Moitinho,[4] Roberto Vázquez,[3] and Yüksel Karataş[5]

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RESUMEN

Presentamos los parámetros fundamentales de enrojecimiento, metalicidad, edad y distancia de los cúmulos abiertos poco estudiados Be 89, Ru 135 y Be 10, derivados de la fotometría CCD *UBVRI*. Los enrojecimientos interestelares se midieron en el diagrama color-color, y las metalicidades fotométricas se derivaron del exceso de ultravioleta de las estrellas tipo F. Las distancias y edades se obtuvieron ajustando isocronas a las secuencias observadas en cinco diagramas color-magnitud diferentes. Los promedios ponderados de los módulos de distancia y distancias heliocéntricas $[(V_0 - M_V), d(\mathrm{kpc})]$ son: $(11\overset{\mathrm{m}}{.}90 \pm 0\overset{\mathrm{m}}{.}06, 2.4 \pm 0.06)$ para Be 89, $(9\overset{\mathrm{m}}{.}58 \pm 0\overset{\mathrm{m}}{.}07, 0.81 \pm 0.03)$ para Ru 135 y $(11\overset{\mathrm{m}}{.}16 \pm 0\overset{\mathrm{m}}{.}06, 1.7 \pm 0.05)$ para Be 10, mientras que los promedios ponderados para las edades $[\log(A), A(\mathrm{Gyr})]$ son: $(9.58 \pm 0.06, 3.8 \pm 0.6)$ para Be 89, $(9.58 \pm 0.06, 3.8 \pm 0.7)$ para Ru 135 y $(9.06 \pm 0.05, 1.08 \pm 0.08)$ para Be 10.

ABSTRACT

The fundamental parameters of reddening, metallicity, age, and distance are presented for the poorly studied open clusters Be 89, Ru 135, and Be 10, derived from their CCD *UBVRI* photometry. The interstellar reddenings, $E(B–V)$, were measured in the two-color diagram, and the photometric metallicities, [Fe/H], from the ultraviolet excesses of the F-type stars. By fitting isochrones to the observed sequences of the clusters in five different color-magnitude diagrams, the weighted averages of distance moduli and heliocentric distances $[(V_0–M_V), d(\mathrm{kpc})]$ are $(11\overset{\mathrm{m}}{.}90 \pm 0\overset{\mathrm{m}}{.}06, 2.4 \pm 0.06)$ for Be 89, $(9\overset{\mathrm{m}}{.}58 \pm 0\overset{\mathrm{m}}{.}07, 0.81 \pm 0.03)$ for Ru 135, and $(11\overset{\mathrm{m}}{.}16 \pm 0\overset{\mathrm{m}}{.}06, 1.7 \pm 0.05)$ for Be 10, and the weighted averages of the ages $[\log(A), A(\mathrm{Gyr})]$ are $(9.58 \pm 0.06, 3.8 \pm 0.6)$ for Be 89, $(9.58 \pm 0.06, 3.8 \pm 0.7)$ for Ru 135, and $(9.06 \pm 0.05, 1.08 \pm 0.08)$ for Be 10.

Key Words: open clusters and associations: individual (Be10, Be89, Ru135) — stars: fundamental parameters — stars: Hertzsprung-Russell and C-M diagrams — techniques: photometric

1. INTRODUCTION

Galactic open clusters, which contain a few tens to a few tens of thousands of stars and are a few parsecs across, are sparsely populated, loosely concentrated, and gravitationally bound systems. With systematic image searches and follow-up photometric surveys, new open clusters are currently being discovered. By fitting the photometric observations of open clusters to synthetic photometry resulting from stellar models (i.e., theoretical isochrones), which include the newest input physics, stellar structure, and differing heavy-element abundances, fun-

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[2]Department of Astronomy and Space Sciences, Erciyes University, Kayseri, Turkey.

[3]Instituto de Astronomía, Universidad Nacional Autónoma de México, Ensenada, B. C., Mexico.

[4]SIM/IDL, Facultade de Ciencias da Universidade de Lisboa, Lisboa, Portugal.

[5]Istanbul University, Science Faculty, Department of Astronomy and Space Sciences, Turkey.

damental parameters such as interstellar reddening, metallicity, distance modulus, and age can be precisely and accurately determined. These parameters have great importance concerning the age-metallicity relation and the metal-abundance gradient in the Galactic disk (e.g., Cameron 1985; Carraro & Chiosi 1994; Friel 1995), as well as the luminosity and mass functions of the open clusters (Piskunov et al. 2008). Open clusters are also very useful for testing the stellar evolutionary models, given that their stars were formed at the same time, out of the same cloud, and under similar environmental conditions. Thus, open clusters are ideal entities for the study of stellar evolution since physical properties are tightly constrained, being mainly distinguished by the stellar mass, so that theoretical models of stellar formation and evolution can be compared with real clusters without excessive complications. For these analyses, the fundamental parameters such as interstellar reddening, metallicity, distance modulus, and age should be determined as precisely and accurately as possible.

In Galactic studies, one of the more severe observational limitations is due to the absence of photometric data for nearly half of the approximately 1500 open clusters known. Furthermore, there is a lack of homogeneity in the observations and analyses of the clusters studied. The catalogue of Lyngå (1987), that resulted from a collection of data from many different sources and which includes 422 open clusters, constituted the observational basis for a large number of astronomical studies, led to important conclusions about the Galactic disk, and has been very useful for planning subsequent observations by other astronomers. However, this catalogue has been built from parameters obtained by various authors, with diverse observing techniques, distinct calibrations, and different criteria for determining the stellar ages, rendering it very inhomogeneous and limited for studies requiring precision in the measurement of these fundamental parameters. As an example of the precision and accuracy that one can expect due to the effects of these inhomogeneities, we refer to Janes & Adler (1982), who found that distance moduli of a given cluster obtained by two or more authors have a mean difference of $0\overset{m}{.}55$.

Within the Sierra San Pedro Mártir, National Astronomical Observatory (hereafter SPM) open cluster project (cf. Schuster et al. 2007; Michael et al. 2010, in preparation), the aims are the following:

1. A common *UBVRI* photometric scale for open clusters.
2. An atlas of color-color and color-magnitude diagrams for these clusters.
3. A homogeneous set of cluster reddenings, distances, ages, and, if possible, metallicities.
4. An increased number of old, significantly reddened, or distant, open clusters.
5. A selection of interesting clusters for further study.

The open clusters for the present study were selected from the large (and most complete) catalogue, "Optically visible open Clusters and Candidates" (Dias et al. 2002), which is now also available at the Centre de Données Astronomiques de Strasbourg (CDS)[6]. This work aims to provide the fundamental parameters of reddening, metallicity, distance modulus and age for the open clusters Be 89, Ru 135, and Be 10. Our final intention is to publish a set of homogeneous photometric *UBVRI* data for over 300 Galactic clusters (Schuster et al. 2007; Tapia et al. 2010).

This paper is organized as follows: § 2 describes the observations and reduction techniques. § 3 contains the derivation from the *UBVRI* photometry of reddening and metallicity of the clusters from two-color diagrams, and the inference of distance moduli and ages from color-magnitude diagrams. Their uncertainties are also discussed. Comparisons of these parameters with previous results from the literature are made in § 4, and the conclusions are given in § 5.

2. OBSERVATION AND REDUCTION TECHNIQUES

2.1. *The observations*

This CCD *UBVRI* project of northern open clusters has been undertaken at SPM using always the same instrumental setup (telescope, CCD-detector, and filters), observing procedures, reduction methods, and system of standard stars (Landolt 1983, 1992). A par focal set of *UBVRI* Johnson-Cousins filters was used for our observations. The 0.84 m f/13 Cassegrain telescope hosted the filter-wheel "Mexman" provided with the SITE#1 (SI003) CCD camera, which has a 1024×1024 square pixel array and a 24 μm × 24 μm pixel size; this CCD has nonlinearities less than 0.45% over a wide dynamical range, no evidence for fringing even in the *I* band, and Metachrome II and VISAR coverings to increase sensitivity in the blue and near ultraviolet. The sky-projected pixel size was $0\overset{''}{.}393$, and the field of view

[6] `http://www.astro.iag.usp.br/~wilton/`.

TABLE 1

LANDOLT'S FIELDS OF STANDARD STARS

July 2001		February 2002	
Region	N_{stds}	Region	N_{stds}
PG1528+062	3	PG0918+029	5
PG1530+057	3	PG0942-029	5
PG1633+099	5	PG1047+003	4
PG1657+078	4	PG1323-086	5
PG2213-006	4	PG1528+062	3
PG2331+055	3	SA 95	5
MARK A	4	SA104	4
		SA107	4
TOTAL	26	TOTAL	35

of the detector was 6.73×6.73 arcmin^2. Here the results of *UBVRI* images for the open clusters Be 89, Ru 135, and Be 10 are presented, which were acquired in July 2001 (Be 89 and Ru 135) and February 2002 (Be 10). The exposure times were typically 3×240 seconds for the U filter, 3×180 for B, 3×100 for V, 3×100 for R, and 3×120 for I. Several standard-star fields from Landolt (1992) were observed nightly to permit the derivation of the photometric transformations to the Johnson-Cousins' system and the atmospheric extinction coefficients. For the July 2001 observing run, seven Landolt groups were used, containing 26 different standard stars with color ranges, $-0\overset{m}{.}25 \leq (B-V) \leq +1\overset{m}{.}14$, $-1\overset{m}{.}09 \leq (U-B) \leq +1\overset{m}{.}14$, and $-0\overset{m}{.}30 \leq (V-I) \leq +1\overset{m}{.}14$. Sixteen to twenty-five observations of these Landolt standards were made per night. For the February 2002 run, eight Landolt groups were employed, containing 35 different standard stars with color ranges, $-0\overset{m}{.}30 \leq (B-V) \leq +1\overset{m}{.}42$, $-1\overset{m}{.}18 \leq (U-B) \leq +1\overset{m}{.}27$, and $-0\overset{m}{.}28 \leq (V-I) \leq +1\overset{m}{.}77$. Fifty-two to seventy-two observations of these Landolt standards were made per night, except one night cut short by clouds, when only 15 observations were managed. The standard-star fields have been observed with exposures of 1×240 seconds for the U filter, 1×120 for B, 1×60 for V, 1×60 for R, and 1×60 for I. The observed Landolt fields and the number of associated stars in each one are summarized in Table 1.

Usually one or more Landolt fields were re-observed nightly with an air-mass range of at least 0.70 in order to measure the coefficients of the atmospheric extinction of the SPM site, which has excellent sky conditions. To improve the accuracy, precision, and efficiency of the photometric observations when required, the filters were observed in forward and backward sequences (i.e., *UBVRI* − *IRVBU*), especially for the large air-mass observations.

2.2. *Data reduction*

The usual (night and run) calibrations for CCD photometry were done during each of our observing periods (i.e., bias, twilight-sky flat fields, and dark-current determinations) to determine the (night and run) mean correcting frames. Standard data reduction procedures have been used within IRAF,[7] the CCDRED and DAOPHOT tasks (aperture and PSF photometry, see Howell 1989, 1990; Stetson 1987, 1990). More details concerning the instrumentation and the observing and reduction procedures of this project will be given in the near future in the succeeding paper of this project (Michel et al. 2010, in preparation, and references therein). To obtain the magnitudes and colors on the standard system for the stars associated with these clusters, we followed Jordi et al. (1995), and Rosselló et al. (1988, and references therein). We proceeded twofold: (i)

The natural magnitude of the filter N is defined as: $\lambda_{Nn} = -2.5 \cdot \log{(ADU's)_N}$, where λ_N stands for the corresponding filters U, B, V, R, and I, $ADU's$ for the analog-to-digital counts, and the subscript n for the corresponding quantity in the natural photometric system. The atmospheric extinction coefficients for a given filter have been estimated by transforming the nightly λ_{Nn}'s to the corresponding magnitudes in the standard system, λ_{Ns}'s, with the following equation:

$$\lambda_{Ns} - \lambda_{Nn} = (\mathrm{zero\ point})_{\mathrm{N}} - \kappa^{'}_{\mathrm{N}} \cdot \mathrm{X_{Nn}} - \kappa^{''}_{N,12} \cdot X_{Nn} \cdot (\lambda_1 - \lambda_2)_s \,, \quad (1)$$

where X_{Nn} is the air-mass when measuring λ_{Nn}. The subscript $N, 12$ indicates that the color $(\lambda_1 - \lambda_2)_s$ was used to determine the second-order extinction coefficient of filter N. Here we follow the convention that the effective wavelength $\lambda_{1\mathrm{eff}} < \lambda_{2\mathrm{eff}}$ to construct the color $(\lambda_1 - \lambda_2)$. Finally, for a proper determination of $\kappa^{'}_N$ and $\kappa^{''}_{N,12}$ by a least squares solution, sufficiently large ranges in the air masses and colors of the standard stars ($\Delta X_N \geq 0.7$ and $\Delta(\lambda_1 - \lambda_2)_n \geq 0.8$ for SPM) must be obtained. Note that the standard magnitudes and colors are known to an accuracy of about two percent, reflected in the

[7]IRAF is distributed by NOAO (operated by the Association of Universities for Research in Astronomy, Inc.) under cooperative agreement with NSF.

TABLE 2

ATMOSPHERIC EXTINCTION AND TRANSFORMATION COEFFICIENTS

Color	λ_1	λ_2	λ_3	$\kappa_1^{'}$	$\kappa_{1,12}^{''}$	$\kappa_{0,12}$	β_{12}	γ_{12}	rms
					July 2001				
$(U-B)$	U	B	V	0.472	−0.056	+1.625	0.711	+0.263	0.028
$(B-V)$	B	V	–	0.243	−0.050	+0.409	1.016	−0.050	0.010
V	V	R	–	0.106	+0.079	+2.375	0.033	−0.008	0.016
$(V-R)$	V	R	–	0.104*	+0.030*	+0.027	0.973	+0.011	0.012
$(V-I)$	V	I	–	0.087*	−0.035*	−0.151	0.923	+0.070	0.010
					February 2002				
$(U-B)$	U	B	V	0.325	−0.056	+1.765	0.751	+0.313	0.037
$(B-V)$	B	V	–	0.212	−0.050	+0.470	0.979	−0.023	0.018
V	V	R	–	0.082	+0.079	+2.455	0.035	−0.054	0.027
$(V-R)$	V	R	–	0.054*	+0.030*	−0.000	1.023	−0.008	0.012
$(V-I)$	V	I	–	0.056*	−0.035*	−0.165	1.038	+0.004	0.014

*Indicates that extinction coefficients refer to λ_2, otherwise to λ_1.

errors of the final transformations of the (bright) standard stars, and that the observed magnitudes and air masses are measured quantities that can have an even better precision. To further simplify the equations, the extra-atmospheric instrumental magnitudes were then introduced using the extinction coefficients of the night:

$$\lambda_{Ni} = \lambda_{Nn} - \kappa_N^{'} \cdot X_{Nn} - \kappa_{N,12}^{''} \cdot X_{Nn} \cdot (\lambda_1 - \lambda_2)_s \,. \quad (2)$$

An instrumental color is the subtraction of two instrumental magnitudes with different passbands,

$$(\lambda_1 - \lambda_2)_i = \lambda_{1i} - \lambda_{2i} \,.$$

(ii) Once the atmospheric extinction coefficients $\kappa_N^{'}$ and $\kappa_{N,12}^{''}$ have been determined and applied, the nightly transformation coefficients are calculated (i.e., β_{12} and γ_{12}) with the following relations for the colors:

$$(\lambda_1 - \lambda_2)_i = \kappa_{0,12} + \beta_{12} \cdot (\lambda_1 - \lambda_2)_s + \gamma_{12} \cdot (\lambda_1 - \lambda_2)_s^2 \,. \quad (3)$$

Due to the Balmer discontinuity that lies in both the U and B passbands, a better transformation for the $U-B$ color has been achieved by substituting the quadratic term on the right side of the above equation with a linear term in the color $B-V$, obtaining the following expression:

$$(\lambda_1 - \lambda_2)_i = \kappa_{0,12} + \beta_{12} \cdot (\lambda_1 - \lambda_2)_s + \gamma_{12} \cdot (\lambda_2 - \lambda_3)_s \,, \quad (4)$$

where $\lambda_{1\text{eff}} < \lambda_{2\text{eff}} < \lambda_{3\text{eff}}$. For the case of the magnitude V, equation (3) has been used as follows:

$$V_i - V_s = \kappa_{01} + \beta_{12} \cdot (\lambda_1 - \lambda_2)_s + \gamma_{12} \cdot (\lambda_1 - \lambda_2)_s^2 \,. \quad (5)$$

For equations (3)–(5), $\kappa_{0,12}$ and κ_{01} are the zero-points of the transformations of the colors $(\lambda_1 - \lambda_2)_s$, i.e., $U-B$, $B-V$, $V-R$, $V-I$, etc., and of the V magnitude, respectively. The coefficients β_{12} and γ_{12} are the respective first- and second-order transformation coefficients.

In general, the second-order atmospheric extinction coefficient $\kappa_{VR}^{''}$ is expected to be close to zero due to the nearly constant level (ozone-band contribution) of the atmospheric extinction curve at SPM near 5500 Å (Schuster & Parrao 2001). The second-order extinction and linear-transformation coefficients for correcting to extra-atmospheric standard magnitudes and colors are very similar from night to night, and also from run to run, because, (i) the SPM has excellent sky conditions, and (ii) the same instrumental setup, observing techniques, and data reduction procedures were used for all nights during both observing runs. In Table 2 the mean zero-point corrections, atmospheric extinction, and transformation coefficients are given.

In Tables 3, 4, and 5 are given the final transformed CCD *UBVRI* photometric values for the open clusters, Be 89, Ru 135, and Be 10, respectively. In these tables Columns 1 and 2 give the X and Y (pixels) the position of a star in the CCD field; Columns 3, 5, 7, 9, and 11 the magnitude and color indices V, $(B-V)$, $(U-B)$, $(V-R)$, and $(V-I)$, respectively (in magnitudes); and Columns 4, 6, 8, 10, and 12 the respective photometric errors, $\sigma_V, \sigma_{B-V}, \sigma_{U-B}, \sigma_{V-R}$, and σ_{V-I} (in magnitudes), as provided by IRAF.

TABLE 3

CCD *UBVRI* PHOTOMETRY OF BE 89

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
767.7	538.3	11.261	0.006	0.441	0.009	0.002	0.007	0.315	0.009	99.999	99.999
466.5	496.2	12.118	0.011	1.362	0.018	1.191	0.011	0.742	0.013	1.399	0.013
511.7	742.6	12.172	0.008	0.443	0.011	0.268	0.005	0.296	0.011	0.569	0.017
213	99.5	12.333	0.006	0.791	0.009	0.359	0.007	0.378	0.012	99.999	99.999
741.7	403.2	12.911	0.005	1.193	0.007	0.855	0.008	0.629	0.008	1.182	0.01
113.3	465.7	13.309	0.004	0.658	0.006	−0.019	0.006	0.351	0.005	0.705	0.006
678.3	596.5	13.754	0.006	1.921	0.014	1.75	0.024	1.058	0.009	2	0.012
464.6	338.7	13.761	0.006	0.706	0.01	0.07	0.01	0.396	0.008	0.725	0.007
834.1	610.2	13.972	0.004	0.735	0.007	0.113	0.009	0.403	0.007	0.777	0.006
701.2	578.9	13.98	0.005	0.875	0.009	0.333	0.011	0.508	0.01	0.932	0.008
254.5	280.4	14.089	0.004	0.819	0.007	0.176	0.009	0.463	0.006	0.897	0.006
198	28.1	14.141	0.016	1.317	0.025	0.695	0.015	0.871	0.019	1.663	0.017
312.4	276.8	14.279	0.004	1.948	0.014	2.029	0.041	1.023	0.006	1.985	0.007
541.6	770.5	14.368	0.01	1.818	0.059	1.688	0.058	0.95	0.015	1.842	0.015
334.6	31.2	14.416	0.006	0.779	0.01	0.179	0.012	0.425	0.009	0.853	0.008
842.2	789.4	14.475	0.004	2.238	0.012	99.999	99.999	1.33	0.006	2.632	0.011
592.1	526.6	14.528	0.006	0.79	0.011	0.104	0.011	0.422	0.009	0.858	0.009
560.7	782.1	14.593	0.006	0.868	0.009	0.25	0.013	0.454	0.007	0.902	0.007
613.3	190.6	14.663	0.006	1.711	0.018	99.999	99.999	0.907	0.01	1.785	0.008
675.9	887.1	14.669	0.005	0.846	0.009	0.241	0.013	0.481	0.006	0.929	0.006
360.9	268.5	14.678	0.004	1.717	0.011	1.441	0.032	0.901	0.006	1.683	0.006
482.7	702.4	14.727	0.005	1.649	0.011	1.23	0.029	0.895	0.007	1.752	0.007
645.6	248.1	14.744	0.006	0.691	0.009	0.366	0.013	0.353	0.008	0.787	0.007
268.8	739	14.759	0.005	1.001	0.01	0.655	0.015	0.55	0.007	1.024	0.007
399.4	206.7	14.83	0.006	0.914	0.01	0.308	0.015	0.518	0.007	0.95	0.007
323	88.8	14.851	0.006	0.726	0.009	0.131	0.013	0.409	0.007	0.829	0.007
791.4	99.7	14.862	0.005	1.574	0.012	1.299	0.033	0.872	0.008	1.696	0.007
416.2	595.1	14.916	0.006	0.829	0.012	0.256	0.015	0.443	0.008	0.878	0.008
219.1	264.4	14.92	0.004	0.83	0.008	0.184	0.014	0.481	0.006	0.913	0.006
758.7	277.5	15.017	0.003	1.582	0.01	1.294	0.035	0.868	0.006	1.68	0.005
385.7	51	15.02	0.005	1.059	0.01	0.974	0.022	0.612	0.007	1.092	0.007
797.4	412.5	15.033	0.004	1.676	0.012	1.436	0.042	0.916	0.007	1.763	0.006
196	157.7	15.054	0.004	1.644	0.013	1.39	0.041	0.89	0.007	1.715	0.006
365.3	316	15.062	0.006	0.687	0.01	0.347	0.013	0.363	0.007	0.79	0.007
338.1	499.2	15.082	0.029	1.49	0.048	99.999	99.999	0.897	0.037	1.713	0.032
579.6	621.2	15.095	0.006	1.553	0.018	1.32	0.046	0.874	0.012	1.684	0.013
738.4	183	15.1	0.005	0.983	0.01	0.543	0.024	0.495	0.006	0.986	0.006
640.5	610.8	15.128	0.006	1.618	0.015	1.289	0.042	0.917	0.01	1.726	0.009
535.4	889.9	15.137	0.004	1.647	0.01	1.373	0.041	0.884	0.006	1.718	0.006
521.7	859.9	15.181	0.004	1.652	0.012	1.448	0.042	0.909	0.007	1.733	0.007
923.2	159.1	15.185	0.007	0.816	0.015	0.248	0.02	0.465	0.01	0.974	0.009
648.5	469.9	15.227	0.006	1.596	0.015	1.371	0.044	0.878	0.01	99.999	99.999
620.5	76.6	15.257	0.006	0.906	0.011	0.312	0.018	0.508	0.007	0.998	0.007
408.6	525	15.258	0.006	0.705	0.012	0.313	0.017	0.408	0.009	0.884	0.007
574.2	818	15.283	0.004	1.718	0.013	1.414	0.049	0.914	0.007	1.785	0.007
697.8	177.7	15.297	0.005	1.225	0.012	0.75	0.027	0.643	0.007	1.283	0.007
916.7	274.2	15.308	0.004	1.523	0.012	1.284	0.037	0.818	0.007	1.602	0.006
601.1	523.6	15.338	0.007	0.671	0.012	0.251	0.015	0.403	0.01	0.884	0.01
53	615	15.445	0.008	1.002	0.016	0.516	0.026	0.527	0.011	1.011	0.01
350.5	182.5	15.466	0.006	0.911	0.011	0.326	0.025	0.5	0.008	1.006	0.007
112.3	890.9	15.494	0.011	0.863	0.019	0.22	0.022	0.521	0.016	0.961	0.024
389.8	609.1	15.51	0.006	0.807	0.011	0.09	0.016	0.456	0.008	0.885	0.007
803	547.1	15.534	0.005	1.337	0.012	1.052	0.041	0.763	0.008	1.397	0.007
538	360.7	15.571	0.007	1.071	0.014	0.379	0.02	0.641	0.009	1.239	0.008
925.7	533.9	15.576	0.006	0.997	0.011	0.578	0.026	0.537	0.007	1.01	0.007
594.4	466.9	15.658	0.007	0.873	0.013	0.559	0.023	0.471	0.01	1.031	0.009
653.4	273.1	15.665	0.006	0.77	0.012	0.357	0.02	0.456	0.008	0.952	0.008
299.5	235.1	15.713	0.006	1.038	0.012	0.406	0.026	0.609	0.008	1.23	0.007
298.7	224.4	15.766	0.006	0.979	0.011	0.271	0.024	0.542	0.008	1.115	0.007
330	898.6	15.832	0.007	2.318	0.023	99.999	99.999	1.272	0.009	2.36	0.007
969	823.5	15.875	0.007	1.662	0.018	1.08	0.063	0.982	0.01	1.87	0.008
328.6	933.5	15.876	0.008	0.839	0.015	0.127	0.02	0.491	0.011	0.959	0.01
281.7	565.7	15.921	0.006	0.979	0.014	0.506	0.03	0.497	0.008	0.976	0.009

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
337.1	623.4	15.964	0.033	1.211	0.052	0.477	0.035	0.656	0.047	1.349	0.035
375.5	847.5	15.993	0.007	0.994	0.015	0.453	0.031	0.542	0.009	1.044	0.009
110.4	961	16.023	0.012	0.917	0.022	0.315	0.027	0.567	0.018	1.051	0.034
713.7	22.8	16.05	0.014	0.946	0.023	0.373	0.035	0.559	0.034	1.207	0.023
451	508.7	16.078	0.006	1.176	0.016	0.392	0.041	0.679	0.009	1.366	0.009
369.5	170.1	16.087	0.006	1.074	0.014	0.431	0.03	0.641	0.008	1.262	0.007
162.3	731	16.115	0.008	1.018	0.016	0.458	0.031	0.582	0.01	1.158	0.009
271.3	105.4	16.162	0.008	0.983	0.016	0.297	0.029	0.551	0.01	1.104	0.01
471.7	585.8	16.185	0.006	1.207	0.015	0.464	0.037	0.655	0.01	1.359	0.008
356.9	708	16.191	0.006	1.081	0.016	0.463	0.029	0.634	0.008	1.33	0.007
476.4	570.8	16.2	0.012	1.113	0.024	0.451	0.037	0.639	0.029	1.285	0.026
181.2	944.2	16.211	0.009	1.182	0.021	0.455	0.036	0.724	0.016	1.34	0.027
802	593.9	16.212	0.007	0.882	0.015	0.252	0.029	0.494	0.009	0.956	0.009
22.8	76.8	16.24	0.012	0.897	0.022	0.305	0.032	0.57	0.017	1.103	0.015
276.6	796	16.241	0.007	2.443	0.026	99.999	99.999	1.332	0.009	2.534	0.008
512.7	161.5	16.248	0.007	1.015	0.015	0.379	0.035	0.588	0.01	1.206	0.008
234.9	633.8	16.28	0.006	1.634	0.019	1.317	0.087	0.901	0.008	1.712	0.007
329	471.8	16.291	0.011	1.307	0.024	1.078	0.055	0.727	0.019	1.429	0.026
489.9	562.9	16.304	0.007	0.927	0.016	0.405	0.031	0.53	0.01	1.098	0.009
733.2	794.9	16.312	0.006	1.208	0.016	0.617	0.04	0.717	0.009	1.435	0.008
305.2	840.3	16.322	0.005	1.173	0.016	0.614	0.045	0.694	0.008	1.378	0.008
437	570.1	16.329	0.008	1.223	0.019	0.526	0.04	0.682	0.012	1.393	0.01
535.2	540.7	16.358	0.008	1.619	0.022	1.143	0.081	0.92	0.011	1.736	0.01
918.4	181.7	16.358	0.008	1.065	0.018	0.713	0.056	0.585	0.012	1.102	0.009
800.1	734.7	16.359	0.006	1.084	0.015	0.722	0.042	0.595	0.009	1.122	0.008
550.3	660.5	16.378	0.007	0.987	0.016	0.35	0.027	0.531	0.01	1.121	0.009
32.2	883.4	16.394	0.015	0.99	0.028	0.285	0.037	0.585	0.02	99.999	99.999
985.1	387.1	16.407	0.008	2.525	0.035	99.999	99.999	1.364	0.01	2.644	0.008
31.9	844.7	16.409	0.015	1.148	0.028	0.624	0.051	0.631	0.02	99.999	99.999
172.4	134.1	16.413	0.008	1.067	0.019	0.538	0.044	0.613	0.011	1.262	0.01
196.1	310.2	16.421	0.007	1.047	0.016	0.436	0.037	0.558	0.009	1.102	0.009
624	463.7	16.428	0.008	0.975	0.016	0.5	0.043	0.533	0.011	1.055	0.012
860.7	116.4	16.432	0.007	1.057	0.019	0.44	0.039	0.643	0.012	1.289	0.009
555.2	346.8	16.457	0.012	1.537	0.022	1.151	0.074	0.851	0.011	1.67	0.009
659.5	820.6	16.457	0.007	1.293	0.019	0.622	0.052	0.739	0.01	1.471	0.009
502.4	82.9	16.467	0.007	1.077	0.017	0.407	0.038	0.648	0.01	1.279	0.01
797.1	496.5	16.472	0.007	1.024	0.016	0.397	0.035	0.625	0.011	1.275	0.008
89.5	532.4	16.492	0.008	1.681	0.023	99.999	99.999	0.924	0.011	1.786	0.009
852.3	148.8	16.501	0.01	0.886	0.021	0.361	0.035	0.551	0.014	1.051	0.029
602.7	723.9	16.515	0.008	2.703	0.043	99.999	99.999	1.587	0.01	3.138	0.008
910.3	744.4	16.523	0.007	1.097	0.018	0.384	0.033	0.679	0.01	1.35	0.009
474.6	116.8	16.527	0.007	1.121	0.019	0.381	0.041	0.642	0.01	1.271	0.009
155.5	37.2	16.538	0.01	1.145	0.021	0.705	0.05	0.638	0.014	1.212	0.03
667.2	46.2	16.554	0.007	1.143	0.016	99.999	99.999	0.569	0.01	1.123	0.009
340	851.1	16.556	0.008	1.061	0.018	0.213	0.041	0.605	0.011	1.195	0.01
612.5	514.7	16.565	0.008	1.09	0.018	0.459	0.04	0.618	0.012	1.301	0.011
638.7	75.3	16.576	0.007	1.082	0.019	0.376	0.041	0.626	0.011	1.26	0.01
121.6	104.7	16.587	0.01	2.263	0.036	99.999	99.999	1.248	0.013	2.36	0.011
148.3	445.5	16.587	0.008	1.048	0.018	0.335	0.036	0.6	0.01	1.217	0.009
566.6	490.7	16.594	0.011	1.077	0.025	0.411	0.049	0.656	0.019	1.314	0.014
489.2	177	16.597	0.007	1.148	0.019	0.428	0.05	0.623	0.01	1.271	0.009
190.8	98.6	16.61	0.009	1.016	0.02	0.394	0.043	0.528	0.012	1.074	0.011
16.9	777.2	16.621	0.013	1.13	0.027	0.337	0.046	0.646	0.018	1.275	0.017
634.9	654.1	16.621	0.009	1.07	0.019	0.304	0.039	0.622	0.013	1.25	0.012
366.6	579.9	16.632	0.007	1.145	0.02	0.421	0.043	0.691	0.011	1.383	0.01
481.7	654.7	16.632	0.008	1.155	0.021	0.491	0.048	0.649	0.012	1.371	0.01
951.4	209.9	16.633	0.012	1.097	0.025	0.623	0.05	0.594	0.02	1.104	0.029
809.9	321.1	16.646	0.007	1.114	0.019	0.429	0.042	0.645	0.011	1.276	0.009
479	327.2	16.669	0.008	1.193	0.021	0.889	0.064	0.626	0.012	1.168	0.011
540.8	337.6	16.68	0.013	1.412	0.024	1.014	0.08	0.819	0.013	1.583	0.011
804.6	180.9	16.684	0.018	1.015	0.036	0.396	0.063	0.421	0.049	1.112	0.043
705.8	675	16.7	0.008	1.016	0.019	0.349	0.036	0.609	0.011	1.254	0.011
126.4	135.2	16.706	0.008	1.022	0.018	0.358	0.038	0.564	0.012	1.127	0.011
70.3	281.9	16.71	0.007	1.154	0.021	0.568	0.055	0.678	0.012	1.367	0.011
231.1	990	16.711	0.009	1.063	0.023	0.424	0.05	0.65	0.016	1.302	0.014

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
699.6	149.3	16.725	0.008	1.137	0.02	0.445	0.05	0.629	0.011	1.279	0.01
521.1	506	16.726	0.007	1.203	0.022	0.423	0.051	0.69	0.012	1.379	0.01
535.5	304.3	16.752	0.014	99.999	99.999	99.999	99.999	0.548	0.05	99.999	99.999
228.4	593.8	16.755	0.008	1.067	0.018	0.297	0.049	0.643	0.012	1.264	0.012
457.6	417.9	16.765	0.008	1.084	0.02	0.501	0.049	0.612	0.011	1.239	0.01
341.7	150.6	16.767	0.007	1.055	0.02	0.343	0.05	0.632	0.011	1.209	0.01
117.5	677.4	16.768	0.007	1.098	0.021	0.412	0.056	0.699	0.012	1.341	0.009
609.1	701.3	16.776	0.008	0.944	0.018	0.242	0.044	0.574	0.012	1.171	0.01
285.2	586.1	16.781	0.008	1.19	0.02	0.556	0.058	0.709	0.011	1.379	0.01
137	372.4	16.781	0.008	1.079	0.021	0.407	0.05	0.629	0.012	1.224	0.011
283.5	57.3	16.786	0.008	1.033	0.021	0.301	0.041	0.611	0.011	1.225	0.01
875.4	230.6	16.791	0.009	1.686	0.025	99.999	99.999	0.932	0.012	1.824	0.01
646	637.8	16.793	0.008	0.941	0.018	0.255	0.046	0.579	0.01	1.061	0.01
950.4	189.7	16.796	0.009	1.119	0.022	0.444	0.047	0.617	0.014	1.303	0.012
702.9	955.9	16.802	0.008	1.073	0.021	0.389	0.051	0.648	0.013	1.277	0.011
791.6	205.4	16.805	0.007	1.029	0.018	0.396	0.041	0.571	0.01	1.208	0.009
444.9	34.3	16.806	0.011	1.078	0.029	0.605	0.058	0.661	0.019	1.244	0.032
27.9	886.1	16.809	0.015	1.125	0.031	0.408	0.055	0.581	0.042	99.999	99.999
346.7	344	16.846	0.009	1.112	0.021	0.456	0.059	0.63	0.012	1.311	0.012
865	505.3	16.847	0.007	1.166	0.022	0.525	0.047	0.705	0.012	1.397	0.01
528.3	698.1	16.851	0.008	1.096	0.019	0.392	0.05	0.634	0.012	1.291	0.01
796.7	158.7	16.856	0.009	2.059	0.037	99.999	99.999	1.138	0.012	2.192	0.009
89	808.1	16.857	0.012	2.062	0.037	99.999	99.999	1.105	0.017	2.137	0.014
875.6	485.8	16.857	0.008	1.21	0.025	0.575	0.055	0.599	0.014	1.234	0.011
337.5	763	16.858	0.011	1.084	0.025	0.489	0.057	0.571	0.018	1.149	0.016
363.3	573.6	16.872	0.009	0.991	0.019	0.256	0.047	0.583	0.012	1.194	0.011
345	253.6	16.885	0.007	1.132	0.02	0.474	0.047	0.657	0.011	1.347	0.011
397.1	845.7	16.891	0.008	1.041	0.02	0.36	0.048	0.628	0.012	1.278	0.01
559.6	440	16.897	0.008	1.09	0.022	0.364	0.051	0.616	0.013	1.282	0.011
737.7	258.6	16.903	0.011	0.866	0.021	0.513	0.05	0.515	0.014	1.087	0.013
64.4	175.6	16.906	0.009	1.845	0.032	99.999	99.999	1.05	0.013	2.038	0.011
441.6	469.4	16.912	0.008	1.121	0.022	0.537	0.056	0.677	0.013	1.294	0.012
621.1	540.1	16.914	0.01	1.047	0.023	0.406	0.055	0.601	0.013	1.146	0.012
548.5	711.8	16.916	0.008	1.117	0.024	0.302	0.054	0.642	0.013	1.285	0.011
393.8	473.8	16.919	0.015	1.134	0.034	0.38	0.052	0.726	0.045	1.456	0.019
960.9	931.9	16.927	0.008	1.093	0.022	0.691	0.061	0.649	0.015	1.345	0.013
474.1	552.7	16.932	0.008	1.165	0.023	0.553	0.069	0.649	0.012	1.333	0.012
228.6	274.8	16.936	0.01	0.965	0.023	0.636	0.06	0.559	0.013	1.093	0.012
490.7	545	16.941	0.01	1.693	0.03	99.999	99.999	0.94	0.013	1.866	0.011
507.7	216	16.978	0.007	1.122	0.023	0.517	0.061	0.646	0.012	1.27	0.011
907.1	680	16.98	0.008	1.142	0.021	0.464	0.067	0.631	0.011	1.326	0.01
763.3	911.5	16.987	0.008	1.076	0.025	0.419	0.05	0.654	0.012	1.322	0.012
199.4	13.4	16.989	0.01	1.065	0.025	0.363	0.056	0.597	0.016	1.266	0.015
431	371.1	16.995	0.009	2.693	0.051	99.999	99.999	1.471	0.012	2.801	0.009
465.3	114.7	17.017	0.014	1.188	0.03	99.999	99.999	0.744	0.021	1.357	0.036
307.3	234.8	17.022	0.01	2.23	0.043	99.999	99.999	1.252	0.012	2.387	0.011
539	303.5	17.023	0.017	99.999	99.999	99.999	99.999	0.508	0.06	99.999	99.999
723.5	743	17.031	0.01	1.928	0.035	99.999	99.999	1.046	0.012	2.081	0.011
676.3	716.3	17.037	0.006	1.093	0.02	0.316	0.056	0.613	0.011	1.253	0.01
960.1	844.3	17.038	0.011	1.191	0.026	0.519	0.067	0.719	0.015	1.408	0.012
462.5	542.5	17.054	0.011	0.865	0.023	0.454	0.054	0.557	0.014	1.073	0.012
644.8	122.5	17.064	0.012	1.052	0.031	0.46	0.063	0.596	0.019	1.226	0.014
938.6	483.7	17.065	0.009	1.026	0.022	0.48	0.059	0.607	0.012	1.3	0.012
910.1	919.8	17.07	0.008	1.079	0.023	0.349	0.065	0.646	0.013	1.281	0.013
473	611.3	17.076	0.009	1.165	0.026	0.467	0.064	0.676	0.014	1.342	0.012
110.2	642.8	17.086	0.01	1.142	0.024	0.466	0.065	0.645	0.014	1.319	0.013
743.3	347.4	17.09	0.01	1.134	0.023	0.465	0.058	0.615	0.014	1.292	0.013
139.5	848.1	17.095	0.012	0.986	0.025	0.325	0.06	0.594	0.018	1.171	0.015
444.2	599.1	17.101	0.008	1.133	0.025	0.35	0.06	0.66	0.012	1.338	0.012
802.7	294.5	17.103	0.006	1.031	0.022	0.533	0.068	0.613	0.011	1.164	0.01
262.2	983.6	17.11	0.01	1.12	0.025	0.45	0.066	0.61	0.015	1.226	0.013
30.5	544.8	17.116	0.009	1.1	0.026	0.282	0.06	0.629	0.015	1.3	0.013
352.4	618.3	17.135	0.008	1.107	0.025	0.372	0.07	0.609	0.012	1.285	0.011
588	777.6	17.138	0.008	1.07	0.024	0.36	0.067	0.618	0.012	1.226	0.011
328.1	375.7	17.139	0.011	1.051	0.026	0.389	0.066	0.578	0.015	1.176	0.014

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
483.7	613.6	17.148	0.009	1.14	0.026	0.647	0.083	0.666	0.015	1.34	0.013
863.8	539.9	17.151	0.01	1.026	0.025	0.254	0.058	0.562	0.014	1.119	0.012
433.7	875.2	17.155	0.009	1.105	0.022	0.388	0.068	0.587	0.012	1.241	0.011
659.9	385.8	17.156	0.008	2.042	0.036	99.999	99.999	1.122	0.012	2.142	0.01
6.8	313.8	17.16	0.013	1.108	0.028	0.39	0.061	0.616	0.017	1.308	0.016
798.5	918.2	17.16	0.009	1.403	0.024	99.999	99.999	0.821	0.012	1.626	0.01
500.4	607.6	17.163	0.009	1.122	0.025	0.462	0.061	0.631	0.014	1.316	0.013
122.5	981.5	17.164	0.011	1.112	0.03	0.407	0.066	0.646	0.02	1.298	0.017
105.6	945.9	17.172	0.012	1.529	0.034	99.999	99.999	0.865	0.018	1.588	0.034
228.4	154.3	17.183	0.011	1.112	0.028	0.403	0.062	0.645	0.016	1.287	0.015
422.2	539.7	17.183	0.008	1.046	0.026	0.412	0.073	0.636	0.012	1.299	0.012
370.6	439	17.184	0.009	1.051	0.027	0.351	0.055	0.638	0.014	1.285	0.012
234.2	343.7	17.186	0.011	1.187	0.026	99.999	99.999	0.655	0.017	1.367	0.016
227.1	821.9	17.192	0.008	1.085	0.023	0.339	0.062	0.65	0.014	1.322	0.012
465.7	248.2	17.192	0.009	1.103	0.027	0.514	0.08	0.649	0.014	1.316	0.012
939.4	176.1	17.192	0.01	1.276	0.026	99.999	99.999	0.68	0.013	1.285	0.011
698.4	981.9	17.203	0.009	1.132	0.023	0.379	0.073	0.675	0.013	1.323	0.012
577.4	617	17.206	0.017	1.051	0.04	0.388	0.076	0.648	0.026	1.316	0.023
841.5	346.2	17.211	0.011	0.902	0.023	0.442	0.052	0.545	0.013	1.135	0.012
191.2	676.1	17.226	0.012	1.195	0.026	0.488	0.083	0.723	0.014	1.361	0.012
433.9	990.1	17.239	0.007	1.035	0.024	0.315	0.066	0.632	0.013	1.306	0.011
990.5	723.5	17.239	0.009	1.11	0.027	0.497	0.071	0.661	0.014	1.364	0.013
256.6	669.7	17.24	0.009	1.123	0.024	0.443	0.09	0.653	0.014	1.331	0.012
72.1	429.1	17.242	0.01	1.236	0.026	0.365	0.079	0.65	0.016	1.36	0.014
718.7	71.2	17.242	0.011	1.323	0.03	99.999	99.999	0.798	0.013	1.492	0.013
78.1	850.3	17.252	0.012	1.131	0.032	0.516	0.081	0.644	0.02	1.243	0.017
18.5	219.1	17.275	0.01	1.147	0.025	0.244	0.067	0.65	0.018	1.289	0.014
155.1	955.3	17.275	0.012	1.127	0.032	0.594	0.094	0.648	0.021	1.242	0.018
167	21.9	17.281	0.015	1.143	0.035	99.999	99.999	0.647	0.021	1.348	0.018
295.3	505.3	17.283	0.011	1.932	0.042	99.999	99.999	1.1	0.014	2.109	0.012
828.6	353.3	17.287	0.01	1.08	0.025	0.365	0.065	0.631	0.014	1.299	0.013
225.2	114.1	17.3	0.013	1.36	0.038	99.999	99.999	0.828	0.017	1.567	0.015
768.4	225	17.306	0.01	1.067	0.028	0.302	0.072	0.631	0.016	1.253	0.013
756.9	386.8	17.307	0.008	1.145	0.025	0.255	0.07	0.664	0.013	1.308	0.011
441.8	494.7	17.311	0.011	1.193	0.026	0.398	0.069	0.7	0.015	1.36	0.014
838.2	847.6	17.316	0.009	1.105	0.027	0.333	0.056	0.676	0.013	1.354	0.012
916	358.1	17.327	0.01	1.089	0.026	0.611	0.096	0.652	0.015	1.349	0.013
900.7	93.4	17.331	0.01	1.051	0.029	0.715	0.082	0.687	0.017	1.401	0.012
273.2	622.7	17.333	0.007	1.028	0.022	0.578	0.072	0.642	0.012	1.301	0.011
537.3	569.2	17.337	0.011	1.088	0.026	0.335	0.074	0.69	0.015	1.322	0.014
292.2	742.1	17.348	0.011	1.107	0.025	0.443	0.086	0.686	0.015	1.348	0.016
522.9	33.2	17.354	0.01	1.308	0.031	99.999	99.999	0.678	0.014	1.315	0.012
520.8	847.5	17.357	0.011	1.113	0.028	99.999	99.999	0.657	0.016	1.275	0.014
331.5	821.6	17.364	0.008	1.062	0.025	0.413	0.065	0.648	0.014	1.246	0.013
491.6	464.3	17.373	0.01	1.119	0.027	0.275	0.068	0.644	0.016	1.314	0.014
496.6	132.8	17.374	0.011	1.092	0.029	0.496	0.105	0.671	0.016	1.317	0.014
715.5	758.5	17.381	0.012	1.233	0.03	99.999	99.999	0.667	0.015	1.335	0.014
560.8	66.1	17.383	0.012	1.208	0.032	99.999	99.999	0.683	0.016	1.405	0.013
649.7	229.5	17.384	0.01	2.199	0.048	99.999	99.999	1.168	0.014	2.263	0.011
451.4	513.5	17.391	0.016	1.191	0.036	99.999	99.999	0.661	0.02	1.423	0.018
27.4	448.9	17.395	0.01	1.132	0.029	0.41	0.093	0.671	0.014	1.359	0.013
91.2	632.9	17.397	0.009	1.184	0.029	0.378	0.088	0.638	0.015	1.274	0.013
694.9	797.3	17.397	0.01	1.134	0.028	0.531	0.075	0.656	0.016	1.364	0.016
282.6	702.2	17.406	0.011	1.08	0.028	0.427	0.082	0.688	0.013	1.344	0.013
729.7	314.3	17.419	0.011	1.022	0.029	0.365	0.078	0.576	0.015	1.232	0.013
480.3	645.2	17.432	0.013	2.001	0.045	99.999	99.999	1.109	0.016	2.17	0.014
719.4	230.2	17.447	0.014	1.186	0.03	0.51	0.098	0.709	0.016	1.38	0.014
863.8	60.3	17.447	0.01	2.317	0.056	99.999	99.999	1.247	0.015	2.393	0.012
915.3	33.9	17.455	0.011	1.029	0.03	0.333	0.081	0.667	0.017	1.35	0.014
885.8	159.6	17.46	0.009	1.176	0.029	0.371	0.078	0.619	0.014	1.301	0.012
368.6	506.4	17.463	0.013	1.159	0.033	99.999	99.999	0.704	0.021	1.269	0.036
475.2	921.3	17.465	0.011	1.088	0.026	99.999	99.999	0.629	0.015	1.249	0.013
813.4	464.2	17.469	0.01	1.595	0.032	99.999	99.999	0.876	0.014	1.738	0.012
421.9	770	17.474	0.009	1.131	0.03	0.577	0.098	0.638	0.014	1.316	0.012
937	240.9	17.488	0.011	1.094	0.027	0.427	0.116	0.673	0.016	1.328	0.014

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
98.1	961.1	17.492	0.016	1.336	0.041	99.999	99.999	0.827	0.022	1.519	0.02
295	455.6	17.506	0.01	1.227	0.027	99.999	99.999	0.679	0.014	1.31	0.012
786.1	494.9	17.507	0.011	1.211	0.032	0.568	0.098	0.639	0.017	1.222	0.015
301	57	17.508	0.011	1.831	0.044	99.999	99.999	0.982	0.015	1.973	0.012
201.2	626.5	17.51	0.011	1.173	0.028	99.999	99.999	0.721	0.016	1.443	0.014
393.9	344.5	17.53	0.01	1.082	0.026	0.392	0.082	0.628	0.017	1.285	0.013
550.5	185.3	17.535	0.012	1.089	0.031	0.378	0.092	0.645	0.017	1.254	0.016
299	296.1	17.553	0.013	2.269	0.062	99.999	99.999	1.24	0.017	2.391	0.013
252.5	767.4	17.554	0.012	1.231	0.034	0.417	0.095	0.673	0.015	1.299	0.014
515	472	17.566	0.015	1.214	0.034	0.3	0.074	0.692	0.019	1.306	0.018
298.1	519.4	17.569	0.011	1.054	0.031	99.999	99.999	0.68	0.016	1.282	0.013
697.3	560	17.573	0.011	0.994	0.031	0.284	0.079	0.618	0.016	1.299	0.015
600.6	109.6	17.593	0.012	1.082	0.033	0.214	0.082	0.586	0.018	1.201	0.015
264.2	721.5	17.612	0.013	1.205	0.036	99.999	99.999	0.656	0.017	1.379	0.015
590	536.8	17.625	0.011	1.03	0.032	0.499	0.108	0.633	0.017	1.281	0.015
343	560.6	17.628	0.013	1.189	0.033	99.999	99.999	0.655	0.017	1.359	0.015
868.5	185.7	17.632	0.01	2.19	0.063	99.999	99.999	1.318	0.014	2.502	0.011
420.9	615.5	17.638	0.015	1.232	0.037	99.999	99.999	0.666	0.022	1.389	0.02
947.8	483.3	17.65	0.01	1.645	0.039	99.999	99.999	0.95	0.014	1.785	0.012
777.9	17.2	17.662	0.015	1.007	0.037	0.514	0.095	0.606	0.021	1.248	0.02
355.5	944.5	17.688	0.013	1.041	0.036	99.999	99.999	0.673	0.017	1.31	0.015
265.5	580.4	17.689	0.027	1.214	0.037	0.376	0.124	0.738	0.017	1.422	0.016
167.8	837.6	17.694	0.016	1.051	0.036	99.999	99.999	0.663	0.023	1.347	0.02
693.8	599.4	17.698	0.01	1.03	0.032	0.395	0.097	0.617	0.017	1.289	0.016
156.8	336.5	17.698	0.011	1.012	0.031	0.427	0.123	0.652	0.016	1.296	0.015
477.9	777.1	17.701	0.013	1.133	0.035	99.999	99.999	0.714	0.018	1.397	0.014
150.4	402.6	17.702	0.014	1.175	0.037	99.999	99.999	0.689	0.018	1.349	0.016
797.1	769.8	17.709	0.013	1.872	0.053	99.999	99.999	1.037	0.016	2.009	0.014
460.4	236.6	17.71	0.013	1.162	0.032	99.999	99.999	0.635	0.016	1.296	0.015
332.4	289.9	17.714	0.01	1.195	0.034	99.999	99.999	0.679	0.015	1.28	0.013
637.3	500	17.715	0.014	1.079	0.031	0.282	0.086	0.667	0.019	1.323	0.018
654.7	130.4	17.717	0.014	1.059	0.031	99.999	99.999	0.657	0.018	1.295	0.015
270.3	570.8	17.736	0.011	1.018	0.028	99.999	99.999	0.62	0.016	1.215	0.013
773.2	789.6	17.756	0.013	1.221	0.031	99.999	99.999	0.629	0.018	1.279	0.015
947.8	510.1	17.757	0.014	1.173	0.039	99.999	99.999	0.684	0.018	1.383	0.016
848.4	634.6	17.758	0.013	1.104	0.031	99.999	99.999	0.674	0.017	1.372	0.015
271.4	293.9	17.762	0.013	1.327	0.04	99.999	99.999	0.748	0.017	1.501	0.014
599.7	480.7	17.762	0.013	1.08	0.035	99.999	99.999	0.648	0.018	1.341	0.014
396.1	530.2	17.764	0.014	1.121	0.035	99.999	99.999	0.686	0.018	1.344	0.015
171.3	697	17.768	0.012	1.24	0.032	99.999	99.999	0.697	0.017	1.339	0.014
473.7	619.3	17.771	0.014	1.16	0.037	99.999	99.999	0.711	0.018	1.336	0.017
352.8	601.4	17.775	0.015	2.14	0.075	99.999	99.999	1.231	0.02	2.34	0.017
644.7	501.5	17.781	0.013	1.382	0.039	99.999	99.999	0.856	0.017	1.499	0.015
495.8	754.9	17.782	0.011	99.999	99.999	99.999	99.999	1.138	0.015	2.198	0.012
612	731.4	17.783	0.015	1.084	0.031	99.999	99.999	0.647	0.02	99.999	99.999
594.3	135	17.786	0.015	1.1	0.035	99.999	99.999	0.658	0.019	1.315	0.018
894.3	258.4	17.786	0.013	1.11	0.033	99.999	99.999	0.624	0.017	1.396	0.014
176.1	418.4	17.787	0.012	1.145	0.036	99.999	99.999	0.692	0.017	1.318	0.014
37	537	17.798	0.012	1.108	0.035	0.296	0.108	0.65	0.019	1.301	0.017
202.8	614.2	17.816	0.015	1.15	0.037	99.999	99.999	0.699	0.021	1.325	0.0 2
100.3	831.9	17.817	0.018	1.254	0.044	99.999	99.999	0.781	0.023	1.535	0.02
349.5	443.3	17.818	0.014	1.244	0.035	99.999	99.999	0.722	0.019	1.46	0.016
620	710.2	17.823	0.016	0.953	0.032	99.999	99.999	0.526	0.021	1.116	0.019
697.3	808.6	17.825	0.012	1.166	0.036	99.999	99.999	0.667	0.016	1.332	0.015
702.2	313.4	17.826	0.01	0.929	0.032	0.337	0.083	0.635	0.016	1.224	0.015
901.3	624.2	17.829	0.013	1.18	0.037	99.999	99.999	0.674	0.017	1.351	0.015
40	988.9	17.831	0.017	1.087	0.044	99.999	99.999	0.642	0.027	1.285	0.023
853.3	284.8	17.831	0.013	1.142	0.031	99.999	99.999	0.652	0.016	1.301	0.015
395.1	491.5	17.841	0.016	1.121	0.037	99.999	99.999	0.713	0.022	1.415	0.019
701.8	917.8	17.841	0.014	1.113	0.034	99.999	99.999	0.565	0.019	1.197	0.016
680.3	990.6	17.844	0.014	1.105	0.034	99.999	99.999	0.66	0.018	1.341	0.015
18	523.6	17.853	0.016	1.836	0.056	99.999	99.999	0.99	0.021	2.025	0.018
454.2	604.3	17.875	0.014	1.13	0.04	99.999	99.999	0.661	0.018	1.306	0.016
808	847.1	17.901	0.014	1.144	0.037	99.999	99.999	0.671	0.018	1.37	0.016
423.7	945.2	17.902	0.015	1.178	0.039	99.999	99.999	0.662	0.019	1.354	0.017

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
934.4	643.1	17.907	0.023	1.1	0.035	0.362	0.103	0.697	0.018	1.411	0.016
158.7	860.2	17.909	0.014	1.164	0.037	99.999	99.999	0.593	0.02	1.298	0.018
933.2	454.9	17.915	0.014	1.82	0.054	99.999	99.999	1.113	0.017	2.093	0.014
212.8	312.1	17.918	0.017	1.966	0.062	99.999	99.999	1.062	0.022	2.11	0.017
423.1	473.2	17.923	0.014	1.285	0.042	99.999	99.999	0.678	0.021	1.334	0.018
256.8	290	17.926	0.022	1.18	0.053	99.999	99.999	0.746	0.031	1.418	0.026
768.3	456.2	17.927	0.015	1.095	0.04	99.999	99.999	0.767	0.019	1.477	0.017
800.6	29.4	17.937	0.014	1.333	0.038	99.999	99.999	0.755	0.019	1.517	0.015
408.6	342.1	17.938	0.011	1.383	0.041	99.999	99.999	0.851	0.018	1.676	0.013
819.9	70.2	17.941	0.015	1.177	0.038	99.999	99.999	0.699	0.02	1.347	0.017
619.3	600.4	17.942	0.015	1.16	0.038	99.999	99.999	0.718	0.02	1.414	0.018
685	318.2	17.947	0.022	1.167	0.045	0.338	0.145	0.653	0.031	99.999	99.999
759.6	596.5	17.949	0.015	1.039	0.037	99.999	99.999	0.669	0.02	1.294	0.019
631.4	957.1	17.954	0.015	1.155	0.038	99.999	99.999	0.665	0.02	1.334	0.017
103.3	152.3	17.956	0.012	1.875	0.057	99.999	99.999	1.035	0.018	2.017	0.013
168.4	572.7	17.957	0.015	1.202	0.038	99.999	99.999	0.657	0.02	1.305	0.018
232	672.9	17.957	0.014	1.076	0.035	99.999	99.999	0.659	0.019	1.312	0.016
833.2	591.5	17.963	0.015	1.228	0.041	99.999	99.999	0.677	0.02	1.362	0.018
540.5	391.8	17.966	0.014	2.186	0.077	99.999	99.999	1.34	0.018	2.453	0.015
732.5	883	17.971	0.014	1.174	0.042	99.999	99.999	0.655	0.019	1.271	0.016
598.9	30.6	17.974	0.014	1.311	0.043	99.999	99.999	0.739	0.019	1.44	0.018
740.2	383.7	17.987	0.014	1.058	0.036	99.999	99.999	0.683	0.018	1.383	0.018
802	146.5	17.987	0.017	1.962	0.08	99.999	99.999	1.105	0.021	2.155	0.018
885.8	577.4	17.992	0.014	1.125	0.039	99.999	99.999	0.768	0.019	1.429	0.017
532.5	462.6	18	0.017	1.157	0.045	99.999	99.999	0.687	0.021	1.312	0.021
894.3	338.5	18.007	0.015	2.014	0.058	99.999	99.999	1.14	0.019	2.213	0.016
515.8	864.9	18.019	0.014	1.205	0.045	99.999	99.999	0.741	0.021	1.374	0.022
795	576.5	18.019	0.015	1.112	0.036	99.999	99.999	0.618	0.021	1.33	0.018
149.5	240.8	18.021	0.016	1.349	0.048	99.999	99.999	0.756	0.02	1.502	0.018
920.5	611.5	18.024	0.014	1.123	0.037	99.999	99.999	0.71	0.019	1.44	0.017
305.1	181.3	18.027	0.018	1.35	0.044	99.999	99.999	0.735	0.023	1.521	0.02
61.8	47.7	18.035	0.015	1.319	0.054	99.999	99.999	0.737	0.021	1.495	0.018
365.8	415.3	18.037	0.021	1.221	0.049	99.999	99.999	0.707	0.034	1.434	0.027
802.9	423	18.046	0.015	1.632	0.051	99.999	99.999	0.922	0.019	1.883	0.016
357.9	121.2	18.047	0.014	1.069	0.036	99.999	99.999	0.601	0.02	1.27	0.016
227.5	614.8	18.05	0.015	1.885	0.061	99.999	99.999	1.044	0.019	2.069	0.016
221.6	732.1	18.058	0.016	1.354	0.044	99.999	99.999	0.726	0.02	1.401	0.018
668.8	333	18.073	0.016	1.1	0.043	99.999	99.999	0.621	0.021	1.31	0.019
675.5	609.9	18.074	0.016	1.119	0.041	99.999	99.999	0.69	0.022	1.268	0.043
531.4	458.6	18.077	0.018	1.193	0.047	99.999	99.999	0.62	0.023	1.33	0.02
613.9	660.8	18.087	0.015	1.106	0.04	99.999	99.999	0.646	0.019	1.327	0.017
224.7	288.7	18.089	0.016	2.236	0.074	99.999	99.999	1.198	0.021	2.306	0.017
493.7	688.9	18.093	0.014	1.382	0.048	99.999	99.999	0.768	0.019	1.521	0.017
761.6	179.8	18.096	0.016	1.225	0.046	99.999	99.999	0.584	0.021	1.25	0.019
163.1	475.8	18.108	0.015	1.132	0.043	99.999	99.999	0.694	0.022	1.307	0.019
729.5	255.7	18.112	0.018	2.025	0.085	99.999	99.999	1.153	0.023	2.206	0.019
438.5	375.8	18.12	0.014	1.361	0.043	99.999	99.999	0.788	0.019	1.495	0.016
619.9	803.7	18.129	0.017	1.054	0.042	99.999	99.999	0.69	0.02	1.349	0.019
653.4	98.1	18.137	0.018	1.188	0.044	99.999	99.999	0.709	0.024	1.439	0.021
536.9	405.5	18.143	0.015	1.175	0.04	99.999	99.999	0.652	0.021	1.362	0.018
447.6	730.4	18.145	0.016	1.235	0.049	99.999	99.999	0.675	0.02	1.375	0.019
701.6	478.9	18.146	0.017	1.485	0.055	99.999	99.999	0.956	0.021	1.982	0.018
15.4	93.9	18.154	0.018	1.272	0.051	99.999	99.999	0.727	0.026	1.413	0.021
598.9	253.9	18.159	0.015	1.367	0.045	99.999	99.999	0.74	0.02	1.453	0.017
877.5	267.3	18.166	0.016	1.282	0.044	99.999	99.999	0.71	0.022	1.41	0.018
791.9	189.1	18.168	0.014	1.401	0.05	99.999	99.999	0.802	0.02	1.445	0.017
388.8	719	18.172	0.017	1.161	0.049	99.999	99.999	0.669	0.022	1.362	0.019
621	585.4	18.177	0.015	1.159	0.042	99.999	99.999	0.707	0.021	1.377	0.018
641.8	476.2	18.178	0.02	1.327	0.055	99.999	99.999	0.689	0.027	1.43	0.022
462.2	293.6	18.192	0.017	1.472	0.051	99.999	99.999	0.753	0.023	1.451	0.019
472.3	832.6	18.197	0.015	1.195	0.046	99.999	99.999	0.692	0.021	1.398	0.017
905.9	445	18.2	0.016	1.039	0.041	99.999	99.999	0.664	0.021	1.325	0.019
530.1	781.7	18.206	0.014	1.257	0.042	99.999	99.999	0.708	0.019	1.351	0.019
240.9	511.2	18.21	0.016	1.105	0.043	99.999	99.999	0.597	0.02	1.258	0.018
959.8	257.1	18.213	0.015	1.313	0.052	99.999	99.999	0.776	0.021	1.546	0.018

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
237.3	582.9	18.223	0.014	2.026	0.087	99.999	99.999	1.101	0.019	2.082	0.016
621.9	282.1	18.223	0.016	1.277	0.041	99.999	99.999	0.678	0.022	1.307	0.019
883.9	455.7	18.224	0.019	1.351	0.054	99.999	99.999	0.85	0.024	1.542	0.021
205.8	201.7	18.229	0.018	1.372	0.049	99.999	99.999	0.748	0.023	1.478	0.021
787.6	590.6	18.231	0.016	1.22	0.042	99.999	99.999	0.746	0.022	1.435	0.019
634.7	113.5	18.232	0.016	1.209	0.048	99.999	99.999	0.629	0.021	1.333	0.019
558.8	400.5	18.24	0.016	1.086	0.043	99.999	99.999	0.621	0.023	1.283	0.019
572.2	773.6	18.241	0.016	1.268	0.044	99.999	99.999	0.692	0.021	1.355	0.02
850.5	399.2	18.255	0.015	1.172	0.05	99.999	99.999	0.708	0.02	1.416	0.018
516.6	271.4	18.261	0.018	1.145	0.049	99.999	99.999	0.648	0.024	1.328	0.021
554.8	69.2	18.261	0.019	1.212	0.049	99.999	99.999	0.727	0.024	1.418	0.021
892.2	366.9	18.263	0.017	1.127	0.048	99.999	99.999	0.693	0.022	1.381	0.021
17.4	245.4	18.266	0.017	1.784	0.084	99.999	99.999	0.979	0.022	1.973	0.019
439.4	832.7	18.267	0.017	1.143	0.045	99.999	99.999	0.64	0.022	1.311	0.021
810.8	114.7	18.271	0.02	1.284	0.054	99.999	99.999	0.644	0.026	1.307	0.023
463.5	323	18.272	0.015	1.095	0.044	99.999	99.999	0.692	0.02	1.321	0.018
930.3	154.4	18.274	0.02	1.912	0.086	99.999	99.999	1.08	0.025	2.096	0.021
86.9	655	18.281	0.019	1.068	0.049	99.999	99.999	0.676	0.023	1.321	0.022
907	828.6	18.284	0.017	0.973	0.041	99.999	99.999	0.632	0.023	1.337	0.02
367	705.1	18.289	0.016	1.188	0.05	99.999	99.999	0.645	0.022	1.337	0.019
244.2	136.1	18.29	0.02	1.204	0.046	99.999	99.999	0.637	0.026	1.301	0.022
781	975.6	18.292	0.023	1.174	0.055	99.999	99.999	0.759	0.031	1.466	0.058
208.4	499.8	18.293	0.016	1.255	0.05	99.999	99.999	0.683	0.022	1.44	0.02
597.4	714.8	18.304	0.018	99.999	99.999	99.999	99.999	1.101	0.023	2.184	0.02
891.4	673.7	18.314	0.015	1.836	0.074	99.999	99.999	1.029	0.021	2.029	0.016
361.8	962.8	18.317	0.015	1.698	0.058	99.999	99.999	0.964	0.02	1.999	0.017
351.6	639.1	18.324	0.019	1.153	0.053	99.999	99.999	0.711	0.024	1.358	0.021
546.2	74.2	18.326	0.019	1.496	0.065	99.999	99.999	0.798	0.025	1.659	0.021
935.6	741	18.335	0.014	1.212	0.05	99.999	99.999	0.717	0.02	1.436	0.017
12.2	735.5	18.349	0.019	1.903	0.078	99.999	99.999	1.045	0.026	2.07	0.021
625.1	494.4	18.351	0.018	1.22	0.049	99.999	99.999	0.739	0.025	1.368	0.022
278.9	767.7	18.355	0.02	1.338	0.057	99.999	99.999	0.674	0.027	1.465	0.024
520	986.4	18.365	0.019	1.278	0.051	99.999	99.999	0.655	0.026	1.351	0.022
563	579.2	18.371	0.018	1.01	0.049	99.999	99.999	0.689	0.025	1.32	0.021
332.9	348.7	18.375	0.019	1.35	0.063	99.999	99.999	0.77	0.026	1.454	0.022
469.5	563	18.393	0.02	1.21	0.051	99.999	99.999	0.665	0.027	1.433	0.024
403.8	125.3	18.394	0.02	99.999	99.999	99.999	99.999	0.786	0.025	1.588	0.022
411.4	552.6	18.397	0.021	1.344	0.059	99.999	99.999	0.7	0.027	1.409	0.024
321.3	465.6	18.414	0.02	1.148	0.046	99.999	99.999	0.687	0.027	1.394	0.025
387	641	18.416	0.017	1.798	0.092	99.999	99.999	1.077	0.022	2.111	0.019
36.1	704.7	18.421	0.019	1.391	0.069	99.999	99.999	0.777	0.025	1.478	0.022
820.9	571	18.421	0.017	1.227	0.058	99.999	99.999	0.847	0.022	1.556	0.02
951.9	619	18.425	0.017	1.454	0.063	99.999	99.999	0.869	0.023	1.771	0.019
666.2	213	18.428	0.019	1.053	0.048	99.999	99.999	0.724	0.025	1.362	0.022
570.6	947.2	18.43	0.017	1.142	0.058	99.999	99.999	0.69	0.022	1.348	0.02
803.1	989.2	18.43	0.015	1.456	0.061	99.999	99.999	0.852	0.024	1.572	0.022
679.4	847.1	18.434	0.017	1.176	0.053	99.999	99.999	0.729	0.021	1.46	0.019
600.5	568.2	18.438	0.02	1.13	0.053	99.999	99.999	0.671	0.027	1.408	0.023
720.7	449.5	18.457	0.02	1.203	0.051	99.999	99.999	0.648	0.028	1.373	0.023
725.9	703.4	18.469	0.017	1.391	0.063	99.999	99.999	0.782	0.022	1.621	0.019
827.4	880.4	18.475	0.02	1.186	0.055	99.999	99.999	0.699	0.025	1.394	0.023
15.9	411.4	18.476	0.022	1.653	0.083	99.999	99.999	0.955	0.028	1.799	0.024
56.8	736.7	18.477	0.022	1.117	0.055	99.999	99.999	0.74	0.028	1.402	0.025
888.8	854.7	18.479	0.019	1.084	0.052	99.999	99.999	0.742	0.025	1.398	0.022
981.2	553.4	18.483	0.018	1.378	0.059	99.999	99.999	0.669	0.024	1.418	0.021
406	258.3	18.484	0.017	99.999	99.999	99.999	99.999	0.853	0.024	1.547	0.02
406.2	35.9	18.485	0.02	1.315	0.059	99.999	99.999	0.651	0.026	1.365	0.023
441.8	798.6	18.485	0.02	1.262	0.059	99.999	99.999	0.635	0.025	1.376	0.022
172.9	502.5	18.486	0.019	1.209	0.058	99.999	99.999	0.679	0.024	1.426	0.023
173.6	727.2	18.486	0.019	1.394	0.065	99.999	99.999	0.737	0.025	1.377	0.022
426.2	354.7	18.488	0.019	1.768	0.08	99.999	99.999	1.056	0.025	2.073	0.02
734.2	470.6	18.491	0.019	1.138	0.052	99.999	99.999	0.681	0.024	1.388	0.024
888	539.8	18.496	0.019	1.882	0.097	99.999	99.999	1.103	0.026	2.092	0.022
105.8	106.7	18.498	0.019	1.485	0.075	99.999	99.999	0.969	0.026	1.861	0.022
634.7	659.3	18.507	0.02	1.102	0.05	99.999	99.999	0.679	0.027	1.355	0.023

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
839.3	690.7	18.507	0.021	1.326	0.063	99.999	99.999	0.729	0.027	1.398	0.024
433.4	812.5	18.524	0.021	1.128	0.06	99.999	99.999	0.67	0.027	1.37	0.025
775.2	917	18.527	0.018	1.191	0.054	99.999	99.999	0.719	0.024	1.444	0.021
6.7	420.3	18.529	0.02	1.166	0.054	99.999	99.999	0.681	0.027	1.455	0.023
733.6	48.3	18.529	0.022	1.287	0.063	99.999	99.999	0.807	0.029	1.576	0.024
162.1	236.6	18.53	0.022	1.199	0.063	99.999	99.999	0.774	0.028	1.415	0.026
879.8	393.4	18.531	0.021	1.074	0.053	99.999	99.999	0.756	0.028	1.521	0.024
95.3	992.1	18.532	0.029	1.219	0.068	99.999	99.999	0.763	0.043	1.484	0.06
297.4	334.9	18.546	0.02	1.262	0.069	99.999	99.999	0.782	0.026	1.46	0.024
671.1	823.1	18.552	0.014	1.87	0.088	99.999	99.999	1.144	0.021	2.197	0.016
426	601.5	18.57	0.021	99.999	99.999	99.999	99.999	1.114	0.028	2.175	0.023
88	649.9	18.573	0.02	1.128	0.059	99.999	99.999	0.669	0.028	1.364	0.024
561.4	469.1	18.58	0.019	1.143	0.051	99.999	99.999	0.789	0.025	1.397	0.024
494	329.9	18.582	0.02	1.125	0.058	99.999	99.999	0.703	0.026	1.409	0.024
220.3	609.4	18.592	0.019	1.201	0.059	99.999	99.999	0.699	0.025	1.389	0.021
929.4	100.7	18.599	0.019	1.093	0.053	99.999	99.999	0.664	0.028	1.359	0.023
657.5	710.9	18.6	0.019	1.262	0.068	99.999	99.999	0.692	0.026	1.453	0.022
658.8	425.5	18.601	0.02	1.083	0.066	99.999	99.999	0.678	0.027	1.41	0.023
692.9	956	18.601	0.021	1.256	0.062	99.999	99.999	0.746	0.027	1.446	0.025
797.3	787.9	18.606	0.02	1.412	0.07	99.999	99.999	0.799	0.028	1.499	0.024
225	319.2	18.609	0.019	1.77	0.088	99.999	99.999	1.011	0.025	2.037	0.02
394.2	560.6	18.624	0.023	1.181	0.061	99.999	99.999	0.727	0.029	1.445	0.026
186.5	176.4	18.626	0.022	1.727	0.106	99.999	99.999	0.997	0.028	2.076	0.024
402.9	759.5	18.633	0.024	1.173	0.064	99.999	99.999	0.713	0.029	1.385	0.027
465.6	176.8	18.636	0.021	1.256	0.062	99.999	99.999	0.695	0.028	1.427	0.024
272.8	725.2	18.637	0.02	1.18	0.06	99.999	99.999	0.796	0.026	1.482	0.025
693.1	7.2	18.64	0.018	1.077	0.054	99.999	99.999	0.672	0.025	1.38	0.022
458.4	752.8	18.646	0.022	1.182	0.062	99.999	99.999	0.718	0.029	1.406	0.025
93.2	893.1	18.649	0.024	1.155	0.07	99.999	99.999	0.708	0.033	1.411	0.028
591.8	234.8	18.655	0.021	1.091	0.058	99.999	99.999	0.764	0.027	1.435	0.024
280.8	895.1	18.659	0.02	1.236	0.071	99.999	99.999	0.705	0.027	1.473	0.023
935.1	711.8	18.659	0.018	1.458	0.068	99.999	99.999	0.767	0.024	1.442	0.021
930.1	130.4	18.66	0.02	1.181	0.063	99.999	99.999	0.724	0.028	1.447	0.026
595	258.4	18.662	0.023	1.292	0.067	99.999	99.999	0.708	0.029	1.431	0.027
614.2	792.3	18.663	0.023	1.322	0.069	99.999	99.999	0.802	0.03	1.562	0.026
794.7	868.4	18.668	0.02	1.37	0.066	99.999	99.999	0.803	0.025	1.627	0.022
721	157.3	18.671	0.021	99.999	99.999	99.999	99.999	1.159	0.028	2.278	0.022
654.6	611.3	18.675	0.022	1.265	0.067	99.999	99.999	0.76	0.027	1.418	0.026
907.4	893.5	18.676	0.021	1.916	0.089	99.999	99.999	1.021	0.027	2.031	0.022
65.7	578.3	18.677	0.02	1.256	0.077	99.999	99.999	0.863	0.026	1.654	0.023
430.1	567.4	18.696	0.021	1.289	0.073	99.999	99.999	0.785	0.029	1.55	0.025
275.2	459.6	18.699	0.021	1.168	0.063	99.999	99.999	0.695	0.028	1.415	0.026
117.1	252.6	18.706	0.022	1.209	0.076	99.999	99.999	0.789	0.03	1.522	0.025
238.7	332.1	18.707	0.022	1.273	0.063	99.999	99.999	0.733	0.028	1.485	0.024
608.8	898.4	18.709	0.02	1.311	0.068	99.999	99.999	0.724	0.026	1.422	0.023
523.2	129.9	18.712	0.022	1.091	0.069	99.999	99.999	0.694	0.028	1.379	0.026
245.7	564	18.717	0.023	1.195	0.071	99.999	99.999	0.704	0.029	1.447	0.025
726.4	51.2	18.719	0.024	1.101	0.066	99.999	99.999	0.705	0.03	1.403	0.027
859.9	211.4	18.721	0.024	1.136	0.064	99.999	99.999	0.705	0.032	1.363	0.03
565.1	651.9	18.722	0.022	1.177	0.065	99.999	99.999	0.762	0.029	1.448	0.027
277.8	299.6	18.725	0.021	1.394	0.087	99.999	99.999	0.764	0.029	1.512	0.023
238.2	140.8	18.727	0.02	1.25	0.07	99.999	99.999	0.833	0.025	1.588	0.024
809.9	303.2	18.729	0.024	1.082	0.06	99.999	99.999	0.712	0.031	1.371	0.027
55.8	807.8	18.73	0.024	1.373	0.081	99.999	99.999	0.753	0.032	1.572	0.027
395.8	103.6	18.735	0.023	1.215	0.068	99.999	99.999	0.762	0.03	1.615	0.026
268.8	801.9	18.741	0.025	1.145	0.065	99.999	99.999	0.722	0.03	1.479	0.029
591.5	119.9	18.743	0.021	1.159	0.07	99.999	99.999	0.688	0.028	1.442	0.024
891.8	212.7	18.744	0.019	1.225	0.076	99.999	99.999	0.692	0.028	1.445	0.023
912.1	684.9	18.745	0.026	1.251	0.063	99.999	99.999	0.76	0.032	1.482	0.028
198.7	828.7	18.75	0.024	1.297	0.075	99.999	99.999	0.737	0.031	1.449	0.028
125.7	224.4	18.75	0.026	1.297	0.082	99.999	99.999	0.807	0.034	1.508	0.029
347.4	581.8	18.756	0.025	1.258	0.072	99.999	99.999	0.607	0.031	1.328	0.028
942.1	673.1	18.757	0.02	1.201	0.076	99.999	99.999	0.755	0.027	1.421	0.023
741.3	946.6	18.763	0.021	99.999	99.999	99.999	99.999	0.716	0.026	1.432	0.025
140.3	207.4	18.763	0.026	1.45	0.094	99.999	99.999	0.749	0.034	1.548	0.029

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
351.4	347.3	18.765	0.027	1.316	0.083	99.999	99.999	0.734	0.034	1.465	0.031
150.3	363.3	18.767	0.026	1.226	0.074	99.999	99.999	0.669	0.034	1.386	0.029
466.5	652.6	18.778	0.023	1.82	0.121	99.999	99.999	1.079	0.028	2.077	0.024
8.9	594.7	18.778	0.027	1.061	0.075	99.999	99.999	0.738	0.035	99.999	99.999
50.1	352.3	18.779	0.025	1.284	0.071	99.999	99.999	0.813	0.03	1.49	0.029
545.7	421.9	18.779	0.023	1.144	0.07	99.999	99.999	0.749	0.032	1.417	0.027
511.5	47.3	18.785	0.025	1.352	0.084	99.999	99.999	0.81	0.033	1.668	0.027
702.3	563.3	18.786	0.023	1.173	0.074	99.999	99.999	0.646	0.032	1.373	0.029
356.5	291.2	18.787	0.026	1.23	0.069	99.999	99.999	0.8	0.036	1.585	0.03
64.4	558.1	18.787	0.025	1.204	0.074	99.999	99.999	0.64	0.035	1.327	0.028
540.5	58.1	18.787	0.018	99.999	99.999	99.999	99.999	1.115	0.025	2.121	0.019
262.6	9	18.8	0.025	1.289	0.076	99.999	99.999	0.687	0.033	1.436	0.028
486.4	693.1	18.802	0.027	1.422	0.082	99.999	99.999	0.813	0.036	1.446	0.07
335.1	469.9	18.806	0.023	1.31	0.08	99.999	99.999	0.737	0.029	1.485	0.028
150	217.5	18.809	0.023	1.1	0.065	99.999	99.999	0.74	0.031	1.425	0.026
277.6	883.6	18.81	0.021	99.999	99.999	99.999	99.999	1.061	0.028	2.08	0.023
901.4	713.3	18.811	0.022	1.186	0.072	99.999	99.999	0.747	0.029	1.417	0.026
24.7	696.2	18.817	0.027	99.999	99.999	99.999	99.999	1.196	0.034	2.237	0.029
2.7	814.9	18.819	0.026	1.34	0.088	99.999	99.999	0.887	0.037	1.718	0.03
43	43.5	18.827	0.023	1.423	0.076	99.999	99.999	0.798	0.033	1.607	0.027
857.4	830.6	18.835	0.023	1.187	0.073	99.999	99.999	0.724	0.03	1.417	0.026
512.6	419.2	18.836	0.024	1.339	0.087	99.999	99.999	0.725	0.032	1.482	0.028
664.9	298.5	18.842	0.024	1.202	0.073	99.999	99.999	0.67	0.032	1.509	0.026
948.2	586.2	18.844	0.023	1.339	0.074	99.999	99.999	0.766	0.03	1.627	0.026
172.3	532.8	18.847	0.027	1.233	0.079	99.999	99.999	0.734	0.035	1.491	0.031
691.2	336.4	18.848	0.025	1.257	0.076	99.999	99.999	0.777	0.032	1.472	0.029
751.7	942.3	18.849	0.023	1.518	0.102	99.999	99.999	0.92	0.031	1.642	0.025
34.1	957.5	18.852	0.027	99.999	99.999	99.999	99.999	1.154	0.036	2.21	0.029
777.4	446.8	18.853	0.027	1.112	0.072	99.999	99.999	0.722	0.034	1.419	0.03
239.2	294.5	18.854	0.025	1.475	0.09	99.999	99.999	0.824	0.033	1.601	0.029
944.3	845.7	18.857	0.022	1.698	0.112	99.999	99.999	1.066	0.028	2.034	0.024
152.8	972.9	18.863	0.027	1.678	0.128	99.999	99.999	0.828	0.034	1.571	0.033
860.9	341.8	18.871	0.027	1.232	0.081	99.999	99.999	0.713	0.034	1.414	0.029
310	334.4	18.875	0.023	1.18	0.073	99.999	99.999	0.766	0.032	1.471	0.027
632.8	988.9	18.877	0.023	1.259	0.076	99.999	99.999	0.65	0.029	1.361	0.028
348.4	561.9	18.884	0.024	1.366	0.078	99.999	99.999	0.694	0.033	1.428	0.028
550.6	206.7	18.886	0.027	1.425	0.085	99.999	99.999	0.775	0.035	1.492	0.031
387.7	486.7	18.891	0.027	99.999	99.999	99.999	99.999	0.776	0.038	1.552	0.032
466.4	687.2	18.892	0.025	1.241	0.068	99.999	99.999	0.698	0.034	1.474	0.028
169.6	66.9	18.895	0.025	1.265	0.092	99.999	99.999	0.831	0.035	1.658	0.028
614.7	642.8	18.897	0.025	1.108	0.075	99.999	99.999	0.671	0.033	1.356	0.029
560.2	617.6	18.902	0.024	1.239	0.086	99.999	99.999	0.713	0.031	1.356	0.029
536.2	155.9	18.906	0.023	99.999	99.999	99.999	99.999	1.01	0.029	2.009	0.025
545	735.4	18.907	0.024	1.326	0.079	99.999	99.999	0.697	0.03	1.403	0.028
556.1	395.7	18.909	0.021	1.159	0.068	99.999	99.999	0.652	0.03	1.387	0.025
181.3	621.1	18.925	0.026	99.999	99.999	99.999	99.999	0.949	0.034	2.001	0.027
623.1	451.9	18.927	0.03	99.999	99.999	99.999	99.999	0.757	0.038	1.411	0.035
485.2	430.9	18.929	0.029	1.186	0.086	99.999	99.999	0.69	0.037	1.424	0.034
975.5	386.4	18.929	0.023	1.439	0.092	99.999	99.999	0.841	0.032	1.603	0.027
597.1	413.6	18.935	0.026	1.276	0.085	99.999	99.999	0.801	0.036	1.533	0.03
275.3	424.3	18.939	0.024	99.999	99.999	99.999	99.999	0.835	0.033	1.705	0.027
412.9	240.8	18.945	0.021	1.414	0.098	99.999	99.999	0.897	0.028	1.598	0.023
979.6	659.5	18.946	0.026	1.298	0.08	99.999	99.999	0.671	0.034	1.435	0.028
488.9	460.3	18.947	0.025	1.098	0.083	99.999	99.999	0.745	0.036	1.487	0.031
171.6	458.6	18.957	0.029	1.238	0.082	99.999	99.999	0.721	0.038	1.393	0.033
693.7	910.9	18.96	0.025	1.233	0.085	99.999	99.999	0.685	0.033	1.352	0.031
668.4	472.2	18.964	0.027	1.578	0.112	99.999	99.999	1.063	0.035	1.967	0.033
184.3	299.9	18.965	0.028	1.151	0.084	99.999	99.999	0.721	0.035	1.468	0.032
50	754.7	18.968	0.025	99.999	99.999	99.999	99.999	1.12	0.034	2.201	0.027
576.4	740.5	18.974	0.026	1.053	0.068	99.999	99.999	0.751	0.035	1.385	0.03
757.6	779.7	18.975	0.027	1.537	0.106	99.999	99.999	0.785	0.037	99.999	99.999
376.1	876.9	18.976	0.027	1.212	0.075	99.999	99.999	0.743	0.034	1.388	0.03
349.6	294.8	18.98	0.027	1.006	0.073	99.999	99.999	0.731	0.035	1.503	0.031
929.2	388.7	18.983	0.028	1.214	0.085	99.999	99.999	0.774	0.038	1.525	0.032
198.4	796.7	18.998	0.027	99.999	99.999	99.999	99.999	0.89	0.033	1.83	0.029

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
861.5	155.3	18.999	0.025	1.493	0.093	99.999	99.999	0.986	0.032	2.153	0.027
670.2	608.5	19	0.03	1.249	0.086	99.999	99.999	0.84	0.04	1.502	0.042
734.8	350.9	19	0.027	1.318	0.09	99.999	99.999	0.799	0.036	1.665	0.03
579	230.4	19.007	0.029	1.608	0.127	99.999	99.999	1.03	0.038	1.896	0.032
19.5	529.3	19.011	0.03	1.088	0.084	99.999	99.999	0.788	0.038	1.405	0.035
17.1	340.5	19.012	0.024	1.449	0.089	99.999	99.999	0.673	0.033	1.466	0.029
667.3	366.7	19.013	0.024	1.272	0.079	99.999	99.999	0.735	0.032	1.523	0.027
981	611.8	19.017	0.025	1.456	0.095	99.999	99.999	0.832	0.033	1.692	0.029
229.2	141.3	19.019	0.024	1.331	0.095	99.999	99.999	0.709	0.033	1.439	0.029
562.9	592.9	19.023	0.029	1.216	0.079	99.999	99.999	0.77	0.045	1.399	0.033
173.4	175	19.029	0.026	1.172	0.097	99.999	99.999	0.727	0.034	1.476	0.03
949.5	891.4	19.032	0.024	1.401	0.096	99.999	99.999	1.036	0.031	2.1	0.025
937.4	618.2	19.033	0.024	1.579	0.102	99.999	99.999	0.961	0.032	1.736	0.027
698	721.7	19.037	0.025	1.131	0.083	99.999	99.999	0.798	0.032	1.517	0.028
271.4	750.5	19.039	0.03	1.18	0.094	99.999	99.999	0.798	0.04	1.538	0.035
317.9	576.3	19.052	0.027	99.999	99.999	99.999	99.999	1.027	0.035	1.91	0.029
413.3	647.7	19.059	0.026	1.327	0.092	99.999	99.999	0.813	0.034	1.487	0.03
771	820.2	19.065	0.025	1.461	0.106	99.999	99.999	1.017	0.033	1.909	0.027
224	687.2	19.071	0.029	99.999	99.999	99.999	99.999	0.996	0.037	1.9	0.032
233.9	766.3	19.071	0.024	99.999	99.999	99.999	99.999	1.115	0.032	2.141	0.027
722.2	846.2	19.079	0.023	1.334	0.094	99.999	99.999	0.736	0.031	1.433	0.028
402.4	260.7	19.086	0.035	99.999	99.999	99.999	99.999	0.653	0.045	1.487	0.039
232.1	186.3	19.087	0.027	99.999	99.999	99.999	99.999	0.82	0.036	1.7	0.03
213.3	389.2	19.094	0.031	1.402	0.111	99.999	99.999	0.75	0.04	1.547	0.035
501.3	143	19.098	0.023	1.22	0.084	99.999	99.999	0.76	0.033	1.525	0.027
276.2	643.8	19.104	0.026	1.214	0.089	99.999	99.999	0.813	0.035	1.49	0.032
831	73.2	19.106	0.028	1.2	0.088	99.999	99.999	0.866	0.037	1.63	0.032
570.2	460.2	19.108	0.025	1.488	0.102	99.999	99.999	0.769	0.034	1.474	0.031
507.6	642.2	19.109	0.028	1.337	0.094	99.999	99.999	0.792	0.037	1.581	0.031
760.9	778.7	19.12	0.032	1.369	0.113	99.999	99.999	0.808	0.043	99.999	99.999
534.9	478.8	19.126	0.025	1.333	0.113	99.999	99.999	0.818	0.031	1.616	0.029
226.9	6.4	19.132	0.033	1.37	0.106	99.999	99.999	0.767	0.041	1.659	0.036
104.2	808	19.132	0.028	99.999	99.999	99.999	99.999	0.704	0.039	1.455	0.032
429.2	419.6	19.134	0.029	1.172	0.089	99.999	99.999	0.663	0.038	1.421	0.033
594.5	788.4	19.134	0.03	1.297	0.09	99.999	99.999	0.77	0.038	1.507	0.034
769.1	613.9	19.134	0.027	99.999	99.999	99.999	99.999	1.019	0.035	1.987	0.03
558.6	731.8	19.145	0.029	99.999	99.999	99.999	99.999	1.156	0.037	2.132	0.031
668.6	771.5	19.148	0.034	1.164	0.096	99.999	99.999	0.729	0.044	1.504	0.038
39.4	213.1	19.151	0.029	1.171	0.09	99.999	99.999	0.72	0.038	1.532	0.033
558.4	911.3	19.161	0.029	1.171	0.098	99.999	99.999	0.749	0.039	1.4	0.033
168.9	230.6	19.169	0.027	99.999	99.999	99.999	99.999	0.767	0.037	1.501	0.032
327.9	155	19.174	0.026	1.198	0.105	99.999	99.999	0.791	0.036	1.43	0.03
201	656.9	19.182	0.03	1.24	0.1	99.999	99.999	0.777	0.038	1.452	0.034
990.9	145.5	19.19	0.04	1.174	0.092	99.999	99.999	0.722	0.048	1.437	0.044
900.6	979.6	19.195	0.029	99.999	99.999	99.999	99.999	1.066	0.038	2.435	0.03
506.9	504.6	19.215	0.028	1.373	0.121	99.999	99.999	0.739	0.038	1.539	0.032
479.8	341.5	19.217	0.033	1.648	0.129	99.999	99.999	0.834	0.042	1.604	0.038
296.1	587.5	19.223	0.034	99.999	99.999	99.999	99.999	0.91	0.043	1.79	0.037
334.8	580	19.229	0.024	99.999	99.999	99.999	99.999	0.73	0.033	1.572	0.029
629.2	158.7	19.232	0.028	0.98	0.087	99.999	99.999	0.856	0.037	1.648	0.032
135.9	886.4	19.233	0.026	99.999	99.999	99.999	99.999	1.038	0.036	2.093	0.028
252.3	695.7	19.244	0.027	1.307	0.122	99.999	99.999	0.86	0.036	1.625	0.032
941.5	249.1	19.261	0.027	1.269	0.095	99.999	99.999	0.778	0.037	1.555	0.032
11.8	120	19.268	0.031	99.999	99.999	99.999	99.999	0.784	0.043	1.513	0.038
89.6	298.8	19.273	0.034	1.246	0.133	99.999	99.999	0.778	0.042	1.471	0.038
352.1	224.3	19.274	0.025	99.999	99.999	99.999	99.999	0.782	0.037	1.467	0.032
871.6	626.3	19.274	0.032	99.999	99.999	99.999	99.999	0.807	0.04	1.532	0.036
658.1	13.8	19.275	0.031	1.184	0.125	99.999	99.999	0.72	0.043	1.577	0.038
851.6	854.6	19.276	0.028	1.402	0.11	99.999	99.999	0.702	0.038	1.452	0.034
781.8	587.7	19.277	0.038	1.023	0.09	99.999	99.999	0.686	0.047	1.484	0.043
837.6	23.8	19.279	0.036	99.999	99.999	99.999	99.999	0.929	0.046	1.625	0.042
172.2	822.1	19.293	0.035	99.999	99.999	99.999	99.999	0.766	0.045	1.491	0.039
25.1	391.8	19.299	0.033	1.18	0.104	99.999	99.999	0.739	0.044	1.511	0.037
400.3	121.8	19.307	0.035	99.999	99.999	99.999	99.999	0.778	0.047	1.509	0.039
443.6	558.8	19.309	0.035	99.999	99.999	99.999	99.999	0.808	0.045	1.626	0.039

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
444.7	621.8	19.309	0.034	1.228	0.103	99.999	99.999	0.781	0.042	1.514	0.039
456.8	550	19.309	0.039	1.448	0.128	99.999	99.999	0.735	0.053	1.484	0.05
728.4	917.1	19.314	0.025	99.999	99.999	99.999	99.999	0.919	0.033	1.728	0.03
462.2	411.7	19.318	0.029	99.999	99.999	99.999	99.999	0.947	0.039	1.675	0.034
277.9	409.2	19.319	0.032	1.394	0.111	99.999	99.999	0.763	0.043	1.523	0.034
56.8	911.5	19.322	0.032	99.999	99.999	99.999	99.999	0.757	0.044	1.532	0.038
677.5	105.9	19.326	0.03	99.999	99.999	99.999	99.999	1.054	0.04	2.148	0.031
27	900.4	19.329	0.024	99.999	99.999	99.999	99.999	0.744	0.035	1.549	0.031
622.8	122.7	19.334	0.032	99.999	99.999	99.999	99.999	0.893	0.04	1.6	0.037
602.8	732.5	19.338	0.032	99.999	99.999	99.999	99.999	0.845	0.042	1.981	0.039
938.8	787	19.339	0.031	0.058	0.049	−0.805	0.068	−0.014	0.051	99.999	99.999
63	668.3	19.342	0.035	99.999	99.999	99.999	99.999	0.932	0.045	1.785	0.039
825.8	224.6	19.344	0.03	1.391	0.128	99.999	99.999	0.923	0.039	1.644	0.036
275.4	629	19.345	0.033	1.179	0.127	99.999	99.999	0.694	0.042	1.487	0.037
391.1	897.3	19.346	0.025	99.999	99.999	99.999	99.999	0.81	0.034	1.552	0.03
637.1	836.8	19.347	0.034	1.119	0.105	99.999	99.999	0.795	0.045	1.547	0.039
436.3	498.3	19.349	0.034	99.999	99.999	99.999	99.999	0.921	0.044	1.863	0.038
539.7	616	19.352	0.036	0.989	0.112	99.999	99.999	0.747	0.046	1.48	0.041
464.9	20.1	19.357	0.034	99.999	99.999	99.999	99.999	1.036	0.042	2.132	0.036
294.7	203	19.359	0.036	99.999	99.999	99.999	99.999	0.842	0.046	1.649	0.039
849.2	313.5	19.359	0.031	99.999	99.999	99.999	99.999	0.809	0.041	1.512	0.035
666.8	410.8	19.361	0.034	99.999	99.999	99.999	99.999	0.856	0.043	1.542	0.038
466.8	965.6	19.366	0.035	1.287	0.116	99.999	99.999	0.752	0.046	1.431	0.04
388.6	817.6	19.374	0.031	99.999	99.999	99.999	99.999	0.997	0.04	1.83	0.037
735.7	421.1	19.378	0.027	99.999	99.999	99.999	99.999	0.789	0.038	1.559	0.034
882.1	491.4	19.378	0.039	1.297	0.121	99.999	99.999	0.777	0.049	1.575	0.043
635.9	714.2	19.385	0.046	99.999	99.999	99.999	99.999	0.773	0.057	1.455	0.052
668.2	864.9	19.387	0.042	99.999	99.999	99.999	99.999	0.798	0.054	1.537	0.048
330.7	54.1	19.388	0.032	99.999	99.999	99.999	99.999	0.757	0.043	1.49	0.036
215.4	168.8	19.389	0.034	99.999	99.999	99.999	99.999	0.647	0.047	1.336	0.04
560.4	642.7	19.391	0.032	99.999	99.999	99.999	99.999	0.851	0.042	1.644	0.036
290.7	346.6	19.396	0.035	99.999	99.999	99.999	99.999	0.905	0.046	1.718	0.038
141	482	19.4	0.038	99.999	99.999	99.999	99.999	0.794	0.047	1.655	0.041
603.6	656.6	19.401	0.04	99.999	99.999	99.999	99.999	0.641	0.05	1.385	0.044
477.4	62.9	19.402	0.032	99.999	99.999	99.999	99.999	0.887	0.043	1.788	0.036
119	76	19.402	0.036	99.999	99.999	99.999	99.999	0.741	0.047	1.436	0.042
280	985.5	19.406	0.031	99.999	99.999	99.999	99.999	0.661	0.043	1.476	0.039
819	832.4	19.407	0.034	1.239	0.139	99.999	99.999	0.802	0.042	1.491	0.038
475.8	228.1	19.408	0.034	1.075	0.103	99.999	99.999	0.794	0.044	1.474	0.041
119.9	860.2	19.408	0.033	99.999	99.999	99.999	99.999	0.897	0.044	1.647	0.038
858	819.3	19.417	0.032	99.999	99.999	99.999	99.999	0.891	0.042	1.776	0.035
264.9	442.4	19.421	0.032	99.999	99.999	99.999	99.999	0.712	0.044	1.467	0.036
512.4	862.4	19.422	0.034	99.999	99.999	99.999	99.999	0.923	0.045	1.66	0.042
666.2	195.5	19.422	0.039	99.999	99.999	99.999	99.999	0.661	0.051	1.418	0.045
457.7	270.4	19.423	0.036	99.999	99.999	99.999	99.999	0.959	0.044	1.946	0.038
882	94.6	19.431	0.035	1.163	0.121	99.999	99.999	0.73	0.045	1.481	0.04
483.8	917.2	19.433	0.035	1.173	0.108	99.999	99.999	0.729	0.046	1.489	0.041
180.5	491	19.434	0.031	99.999	99.999	99.999	99.999	0.755	0.044	1.516	0.037
929.2	603.3	19.434	0.033	1.238	0.123	99.999	99.999	0.708	0.046	1.439	0.039
266.8	795.7	19.441	0.037	99.999	99.999	99.999	99.999	0.876	0.046	1.742	0.042
473	738.9	19.446	0.04	99.999	99.999	99.999	99.999	0.744	0.051	1.498	0.045
640	382.5	19.446	0.034	99.999	99.999	99.999	99.999	0.864	0.045	1.681	0.039
561.2	888.2	19.448	0.038	1.073	0.101	99.999	99.999	0.778	0.049	1.55	0.043
209.9	849.7	19.449	0.038	99.999	99.999	99.999	99.999	0.862	0.049	1.65	0.041
188.3	892.2	19.457	0.044	99.999	99.999	99.999	99.999	0.768	0.056	1.594	0.048
517.8	221	19.462	0.043	99.999	99.999	99.999	99.999	0.717	0.054	1.517	0.049
320.9	870.5	19.486	0.039	99.999	99.999	99.999	99.999	0.874	0.05	1.501	0.045
358	176.4	19.49	0.036	99.999	99.999	99.999	99.999	0.887	0.049	1.506	0.042
666.5	985.4	19.495	0.04	99.999	99.999	99.999	99.999	0.724	0.051	1.451	0.045
938.4	939	19.496	0.032	99.999	99.999	99.999	99.999	0.802	0.045	1.625	0.035
408.2	250.5	19.52	0.036	99.999	99.999	99.999	99.999	0.803	0.051	1.662	0.042
77.9	68.8	19.522	0.037	99.999	99.999	99.999	99.999	0.736	0.052	1.391	0.043
589	948.4	19.524	0.037	99.999	99.999	99.999	99.999	0.729	0.049	1.413	0.042
852.4	637.8	19.524	0.037	99.999	99.999	99.999	99.999	0.835	0.047	1.611	0.043
463.8	163.5	19.53	0.043	99.999	99.999	99.999	99.999	0.707	0.054	1.526	0.047

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
75.8	40	19.53	0.048	99.999	99.999	99.999	99.999	0.659	0.064	1.378	0.06
908.5	71	19.532	0.034	99.999	99.999	99.999	99.999	0.783	0.044	1.484	0.041
103	212.9	19.533	0.038	99.999	99.999	99.999	99.999	0.821	0.051	1.507	0.045
77.8	159.4	19.539	0.037	99.999	99.999	99.999	99.999	0.745	0.05	1.469	0.044
121	789.5	19.557	0.038	99.999	99.999	99.999	99.999	0.818	0.05	1.575	0.043
259.3	467.2	19.559	0.042	99.999	99.999	99.999	99.999	0.8	0.054	1.578	0.048
925.9	666.9	19.575	0.041	99.999	99.999	99.999	99.999	0.746	0.055	1.606	0.049
131.7	412.9	19.58	0.031	99.999	99.999	99.999	99.999	1.095	0.041	2.149	0.033
767.5	963.8	19.594	0.032	1.055	0.111	99.999	99.999	0.717	0.044	1.519	0.037
302.2	521.8	19.614	0.045	99.999	99.999	99.999	99.999	0.999	0.061	2.143	0.046
95.2	29.1	19.614	0.036	99.999	99.999	99.999	99.999	0.718	0.05	1.589	0.045
899.7	502.3	19.631	0.035	1.345	0.184	99.999	99.999	0.998	0.046	1.983	0.039
486.9	320.5	19.638	0.042	99.999	99.999	99.999	99.999	0.709	0.056	1.443	0.05
649.4	871.7	19.639	0.039	99.999	99.999	99.999	99.999	0.946	0.049	1.839	0.043
916.2	643.2	19.64	0.041	99.999	99.999	99.999	99.999	1.102	0.053	2.141	0.043
498	253.8	19.654	0.045	99.999	99.999	99.999	99.999	0.997	0.059	1.877	0.052
194.4	621.4	19.66	0.047	99.999	99.999	99.999	99.999	0.891	0.061	1.646	0.051
844	421.1	19.66	0.043	99.999	99.999	99.999	99.999	0.928	0.055	1.806	0.047
737.2	608.8	19.688	0.04	99.999	99.999	99.999	99.999	0.894	0.052	1.663	0.046
581.6	705.3	19.693	0.041	99.999	99.999	99.999	99.999	0.659	0.053	1.452	0.047
229.5	337.6	19.697	0.046	99.999	99.999	99.999	99.999	0.924	0.059	1.842	0.049
469.2	856.7	19.7	0.05	99.999	99.999	99.999	99.999	1.015	0.063	1.862	0.054
46.7	803	19.714	0.045	99.999	99.999	99.999	99.999	0.774	0.057	1.553	0.05
592.9	612.6	19.716	0.043	99.999	99.999	99.999	99.999	0.834	0.056	1.589	0.049
178.3	404.1	19.721	0.043	99.999	99.999	99.999	99.999	0.788	0.057	1.674	0.049
503.6	544.1	19.729	0.046	99.999	99.999	99.999	99.999	0.819	0.058	1.774	0.05
712.3	14.6	19.732	0.045	99.999	99.999	99.999	99.999	0.794	0.063	1.554	0.055
961	523.3	19.732	0.045	99.999	99.999	99.999	99.999	0.903	0.058	1.805	0.049
299.2	702.9	19.736	0.041	99.999	99.999	99.999	99.999	0.807	0.054	1.557	0.047
752.7	202.8	19.736	0.046	99.999	99.999	99.999	99.999	0.796	0.062	1.516	0.053
180.5	340.6	19.737	0.048	99.999	99.999	99.999	99.999	0.872	0.065	1.657	0.055
436.2	340.9	19.738	0.042	0.991	0.154	99.999	99.999	0.61	0.057	1.383	0.049
750.6	306.8	19.739	0.036	99.999	99.999	99.999	99.999	0.737	0.049	1.497	0.041
173.4	566.1	19.75	0.048	99.999	99.999	99.999	99.999	0.803	0.064	1.464	0.056
411.3	299.1	19.753	0.041	99.999	99.999	99.999	99.999	0.809	0.054	1.547	0.047
792.5	268.9	19.765	0.036	99.999	99.999	99.999	99.999	0.826	0.05	1.767	0.042
161.2	795.5	19.767	0.054	99.999	99.999	99.999	99.999	0.793	0.067	1.646	0.057
991.4	267.2	19.77	0.036	99.999	99.999	99.999	99.999	0.628	0.049	1.346	0.043
467.9	142.5	19.782	0.049	99.999	99.999	99.999	99.999	0.799	0.063	1.71	0.052
128	626	19.803	0.044	99.999	99.999	99.999	99.999	0.748	0.058	1.63	0.049
14.1	894.9	19.814	0.051	99.999	99.999	99.999	99.999	0.889	0.068	1.702	0.058
865	526.6	19.817	0.046	99.999	99.999	99.999	99.999	0.823	0.059	1.599	0.053
392.3	593.1	19.849	0.051	99.999	99.999	99.999	99.999	0.767	0.068	1.598	0.057
365.9	301.3	19.911	0.047	99.999	99.999	99.999	99.999	1.17	0.063	2.019	0.052
588.6	395.2	19.94	0.049	99.999	99.999	99.999	99.999	0.713	0.068	1.476	0.056
579.9	668.7	19.969	0.048	99.999	99.999	99.999	99.999	1.129	0.06	2.104	0.052
558.7	713.5	19.985	0.053	99.999	99.999	99.999	99.999	1.096	0.068	2.086	0.058
354.3	350.4	19.988	0.058	99.999	99.999	99.999	99.999	1.099	0.074	2.062	0.063
593.7	641.3	19.992	0.057	99.999	99.999	99.999	99.999	1.104	0.073	2.013	0.063
552.9	428.6	20	0.062	99.999	99.999	99.999	99.999	0.999	0.078	1.859	0.068
892.1	376.9	20.015	0.049	99.999	99.999	99.999	99.999	0.983	0.066	1.759	0.058
554	864.7	20.018	0.05	99.999	99.999	99.999	99.999	0.999	0.064	1.977	0.055
761.4	639.3	20.019	0.053	99.999	99.999	99.999	99.999	0.965	0.07	1.771	0.058
714.2	712.7	20.025	0.056	99.999	99.999	99.999	99.999	0.95	0.071	1.773	0.061
765.7	728.1	20.037	0.06	99.999	99.999	99.999	99.999	1.167	0.075	2.653	0.061
226.7	516.2	20.043	0.053	99.999	99.999	99.999	99.999	0.954	0.069	1.796	0.06
746.9	729.5	20.045	0.051	99.999	99.999	99.999	99.999	1.082	0.065	2.086	0.055
709.1	884.1	20.051	0.06	99.999	99.999	99.999	99.999	0.939	0.075	1.743	0.066
569.3	542.4	20.07	0.054	99.999	99.999	99.999	99.999	0.836	0.071	1.621	0.062
591.2	654.5	20.073	0.04	99.999	99.999	99.999	99.999	0.869	0.054	1.614	0.049
880.7	884.8	20.073	0.064	99.999	99.999	99.999	99.999	0.873	0.081	1.621	0.073
367.8	97.3	20.092	0.049	99.999	99.999	99.999	99.999	0.823	0.067	1.563	0.058
950.8	985.3	20.096	0.062	99.999	99.999	99.999	99.999	0.843	0.08	1.656	0.069
934.6	609.6	20.102	0.062	99.999	99.999	99.999	99.999	0.85	0.079	1.701	0.068
764.4	625.4	20.103	0.061	99.999	99.999	99.999	99.999	0.842	0.079	1.731	0.068

TABLE 3 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
417.5	218.9	20.105	0.058	99.999	99.999	99.999	99.999	0.879	0.075	1.816	0.063
88.7	573.6	20.105	0.056	99.999	99.999	99.999	99.999	0.838	0.072	1.649	0.063
964.3	194.1	20.109	0.052	99.999	99.999	99.999	99.999	0.865	0.067	1.622	0.061
473.2	382.4	20.111	0.05	99.999	99.999	99.999	99.999	0.936	0.067	1.724	0.057
583	379.1	20.113	0.058	99.999	99.999	99.999	99.999	0.89	0.077	1.741	0.066
849.2	940.4	20.113	0.058	99.999	99.999	99.999	99.999	0.874	0.079	1.723	0.065
635	683.9	20.117	0.055	99.999	99.999	99.999	99.999	0.834	0.071	1.764	0.061
686.7	646.6	20.118	0.062	99.999	99.999	99.999	99.999	0.834	0.081	1.697	0.069
831.9	651.2	20.122	0.053	99.999	99.999	99.999	99.999	0.99	0.068	2.078	0.057
285.4	96.9	20.127	0.058	99.999	99.999	99.999	99.999	0.826	0.078	1.626	0.067
506.3	66.5	20.128	0.078	99.999	99.999	99.999	99.999	0.871	0.097	1.794	0.083
503.3	964.5	20.132	0.063	99.999	99.999	99.999	99.999	0.841	0.081	1.593	0.071
788	246.9	20.132	0.063	99.999	99.999	99.999	99.999	1.038	0.08	1.841	0.07
645.4	973.6	20.144	0.061	99.999	99.999	99.999	99.999	0.765	0.081	1.65	0.069
158	173.2	20.15	0.063	99.999	99.999	99.999	99.999	0.85	0.081	1.721	0.075
252.2	787	20.154	0.054	99.999	99.999	99.999	99.999	0.763	0.075	1.564	0.062
969.6	273.4	20.161	0.056	99.999	99.999	99.999	99.999	0.731	0.078	1.694	0.062
322.6	825.9	20.165	0.064	99.999	99.999	99.999	99.999	1.02	0.084	99.999	99.999
909.1	870.4	20.172	0.053	99.999	99.999	99.999	99.999	0.764	0.072	1.539	0.061
853.6	959.5	20.174	0.056	99.999	99.999	99.999	99.999	0.913	0.071	1.708	0.064
512.3	830.4	20.185	0.068	99.999	99.999	99.999	99.999	0.781	0.088	1.463	0.077
981.4	802.5	20.196	0.049	99.999	99.999	99.999	99.999	1.012	0.064	2.157	0.053
605.7	36.3	20.21	0.055	99.999	99.999	99.999	99.999	0.826	0.074	1.676	0.065
147.8	580.8	20.217	0.074	99.999	99.999	99.999	99.999	0.757	0.094	1.442	0.085
805.1	669.4	20.219	0.063	99.999	99.999	99.999	99.999	0.787	0.082	1.687	0.07
754.5	909.6	20.221	0.066	99.999	99.999	99.999	99.999	1.162	0.082	1.901	0.073
475.5	443.1	20.225	0.066	99.999	99.999	99.999	99.999	1.036	0.083	1.813	0.073
419.7	609.3	20.226	0.062	99.999	99.999	99.999	99.999	1.068	0.079	1.914	0.071
880	326.8	20.227	0.081	99.999	99.999	99.999	99.999	0.744	0.1	1.675	0.088
253	170.9	20.236	0.064	99.999	99.999	99.999	99.999	0.642	0.089	1.399	0.077
825.6	339.4	20.239	0.08	99.999	99.999	99.999	99.999	0.861	0.102	1.667	0.088
533.3	500.4	20.24	0.053	99.999	99.999	99.999	99.999	0.827	0.075	1.543	0.063
870	192.3	20.24	0.074	99.999	99.999	99.999	99.999	1.169	0.095	2.122	0.081
584.9	751.6	20.244	0.073	99.999	99.999	99.999	99.999	0.869	0.093	1.801	0.079
971.2	349.6	20.246	0.064	99.999	99.999	99.999	99.999	0.994	0.083	1.929	0.069
568.3	359.6	20.252	0.074	99.999	99.999	99.999	99.999	0.787	0.096	1.691	0.081
901.7	900.1	20.253	0.055	99.999	99.999	99.999	99.999	0.945	0.075	1.747	0.061
990.6	313.4	20.254	0.059	99.999	99.999	99.999	99.999	0.836	0.079	1.78	0.064
784.3	437.1	20.266	0.062	99.999	99.999	99.999	99.999	0.913	0.08	1.661	0.072
404.5	364	20.27	0.069	99.999	99.999	99.999	99.999	0.76	0.089	1.6	0.078
809.9	811.1	20.283	0.071	99.999	99.999	99.999	99.999	1.089	0.089	2.181	0.075
109.2	527.1	20.284	0.091	99.999	99.999	99.999	99.999	0.771	0.115	1.674	0.097
726.7	99.4	20.286	0.066	99.999	99.999	99.999	99.999	0.689	0.085	1.695	0.073
833.3	120.9	20.29	0.075	99.999	99.999	99.999	99.999	0.811	0.098	1.545	0.082
993.4	453.6	20.302	0.067	99.999	99.999	99.999	99.999	0.825	0.084	1.805	0.071
961.8	444.3	20.321	0.068	99.999	99.999	99.999	99.999	0.888	0.089	1.768	0.073
605.6	244.7	20.342	0.074	99.999	99.999	99.999	99.999	0.794	0.096	1.636	0.082
666.7	741.3	20.364	0.064	99.999	99.999	99.999	99.999	0.884	0.082	1.768	0.072
795.7	224.1	20.365	0.074	99.999	99.999	99.999	99.999	0.871	0.097	1.794	0.08
960.8	103.9	20.395	0.082	99.999	99.999	99.999	99.999	0.832	0.105	1.804	0.087
941.4	45.4	20.398	0.074	99.999	99.999	99.999	99.999	0.766	0.1	1.65	0.084
943.9	654.6	20.409	0.072	99.999	99.999	99.999	99.999	0.899	0.094	1.637	0.082
871.2	251.2	20.423	0.072	99.999	99.999	99.999	99.999	0.918	0.095	1.676	0.082
889.1	833.8	20.445	0.099	99.999	99.999	99.999	99.999	1.046	0.126	1.884	0.112
606.2	427.6	20.516	0.091	99.999	99.999	99.999	99.999	1.033	0.117	2.15	0.096

2.3. *The data inspection tools* ELIPSE *and* SAFE

Since the stellar density of a cluster increases towards its center with respect to the field stars, an AWK macro (ELIPSE, Moitinho 2003, private communication) was used to extract the data of the central region of a given cluster, as defined by visual inspection in a visual (V) or red (R) image, thus increasing the contrast of the cluster with respect to the surrounding field stars. An ellipse was fitted visually to the image in order to extract the photometric data of the central region of the cluster. To further support the analyses of the clusters, a Java-based computer program (SAFE, McFarland 2010) was developed and

TABLE 4

CCD *UBVRI* PHOTOMETRY OF RU 135

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
862.7	231.5	11.132	0.003	0.597	0.004	0.212	0.002	0.36	0.01	99.999	99.999
237.1	325.4	11.689	0.003	0.71	0.003	0.364	0.003	0.387	0.014	0.86	0.011
294	387.3	11.871	0.008	0.742	0.003	0.405	0.004	0.45	0.038	0.895	0.014
753.2	283.1	12.258	0.002	0.742	0.004	0.405	0.005	0.45	0.002	99.999	99.999
219.7	343	12.337	0.004	0.789	0.003	0.409	0.005	0.47	0.015	0.97	0.01
251.1	263.2	12.691	0.005	0.734	0.004	0.418	0.005	0.431	0.014	0.886	0.003
914.4	595.1	12.697	0.005	0.729	0.004	0.383	0.004	0.433	0.014	0.915	0.003
905.1	237	12.769	0.004	0.768	0.003	0.401	0.006	0.447	0.01	0.956	0.003
244	620.7	12.8	0.004	0.755	0.003	0.378	0.006	0.439	0.01	0.867	0.003
765.1	218	12.809	0.005	0.686	0.005	0.426	0.005	0.414	0.012	0.861	0.003
754.6	654.7	13.162	0.002	2.372	0.006	2.415	0.033	1.276	0.002	2.387	0.01
312	509.4	13.221	0.002	0.995	0.011	0.399	0.007	0.549	0.003	1.099	0.007
929	857.1	13.228	0.002	1.885	0.009	1.897	0.024	1.003	0.003	1.88	0.01
311.8	534.8	13.467	0.002	1.023	0.005	0.446	0.008	0.579	0.002	1.125	0.003
240.7	741.6	14.015	0.003	0.818	0.005	0.444	0.01	0.462	0.02	0.976	0.003
375.8	871.1	14.124	0.003	1.035	0.006	0.31	0.012	0.63	0.003	1.266	0.003
170	549.7	14.153	0.003	0.835	0.005	0.345	0.01	0.483	0.017	1.001	0.004
900.7	200.3	14.153	0.005	1.018	0.01	0.422	0.013	0.592	0.008	99.999	99.999
59.6	527.3	14.168	0.003	0.831	0.006	0.403	0.012	0.462	0.024	0.995	0.004
469.5	207.9	14.189	0.003	0.859	0.006	0.494	0.011	0.494	0.004	1.025	0.004
853.8	605.3	14.221	0.004	1.196	0.008	0.529	0.014	0.693	0.005	1.353	0.005
809.4	224	14.231	0.003	1.853	0.011	1.838	0.038	0.993	0.003	1.896	0.004
811.6	155.8	14.256	0.003	1.446	0.008	1.047	0.02	0.811	0.003	1.556	0.003
655.4	41.7	14.441	0.005	0.948	0.009	0.543	0.013	0.552	0.005	1.138	0.005
900.3	424.6	14.467	0.003	2.276	0.011	2.269	0.088	1.236	0.003	2.373	0.003
153.8	339.4	14.601	0.003	1.895	0.013	1.697	0.049	1.004	0.004	1.915	0.005
989.5	613.4	14.68	0.004	1.226	0.008	0.502	0.021	0.715	0.005	1.464	0.004
472.4	387.8	14.741	0.004	0.969	0.008	0.442	0.017	0.556	0.004	1.137	0.005
61.3	781.1	14.918	0.005	1.098	0.01	0.407	0.02	0.654	0.006	1.297	0.006
501.1	703.7	14.956	0.005	1.036	0.009	0.428	0.019	0.627	0.005	1.253	0.005
183.2	500.2	14.976	0.004	0.99	0.008	0.385	0.019	0.602	0.004	1.212	0.004
818.7	932	14.986	0.003	2.001	0.012	1.942	0.079	1.115	0.004	2.156	0.004
351.3	365.8	14.994	0.004	0.999	0.009	0.384	0.017	0.585	0.004	1.193	0.005
379.3	444	15.06	0.003	2.422	0.017	99.999	99.999	1.301	0.004	2.513	0.004
343.8	97.8	15.111	0.004	1.031	0.009	0.352	0.02	0.571	0.005	1.177	0.005
68.5	51	15.134	0.006	1.088	0.014	0.459	0.025	0.632	0.009	1.309	0.008
706.7	842.4	15.192	0.004	1.84	0.014	1.504	0.079	1.03	0.005	1.986	0.004
150.3	825.4	15.197	0.004	1.112	0.01	0.388	0.023	0.657	0.006	1.316	0.005
313.6	726.9	15.205	0.004	2.212	0.017	99.999	99.999	1.223	0.005	2.286	0.004
375.9	803.3	15.224	0.003	2.564	0.018	99.999	99.999	1.531	0.004	3.096	0.003
799.1	572.3	15.23	0.004	2.175	0.017	99.999	99.999	1.197	0.005	2.282	0.005
903.7	670.2	15.288	0.005	0.988	0.01	0.556	0.022	0.573	0.006	1.197	0.005
864.3	948.6	15.3	0.004	1.032	0.011	0.343	0.023	0.632	0.006	1.293	0.005
521.4	250.4	15.316	0.005	1.04	0.01	0.404	0.023	0.609	0.006	1.242	0.005
892.6	117	15.322	0.004	1.195	0.011	0.554	0.031	0.706	0.006	1.405	0.005
461.7	756.4	15.425	0.005	1.084	0.011	0.441	0.025	0.609	0.006	1.244	0.005
76.8	106.8	15.463	0.006	1.174	0.015	0.552	0.029	0.651	0.008	1.321	0.007
695.9	568.1	15.488	0.006	1.072	0.014	0.396	0.025	0.65	0.009	1.255	0.027
463	662.2	15.506	0.005	1.279	0.011	0.749	0.034	0.735	0.006	1.424	0.006
203.7	486	15.517	0.007	2.078	0.021	99.999	99.999	1.127	0.008	2.196	0.006
360.7	317	15.546	0.005	1.068	0.012	0.374	0.028	0.643	0.007	1.261	0.007
470.2	605.9	15.559	0.004	1.315	0.012	0.62	0.035	0.747	0.006	1.489	0.005
247.4	882.8	15.6	0.004	2.152	0.019	99.999	99.999	1.191	0.005	2.26	0.004
548	109.8	15.611	0.004	1.321	0.012	0.62	0.033	0.743	0.006	1.479	0.005
140.3	606.1	15.616	0.005	1.837	0.016	1.35	0.085	1.014	0.006	1.982	0.005
188.1	270.2	15.655	0.005	1.176	0.013	0.437	0.029	0.689	0.007	1.392	0.006
209.3	281.9	15.658	0.005	1.184	0.014	0.464	0.031	0.693	0.006	1.377	0.006
328.2	15.2	15.663	0.006	1.1	0.014	0.398	0.029	0.659	0.008	1.325	0.007
88	309.4	15.683	0.005	1.884	0.018	1.365	0.119	1.005	0.006	1.983	0.005
211	583.4	15.74	0.004	1.191	0.013	0.571	0.033	0.699	0.006	1.372	0.005
627.1	302.6	15.745	0.005	1.194	0.013	0.591	0.034	0.717	0.006	1.432	0.006
358.2	286.1	15.779	0.004	1.274	0.014	0.588	0.037	0.737	0.007	1.462	0.006
333.6	329.6	15.836	0.008	1.821	0.024	99.999	99.999	0.987	0.012	1.85	0.027
444	138.8	15.841	0.005	1.097	0.014	0.394	0.031	0.614	0.006	1.263	0.006

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
184.3	820	15.872	0.006	2.283	0.023	99.999	99.999	1.231	0.007	2.301	0.006
290.3	303.8	15.937	0.005	1.284	0.016	0.499	0.038	0.723	0.007	1.418	0.007
185.1	234.9	16.002	0.006	2.123	0.027	99.999	99.999	1.139	0.007	2.165	0.006
752.2	402	16.035	0.005	1.217	0.016	0.546	0.043	0.715	0.008	1.418	0.007
882.7	333.3	16.039	0.006	1.919	0.021	99.999	99.999	1.051	0.007	2.013	0.006
752.8	733.8	16.051	0.004	1.208	0.015	0.579	0.042	0.727	0.006	1.435	0.006
366.3	480.5	16.091	0.006	2.366	0.027	99.999	99.999	1.308	0.007	2.527	0.006
768.8	543	16.107	0.006	2.45	0.028	99.999	99.999	1.312	0.008	2.477	0.006
338.2	90.7	16.112	0.006	1.23	0.017	0.653	0.05	0.762	0.009	1.471	0.008
824.9	64.7	16.124	0.006	2.435	0.032	99.999	99.999	1.381	0.008	2.598	0.006
886.1	231.2	16.133	0.006	1.304	0.019	99.999	99.999	0.718	0.008	1.438	0.007
306.2	824.7	16.141	0.006	1.819	0.02	99.999	99.999	0.921	0.008	1.676	0.006
191.6	669.5	16.186	0.005	1.206	0.016	0.543	0.044	0.708	0.008	1.429	0.007
92	678	16.2	0.006	1.869	0.025	99.999	99.999	0.999	0.008	1.928	0.006
415.8	968.1	16.235	0.006	1.435	0.019	0.716	0.063	0.793	0.008	1.576	0.007
413.4	213.4	16.237	0.007	2.121	0.028	99.999	99.999	1.122	0.008	2.164	0.007
95.5	889.5	16.243	0.006	1.18	0.017	0.262	0.04	0.649	0.009	1.354	0.008
24.3	299.1	16.3	0.006	1.182	0.018	0.353	0.047	0.701	0.01	1.439	0.008
815.3	887.9	16.324	0.006	1.194	0.02	0.593	0.054	0.76	0.009	1.495	0.008
813.1	638.1	16.356	0.006	1.982	0.024	99.999	99.999	1.103	0.008	2.116	0.007
515.2	188.3	16.388	0.007	1.684	0.025	99.999	99.999	0.941	0.008	1.798	0.007
610.2	294	16.405	0.006	1.342	0.022	0.947	0.081	0.769	0.009	1.516	0.008
282.9	830.9	16.434	0.006	1.129	0.018	0.392	0.045	0.709	0.008	1.405	0.008
630.8	635.4	16.465	0.007	1.319	0.021	0.568	0.059	0.785	0.01	1.499	0.009
344.2	162.9	16.467	0.007	1.347	0.021	0.765	0.07	0.768	0.009	1.506	0.008
79.3	270.1	16.506	0.008	1.229	0.021	99.999	99.999	0.74	0.01	1.461	0.008
572.8	213.6	16.526	0.021	1.805	0.034	99.999	99.999	1.028	0.067	99.999	99.999
129.5	127	16.538	0.006	1.239	0.021	0.392	0.059	0.714	0.01	1.408	0.009
737.2	811.1	16.557	0.013	1.498	0.023	0.822	0.107	0.862	0.01	1.671	0.009
264.5	777.8	16.594	0.007	2.012	0.031	99.999	99.999	1.095	0.008	2.074	0.007
934.5	237.7	16.614	0.009	2.107	0.038	99.999	99.999	1.144	0.012	2.187	0.01
760.6	550.9	16.634	0.008	1.309	0.022	0.639	0.071	0.777	0.009	1.533	0.009
61.3	553.6	16.652	0.007	1.884	0.03	99.999	99.999	1.057	0.009	2.061	0.008
746.1	114.2	16.664	0.008	2.049	0.033	99.999	99.999	1.109	0.01	2.11	0.008
137	235.2	16.673	0.007	1.193	0.022	0.559	0.074	0.743	0.01	1.437	0.009
490.8	408.2	16.687	0.008	1.758	0.029	99.999	99.999	1.029	0.01	2.007	0.008
409.1	283.6	16.709	0.008	1.326	0.023	0.727	0.077	0.763	0.011	1.498	0.01
95.7	22.9	16.717	0.01	1.954	0.034	99.999	99.999	1.103	0.012	2.117	0.011
354.4	941.2	16.733	0.007	1.144	0.023	0.481	0.064	0.698	0.01	1.407	0.01
812.7	355.6	16.742	0.007	1.902	0.031	99.999	99.999	1.057	0.009	2.031	0.008
505.7	194.2	16.752	0.009	1.286	0.025	0.652	0.098	0.752	0.012	1.481	0.011
863.5	537.6	16.767	0.008	1.727	0.03	99.999	99.999	1.082	0.01	2.244	0.008
972.6	730.3	16.781	0.009	1.918	0.033	99.999	99.999	1.026	0.011	2.028	0.009
2.1	118.5	16.789	0.009	2.02	0.04	99.999	99.999	1.077	0.012	2.098	0.01
391.1	830.6	16.817	0.009	1.322	0.026	0.71	0.095	0.76	0.011	1.488	0.01
873.1	206.6	16.842	0.01	1.587	0.032	99.999	99.999	0.878	0.012	1.721	0.011
586.2	658.1	16.85	0.008	1.634	0.031	99.999	99.999	0.874	0.01	1.742	0.009
290	63.5	16.873	0.009	2.045	0.036	99.999	99.999	1.175	0.011	2.249	0.009
725.5	100.3	16.877	0.008	1.24	0.025	0.451	0.082	0.718	0.011	1.433	0.01
555	250.4	16.887	0.008	1.771	0.034	99.999	99.999	0.988	0.011	1.947	0.009
854	771.5	16.893	0.013	1.408	0.027	0.58	0.111	0.796	0.012	1.58	0.011
461.8	176.8	16.913	0.008	1.371	0.028	99.999	99.999	0.773	0.011	1.49	0.01
905.1	15.1	16.923	0.011	1.366	0.029	0.665	0.088	0.772	0.013	1.539	0.011
456.4	781.6	16.941	0.007	2.022	0.036	99.999	99.999	1.123	0.009	2.116	0.008
99.2	770.3	16.949	0.01	99.999	99.999	99.999	99.999	1.036	0.013	2.123	0.039
927.5	475	16.953	0.009	1.58	0.03	99.999	99.999	0.939	0.011	1.806	0.01
680.8	105.6	16.967	0.008	1.871	0.036	99.999	99.999	1.029	0.01	2.015	0.009
213.2	622.9	16.969	0.009	1.477	0.03	99.999	99.999	0.851	0.012	1.668	0.01
406.4	861.7	16.987	0.009	1.7	0.035	99.999	99.999	0.979	0.011	1.894	0.009
419	210.8	16.995	0.011	1.88	0.043	99.999	99.999	1.037	0.014	2.012	0.014
586.2	482.6	17.031	0.01	1.26	0.025	0.761	0.103	0.741	0.012	1.467	0.01
794.2	705.6	17.04	0.009	1.926	0.043	99.999	99.999	1.098	0.011	2.084	0.009
678.4	942	17.043	0.012	2.349	0.061	99.999	99.999	1.293	0.016	2.421	0.013
849.3	61.4	17.07	0.01	1.88	0.04	99.999	99.999	1.07	0.012	2.077	0.01
365.7	892.8	17.073	0.01	1.297	0.03	99.999	99.999	0.828	0.013	1.58	0.011
156.4	570	17.083	0.008	1.268	0.026	99.999	99.999	0.764	0.011	1.493	0.009

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
368.6	275.1	17.086	0.009	2.122	0.051	99.999	99.999	1.196	0.011	2.257	0.009
445.4	296.3	17.104	0.011	1.301	0.029	99.999	99.999	0.746	0.014	1.485	0.012
218.5	564.4	17.138	0.009	1.362	0.033	99.999	99.999	0.757	0.012	1.519	0.01
476.3	271.1	17.139	0.01	1.332	0.028	99.999	99.999	0.758	0.013	1.494	0.011
822	108.5	17.151	0.01	2.077	0.049	99.999	99.999	1.21	0.013	2.301	0.011
906.3	510.2	17.165	0.01	1.756	0.039	99.999	99.999	0.991	0.013	1.952	0.01
482.2	595.9	17.168	0.009	1.926	0.045	99.999	99.999	1.131	0.012	2.12	0.01
237.5	120.7	17.173	0.009	2.32	0.052	99.999	99.999	1.267	0.012	2.38	0.01
527.7	735.7	17.181	0.009	1.942	0.045	99.999	99.999	1.052	0.011	1.994	0.009
906.9	842.3	17.183	0.011	1.385	0.034	99.999	99.999	0.8	0.014	1.585	0.012
201.5	732.9	17.184	0.009	1.217	0.031	99.999	99.999	0.8	0.012	1.525	0.011
925.6	149.5	17.197	0.015	99.999	99.999	99.999	99.999	0.83	0.022	1.654	0.019
466	902.1	17.217	0.009	1.854	0.043	99.999	99.999	0.993	0.011	1.949	0.009
446.9	492.6	17.218	0.014	99.999	99.999	99.999	99.999	1.086	0.019	99.999	99.999
745.3	579.2	17.219	0.011	1.391	0.034	99.999	99.999	0.881	0.014	1.718	0.012
751.7	152.2	17.219	0.011	1.897	0.053	99.999	99.999	1.078	0.015	2.063	0.012
607.5	572.6	17.223	0.011	1.342	0.033	99.999	99.999	0.786	0.014	1.55	0.012
753.5	233.6	17.224	0.011	1.803	0.038	99.999	99.999	1.094	0.014	2.079	0.012
319.2	878.6	17.236	0.01	1.311	0.031	99.999	99.999	0.75	0.013	1.474	0.011
810	904	17.241	0.011	1.403	0.035	99.999	99.999	0.861	0.015	1.66	0.013
110.2	933.7	17.245	0.011	1.413	0.035	99.999	99.999	0.787	0.015	1.558	0.013
357.8	451.6	17.249	0.01	1.513	0.034	99.999	99.999	0.825	0.013	1.591	0.011
328.3	762.8	17.26	0.01	1.815	0.041	99.999	99.999	1.021	0.013	1.969	0.011
818.2	740.1	17.263	0.01	1.784	0.041	99.999	99.999	1.012	0.013	1.956	0.011
611.8	964.6	17.306	0.011	1.419	0.035	99.999	99.999	0.804	0.015	1.572	0.014
508	75.8	17.31	0.012	1.431	0.035	99.999	99.999	0.81	0.014	1.613	0.013
971.1	836.7	17.322	0.011	1.909	0.05	99.999	99.999	1.064	0.014	2.097	0.012
919.6	70.5	17.327	0.012	1.279	0.038	99.999	99.999	0.767	0.015	1.542	0.013
547.2	231.7	17.357	0.011	1.756	0.048	99.999	99.999	1.025	0.014	1.975	0.012
824.3	986.5	17.382	0.011	1.823	0.052	99.999	99.999	1.022	0.014	1.953	0.012
7.8	319.3	17.389	0.013	2.027	0.051	99.999	99.999	1.085	0.016	2.095	0.013
869.9	635.1	17.397	0.01	1.69	0.046	99.999	99.999	1.029	0.013	1.973	0.011
974.9	118.1	17.418	0.009	2.62	0.081	99.999	99.999	1.382	0.012	2.67	0.01
792.6	311.8	17.424	0.015	1.873	0.055	99.999	99.999	1.034	0.019	1.989	0.016
31.4	739.7	17.429	0.013	2.082	0.063	99.999	99.999	1.137	0.016	2.149	0.013
518.1	429.3	17.43	0.012	1.284	0.037	99.999	99.999	0.757	0.016	1.542	0.014
334.7	347.9	17.448	0.013	1.36	0.036	99.999	99.999	0.796	0.016	1.521	0.014
87.4	480.8	17.453	0.011	2.005	0.058	99.999	99.999	1.093	0.014	2.092	0.012
87.5	256.5	17.459	0.012	2.073	0.068	99.999	99.999	1.098	0.015	2.116	0.012
469.8	867.5	17.461	0.012	1.473	0.041	99.999	99.999	0.854	0.015	1.673	0.013
655.5	726.6	17.461	0.011	1.536	0.039	99.999	99.999	0.858	0.014	1.66	0.012
528.4	217.8	17.463	0.012	2.028	0.067	99.999	99.999	1.127	0.016	2.086	0.013
137.2	585.6	17.469	0.011	1.984	0.051	99.999	99.999	1.097	0.014	2.082	0.012
111.4	515.9	17.476	0.014	1.968	0.058	99.999	99.999	1.092	0.019	2.107	0.015
201.9	138.1	17.485	0.012	2.028	0.063	99.999	99.999	1.17	0.016	2.187	0.013
7.3	466.3	17.487	0.011	1.361	0.035	99.999	99.999	0.78	0.016	1.54	0.012
164.5	186.9	17.489	0.013	1.42	0.037	99.999	99.999	0.789	0.017	1.548	0.015
229.5	520.9	17.505	0.011	1.33	0.042	99.999	99.999	0.812	0.015	1.523	0.013
167.3	429.6	17.511	0.012	1.653	0.053	99.999	99.999	1.014	0.015	1.966	0.013
608.8	72.8	17.522	0.012	1.609	0.046	99.999	99.999	0.846	0.015	1.679	0.013
72.4	217.1	17.532	0.013	1.351	0.043	99.999	99.999	0.77	0.017	1.537	0.015
434.2	710.5	17.534	0.012	1.447	0.054	99.999	99.999	0.914	0.015	1.728	0.014
734.2	460.8	17.542	0.012	1.702	0.047	99.999	99.999	0.974	0.015	1.843	0.013
659.9	85.5	17.547	0.013	2.064	0.052	99.999	99.999	1.102	0.017	2.127	0.014
468.6	705.9	17.551	0.012	1.368	0.038	99.999	99.999	0.812	0.015	1.61	0.013
690.6	801.2	17.57	0.012	1.328	0.04	99.999	99.999	0.828	0.017	1.662	0.014
795.7	485.1	17.582	0.014	99.999	99.999	99.999	99.999	1.103	0.018	2.119	0.015
205.9	514	17.583	0.014	2.232	0.07	99.999	99.999	1.212	0.018	2.285	0.015
879.8	929.6	17.584	0.012	1.381	0.044	99.999	99.999	0.803	0.015	1.618	0.013
873.3	723.2	17.587	0.011	1.898	0.05	99.999	99.999	1.123	0.014	2.092	0.012
714.3	66.9	17.594	0.013	1.376	0.044	99.999	99.999	0.8	0.017	1.574	0.015
601.7	607.3	17.623	0.012	2.037	0.073	99.999	99.999	1.104	0.015	2.101	0.013
24.5	766.4	17.627	0.015	1.367	0.045	99.999	99.999	0.758	0.018	1.545	0.016
331.1	211.7	17.632	0.014	1.393	0.045	99.999	99.999	0.835	0.018	1.554	0.016
768.7	25.7	17.642	0.012	2.137	0.077	99.999	99.999	1.201	0.016	2.278	0.013
282.8	367.4	17.643	0.014	99.999	99.999	99.999	99.999	1.004	0.018	1.968	0.016

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
271	201.8	17.667	0.013	99.999	99.999	99.999	99.999	1.113	0.018	2.15	0.014
410.2	815.2	17.667	0.015	2.004	0.065	99.999	99.999	1.171	0.02	2.15	0.016
174.1	880.8	17.669	0.014	1.98	0.065	99.999	99.999	1.109	0.019	2.12	0.016
451.2	656.3	17.669	0.015	1.413	0.045	99.999	99.999	0.727	0.019	1.478	0.016
310.9	206.9	17.67	0.012	1.611	0.051	99.999	99.999	0.882	0.016	1.75	0.014
654.1	576.7	17.672	0.013	2.396	0.086	99.999	99.999	1.263	0.017	2.388	0.014
789.2	702.1	17.683	0.014	1.487	0.048	99.999	99.999	0.826	0.019	1.652	0.016
775.5	886.6	17.685	0.014	1.056	0.037	99.999	99.999	0.658	0.019	1.364	0.017
348.7	659.8	17.694	0.013	1.294	0.041	99.999	99.999	0.753	0.018	1.529	0.015
210.8	480.9	17.701	0.013	2.119	0.077	99.999	99.999	1.122	0.017	2.14	0.014
544.3	696.3	17.701	0.015	1.373	0.045	99.999	99.999	0.831	0.019	1.64	0.016
323.4	401.1	17.708	0.014	2.048	0.074	99.999	99.999	1.048	0.018	1.956	0.015
902.9	681.7	17.715	0.012	2.119	0.066	99.999	99.999	1.185	0.016	2.209	0.013
296.1	529.6	17.717	0.014	1.454	0.05	99.999	99.999	0.817	0.019	1.569	0.016
356	482.3	17.728	0.013	1.282	0.045	99.999	99.999	0.818	0.017	1.611	0.014
779.3	599.5	17.733	0.015	1.307	0.062	99.999	99.999	0.778	0.02	1.535	0.017
363.4	109.5	17.74	0.014	1.812	0.06	99.999	99.999	1	0.018	1.911	0.016
547.8	846.7	17.756	0.015	1.413	0.049	99.999	99.999	0.831	0.019	1.632	0.017
780.8	604.5	17.761	0.016	1.361	0.063	99.999	99.999	0.879	0.024	1.686	0.02
203	36.2	17.767	0.015	1.781	0.067	99.999	99.999	1.064	0.019	2.072	0.016
92.1	990.2	17.767	0.017	1.47	0.049	99.999	99.999	0.797	0.024	1.56	0.02
702.2	601.4	17.768	0.014	1.339	0.041	99.999	99.999	0.828	0.018	1.609	0.016
662.5	917.2	17.769	0.014	1.962	0.062	99.999	99.999	1.058	0.018	2.044	0.015
725.8	623	17.775	0.013	1.525	0.05	99.999	99.999	0.897	0.017	1.742	0.014
877.3	477.7	17.777	0.013	2.019	0.067	99.999	99.999	1.091	0.017	2.078	0.014
985.6	318.6	17.784	0.016	1.468	0.054	99.999	99.999	0.825	0.023	1.595	0.019
218.7	812.3	17.789	0.014	1.235	0.043	99.999	99.999	0.789	0.018	1.573	0.016
951.4	441	17.796	0.013	1.41	0.05	99.999	99.999	0.79	0.017	1.571	0.015
275.4	536.2	17.799	0.015	1.899	0.074	99.999	99.999	1.156	0.019	2.143	0.016
555.7	140.9	17.803	0.012	1.857	0.064	99.999	99.999	1.158	0.016	2.171	0.013
246	723.6	17.818	0.014	1.866	0.078	99.999	99.999	1.13	0.018	2.125	0.015
850.1	803.5	17.819	0.014	1.613	0.051	99.999	99.999	0.868	0.018	1.65	0.016
129.8	227.8	17.822	0.015	1.398	0.049	99.999	99.999	0.868	0.018	1.63	0.017
768.6	616.3	17.826	0.015	1.358	0.049	99.999	99.999	0.833	0.02	1.656	0.02
226.9	302.7	17.83	0.015	2.57	0.116	99.999	99.999	1.193	0.019	2.303	0.015
848.3	122.4	17.842	0.019	99.999	99.999	99.999	99.999	1.086	0.024	2.079	0.02
624.2	13.8	17.843	0.015	1.392	0.049	99.999	99.999	0.844	0.02	1.607	0.018
656.1	636.9	17.859	0.016	1.834	0.074	99.999	99.999	1.18	0.02	2.467	0.016
924.3	881	17.873	0.015	2.234	0.144	99.999	99.999	1.974	0.02	4.023	0.016
485.3	54.3	17.878	0.015	1.752	0.07	99.999	99.999	0.986	0.019	1.968	0.017
776.4	547.5	17.878	0.016	1.894	0.074	99.999	99.999	1.086	0.02	2.068	0.017
626.6	918.6	17.891	0.015	1.644	0.061	99.999	99.999	0.991	0.019	1.87	0.016
169.6	332.3	17.892	0.018	1.62	0.066	99.999	99.999	0.904	0.023	1.844	0.02
475.8	951.5	17.894	0.014	1.815	0.075	99.999	99.999	1.039	0.018	2.036	0.015
615.9	635.6	17.927	0.016	1.859	0.074	99.999	99.999	1.086	0.021	2.107	0.018
668.5	725.7	17.93	0.016	1.474	0.055	99.999	99.999	0.858	0.02	1.685	0.018
981.7	950.3	17.934	0.017	1.544	0.055	99.999	99.999	0.887	0.023	1.728	0.02
88.4	816.2	17.936	0.014	1.761	0.074	99.999	99.999	1.037	0.019	1.989	0.016
473.4	164.6	17.939	0.015	1.801	0.072	99.999	99.999	1.124	0.019	2.07	0.016
695.6	330.1	17.943	0.019	1.944	0.083	99.999	99.999	1.13	0.026	99.999	99.999
125.4	340	17.946	0.016	1.876	0.073	99.999	99.999	1.089	0.02	2.093	0.017
71.7	473.4	17.949	0.015	2.197	0.096	99.999	99.999	1.098	0.02	2.188	0.016
781.7	480.8	17.958	0.016	1.83	0.074	99.999	99.999	0.997	0.021	1.972	0.017
19.2	716.9	17.964	0.015	1.341	0.055	99.999	99.999	0.781	0.019	1.552	0.016
384.2	612.5	17.968	0.014	1.563	0.058	99.999	99.999	0.882	0.019	1.744	0.015
71.3	314.4	17.97	0.019	1.929	0.075	99.999	99.999	1.103	0.023	2.052	0.02
293.6	642.1	17.974	0.017	1.661	0.071	99.999	99.999	0.979	0.022	1.907	0.019
234.5	252.3	17.978	0.017	1.8	0.074	99.999	99.999	0.975	0.021	1.939	0.018
794.2	761	17.983	0.02	2.19	0.101	99.999	99.999	1.16	0.026	2.207	0.021
686.7	183.9	17.991	0.015	1.378	0.06	99.999	99.999	0.862	0.02	1.676	0.018
381.4	217.1	17.995	0.016	2.145	0.103	99.999	99.999	1.202	0.02	2.232	0.017
262.2	294.3	17.997	0.018	2.129	0.102	99.999	99.999	1.164	0.022	2.223	0.018
240.9	236.3	17.999	0.017	99.999	99.999	99.999	99.999	1.041	0.022	1.954	0.018
732.9	758.2	18.004	0.015	1.675	0.065	99.999	99.999	0.916	0.02	1.793	0.016
452.9	189.2	18.011	0.018	1.444	0.065	99.999	99.999	0.852	0.023	1.645	0.021
564.3	495.4	18.017	0.016	1.859	0.069	99.999	99.999	1.2	0.02	2.208	0.017

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
784.2	128.7	18.022	0.015	2.148	0.088	99.999	99.999	1.192	0.02	2.261	0.015
86	981.2	18.029	0.016	1.98	0.088	99.999	99.999	1.055	0.021	2.044	0.017
559.1	342.8	18.031	0.016	1.299	0.06	99.999	99.999	0.839	0.022	1.645	0.019
621.8	401.8	18.038	0.017	1.493	0.064	99.999	99.999	0.887	0.022	1.685	0.019
89.1	656.5	18.039	0.022	99.999	99.999	99.999	99.999	0.807	0.031	1.608	0.028
565.2	744.2	18.053	0.017	1.386	0.057	99.999	99.999	0.855	0.022	1.639	0.019
770	383.1	18.055	0.022	1.488	0.072	99.999	99.999	0.853	0.031	1.702	0.026
936	416.7	18.057	0.015	1.618	0.061	99.999	99.999	0.909	0.02	1.789	0.017
64.9	663.2	18.068	0.017	1.828	0.09	99.999	99.999	1.04	0.022	2.018	0.018
561.6	865.9	18.07	0.016	1.428	0.06	99.999	99.999	0.836	0.021	1.62	0.018
339.2	141.5	18.074	0.017	1.326	0.058	99.999	99.999	0.741	0.023	1.488	0.02
29.4	688.4	18.1	0.019	99.999	99.999	99.999	99.999	1.057	0.024	2.019	0.02
639.4	780.1	18.101	0.019	2.005	0.086	99.999	99.999	1.115	0.024	2.153	0.019
942.9	270	18.101	0.018	1.596	0.071	99.999	99.999	0.899	0.024	1.693	0.02
660	510.9	18.104	0.023	1.76	0.09	99.999	99.999	1.015	0.03	99.999	99.999
538.7	10.3	18.109	0.017	1.532	0.074	99.999	99.999	0.813	0.022	1.646	0.019
534	206.9	18.114	0.019	1.979	0.087	99.999	99.999	1.072	0.024	2.005	0.02
104.2	768.2	18.117	0.023	99.999	99.999	99.999	99.999	0.851	0.031	99.999	99.999
702.1	852.9	18.118	0.018	1.589	0.074	99.999	99.999	0.917	0.024	1.785	0.02
634.1	309.7	18.123	0.018	1.809	0.081	99.999	99.999	0.98	0.023	1.95	0.019
18.8	612.5	18.126	0.018	1.946	0.082	99.999	99.999	1.028	0.023	2.036	0.019
301.3	286.2	18.13	0.018	99.999	99.999	99.999	99.999	0.833	0.025	1.548	0.02
154.6	58.7	18.143	0.018	1.457	0.065	99.999	99.999	0.845	0.023	1.665	0.019
180.2	599.2	18.148	0.018	1.716	0.076	99.999	99.999	0.924	0.022	1.912	0.019
384.4	351.1	18.155	0.02	1.228	0.061	99.999	99.999	0.854	0.028	1.574	0.024
367.9	577.9	18.17	0.019	1.586	0.071	99.999	99.999	0.804	0.024	1.66	0.021
321.6	180.6	18.174	0.02	1.019	0.054	99.999	99.999	0.532	0.026	1.198	0.024
617	889.7	18.182	0.018	1.43	0.065	99.999	99.999	0.894	0.023	1.689	0.02
396.5	755.3	18.187	0.018	99.999	99.999	99.999	99.999	1.183	0.023	2.231	0.019
243.6	499.2	18.188	0.017	1.309	0.065	99.999	99.999	0.848	0.022	1.596	0.02
708.6	913	18.197	0.02	1.445	0.066	99.999	99.999	0.877	0.027	1.683	0.024
424.6	215.9	18.198	0.022	1.574	0.076	99.999	99.999	0.844	0.029	1.611	0.036
253.4	805.6	18.204	0.02	0.938	0.049	99.999	99.999	0.491	0.027	1.119	0.023
112.5	255.6	18.207	0.022	1.442	0.067	99.999	99.999	0.795	0.029	1.616	0.024
389.1	792.5	18.211	0.017	1.574	0.071	99.999	99.999	0.838	0.024	1.67	0.022
298.2	225.2	18.214	0.021	1.365	0.073	99.999	99.999	0.802	0.027	1.571	0.025
423.5	27.7	18.215	0.021	99.999	99.999	99.999	99.999	1.157	0.027	2.236	0.022
922.1	394.6	18.22	0.022	1.356	0.078	99.999	99.999	0.835	0.031	1.643	0.028
361	686.7	18.225	0.022	99.999	99.999	99.999	99.999	1.07	0.028	1.994	0.024
111	342.2	18.225	0.019	1.185	0.062	99.999	99.999	0.773	0.025	1.57	0.021
398.2	318.1	18.237	0.019	1.697	0.089	99.999	99.999	1.03	0.025	2.009	0.022
405.6	308	18.237	0.017	1.904	0.102	99.999	99.999	1.024	0.022	1.998	0.019
363.4	868	18.238	0.02	1.409	0.074	99.999	99.999	0.799	0.027	1.622	0.024
472.3	304.8	18.245	0.019	1.863	0.099	99.999	99.999	1.07	0.025	2.073	0.02
508.4	17.4	18.246	0.019	1.405	0.064	99.999	99.999	0.88	0.024	1.716	0.02
532.6	313.5	18.246	0.02	1.317	0.069	99.999	99.999	0.785	0.025	1.582	0.021
440.5	448.8	18.253	0.021	1.903	0.098	99.999	99.999	1.11	0.027	2.102	0.023
320.9	42.3	18.257	0.019	1.64	0.078	99.999	99.999	0.884	0.024	1.748	0.021
986.6	232.2	18.258	0.019	1.978	0.104	99.999	99.999	0.952	0.025	1.912	0.02
450	290	18.265	0.021	1.365	0.064	99.999	99.999	0.834	0.028	1.655	0.023
316.1	846.9	18.267	0.023	99.999	99.999	99.999	99.999	0.861	0.032	1.686	0.029
372.5	958.6	18.267	0.02	1.298	0.069	99.999	99.999	0.757	0.025	1.512	0.022
783.9	820.6	18.271	0.016	1.419	0.073	99.999	99.999	0.872	0.022	1.663	0.018
829.5	860.4	18.278	0.024	1.401	0.077	99.999	99.999	0.818	0.034	1.638	0.029
705.8	462.1	18.284	0.02	1.89	0.088	99.999	99.999	1.043	0.025	2.021	0.021
464.5	233.2	18.285	0.023	1.72	0.107	99.999	99.999	0.866	0.031	1.69	0.027
813.9	651.7	18.287	0.016	1.365	0.068	99.999	99.999	0.826	0.023	1.684	0.018
19.2	121.5	18.293	0.019	1.905	0.102	99.999	99.999	1.126	0.026	2.129	0.021
512.9	118.8	18.315	0.021	1.412	0.071	99.999	99.999	0.875	0.026	1.69	0.023
222.8	499.6	18.32	0.021	1.965	0.102	99.999	99.999	1.152	0.027	2.143	0.023
600.4	429	18.32	0.02	1.612	0.087	99.999	99.999	1.006	0.025	1.89	0.021
540.9	912.4	18.325	0.019	1.841	0.106	99.999	99.999	0.941	0.025	1.843	0.021
636.8	506.6	18.335	0.019	1.504	0.075	99.999	99.999	0.853	0.025	1.648	0.022
21.3	444.2	18.338	0.021	1.371	0.066	99.999	99.999	0.874	0.028	1.735	0.024
889.9	539.7	18.343	0.02	1.877	0.088	99.999	99.999	1.076	0.026	2.048	0.022
21.5	597.5	18.346	0.022	1.346	0.072	99.999	99.999	0.774	0.028	1.577	0.025

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
639.9	912.8	18.351	0.02	99.999	99.999	99.999	99.999	1.076	0.026	2.029	0.022
122.9	438.9	18.356	0.019	2.021	0.128	99.999	99.999	1	0.025	2.035	0.02
127.3	48.8	18.363	0.021	1.369	0.075	99.999	99.999	0.876	0.028	1.682	0.024
540.9	740.8	18.372	0.021	1.293	0.079	99.999	99.999	0.876	0.028	1.654	0.025
978.6	104	18.374	0.02	1.343	0.078	99.999	99.999	0.858	0.027	1.618	0.024
659	782.1	18.377	0.019	1.354	0.066	99.999	99.999	0.858	0.026	1.646	0.021
104	207.9	18.382	0.023	1.993	0.102	99.999	99.999	1.042	0.029	2.059	0.024
770.3	966.7	18.389	0.021	1.532	0.085	99.999	99.999	0.95	0.026	1.793	0.022
899.1	688.8	18.391	0.02	1.712	0.09	99.999	99.999	0.834	0.028	1.676	0.024
180.3	472.9	18.395	0.021	1.473	0.081	99.999	99.999	0.985	0.029	1.814	0.025
345	502.8	18.395	0.022	1.844	0.108	99.999	99.999	0.988	0.03	1.964	0.024
980.7	395.9	18.404	0.024	99.999	99.999	99.999	99.999	1.021	0.031	1.913	0.026
406.1	164.1	18.405	0.021	1.656	0.103	99.999	99.999	0.986	0.027	1.937	0.023
303.4	159.3	18.409	0.023	1.512	0.083	99.999	99.999	0.835	0.029	1.619	0.025
515.2	91.2	18.409	0.022	1.413	0.091	99.999	99.999	0.943	0.028	1.806	0.025
396.6	620.2	18.411	0.021	1.497	0.084	99.999	99.999	0.958	0.027	1.759	0.023
823.8	537.1	18.411	0.021	1.484	0.088	99.999	99.999	0.87	0.027	1.662	0.024
432.4	593.6	18.415	0.021	1.636	0.095	99.999	99.999	0.937	0.027	1.814	0.023
52	700.1	18.424	0.024	1.852	0.122	99.999	99.999	1.044	0.032	2.025	0.026
215.9	235.4	18.429	0.021	99.999	99.999	99.999	99.999	1.16	0.027	2.277	0.022
375.3	600.2	18.433	0.022	1.477	0.081	99.999	99.999	0.993	0.028	1.941	0.023
260	848.6	18.439	0.022	1.408	0.083	99.999	99.999	0.955	0.028	1.775	0.025
267.9	915.8	18.443	0.022	1.594	0.093	99.999	99.999	1.07	0.029	2.051	0.024
154.6	810.4	18.445	0.022	1.359	0.083	99.999	99.999	0.827	0.029	1.625	0.025
206.2	388.7	18.451	0.02	1.383	0.081	99.999	99.999	0.923	0.025	1.776	0.022
221.3	943.6	18.458	0.024	2.053	0.139	99.999	99.999	1.143	0.03	2.151	0.025
814.4	882.2	18.472	0.031	99.999	99.999	99.999	99.999	0.913	0.041	1.728	0.034
785.2	358.9	18.485	0.023	99.999	99.999	99.999	99.999	1.052	0.029	2.032	0.025
376.4	573	18.486	0.025	1.586	0.094	99.999	99.999	1.068	0.031	2.026	0.026
60.1	85.2	18.488	0.026	1.612	0.107	99.999	99.999	0.917	0.033	1.739	0.028
173.3	748.6	18.492	0.024	99.999	99.999	99.999	99.999	1.101	0.03	2.03	0.026
757.7	317	18.494	0.023	1.46	0.088	99.999	99.999	0.794	0.03	1.602	0.025
130.9	109.1	18.496	0.023	1.187	0.075	99.999	99.999	0.861	0.03	1.633	0.025
508.9	918.3	18.501	0.023	1.763	0.114	99.999	99.999	0.975	0.029	1.954	0.024
14.3	826.2	18.505	0.02	1.176	0.071	99.999	99.999	0.799	0.027	1.56	0.023
839.1	774.3	18.515	0.028	1.266	0.076	99.999	99.999	0.899	0.036	1.744	0.032
143.1	282.5	18.52	0.025	1.335	0.09	99.999	99.999	0.843	0.035	1.668	0.03
777.5	523.5	18.521	0.023	1.276	0.076	99.999	99.999	0.872	0.03	1.668	0.026
980.3	451	18.522	0.021	1.768	0.124	99.999	99.999	0.952	0.027	1.888	0.023
667.4	220.8	18.526	0.023	1.723	0.102	99.999	99.999	1.005	0.031	1.975	0.025
262.9	39.2	18.527	0.025	1.252	0.075	99.999	99.999	0.896	0.033	1.68	0.028
484.1	551	18.53	0.021	99.999	99.999	99.999	99.999	0.968	0.028	1.913	0.023
367.6	877.7	18.541	0.025	1.708	0.118	99.999	99.999	0.853	0.035	1.63	0.031
823	324.7	18.549	0.022	1.38	0.079	99.999	99.999	0.899	0.029	1.813	0.024
303.9	589.4	18.551	0.023	1.505	0.087	99.999	99.999	0.856	0.03	1.702	0.026
516.4	894.4	18.557	0.024	99.999	99.999	99.999	99.999	0.88	0.031	1.712	0.026
799.6	652.7	18.561	0.023	1.459	0.089	99.999	99.999	0.834	0.031	1.653	0.026
855.3	665	18.564	0.025	1.465	0.102	99.999	99.999	0.853	0.032	1.697	0.027
197.1	930	18.566	0.023	99.999	99.999	99.999	99.999	1.085	0.03	2.083	0.025
403.5	623.1	18.566	0.025	1.69	0.105	99.999	99.999	1.072	0.032	2.093	0.026
818.2	83.4	18.57	0.025	1.54	0.098	99.999	99.999	0.942	0.033	1.782	0.031
704.8	960.7	18.576	0.022	1.553	0.083	99.999	99.999	0.872	0.028	1.689	0.025
28.5	126.4	18.578	0.027	99.999	99.999	99.999	99.999	1.05	0.034	2.069	0.029
165.3	308.2	18.585	0.027	1.856	0.136	99.999	99.999	1.183	0.035	2.167	0.029
22.7	787.2	18.589	0.024	1.583	0.122	99.999	99.999	0.921	0.032	1.721	0.028
185.4	44.3	18.598	0.026	1.487	0.102	99.999	99.999	0.992	0.033	1.901	0.028
621.6	79.5	18.607	0.028	1.828	0.145	99.999	99.999	1.004	0.035	2.002	0.03
330.4	36.6	18.61	0.026	1.31	0.092	99.999	99.999	0.876	0.035	1.657	0.031
315.5	662.9	18.627	0.024	1.479	0.098	99.999	99.999	0.808	0.032	1.629	0.028
53.7	504.4	18.634	0.027	99.999	99.999	99.999	99.999	0.998	0.034	1.951	0.028
439.8	228.9	18.634	0.023	1.46	0.084	99.999	99.999	0.796	0.032	1.656	0.03
5.5	523.6	18.636	0.023	1.511	0.105	99.999	99.999	0.871	0.03	1.685	0.026
980.2	401.1	18.638	0.033	99.999	99.999	99.999	99.999	1.007	0.044	1.948	0.038
680.5	293.2	18.643	0.024	1.658	0.116	99.999	99.999	0.973	0.033	1.796	0.028
541.5	879.7	18.646	0.027	99.999	99.999	99.999	99.999	0.996	0.035	2.026	0.029
512.2	846.2	18.648	0.026	99.999	99.999	99.999	99.999	1.068	0.033	2.021	0.028

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
843.5	66.1	18.651	0.025	99.999	99.999	99.999	99.999	1.124	0.032	2.155	0.028
551.7	960.8	18.656	0.026	1.477	0.101	99.999	99.999	0.911	0.035	1.761	0.03
563.2	503.2	18.666	0.026	1.485	0.096	99.999	99.999	0.844	0.032	1.699	0.028
153.6	563.6	18.674	0.03	99.999	99.999	99.999	99.999	0.914	0.041	1.751	0.034
677.8	429.4	18.675	0.026	99.999	99.999	99.999	99.999	1.028	0.033	1.99	0.028
673.5	800	18.676	0.025	1.295	0.081	99.999	99.999	0.854	0.032	1.717	0.027
447	635.2	18.68	0.023	99.999	99.999	99.999	99.999	1.093	0.029	1.996	0.026
171.2	179.8	18.682	0.027	1.598	0.117	99.999	99.999	0.988	0.035	1.847	0.03
111.4	715.1	18.688	0.025	99.999	99.999	99.999	99.999	1.106	0.032	2.015	0.027
897.7	829.8	18.689	0.028	1.507	0.123	99.999	99.999	0.825	0.035	1.728	0.031
438.2	606	18.694	0.022	99.999	99.999	99.999	99.999	1.154	0.029	2.162	0.024
728.5	738.8	18.694	0.023	1.754	0.122	99.999	99.999	0.985	0.029	1.828	0.025
526.3	242.4	18.7	0.032	99.999	99.999	99.999	99.999	0.879	0.041	1.758	0.035
493.5	172.3	18.71	0.03	1.57	0.114	99.999	99.999	1.146	0.039	2.108	0.032
971.6	311.4	18.713	0.023	99.999	99.999	99.999	99.999	1.165	0.029	2.188	0.025
953.2	469.3	18.715	0.023	1.178	0.076	99.999	99.999	0.831	0.03	1.629	0.026
956.6	93.3	18.717	0.025	1.625	0.129	99.999	99.999	1.071	0.032	2.083	0.027
573.8	722.6	18.722	0.027	99.999	99.999	99.999	99.999	1.178	0.035	2.152	0.029
335.5	821.2	18.725	0.028	1.439	0.1	99.999	99.999	0.748	0.036	1.537	0.031
668.1	847.1	18.727	0.024	1.679	0.134	99.999	99.999	0.917	0.032	1.763	0.027
708.8	372.7	18.727	0.03	99.999	99.999	99.999	99.999	1.073	0.038	2.178	0.031
885.7	830.7	18.738	0.026	1.609	0.108	99.999	99.999	1.009	0.035	1.961	0.028
406.5	489	18.739	0.028	99.999	99.999	99.999	99.999	1.123	0.036	2.148	0.031
481.8	464.8	18.74	0.026	1.557	0.097	99.999	99.999	0.899	0.033	1.728	0.029
616	294.4	18.741	0.031	99.999	99.999	99.999	99.999	1.123	0.039	2.12	0.033
62.7	607.4	18.742	0.026	1.334	0.095	99.999	99.999	0.781	0.033	1.621	0.029
727.2	225.2	18.743	0.028	99.999	99.999	99.999	99.999	0.975	0.036	1.983	0.03
231.5	800.9	18.756	0.025	1.347	0.11	99.999	99.999	0.956	0.034	1.771	0.028
891.7	47.4	18.758	0.031	99.999	99.999	99.999	99.999	1.105	0.04	2.104	0.033
407.4	719.7	18.76	0.024	1.447	0.089	99.999	99.999	0.872	0.033	1.685	0.027
228.8	163.8	18.763	0.028	1.479	0.116	99.999	99.999	1.011	0.036	1.865	0.031
453.3	952.2	18.765	0.03	99.999	99.999	99.999	99.999	0.998	0.037	1.977	0.032
388	228.9	18.767	0.03	1.289	0.093	99.999	99.999	0.883	0.04	1.665	0.036
630	728.3	18.768	0.026	99.999	99.999	99.999	99.999	1.048	0.033	2.059	0.027
195.9	842.3	18.772	0.031	99.999	99.999	99.999	99.999	1.055	0.043	1.995	0.035
204.1	638.4	18.775	0.028	1.74	0.146	99.999	99.999	0.999	0.037	1.905	0.031
323.9	106.6	18.778	0.028	99.999	99.999	99.999	99.999	0.803	0.036	1.586	0.03
698.5	703.8	18.779	0.029	99.999	99.999	99.999	99.999	1.076	0.038	2.062	0.031
121.7	623.8	18.781	0.027	1.666	0.128	99.999	99.999	0.991	0.036	1.895	0.03
603.2	270.6	18.783	0.028	1.429	0.095	99.999	99.999	0.896	0.036	1.646	0.032
414.9	714.9	18.79	0.028	99.999	99.999	99.999	99.999	1.095	0.037	2.058	0.031
624.4	101.3	18.791	0.028	1.47	0.135	99.999	99.999	1.07	0.036	2.058	0.03
674.2	204.7	18.791	0.029	1.497	0.108	99.999	99.999	0.918	0.039	1.723	0.032
809.2	752.9	18.803	0.026	1.589	0.117	99.999	99.999	0.921	0.036	1.763	0.03
111.2	882.9	18.81	0.03	99.999	99.999	99.999	99.999	0.981	0.038	1.802	0.033
641.6	926.8	18.827	0.029	99.999	99.999	99.999	99.999	1.019	0.036	1.981	0.031
706.7	788.2	18.834	0.025	1.265	0.101	99.999	99.999	0.813	0.034	1.643	0.028
162.7	433.5	18.835	0.031	99.999	99.999	99.999	99.999	0.866	0.042	1.667	0.037
33	905.9	18.841	0.031	99.999	99.999	99.999	99.999	1.079	0.039	2.028	0.033
786.1	2.5	18.847	0.032	1.372	0.131	99.999	99.999	0.977	0.04	1.836	0.035
426.4	625.7	18.849	0.029	0.984	0.09	99.999	99.999	0.704	0.038	1.467	0.033
439.5	710.4	18.849	0.031	99.999	99.999	99.999	99.999	0.84	0.041	1.577	0.038
71.7	287.8	18.849	0.028	99.999	99.999	99.999	99.999	0.971	0.037	1.853	0.031
567.8	948.9	18.855	0.03	99.999	99.999	99.999	99.999	0.93	0.038	1.76	0.033
709.3	427.2	18.855	0.028	99.999	99.999	99.999	99.999	1.011	0.037	1.898	0.031
20.2	423.8	18.862	0.029	99.999	99.999	99.999	99.999	0.888	0.038	1.73	0.033
207.7	655.7	18.873	0.03	1.327	0.096	99.999	99.999	0.859	0.04	1.688	0.033
488.5	348.6	18.873	0.027	1.502	0.116	99.999	99.999	0.87	0.036	1.696	0.031
386.1	88.4	18.885	0.029	99.999	99.999	99.999	99.999	0.988	0.039	1.954	0.032
961.5	305.3	18.901	0.028	1.321	0.11	99.999	99.999	0.772	0.036	1.62	0.031
254.6	839.7	18.904	0.03	1.582	0.133	99.999	99.999	1.062	0.04	2.02	0.033
879	274.3	18.904	0.033	99.999	99.999	99.999	99.999	0.866	0.042	1.709	0.037
13.3	125.9	18.904	0.032	1.273	0.126	99.999	99.999	0.88	0.04	1.704	0.036
295	239.5	18.906	0.026	99.999	99.999	99.999	99.999	1.079	0.035	2.038	0.029
849.6	504.2	18.906	0.033	99.999	99.999	99.999	99.999	0.955	0.041	1.862	0.035
168.7	806.8	18.917	0.029	99.999	99.999	99.999	99.999	1.066	0.039	2.091	0.031

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
832.4	227.2	18.917	0.034	99.999	99.999	99.999	99.999	1.13	0.043	2.156	0.037
446.1	669.5	18.919	0.031	99.999	99.999	99.999	99.999	1.101	0.041	1.936	0.035
37.5	479.3	18.92	0.033	99.999	99.999	99.999	99.999	0.871	0.042	1.787	0.037
808.3	302.7	18.92	0.032	99.999	99.999	99.999	99.999	0.826	0.042	1.61	0.036
591.6	730.9	18.926	0.034	99.999	99.999	99.999	99.999	0.971	0.044	1.788	0.038
890.1	733.4	18.932	0.035	1.506	0.149	99.999	99.999	0.821	0.045	1.69	0.038
256.4	755	18.938	0.029	1.337	0.141	99.999	99.999	0.834	0.039	1.652	0.035
599.7	249.7	18.946	0.033	1.331	0.104	99.999	99.999	0.883	0.042	1.747	0.036
529.8	978.5	18.95	0.032	1.47	0.124	99.999	99.999	0.912	0.042	1.734	0.036
467.2	562.9	18.951	0.034	99.999	99.999	99.999	99.999	0.946	0.043	1.884	0.037
534.2	423	18.951	0.031	99.999	99.999	99.999	99.999	0.821	0.04	1.681	0.035
970.9	901.3	18.952	0.031	99.999	99.999	99.999	99.999	0.999	0.039	1.955	0.034
3.7	773.8	18.959	0.031	99.999	99.999	99.999	99.999	0.989	0.04	1.947	0.033
349.1	285.4	18.961	0.03	99.999	99.999	99.999	99.999	0.868	0.038	1.734	0.034
557.9	39.3	18.965	0.037	99.999	99.999	99.999	99.999	1.045	0.046	1.992	0.04
186.3	279	18.969	0.035	99.999	99.999	99.999	99.999	1.031	0.045	1.951	0.038
586.5	607.7	18.973	0.034	1.471	0.151	99.999	99.999	0.898	0.044	1.765	0.038
785.8	525.9	18.98	0.029	99.999	99.999	99.999	99.999	1.059	0.038	1.987	0.031
444.9	392.6	18.982	0.033	99.999	99.999	99.999	99.999	1.231	0.043	2.186	0.036
59.1	848.2	18.984	0.034	1.293	0.142	99.999	99.999	0.887	0.044	1.723	0.038
364.8	400.4	18.995	0.032	99.999	99.999	99.999	99.999	1.143	0.041	2.128	0.034
401.7	374.8	18.997	0.029	99.999	99.999	99.999	99.999	0.923	0.04	1.765	0.034
534.8	32.3	18.997	0.033	99.999	99.999	99.999	99.999	1.202	0.043	2.196	0.035
986.6	77.2	19.001	0.033	99.999	99.999	99.999	99.999	0.964	0.043	1.821	0.036
488.6	556.3	19.008	0.034	99.999	99.999	99.999	99.999	1.172	0.044	2.098	0.036
514.2	836.6	19.015	0.041	99.999	99.999	99.999	99.999	0.704	0.053	1.486	0.046
175.8	646.1	19.019	0.033	1.58	0.158	99.999	99.999	0.873	0.043	1.701	0.036
841.3	28.8	19.019	0.04	99.999	99.999	99.999	99.999	1.047	0.056	1.925	0.043
247.6	412.4	19.02	0.031	99.999	99.999	99.999	99.999	0.922	0.039	1.768	0.036
850.1	365.6	19.028	0.029	99.999	99.999	99.999	99.999	0.935	0.039	1.816	0.032
263.3	603.1	19.031	0.047	99.999	99.999	99.999	99.999	1.062	0.062	2.053	0.051
138.2	688.8	19.037	0.036	99.999	99.999	99.999	99.999	0.994	0.046	1.891	0.039
141.4	365.1	19.039	0.033	99.999	99.999	99.999	99.999	0.921	0.044	1.784	0.037
214.2	363.3	19.043	0.036	99.999	99.999	99.999	99.999	1.058	0.047	2.001	0.04
69.6	857.8	19.043	0.037	99.999	99.999	99.999	99.999	0.992	0.047	1.921	0.04
420.3	632.8	19.044	0.03	99.999	99.999	99.999	99.999	1.027	0.039	1.861	0.034
915.2	778.7	19.044	0.034	99.999	99.999	99.999	99.999	0.74	0.045	1.495	0.04
410.9	352.7	19.045	0.036	99.999	99.999	99.999	99.999	0.869	0.046	1.784	0.039
316.2	29.8	19.048	0.04	99.999	99.999	99.999	99.999	1.112	0.05	2.124	0.043
403.4	251.8	19.05	0.035	99.999	99.999	99.999	99.999	1.015	0.045	1.91	0.039
593.6	279.8	19.05	0.035	99.999	99.999	99.999	99.999	0.966	0.046	1.784	0.039
676.9	240.2	19.056	0.033	99.999	99.999	99.999	99.999	0.983	0.043	1.85	0.036
285.4	736.2	19.057	0.037	99.999	99.999	99.999	99.999	0.863	0.048	1.815	0.039
286.7	960	19.057	0.033	99.999	99.999	99.999	99.999	0.966	0.041	1.86	0.036
233.6	276.2	19.058	0.035	99.999	99.999	99.999	99.999	1.032	0.047	2.015	0.038
512.6	742.4	19.062	0.035	99.999	99.999	99.999	99.999	0.921	0.044	1.742	0.038
242.3	279.1	19.069	0.042	99.999	99.999	99.999	99.999	0.719	0.057	1.553	0.048
926	569.8	19.069	0.032	99.999	99.999	99.999	99.999	1.189	0.041	2.15	0.034
722.6	206.6	19.077	0.034	99.999	99.999	99.999	99.999	1.005	0.044	2.004	0.037
34.2	928.4	19.084	0.041	99.999	99.999	99.999	99.999	1.018	0.055	2.027	0.045
651	25.9	19.084	0.032	99.999	99.999	99.999	99.999	0.944	0.042	1.788	0.036
836.3	636.9	19.084	0.04	99.999	99.999	99.999	99.999	0.974	0.05	1.909	0.042
43.8	36.4	19.085	0.037	99.999	99.999	99.999	99.999	0.971	0.049	1.842	0.041
73.1	861.1	19.085	0.041	99.999	99.999	99.999	99.999	1.031	0.053	2.106	0.044
983.4	742.3	19.085	0.037	99.999	99.999	99.999	99.999	0.861	0.048	1.718	0.041
494.7	53.5	19.09	0.037	99.999	99.999	99.999	99.999	0.966	0.047	1.921	0.04
320.2	656.5	19.098	0.036	99.999	99.999	99.999	99.999	0.885	0.047	1.73	0.041
325.6	344	19.101	0.037	99.999	99.999	99.999	99.999	0.959	0.048	1.798	0.042
161.5	370.8	19.103	0.038	99.999	99.999	99.999	99.999	0.94	0.05	1.783	0.042
449.4	759.5	19.105	0.036	1.435	0.172	99.999	99.999	1.045	0.047	1.886	0.04
880.9	593.5	19.107	0.034	99.999	99.999	99.999	99.999	0.996	0.045	1.839	0.037
336.7	768.1	19.118	0.034	99.999	99.999	99.999	99.999	0.849	0.045	1.713	0.039
928.6	885.5	19.121	0.038	99.999	99.999	99.999	99.999	1.093	0.049	99.999	99.999
76.9	119.6	19.133	0.039	99.999	99.999	99.999	99.999	1.02	0.049	1.982	0.041
34.9	210.5	19.139	0.034	99.999	99.999	99.999	99.999	1.047	0.044	2.03	0.036
943.4	779.2	19.14	0.04	99.999	99.999	99.999	99.999	0.876	0.053	1.764	0.044

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
531.2	900.2	19.146	0.035	99.999	99.999	99.999	99.999	0.933	0.046	1.736	0.04
573.9	235.7	19.152	0.039	99.999	99.999	99.999	99.999	0.957	0.049	1.839	0.042
167.8	394.8	19.153	0.043	99.999	99.999	99.999	99.999	0.721	0.056	1.646	0.047
742.1	70.2	19.154	0.035	99.999	99.999	99.999	99.999	1.082	0.044	2.094	0.038
131.4	559.3	19.156	0.039	99.999	99.999	99.999	99.999	0.93	0.05	1.817	0.043
254.2	283.7	19.161	0.047	99.999	99.999	99.999	99.999	0.986	0.06	1.986	0.051
325.1	500.9	19.161	0.042	99.999	99.999	99.999	99.999	0.853	0.058	1.738	0.046
123.8	717.4	19.167	0.035	99.999	99.999	99.999	99.999	1.078	0.045	2.006	0.038
712	860.4	19.169	0.036	99.999	99.999	99.999	99.999	0.955	0.046	1.834	0.04
138.6	125.4	19.172	0.035	99.999	99.999	99.999	99.999	0.916	0.045	1.796	0.038
308	749.5	19.173	0.039	99.999	99.999	99.999	99.999	0.839	0.05	1.674	0.045
413.7	652.5	19.178	0.04	99.999	99.999	99.999	99.999	0.776	0.052	1.618	0.045
694.2	164.3	19.179	0.034	99.999	99.999	99.999	99.999	1.148	0.044	2.102	0.037
791.7	876.4	19.18	0.036	99.999	99.999	99.999	99.999	0.943	0.049	1.83	0.041
92.9	368.4	19.187	0.034	99.999	99.999	99.999	99.999	0.936	0.045	1.797	0.039
746.4	31.5	19.19	0.039	99.999	99.999	99.999	99.999	1.141	0.049	2.147	0.042
806.8	851.7	19.194	0.04	99.999	99.999	99.999	99.999	0.904	0.052	1.744	0.044
188.5	851.8	19.204	0.041	99.999	99.999	99.999	99.999	0.953	0.053	1.758	0.045
342.8	414.4	19.206	0.038	99.999	99.999	99.999	99.999	0.949	0.048	1.786	0.042
150	833.7	19.214	0.046	99.999	99.999	99.999	99.999	0.971	0.059	1.846	0.051
431.9	777.5	19.214	0.034	99.999	99.999	99.999	99.999	1.122	0.046	2.029	0.038
79.9	764.1	19.219	0.033	99.999	99.999	99.999	99.999	0.775	0.047	1.618	0.039
74.2	879	19.22	0.036	99.999	99.999	99.999	99.999	1.032	0.046	2.034	0.038
195.8	326.2	19.222	0.044	99.999	99.999	99.999	99.999	0.993	0.058	1.984	0.047
313.9	624.6	19.225	0.042	99.999	99.999	99.999	99.999	0.988	0.053	1.887	0.046
122.9	640	19.227	0.04	99.999	99.999	99.999	99.999	0.908	0.054	1.713	0.047
447.3	274.1	19.228	0.038	99.999	99.999	99.999	99.999	1.149	0.053	2.101	0.043
786.7	978.3	19.229	0.037	99.999	99.999	99.999	99.999	0.881	0.048	1.723	0.042
49.7	856	19.233	0.043	99.999	99.999	99.999	99.999	0.823	0.056	1.624	0.048
462.2	742.5	19.233	0.042	99.999	99.999	99.999	99.999	1.042	0.053	2.05	0.045
816.8	116.7	19.234	0.043	99.999	99.999	99.999	99.999	0.919	0.057	1.797	0.049
335.6	798.7	19.239	0.035	99.999	99.999	99.999	99.999	0.881	0.047	1.678	0.042
529.1	938.4	19.25	0.034	99.999	99.999	99.999	99.999	0.839	0.046	1.695	0.038
127.2	668.9	19.25	0.035	99.999	99.999	99.999	99.999	0.869	0.046	1.749	0.039
373.5	717.6	19.256	0.043	99.999	99.999	99.999	99.999	0.904	0.056	1.726	0.047
545.3	746.5	19.258	0.036	99.999	99.999	99.999	99.999	0.985	0.048	1.863	0.041
869.2	36.7	19.258	0.045	99.999	99.999	99.999	99.999	0.746	0.057	1.591	0.049
946	704.9	19.259	0.042	99.999	99.999	99.999	99.999	0.913	0.053	1.826	0.045
817.1	251.3	19.265	0.044	99.999	99.999	99.999	99.999	1.169	0.056	2.164	0.047
433	989.5	19.266	0.046	99.999	99.999	99.999	99.999	0.883	0.059	1.641	0.052
169	221.6	19.272	0.04	99.999	99.999	99.999	99.999	1.081	0.051	2	0.045
627.9	410.5	19.272	0.045	99.999	99.999	99.999	99.999	1.076	0.058	2.036	0.048
407.8	195.7	19.274	0.039	99.999	99.999	99.999	99.999	0.969	0.053	99.999	99.999
190.4	612.7	19.275	0.041	99.999	99.999	99.999	99.999	0.979	0.054	1.796	0.046
521.2	511.6	19.276	0.039	99.999	99.999	99.999	99.999	1.096	0.049	2.113	0.042
955.9	461.1	19.277	0.043	99.999	99.999	99.999	99.999	0.787	0.055	1.58	0.049
308	175.1	19.282	0.036	99.999	99.999	99.999	99.999	0.964	0.046	1.81	0.043
811.5	848.3	19.285	0.038	99.999	99.999	99.999	99.999	1.021	0.049	1.972	0.041
662.4	949.2	19.289	0.036	99.999	99.999	99.999	99.999	0.951	0.048	1.808	0.041
567.6	126	19.29	0.041	99.999	99.999	99.999	99.999	1.019	0.055	1.891	0.045
275.9	620.7	19.292	0.04	99.999	99.999	99.999	99.999	0.962	0.052	1.768	0.045
320.2	922.2	19.292	0.046	99.999	99.999	99.999	99.999	0.852	0.061	1.663	0.053
547.3	323.5	19.294	0.038	99.999	99.999	99.999	99.999	0.912	0.05	1.726	0.042
583.3	393.4	19.294	0.05	99.999	99.999	99.999	99.999	0.741	0.062	1.518	0.056
869.8	64.6	19.299	0.046	99.999	99.999	99.999	99.999	0.953	0.059	1.822	0.051
257.1	148.2	19.304	0.043	99.999	99.999	99.999	99.999	0.924	0.054	1.754	0.048
696.3	493.3	19.304	0.041	99.999	99.999	99.999	99.999	0.87	0.054	1.695	0.047
561.9	187.3	19.308	0.038	99.999	99.999	99.999	99.999	0.714	0.051	1.496	0.047
837.7	366.4	19.308	0.041	99.999	99.999	99.999	99.999	0.975	0.055	1.77	0.047
440	614.4	19.309	0.042	99.999	99.999	99.999	99.999	0.908	0.055	1.891	0.045
714.5	256.1	19.319	0.043	99.999	99.999	99.999	99.999	0.926	0.056	1.76	0.049
856.5	310.3	19.32	0.045	99.999	99.999	99.999	99.999	0.938	0.058	1.788	0.049
965.3	600.1	19.323	0.042	99.999	99.999	99.999	99.999	0.918	0.054	1.789	0.046
429	162.8	19.324	0.043	99.999	99.999	99.999	99.999	0.993	0.057	1.875	0.05
616.2	504.1	19.327	0.042	99.999	99.999	99.999	99.999	1.033	0.053	2.053	0.045
105.3	984.4	19.328	0.044	99.999	99.999	99.999	99.999	0.877	0.057	1.755	0.048

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
522	825.8	19.33	0.047	99.999	99.999	99.999	99.999	1.049	0.06	1.921	0.051
854.9	956.3	19.331	0.043	99.999	99.999	99.999	99.999	0.987	0.055	1.853	0.046
91.4	319.3	19.332	0.046	99.999	99.999	99.999	99.999	0.94	0.059	1.942	0.049
80.9	819.9	19.334	0.046	99.999	99.999	99.999	99.999	0.839	0.058	1.667	0.051
609.4	303.9	19.34	0.041	99.999	99.999	99.999	99.999	1.101	0.055	2.041	0.044
535.1	329.2	19.344	0.039	99.999	99.999	99.999	99.999	0.957	0.052	1.934	0.043
142	157.2	19.352	0.041	99.999	99.999	99.999	99.999	0.979	0.055	1.869	0.046
234.7	697.3	19.352	0.045	99.999	99.999	99.999	99.999	1.004	0.056	1.963	0.049
576.9	548.7	19.352	0.042	99.999	99.999	99.999	99.999	0.927	0.055	1.784	0.046
265.2	901.1	19.355	0.045	99.999	99.999	99.999	99.999	0.972	0.059	1.942	0.049
484.4	851.3	19.362	0.041	99.999	99.999	99.999	99.999	1.076	0.052	2.053	0.045
863	798.4	19.367	0.046	99.999	99.999	99.999	99.999	1.187	0.059	2.081	0.05
952.6	283	19.369	0.041	99.999	99.999	99.999	99.999	0.885	0.053	1.827	0.046
423.5	221.9	19.371	0.048	99.999	99.999	99.999	99.999	0.875	0.064	1.673	0.062
875.3	527.4	19.374	0.042	99.999	99.999	99.999	99.999	0.978	0.054	1.745	0.048
725	383.6	19.375	0.038	99.999	99.999	99.999	99.999	0.86	0.051	1.695	0.044
101.1	109.3	19.381	0.049	99.999	99.999	99.999	99.999	0.784	0.066	1.49	0.061
458.5	264.4	19.382	0.041	99.999	99.999	99.999	99.999	0.99	0.054	1.942	0.046
209.6	859.9	19.385	0.043	99.999	99.999	99.999	99.999	0.859	0.055	1.651	0.048
22	191.8	19.386	0.049	99.999	99.999	99.999	99.999	0.883	0.063	1.815	0.053
740.2	583.8	19.388	0.042	99.999	99.999	99.999	99.999	0.915	0.056	1.752	0.048
213.7	176.1	19.389	0.045	99.999	99.999	99.999	99.999	1.037	0.058	1.973	0.049
804	958.7	19.393	0.042	99.999	99.999	99.999	99.999	1.018	0.053	1.744	0.048
581.8	575.3	19.397	0.039	99.999	99.999	99.999	99.999	1.01	0.052	1.891	0.042
771.5	105.9	19.398	0.043	99.999	99.999	99.999	99.999	0.902	0.057	1.716	0.049
636.8	551.3	19.402	0.048	99.999	99.999	99.999	99.999	0.997	0.061	1.819	0.053
878.9	86.3	19.402	0.045	99.999	99.999	99.999	99.999	1.071	0.06	2.068	0.05
471.6	39.2	19.408	0.043	99.999	99.999	99.999	99.999	0.824	0.058	1.693	0.046
691.4	295.5	19.41	0.052	99.999	99.999	99.999	99.999	0.991	0.066	1.879	0.058
351.3	551.2	19.415	0.043	99.999	99.999	99.999	99.999	0.898	0.057	1.819	0.049
691.6	260.6	19.417	0.054	99.999	99.999	99.999	99.999	0.992	0.068	1.836	0.059
418.6	797.3	19.418	0.043	99.999	99.999	99.999	99.999	1.03	0.056	2.015	0.046
674.6	861.3	19.418	0.049	99.999	99.999	99.999	99.999	0.969	0.062	1.889	0.053
283.6	326.6	19.42	0.05	99.999	99.999	99.999	99.999	0.97	0.063	1.946	0.053
876.5	381.7	19.428	0.048	99.999	99.999	99.999	99.999	0.907	0.062	1.724	0.053
489.4	954.1	19.429	0.042	99.999	99.999	99.999	99.999	0.917	0.055	1.69	0.049
821.5	201.3	19.433	0.052	99.999	99.999	99.999	99.999	0.957	0.068	1.826	0.058
844.3	771	19.434	0.042	99.999	99.999	99.999	99.999	0.848	0.056	1.764	0.047
924	43.5	19.435	0.043	99.999	99.999	99.999	99.999	1.099	0.057	2.106	0.047
823.5	190.9	19.436	0.049	99.999	99.999	99.999	99.999	0.868	0.067	1.654	0.058
457.9	304.7	19.44	0.044	99.999	99.999	99.999	99.999	1.021	0.06	1.885	0.049
673	123.3	19.441	0.048	99.999	99.999	99.999	99.999	0.844	0.062	1.715	0.053
783.8	80.5	19.444	0.044	99.999	99.999	99.999	99.999	0.974	0.058	1.951	0.048
254.4	396.2	19.445	0.056	99.999	99.999	99.999	99.999	1.024	0.071	2.03	0.06
586.7	798.9	19.445	0.054	99.999	99.999	99.999	99.999	0.874	0.07	1.746	0.061
317.8	648.7	19.446	0.05	99.999	99.999	99.999	99.999	1.044	0.064	2.039	0.054
436.8	981.3	19.447	0.046	99.999	99.999	99.999	99.999	0.83	0.059	1.718	0.05
604.8	709.5	19.447	0.044	99.999	99.999	99.999	99.999	1.068	0.057	2.055	0.048
693.5	953.8	19.447	0.044	99.999	99.999	99.999	99.999	0.881	0.058	1.648	0.05
818.4	496.8	19.448	0.046	99.999	99.999	99.999	99.999	0.965	0.058	1.907	0.05
891.9	457	19.448	0.052	99.999	99.999	99.999	99.999	0.843	0.066	1.699	0.057
648.6	812	19.451	0.043	99.999	99.999	99.999	99.999	0.995	0.056	2.095	0.049
355.5	988.2	19.452	0.046	99.999	99.999	99.999	99.999	0.751	0.059	1.502	0.053
198.1	413.6	19.453	0.05	99.999	99.999	99.999	99.999	0.904	0.068	1.767	0.057
6.3	591.5	19.453	0.041	99.999	99.999	99.999	99.999	0.862	0.055	1.805	0.045
970.5	498.7	19.454	0.049	99.999	99.999	99.999	99.999	0.868	0.064	1.694	0.054
561.3	532.2	19.457	0.039	99.999	99.999	99.999	99.999	0.955	0.052	1.828	0.044
461.6	339.1	19.459	0.051	99.999	99.999	99.999	99.999	0.956	0.069	1.788	0.06
700.3	262.3	19.461	0.048	99.999	99.999	99.999	99.999	0.958	0.061	1.9	0.053
277.2	208.1	19.464	0.05	99.999	99.999	99.999	99.999	0.933	0.063	1.714	0.056
107.9	142.1	19.474	0.048	99.999	99.999	99.999	99.999	0.833	0.061	1.788	0.053
868.5	871.5	19.477	0.047	99.999	99.999	99.999	99.999	0.815	0.061	1.739	0.052
162.4	718.3	19.479	0.06	99.999	99.999	99.999	99.999	0.951	0.079	1.847	0.067
216.5	495.2	19.48	0.049	99.999	99.999	99.999	99.999	1.033	0.066	99.999	99.999
588.3	340.1	19.48	0.05	99.999	99.999	99.999	99.999	0.96	0.064	1.785	0.055
485.5	581.3	19.482	0.048	99.999	99.999	99.999	99.999	0.896	0.063	1.758	0.054

TABLE 4 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
733.2	573.2	19.483	0.054	99.999	99.999	99.999	99.999	0.944	0.068	1.815	0.058
188.1	797.7	19.49	0.044	99.999	99.999	99.999	99.999	1.041	0.057	1.99	0.048
241.6	767.1	19.49	0.072	99.999	99.999	99.999	99.999	1.021	0.091	1.979	0.077
336.6	835.3	19.492	0.046	99.999	99.999	99.999	99.999	1.05	0.059	1.884	0.051
123.8	569.2	19.493	0.048	99.999	99.999	99.999	99.999	0.858	0.062	1.746	0.055
271.4	485.6	19.496	0.05	99.999	99.999	99.999	99.999	1.046	0.063	1.924	0.054
272.9	688.4	19.5	0.049	99.999	99.999	99.999	99.999	0.916	0.064	1.731	0.055
479.4	377.8	19.501	0.055	99.999	99.999	99.999	99.999	0.839	0.072	1.665	0.061
40.7	395.6	19.506	0.046	99.999	99.999	99.999	99.999	0.926	0.06	1.796	0.051
521.9	932.5	19.513	0.043	99.999	99.999	99.999	99.999	0.955	0.058	1.777	0.048
445.2	244.8	19.519	0.05	99.999	99.999	99.999	99.999	0.862	0.063	1.726	0.056
404.4	657.8	19.523	0.054	99.999	99.999	99.999	99.999	0.929	0.07	1.776	0.061
706.5	360.4	19.524	0.045	99.999	99.999	99.999	99.999	0.861	0.061	1.766	0.05
479.3	412.5	19.532	0.055	99.999	99.999	99.999	99.999	0.992	0.078	1.753	0.063
274.8	721.5	19.533	0.051	99.999	99.999	99.999	99.999	1.014	0.065	1.944	0.055
681.5	737.3	19.533	0.056	99.999	99.999	99.999	99.999	0.973	0.071	1.792	0.063
42.7	866.7	19.535	0.054	99.999	99.999	99.999	99.999	0.984	0.07	1.839	0.059
743.6	422.6	19.54	0.046	99.999	99.999	99.999	99.999	0.836	0.06	1.651	0.054
364.5	72.2	19.545	0.05	99.999	99.999	99.999	99.999	0.935	0.064	1.769	0.055
801.8	622.5	19.545	0.054	99.999	99.999	99.999	99.999	0.942	0.068	1.757	0.059
147	624.1	19.547	0.048	99.999	99.999	99.999	99.999	0.89	0.063	1.712	0.054
699.5	552.8	19.55	0.059	99.999	99.999	99.999	99.999	0.952	0.076	1.714	0.064
770.9	247.1	19.551	0.048	99.999	99.999	99.999	99.999	0.882	0.065	1.673	0.055
12.4	438.3	19.555	0.048	99.999	99.999	99.999	99.999	0.702	0.064	1.608	0.053
102.6	841.7	19.557	0.05	99.999	99.999	99.999	99.999	1.002	0.065	1.8	0.056
255.3	777.6	19.559	0.047	99.999	99.999	99.999	99.999	0.993	0.063	1.81	0.054
288.1	417.9	19.56	0.044	99.999	99.999	99.999	99.999	0.905	0.059	1.741	0.052
781.3	771.4	19.561	0.052	99.999	99.999	99.999	99.999	0.893	0.068	1.77	0.057
512.4	673.6	19.564	0.058	99.999	99.999	99.999	99.999	0.783	0.073	1.765	0.062
536	237.2	19.568	0.062	99.999	99.999	99.999	99.999	0.936	0.077	99.999	99.999
608.4	883.8	19.568	0.065	99.999	99.999	99.999	99.999	0.865	0.082	1.697	0.071
236.3	764	19.572	0.054	99.999	99.999	99.999	99.999	0.913	0.069	1.728	0.06
963.2	975.4	19.582	0.054	99.999	99.999	99.999	99.999	1.102	0.07	1.999	0.059
353.3	781.1	19.586	0.056	99.999	99.999	99.999	99.999	0.975	0.073	1.731	0.064
415.2	384.8	19.59	0.049	99.999	99.999	99.999	99.999	0.91	0.065	1.821	0.055
421.8	576.3	19.593	0.054	99.999	99.999	99.999	99.999	0.875	0.07	1.671	0.062
337.1	622.5	19.596	0.046	99.999	99.999	99.999	99.999	0.941	0.062	1.661	0.056
942.6	783.6	19.599	0.055	99.999	99.999	99.999	99.999	0.945	0.073	1.789	0.06
357.5	735.8	19.6	0.058	99.999	99.999	99.999	99.999	0.848	0.075	1.715	0.064
305.1	291	19.604	0.05	99.999	99.999	99.999	99.999	0.879	0.069	1.627	0.058
124.5	394.4	19.61	0.061	99.999	99.999	99.999	99.999	0.703	0.077	1.571	0.068
634.3	810.2	19.613	0.059	99.999	99.999	99.999	99.999	0.839	0.076	1.718	0.065
305.6	975.8	19.616	0.057	99.999	99.999	99.999	99.999	0.993	0.075	1.891	0.064
758	429.6	19.62	0.056	99.999	99.999	99.999	99.999	0.875	0.072	1.725	0.064
302.2	192.3	19.629	0.052	99.999	99.999	99.999	99.999	0.839	0.068	1.73	0.061
614	741.7	19.637	0.061	99.999	99.999	99.999	99.999	0.925	0.079	1.762	0.068
98.1	710.2	19.646	0.055	99.999	99.999	99.999	99.999	0.868	0.072	1.799	0.06
382.1	974.2	19.675	0.05	99.999	99.999	99.999	99.999	0.824	0.066	1.602	0.06
489.2	372.2	19.681	0.064	99.999	99.999	99.999	99.999	0.796	0.081	1.629	0.07
552	807.5	19.683	0.052	99.999	99.999	99.999	99.999	0.765	0.069	1.598	0.059
382.4	941.8	19.693	0.059	99.999	99.999	99.999	99.999	0.672	0.077	1.541	0.066
897	613.9	19.707	0.054	99.999	99.999	99.999	99.999	0.811	0.074	1.623	0.064
666.9	571.6	19.711	0.065	99.999	99.999	99.999	99.999	1.076	0.082	1.893	0.071
958.8	258.5	19.72	0.068	99.999	99.999	99.999	99.999	0.823	0.085	1.605	0.078
46.7	519.8	19.735	0.067	99.999	99.999	99.999	99.999	0.921	0.086	1.911	0.072
696.3	668.3	19.737	0.069	99.999	99.999	99.999	99.999	1.204	0.089	2.166	0.075
68.7	355.7	19.746	0.06	99.999	99.999	99.999	99.999	1.169	0.077	2.212	0.064
796.6	933.4	19.796	0.073	99.999	99.999	99.999	99.999	1.062	0.092	2.041	0.079
334.2	698.1	19.804	0.056	99.999	99.999	99.999	99.999	1.069	0.072	2.015	0.062
675.3	679.1	19.819	0.063	99.999	99.999	99.999	99.999	1.033	0.081	1.913	0.07
811.8	19.6	19.819	0.06	99.999	99.999	99.999	99.999	0.978	0.076	2.086	0.064
677.6	61.9	19.857	0.066	99.999	99.999	99.999	99.999	0.903	0.09	1.797	0.072

TABLE 5 CCD *UBVRI* PHOTOMETRY OF BE 10

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
374.5	153.4	11.244	0.004	0.433	0.004	0.246	0.002	0.22	0.005	0.5	0.004
528.6	217.9	12.352	0.002	1.483	0.004	1.346	0.009	0.851	0.003	1.631	0.003
804.6	881.2	12.746	0.003	0.738	0.014	0.231	0.004	0.44	0.014	0.873	0.005
102.5	174.5	13.562	0.002	0.771	0.012	0.174	0.008	0.499	0.006	0.971	0.003
85.1	74.1	13.573	0.003	0.794	0.009	0.213	0.008	0.493	0.01	0.994	0.005
400.8	856.8	13.729	0.002	0.823	0.004	0.227	0.007	0.548	0.003	1.047	0.002
491.8	510.5	13.945	0.003	1.083	0.006	1.061	0.013	0.631	0.005	1.185	0.004
213.6	723.9	14.418	0.003	0.861	0.006	0.496	0.012	0.568	0.004	1.152	0.003
206.6	867.4	14.437	0.003	1.655	0.009	0.976	0.029	0.93	0.004	1.859	0.004
517.1	851.9	14.542	0.003	1.759	0.009	1.117	0.039	0.991	0.004	1.963	0.004
508.4	866.6	14.555	0.003	0.95	0.006	0.52	0.014	0.584	0.004	1.217	0.003
444.3	880.9	14.646	0.004	1.57	0.009	0.914	0.029	0.973	0.004	1.898	0.003
908.6	351.2	14.664	0.005	1.603	0.009	0.96	0.032	0.953	0.005	1.87	0.004
407.5	366.4	14.681	0.005	1.387	0.008	0.694	0.02	0.834	0.005	1.638	0.004
633.4	848	14.681	0.004	0.876	0.007	0.567	0.018	0.578	0.005	1.191	0.004
741.7	698.6	14.689	0.005	1.573	0.009	1.054	0.034	0.982	0.004	1.911	0.004
31.6	851.7	14.741	0.004	0.975	0.007	0.547	0.013	0.599	0.005	1.275	0.004
589.3	431.3	14.783	0.004	1.062	0.009	0.579	0.018	0.677	0.005	1.376	0.004
863.5	657.2	14.814	0.004	0.925	0.008	0.572	0.016	0.598	0.005	1.217	0.004
519.3	148.1	14.868	0.004	1.009	0.008	0.572	0.017	0.65	0.005	1.353	0.004
567.4	597.2	14.908	0.005	0.907	0.01	0.476	0.019	0.605	0.007	1.248	0.006
450.5	539.8	14.955	0.004	1.024	0.009	0.557	0.018	0.618	0.006	1.289	0.005
706.6	23.4	14.967	0.005	0.99	0.01	0.642	0.019	0.632	0.007	1.313	0.006
639.9	578.8	15.018	0.004	1.656	0.011	1.017	0.043	0.994	0.005	1.986	0.004
622.6	800.4	15.028	0.004	0.907	0.008	0.535	0.018	0.557	0.005	1.161	0.004
586.6	361.2	15.161	0.005	1.029	0.01	0.61	0.021	0.658	0.006	1.357	0.005
595.8	449.5	15.205	0.005	0.964	0.01	0.523	0.02	0.594	0.006	1.256	0.006
209.6	597	15.27	0.004	0.846	0.009	0.512	0.021	0.534	0.005	1.113	0.005
751.6	369	15.352	0.005	1.04	0.011	0.567	0.027	0.668	0.006	1.397	0.005
616.3	399.1	15.353	0.004	1.037	0.01	0.552	0.026	0.649	0.006	1.337	0.005
177.9	451.3	15.365	0.007	0.988	0.014	99.999	99.999	0.606	0.008	1.262	0.007
567.3	534.7	15.391	0.005	0.948	0.011	0.545	0.026	0.577	0.006	1.264	0.006
116.4	346	15.472	0.007	1.739	0.015	1.021	0.07	1.084	0.005	2.128	0.004
541.2	770.4	15.507	0.005	0.894	0.01	0.568	0.025	0.581	0.006	1.198	0.005
841	133	15.568	0.006	1.184	0.012	0.646	0.034	0.715	0.007	1.381	0.006
483.6	451.3	15.593	0.005	1.022	0.012	0.542	0.027	0.62	0.007	1.29	0.006
603.6	643.9	15.598	0.005	1.042	0.011	0.518	0.026	0.635	0.007	1.345	0.006
104.1	201.2	15.609	0.006	1.105	0.012	0.655	0.032	0.707	0.007	1.358	0.006
371.1	561.6	15.696	0.005	0.952	0.012	0.478	0.028	0.51	0.007	1.169	0.006
468.5	477	15.712	0.006	1.048	0.012	0.583	0.027	0.602	0.007	1.329	0.006
379.1	857.6	15.732	0.005	1.139	0.012	0.41	0.029	0.697	0.006	1.421	0.005
688.2	56.5	15.734	0.006	0.99	0.013	0.576	0.026	0.614	0.007	1.293	0.006
100.7	7.4	15.771	0.007	2.373	0.022	99.999	99.999	1.413	0.009	2.839	0.007
607.3	180.7	15.78	0.007	1.302	0.015	1.238	0.059	0.82	0.007	1.523	0.006
432.8	785.3	15.8	0.006	1.125	0.012	0.44	0.033	0.732	0.006	1.487	0.005
752.4	40.7	15.804	0.006	0.955	0.012	0.708	0.037	0.643	0.007	1.324	0.006
176.1	445.9	15.804	0.009	1.002	0.02	99.999	99.999	0.621	0.01	1.271	0.01
761.4	451.7	15.818	0.005	0.987	0.012	0.53	0.03	0.597	0.007	1.253	0.006
334.6	223.5	15.869	0.006	1.027	0.013	0.597	0.032	0.622	0.007	1.392	0.006
483.1	963.5	15.918	0.006	0.987	0.012	0.511	0.033	0.608	0.007	1.281	0.006
852.3	189.3	15.93	0.009	1.355	0.015	1.184	0.056	0.929	0.007	1.81	0.006
470.5	507.4	15.934	0.006	1.941	0.019	99.999	99.999	1.128	0.007	2.184	0.006
103.4	84.9	15.943	0.009	1.465	0.016	0.72	0.053	0.88	0.007	1.831	0.006
743.2	35.5	15.994	0.007	1.005	0.017	0.68	0.04	0.594	0.008	1.265	0.008
423.8	387.4	16.024	0.007	1.058	0.016	0.558	0.037	0.612	0.008	1.298	0.007
214.1	792.8	16.045	0.006	0.904	0.013	0.538	0.033	0.598	0.007	1.216	0.006
650.9	521.1	16.106	0.007	0.969	0.015	0.555	0.035	0.579	0.008	1.209	0.007
310.3	345.1	16.106	0.007	1.112	0.016	0.539	0.041	0.665	0.008	1.41	0.007
578.3	415.5	16.194	0.007	1.084	0.015	0.575	0.041	0.649	0.009	1.363	0.008
299.7	814.6	16.248	0.01	1.415	0.018	0.792	0.063	0.881	0.008	1.775	0.007
390	775.1	16.254	0.007	0.972	0.015	0.5	0.042	0.552	0.008	1.22	0.008
459.5	58.4	16.259	0.007	1.014	0.017	0.63	0.046	0.645	0.008	1.339	0.008
530.2	848.3	16.284	0.008	1.025	0.017	0.572	0.047	0.629	0.009	1.317	0.008
173.2	655	16.373	0.008	0.949	0.017	0.514	0.041	0.599	0.01	1.235	0.008
644.8	610.1	16.383	0.007	1.153	0.018	0.455	0.05	0.708	0.008	1.467	0.007
637.7	392.2	16.4	0.008	1.081	0.018	0.596	0.05	0.653	0.009	1.351	0.008

TABLE 5 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
884.7	48.6	16.466	0.008	1.086	0.02	0.582	0.055	0.682	0.01	1.432	0.009
208.4	805.8	16.475	0.008	1.024	0.018	0.511	0.047	0.643	0.009	1.329	0.008
503	790.6	16.51	0.008	1.006	0.019	0.488	0.046	0.611	0.009	1.271	0.008
341.8	333.4	16.511	0.008	1.129	0.02	0.472	0.055	0.625	0.009	1.327	0.008
848.8	423.3	16.524	0.008	1.026	0.017	0.602	0.052	0.665	0.009	1.333	0.008
56.6	322.6	16.606	0.01	1.935	0.029	99.999	99.999	1.089	0.01	2.228	0.008
511.8	242.7	16.662	0.011	1.341	0.025	0.556	0.072	0.801	0.01	1.702	0.009
461.4	238.9	16.689	0.009	1.125	0.022	0.507	0.053	0.705	0.01	1.466	0.009
890.3	254.8	16.715	0.009	1.14	0.023	0.518	0.063	0.672	0.011	1.401	0.009
127.6	688.2	16.715	0.009	1.047	0.022	0.381	0.087	0.643	0.011	1.34	0.009
830.3	571.3	16.725	0.01	1.637	0.028	99.999	99.999	1.015	0.011	2.004	0.009
706.8	653.2	16.785	0.01	1.056	0.023	0.478	0.059	0.659	0.012	1.354	0.01
857.7	686.4	16.872	0.011	1.904	0.035	99.999	99.999	1.129	0.011	2.153	0.009
313	474.9	16.925	0.012	1.122	0.025	0.556	0.076	0.74	0.013	1.505	0.011
407.9	892.1	16.949	0.012	1.302	0.028	0.395	0.079	0.792	0.012	1.595	0.01
213.7	569.5	16.953	0.013	1.287	0.028	99.999	99.999	0.719	0.016	1.445	0.014
898.4	763.7	17.005	0.011	1.021	0.025	0.351	0.064	0.677	0.013	1.353	0.011
889.5	213.6	17.022	0.011	1.114	0.029	0.542	0.081	0.686	0.012	1.397	0.011
365.8	56.9	17.048	0.016	1.443	0.031	0.552	0.113	0.878	0.014	1.739	0.012
715.2	204.4	17.055	0.013	1.254	0.028	0.469	0.093	0.821	0.012	1.633	0.011
357.7	727	17.073	0.011	1.263	0.028	99.999	99.999	0.83	0.012	1.682	0.011
784.3	880.8	17.087	0.012	1.403	0.035	99.999	99.999	0.875	0.014	1.728	0.012
181.3	413	17.117	0.012	1.17	0.029	0.525	0.095	0.737	0.013	1.513	0.011
522.8	437.4	17.118	0.012	1.295	0.03	0.428	0.099	0.75	0.013	1.565	0.011
455.4	6.7	17.126	0.012	1.307	0.028	0.36	0.099	0.759	0.013	1.594	0.011
536.7	965.8	17.159	0.012	1.075	0.028	0.559	0.088	0.685	0.014	1.419	0.012
572.6	539.7	17.166	0.013	1.082	0.029	99.999	99.999	0.733	0.015	1.476	0.013
574.3	574	17.175	0.011	1.081	0.026	0.412	0.076	0.688	0.013	1.421	0.011
855.7	929.1	17.194	0.013	1.31	0.031	99.999	99.999	0.855	0.015	1.567	0.013
96.4	221.9	17.246	0.012	1.057	0.029	0.576	0.089	0.629	0.014	1.387	0.012
440.9	474.2	17.249	0.013	1.181	0.032	99.999	99.999	0.733	0.016	1.521	0.014
292.2	905.7	17.372	0.014	0.91	0.03	0.391	0.082	0.518	0.018	1.134	0.015
149.1	325.6	17.39	0.016	1.512	0.042	99.999	99.999	0.98	0.016	1.856	0.014
371.1	428.8	17.396	0.017	1.202	0.035	0.396	0.105	0.785	0.017	1.635	0.014
349.9	730.6	17.412	0.017	1.324	0.044	99.999	99.999	0.801	0.027	99.999	99.999
607	409.2	17.414	0.014	1.71	0.048	99.999	99.999	1.005	0.015	2.008	0.012
423.8	676.4	17.521	0.014	1.159	0.037	99.999	99.999	0.74	0.015	1.539	0.014
441.5	467.7	17.548	0.018	1.225	0.042	0.274	0.119	0.766	0.02	1.565	0.017
36.8	252.1	17.565	0.016	1.302	0.042	99.999	99.999	0.791	0.018	1.631	0.015
715.7	474.9	17.578	0.015	1.21	0.04	99.999	99.999	0.723	0.017	1.521	0.015
144.7	66.3	17.578	0.016	1.36	0.042	99.999	99.999	0.811	0.017	1.647	0.016
802.6	738.1	17.587	0.014	1.354	0.042	99.999	99.999	0.812	0.015	1.655	0.014
774.7	680.8	17.64	0.016	1.149	0.038	0.329	0.115	0.762	0.017	1.505	0.015
191.5	383.9	17.646	0.017	1.286	0.042	99.999	99.999	0.797	0.018	1.64	0.016
514.3	656.5	17.666	0.015	1.21	0.039	99.999	99.999	0.705	0.018	1.437	0.015
99	636.6	17.676	0.016	1.118	0.039	99.999	99.999	0.783	0.018	1.49	0.015
893.2	772	17.676	0.017	1.512	0.047	99.999	99.999	0.942	0.018	1.802	0.015
12.1	285.9	17.685	0.017	2.008	0.066	99.999	99.999	1.197	0.018	2.364	0.015
39.7	492.9	17.708	0.018	1.833	0.061	99.999	99.999	1.07	0.018	2.129	0.015
474.5	639	17.72	0.018	1.213	0.045	99.999	99.999	0.778	0.02	1.545	0.017
409	384.8	17.738	0.018	1.276	0.047	99.999	99.999	0.802	0.02	1.637	0.018
243.4	985.8	17.772	0.02	1.189	0.05	99.999	99.999	0.769	0.022	1.614	0.019
887.8	66	17.774	0.018	1.255	0.047	99.999	99.999	0.771	0.021	1.636	0.017
327.7	808.9	17.787	0.017	1.19	0.047	99.999	99.999	0.798	0.02	1.576	0.017
513.6	755.5	17.796	0.018	1.189	0.047	99.999	99.999	0.753	0.021	1.546	0.017
260.1	268.5	17.802	0.015	1.352	0.05	99.999	99.999	0.797	0.018	1.668	0.015
523.4	410	17.822	0.02	1.218	0.049	99.999	99.999	0.765	0.022	1.563	0.019
114.3	942.4	17.856	0.019	1.384	0.051	99.999	99.999	0.872	0.02	1.692	0.018
866.3	423.4	17.867	0.019	1.156	0.052	99.999	99.999	0.716	0.021	1.514	0.019
290.3	127.4	17.882	0.018	1.424	0.055	99.999	99.999	0.944	0.019	1.89	0.016
14.3	632	17.885	0.018	1.144	0.045	99.999	99.999	0.675	0.021	1.487	0.018
564.4	466.8	17.917	0.02	1.354	0.054	99.999	99.999	0.742	0.023	1.599	0.019
730.8	894.1	17.936	0.022	1.58	0.064	99.999	99.999	1.026	0.022	1.892	0.019
261.7	687.5	17.968	0.019	1.199	0.047	99.999	99.999	0.668	0.022	1.44	0.018
706.4	601.3	17.993	0.02	1.141	0.054	99.999	99.999	0.783	0.022	1.586	0.019
802	334	18.008	0.021	1.223	0.053	99.999	99.999	0.781	0.023	1.527	0.021

TABLE 5 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
535.4	613.7	18.015	0.019	1.177	0.052	99.999	99.999	0.788	0.022	1.584	0.019
1.8	843.6	18.024	0.026	99.999	99.999	99.999	99.999	0.806	0.028	1.643	0.025
131.7	267.7	18.042	0.021	1.376	0.058	99.999	99.999	0.868	0.023	1.751	0.02
299.4	501.5	18.047	0.019	1.43	0.063	99.999	99.999	0.826	0.021	1.707	0.018
849.6	729.5	18.062	0.024	1.465	0.073	99.999	99.999	0.929	0.025	1.84	0.021
689.8	859.2	18.094	0.023	1.259	0.069	99.999	99.999	0.719	0.026	1.5	0.022
534.8	528.8	18.117	0.02	1.365	0.068	99.999	99.999	0.8	0.023	1.617	0.019
292.6	554.1	18.124	0.024	1.263	0.063	99.999	99.999	0.682	0.026	1.553	0.023
282.5	893.1	18.183	0.023	1.156	0.061	99.999	99.999	0.77	0.026	1.535	0.022
714.4	700.2	18.208	0.023	1.247	0.066	99.999	99.999	0.868	0.026	1.672	0.022
858.6	508	18.238	0.025	1.095	0.063	99.999	99.999	0.785	0.027	1.553	0.024
839.7	656.6	18.259	0.025	1.207	0.065	99.999	99.999	0.754	0.028	1.515	0.024
648.3	735.1	18.272	0.024	1.333	0.087	99.999	99.999	0.811	0.026	1.597	0.023
171.7	905.5	18.286	0.023	1.402	0.07	99.999	99.999	0.868	0.025	1.748	0.022
841	620.1	18.289	0.025	99.999	99.999	99.999	99.999	0.782	0.028	1.521	0.024
166.7	606.4	18.324	0.023	1.254	0.077	99.999	99.999	0.723	0.027	1.533	0.023
451.1	430	18.348	0.026	1.444	0.08	99.999	99.999	0.854	0.027	1.735	0.025
405.4	637.9	18.352	0.028	1.482	0.08	99.999	99.999	0.829	0.031	1.693	0.026
545	575.8	18.401	0.03	1.26	0.08	99.999	99.999	0.82	0.032	1.674	0.028
263.3	242.9	18.407	0.027	1.567	0.091	99.999	99.999	1.028	0.028	1.917	0.024
628	293.8	18.446	0.028	1.358	0.088	99.999	99.999	0.842	0.03	1.735	0.026
836.7	425.5	18.459	0.029	1.248	0.081	99.999	99.999	0.762	0.031	1.58	0.028
212.6	459.4	18.459	0.029	1.188	0.076	99.999	99.999	0.814	0.031	1.606	0.028
183.9	340.2	18.474	0.029	1.357	0.085	99.999	99.999	0.844	0.031	1.728	0.028
412	648	18.491	0.028	1.274	0.077	99.999	99.999	0.961	0.03	1.855	0.025
394.7	881.8	18.494	0.028	1.647	0.103	99.999	99.999	0.942	0.029	1.849	0.026
474	96.9	18.5	0.029	1.768	0.109	99.999	99.999	0.954	0.03	1.854	0.026
418.6	440.8	18.501	0.031	1.587	0.092	99.999	99.999	0.877	0.033	1.756	0.028
867.5	598	18.507	0.031	99.999	99.999	99.999	99.999	1.092	0.03	2.078	0.027
533.3	252	18.551	0.033	99.999	99.999	99.999	99.999	0.875	0.035	1.784	0.031
833.6	631.9	18.578	0.031	1.44	0.097	99.999	99.999	0.827	0.035	1.644	0.029
785	971.5	18.581	0.032	99.999	99.999	99.999	99.999	0.907	0.033	1.75	0.03
147.5	315.8	18.593	0.032	1.31	0.09	99.999	99.999	0.876	0.034	1.779	0.03
923.2	618.1	18.603	0.03	1.326	0.091	99.999	99.999	0.934	0.031	1.832	0.028
751.8	244	18.632	0.033	1.431	0.098	99.999	99.999	1.016	0.034	1.964	0.029
318.5	481.2	18.654	0.039	1.68	0.14	99.999	99.999	0.96	0.04	1.868	0.035
396.5	260.3	18.673	0.033	1.371	0.101	99.999	99.999	0.732	0.036	1.642	0.032
468.1	232.5	18.694	0.031	99.999	99.999	99.999	99.999	0.83	0.034	1.744	0.03
896.9	706.3	18.702	0.034	99.999	99.999	99.999	99.999	0.731	0.037	1.609	0.033
396.9	404.3	18.707	0.033	99.999	99.999	99.999	99.999	0.918	0.035	1.794	0.031
348.2	679.7	18.707	0.032	1.097	0.089	99.999	99.999	0.824	0.035	1.644	0.031
113.9	727	18.714	0.035	1.267	0.105	99.999	99.999	0.865	0.037	1.666	0.032
123.9	544.8	18.716	0.036	1.283	0.1	99.999	99.999	0.822	0.04	1.598	0.034
188.5	861	18.72	0.03	1.243	0.101	99.999	99.999	0.822	0.034	1.635	0.03
459.8	343.8	18.732	0.036	1.533	0.136	99.999	99.999	0.796	0.04	1.679	0.034
916.2	835.9	18.735	0.036	1.225	0.1	99.999	99.999	0.833	0.039	1.65	0.034
497	118.9	18.745	0.03	99.999	99.999	99.999	99.999	0.813	0.033	1.769	0.029
368.5	578.8	18.757	0.036	1.458	0.126	99.999	99.999	0.905	0.037	1.844	0.033
776.1	687.7	18.758	0.033	1.258	0.101	99.999	99.999	0.745	0.038	1.586	0.032
170.7	934.1	18.838	0.036	99.999	99.999	99.999	99.999	1.064	0.036	2.07	0.032
148.2	394.9	18.877	0.036	99.999	99.999	99.999	99.999	0.93	0.039	1.791	0.033
189.2	460.1	18.887	0.047	99.999	99.999	99.999	99.999	1.111	0.045	2.138	0.04
378.7	407.8	18.897	0.037	99.999	99.999	99.999	99.999	0.891	0.039	1.749	0.034
263.5	664.5	18.899	0.039	99.999	99.999	99.999	99.999	0.788	0.042	1.58	0.037
104.9	695	18.934	0.042	1.154	0.116	99.999	99.999	0.819	0.045	1.632	0.039
24.9	681.5	18.938	0.038	1.184	0.113	99.999	99.999	0.763	0.042	1.529	0.037
422.7	449.4	18.968	0.037	99.999	99.999	99.999	99.999	0.884	0.039	1.783	0.035
306.5	767.3	18.971	0.042	99.999	99.999	99.999	99.999	0.797	0.045	1.645	0.04
277.9	498.6	18.973	0.043	99.999	99.999	99.999	99.999	0.826	0.047	1.69	0.04
186	556.3	18.978	0.045	1.271	0.133	99.999	99.999	0.804	0.049	1.638	0.043
533.3	407.9	18.983	0.044	99.999	99.999	99.999	99.999	0.866	0.045	1.76	0.04
253.5	678.5	19.008	0.04	1.121	0.103	99.999	99.999	0.69	0.045	1.423	0.041
715.4	275.5	19.048	0.04	99.999	99.999	99.999	99.999	0.815	0.042	1.766	0.038
712.4	485.8	19.074	0.046	99.999	99.999	99.999	99.999	0.977	0.048	1.808	0.041
448.1	839.3	19.079	0.043	99.999	99.999	99.999	99.999	0.803	0.046	1.624	0.041
609.2	585.4	19.098	0.052	99.999	99.999	99.999	99.999	1.169	0.049	2.38	0.043

TABLE 5 (CONTINUED)

X	Y	V	σ_V	$(B-V)$	σ_{B-V}	$(U-B)$	σ_{U-B}	$(V-R)$	σ_{V-R}	$(V-I)$	σ_{V-I}
167	666.8	19.103	0.045	99.999	99.999	99.999	99.999	0.722	0.049	1.51	0.043
660.7	542.1	19.15	0.054	99.999	99.999	99.999	99.999	0.909	0.055	1.812	0.049
840.5	711	19.152	0.043	99.999	99.999	99.999	99.999	0.855	0.046	1.658	0.041
747.2	514.5	19.16	0.045	99.999	99.999	99.999	99.999	0.911	0.047	1.802	0.042
791.4	338.5	19.163	0.047	1.091	0.134	99.999	99.999	1.029	0.048	1.882	0.043
884.2	936	19.165	0.051	99.999	99.999	99.999	99.999	0.982	0.051	1.883	0.046
799.2	629.2	19.181	0.052	0.898	0.122	99.999	99.999	0.858	0.054	1.651	0.049
315.9	924	19.202	0.05	99.999	99.999	99.999	99.999	0.923	0.052	1.83	0.046
325.3	790.9	19.204	0.052	99.999	99.999	99.999	99.999	0.875	0.055	1.748	0.048
425	25.3	19.212	0.044	99.999	99.999	99.999	99.999	0.935	0.046	1.814	0.041
151.9	459	19.217	0.047	99.999	99.999	99.999	99.999	0.799	0.05	1.651	0.046
568.2	3.8	19.221	0.054	99.999	99.999	99.999	99.999	0.835	0.056	1.794	0.05
75.1	753.4	19.235	0.048	99.999	99.999	99.999	99.999	0.765	0.051	1.586	0.047
660.3	809	19.244	0.052	99.999	99.999	99.999	99.999	0.846	0.054	1.677	0.049
277.2	874.9	19.248	0.057	99.999	99.999	99.999	99.999	0.866	0.058	1.697	0.053
636.9	698.1	19.254	0.045	99.999	99.999	99.999	99.999	0.738	0.05	1.543	0.043
854.3	293.3	19.257	0.055	99.999	99.999	99.999	99.999	0.83	0.057	1.646	0.052
170.4	418.7	19.273	0.055	99.999	99.999	99.999	99.999	0.856	0.058	1.768	0.051
740	805.2	19.313	0.051	99.999	99.999	99.999	99.999	0.914	0.053	1.897	0.046
305.6	336.1	19.324	0.057	99.999	99.999	99.999	99.999	0.888	0.062	1.794	0.053
861.4	623.4	19.326	0.058	99.999	99.999	99.999	99.999	0.985	0.059	2.026	0.051
780.4	105.5	19.33	0.055	99.999	99.999	99.999	99.999	0.838	0.058	1.746	0.051
891.1	150.2	19.334	0.055	1.12	0.15	99.999	99.999	0.772	0.062	1.6	0.053
384.8	755.5	19.344	0.055	99.999	99.999	99.999	99.999	0.848	0.058	1.678	0.051
637.2	613.8	19.358	0.055	99.999	99.999	99.999	99.999	0.871	0.058	1.628	0.052
680.1	860.1	19.359	0.059	99.999	99.999	99.999	99.999	0.798	0.061	1.688	0.056
50	455.1	19.363	0.055	99.999	99.999	99.999	99.999	0.807	0.058	1.878	0.051
215.8	223.9	19.368	0.058	99.999	99.999	99.999	99.999	0.845	0.06	1.786	0.053
10.3	605.8	19.382	0.057	99.999	99.999	99.999	99.999	0.799	0.061	1.702	0.055
537.4	942.8	19.389	0.064	99.999	99.999	99.999	99.999	0.841	0.066	1.734	0.059
255.4	599.4	19.402	0.059	99.999	99.999	99.999	99.999	0.946	0.059	1.764	0.054
49	671.7	19.409	0.064	99.999	99.999	99.999	99.999	1.089	0.062	2.069	0.055
847.1	541.9	19.419	0.062	99.999	99.999	99.999	99.999	0.748	0.066	1.66	0.059
550.9	454.9	19.421	0.057	99.999	99.999	99.999	99.999	0.939	0.058	1.903	0.051
576.3	687.7	19.428	0.055	99.999	99.999	99.999	99.999	0.747	0.063	1.659	0.054
680	429	19.428	0.067	99.999	99.999	99.999	99.999	0.844	0.068	1.673	0.063
751.4	450.8	19.432	0.055	99.999	99.999	99.999	99.999	0.942	0.057	1.76	0.052
429.8	251.6	19.437	0.061	99.999	99.999	99.999	99.999	0.739	0.066	1.616	0.058
394.7	367	19.449	0.07	99.999	99.999	99.999	99.999	0.955	0.071	1.734	0.064
249.1	983.9	19.45	0.074	99.999	99.999	99.999	99.999	1.107	0.071	2.083	0.063
295.1	657	19.451	0.058	99.999	99.999	99.999	99.999	1.154	0.057	2.063	0.05
340.6	456.9	19.502	0.06	99.999	99.999	99.999	99.999	0.86	0.064	1.765	0.055
863.5	383.3	19.553	0.066	99.999	99.999	99.999	99.999	0.812	0.071	1.646	0.062
376.6	539.7	19.579	0.066	99.999	99.999	99.999	99.999	0.706	0.074	1.493	0.065
732.4	168.4	19.58	0.067	99.999	99.999	99.999	99.999	0.877	0.068	1.819	0.062
673.3	587.1	19.593	0.073	99.999	99.999	99.999	99.999	1.04	0.072	1.947	0.064
136.6	393.6	19.593	0.067	99.999	99.999	99.999	99.999	0.855	0.069	1.816	0.061
892.5	688.9	19.595	0.067	99.999	99.999	99.999	99.999	0.782	0.072	1.72	0.064
284.6	219.6	19.607	0.067	99.999	99.999	99.999	99.999	0.787	0.074	1.794	0.063
466.8	246.1	19.614	0.067	99.999	99.999	99.999	99.999	0.828	0.071	1.802	0.063
669.1	739.3	19.63	0.066	99.999	99.999	99.999	99.999	0.834	0.072	1.711	0.062
187.3	543.2	19.651	0.074	99.999	99.999	99.999	99.999	0.59	0.081	1.558	0.074
595.7	889.6	19.668	0.077	99.999	99.999	99.999	99.999	0.868	0.079	1.744	0.073
630.9	198.8	19.671	0.075	99.999	99.999	99.999	99.999	0.842	0.08	1.804	0.069
340.1	373	19.671	0.067	99.999	99.999	99.999	99.999	0.813	0.074	1.711	0.063
915.1	27.4	19.683	0.075	99.999	99.999	99.999	99.999	1.065	0.074	2.101	0.066
607.4	290.5	19.686	0.073	99.999	99.999	99.999	99.999	0.876	0.074	1.854	0.067
512.5	302.7	19.723	0.087	99.999	99.999	99.999	99.999	1.044	0.083	2.022	0.076
500.5	973.7	19.725	0.077	99.999	99.999	99.999	99.999	0.659	0.085	1.552	0.076
645.4	154.5	19.733	0.08	99.999	99.999	99.999	99.999	0.884	0.08	1.757	0.073
280.7	123.8	19.778	0.08	99.999	99.999	99.999	99.999	0.997	0.08	1.972	0.071
636.5	933	19.805	0.095	99.999	99.999	99.999	99.999	0.729	0.098	1.584	0.088
64.8	500.9	19.82	0.096	99.999	99.999	99.999	99.999	1.05	0.092	2.009	0.082
111.6	32.8	19.867	0.104	99.999	99.999	99.999	99.999	1.086	0.102	2.178	0.088
819.8	718.2	19.902	0.083	99.999	99.999	99.999	99.999	0.717	0.092	1.592	0.08
65.4	714.9	19.921	0.083	99.999	99.999	99.999	99.999	0.707	0.094	1.598	0.082

used to help us in the visualization and analysis of the photometric data (e.g., Schuster et al. 2007). These programs facilitate the elimination of field and apparent non-member stars of a given cluster from the diagnostic diagrams used to enhance the apperception of cluster features. Once a satisfactory first estimate of the parameters was obtained, a full-frame solution was also consulted and refined.

SAFE is capable of displaying simultaneously in different color-color (CC) and color-magnitude (CM) diagrams the cluster's data and has an interactive way to identify a (group of) star(s) in one particular diagram and to see where it falls in the other diagrams. This program is capable of displaying up to 16 different diagrams for a given cluster and is very useful for the determination of a cluster's physical parameters. Figure 1a-c presents the DSS red-filter images of Be 89 (Panel a), Ru 135 (Panel b) and Be 10 (Panel c), with the regions analyzed in this work enclosed by ellipses. The central (X, Y) pixel coordinates of the nearly circular regions in Figure 1a-c, which are considered for the photometric analyses are the following: (584, 488) pixels for Be 89, (542, 504) for Ru 135, and (517, 493) for Be 10. The diameters in arcminutes (ΔX, ΔY) of nearly circular regions in Figure 1a-c are the following: (2.27, 2.65) for Be 89, (2.62, 2.67) for Ru 135, and (3.12, 2.34) for Be 10.

3. ANALYSES OF THE OPEN CLUSTERS BE 89, RU 135, AND BE 10

The $(U-B, B-V)$, two-color or CC, diagram, and five CM diagrams have been used together with the zero-age-main-sequence (ZAMS) intrinsic-color calibrations of Schmidt-Kaler (1982, hereafter SK82) and with the Padova isochrones (Girardi et al. 2000, hereafter GBBC; Bertelli et al. 2008; Marigo et al. 2008, hereafter MGBG) to obtain reddenings, metallicities, distance moduli, and ages for these clusters.

Our analysis technique for our program clusters places particular emphasis upon the fit of the ZAMS intrinsic colors and Padova isochrones to the observational data of the clusters, and this depends in turn upon important characteristics of the CM and CC diagrams for open clusters (e.g., Paunzen & Netopil 2006, their § 3), which are summarized as follows:

1. A procedure for eliminating non-members.

2. A determination of the interstellar reddening as accurately as possible.

3. Visibility of the turn-off.

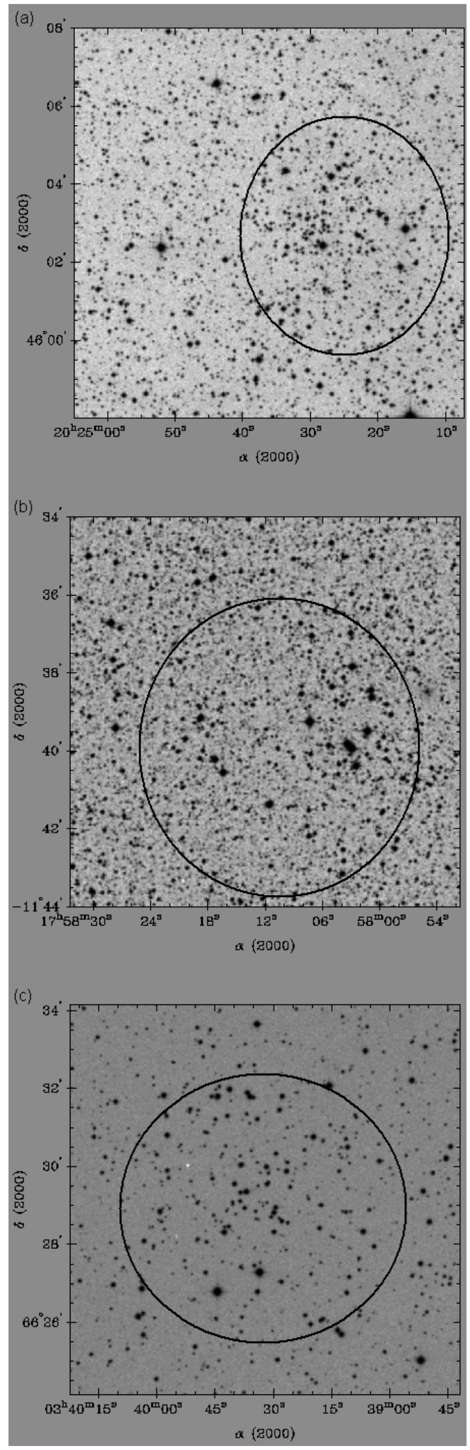

Fig. 1. DSS red-filter images of the Galactic open clusters Be 89 (Panel a), Ru 135 (Panel b), and Be 10 (Panel c). The regions analyzed with the ELIPSE inspection tool, to derive first estimates for the fundamental parameters, are enclosed by ellipses. Orientation as usual: north is up, and east to the left.

4. Compensation for binary stars which tend to widen the main-sequence distribution.

5. Consideration of the red-clump stars (if present) to improve the isochrone fit.

6. An appropriate choice of the isochrone which corresponds to the correct heavy-element abundance (Z).

Regarding the locus of the main sequence in a CM diagram, and independent of any cosmic dispersion, the main-sequence strips or bands in the CM diagrams are affected by the contamination of binary and multiple stars; particularly, the mid-points are shifted to brighter magnitudes and the colors to redder values due to this contamination, and also sometimes due to variable intercluster extinction. For this reason, the SK82 ZAMS and the MGBG isochrones have been fitted to the blue- and faint-most concentrations within the observed broad main-sequence bands whenever possible, assuming that these concentrations reflect the single-star distribution (e.g., Carney 2001), and that most stars observed red- and bright-ward of these are in fact binary, or multiple, systems.

In the absence of proper-motion/radial-velocity measurements to insure cluster membership, and to minimize the effects of field-star contamination, we have concentrated more on the central regions of the clusters rather than using the full-frame CCD images; this has been accomplished by using the ELIPSE or SAFE programs, described above. These have been used to select an elliptical, or polygonal area (with as many as 10 sides), centered on the open cluster as seen in a V or R image, excluding stars outside this area from further analyses. (See Figure 1). These interactive analyses greatly increase the contrast of cluster members with respect to the field stars, and thus the scatter in the CM and CC diagrams is significantly reduced.

Also, the observational errors, e.g., $\sigma_{(U-B)}$, of these three clusters have been considered as a criterion in selecting the more reliable data for further analyses. The values of $\sigma_{(U-B)}$ are almost always larger than the ones of $\sigma_{(B-V)}$ due to the smaller sensitivity of the CCD in the ultraviolet, and the errors $\sigma_{(R-I)}$, $\sigma_{(V-I)}$, and $\sigma_{(V-R)}$ are among the smallest. The observational errors, such as $\sigma_{(U-B)}$, $\sigma_{(B-V)}$, and $\sigma_{(B-R)}$, have been selected to be less than $\approx 0\overset{m}{.}10$ (and sometimes $\lesssim 0\overset{m}{.}05$) in some of the diagnostic diagrams presented in the analyses to follow, such as the $(U-B,\ B-V)$, $(V,\ B-V)$, and $(V,\ B-R)$ diagrams.

Interstellar reddenings of the program clusters have been estimated from shifts of the intrinsic-color sequences of SK82 in the $(U-B,\ B-V)$ diagram, until the best fit to the data of the clusters was achieved: along the $U-B$ axis by 0.72 $E(B-V)$ + 0.05 $E(B-V)^2$ and along the $(B-V)$ axis by $E(B-V)$. For this, F-type stars have been fitted above the main sequence of SK82 [i.e., blue-ward in $(U-B)$], and simultaneously the red-clump stars above the red-giant colors of SK82 with consistent ultraviolet excesses according to the normalizations of Sandage (1969). The two-color sequence of SK82 has been constructed from the intrinsic colors of SK82 for zero-age dwarfs [$(B-V)_0 \lesssim 0\overset{m}{.}75$] and for giants [$(B-V)_0 \gtrsim 0\overset{m}{.}75$].

Once the two-color sequence of SK82 has been fixed as indicated above, to determine the photometric metal abundance, [Fe/H], one first locates the F-type stars in the $(U-B,\ B-V)$ diagram and compares their location with that of their counterparts of known metallicity (e.g., the SK82's ZAMS calibration). Deviations between the two are due mainly to their differences in metal content, an ultraviolet excess, $\delta(U-B)$, being caused by differences in line blanketing. The metal-deficient F-type cluster stars, if present, lie blue-ward of the "hump region" of the ZAMS sequence, where an eyeball-fitted osculating curve similar to "the hump" has been fitted to the data points of the F-stars (i.e., the thick line above the hump of the F-star region in Figures 2, 5, and 8) and, simultaneously, to the red-clump stars (if present), since they also will lie blue-ward of the red-giant colors of SK82 with a corresponding ultraviolet excess. This ultraviolet excess is correlated with the photometric metallicity of the cluster. Then, a metallicity value, [Fe/H], for a cluster can be derived from the empirical calibration, [Fe/H]-$\delta(U-B)_{0.6}$, of Karataş & Schuster (2006), allowing the determination of [Fe/H] independently of the isochrones to be fitted to the data, thus reducing from three to two the free parameters to be derived from the CM diagrams. Heavy-element abundances (Z) of the three clusters have been obtained from the photometric metal abundances [Fe/H] with the expression

$$Z = Z_{\odot} \cdot 10^{\mathrm{[Fe/H]}}, \quad Z_{\odot} = +0.019\,. \qquad (6)$$

Finally, the appropriate isochrones of MGBG were computed online in terms of the resulting heavy-element abundance for further analyses of the clusters (distances and ages).

To estimate the the age of a cluster (A) and the true distance modulus ($DM = V_0 - M_V$) in a CM diagram, for example the $(V,\ B-V)$ dia-

TABLE 6

ADOPTED INTERSTELLAR EXTINCTION LAW

$\frac{E(V-I)}{E(B-V)}$	$\frac{E(R-I)}{E(B-V)}$	$\frac{E(V-R)}{E(B-V)}$	$\frac{E(B-R)}{E(B-V)}$
1.25	0.69	0.56	1.56

gram, the absolute magnitudes, M_V, of the MGBG isochrones have been shifted by $DM + 3.1\ E(B-V)$ along the magnitude axis and their corresponding colors, $(B-V)_0$, reddened by adding the color excess $E(B-V)$ until some DM value provides a good fit of the appropriate isochrone to the faint/blue concentration of the observed lower main sequence of the cluster and, if present, of the red-clump stars. One has to take into account when determining the DM that metal-poor stars are sub-luminous as compared with their solar-like counterparts by determining a reliable value for Z from the CC diagram. To infer the age of the cluster, the (logarithm of the) age of the isochrones, log A, has been varied until a good match with the observed sequences, i.e., the upper main-sequence (MS), the turn-off (TO) stars, and, if present, the red-clump (RC) stars, has been achieved. A fine tuning of the DM has been made if necessary. The uncertainties of $E(B-V)$, Z, DM, and log A are discussed in § 3.4.

Following a similar procedure to that outlined above, the distance moduli and cluster ages have also been derived from analyses of four other CM diagrams for each of the clusters. The corresponding color excesses applied in the diagrams were iterated starting with the previously derived color excess estimates, $E(B-V)$, and the results were intercompared by means of the standard interstellar extinction law adopted (see Table 6; also cf. Dean, Warren, & Cousins 1978; Mathis 1990; Straižys 1995) until satisfactory solutions were obtained for all the CM diagrams. The derived extinction laws do not differ significantly from that of Table 6.

3.1. *Be 89*

The $(U-B,\ B-V)$ diagram of Be 89 is shown in Figure 2. An interstellar reddening of $(B-V) = 0\overset{m}{.}60 \pm 0\overset{m}{.}09$ has been derived by shifting the intrinsic two-color stellar sequence of SK82 along the reddening vector as described in the previous section. (Another possibility, to fit the stars by $E(B-V) \simeq 0\overset{m}{.}73$ to the blue (B-star) branch of the ZAMS curve, would leave many stars far from a good fit). Six stars apparently in the cluster are noticed with $(B-V) \approx 1\overset{m}{.}6$ and $(U-B) \approx 1\overset{m}{.}4$

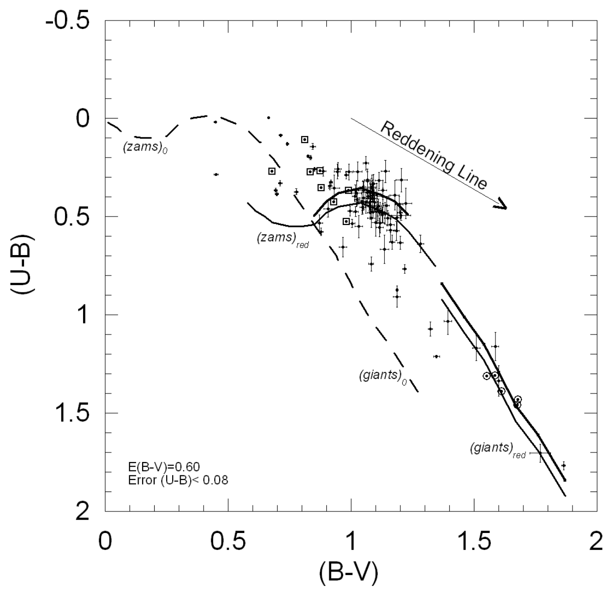

Fig. 2. The $(U-B,\ B-V)$ diagram of Be 89. The "S" curves (upper parts, ZAMS, and lower parts, red giants) have been taken from the two-color relations of SK82 and are displayed for the interstellar reddening values $E(B-V) = 0\overset{m}{.}00$ and $0\overset{m}{.}60$ (the bluer and redder versions, respectively). A reddening vector is also shown as an arrow, and big open circles mark the six RC candidates, and open squares, the blue-straggler ones. A heavy solid curve represents our best fit to the data; this has been adjusted to the main-sequence F-type stars above (i.e., blue-ward of) the ZAMS colors of SK82 and, simultaneously, to the RC stars above the red-giant colors of SK82. This fit has been used to estimate the heavy-element abundance of the cluster, which is shown in Table 7.

(big open circles in Figure 2) lying near, but above (i.e., blue-ward of) the giant sequence of SK82, the expected location of the RC stars; their subsequent locations in the CM diagrams confirm this classification (see Figures 3 and 4). A seventh candidate falls further from the expected RC locus in four of the five CM diagrams.

The F-type and RC stars of Be 89 (cf. Figure 2, $(B-V) \approx 1\overset{m}{.}0$ and $\approx 1\overset{m}{.}6$, respectively) lie above the (reddened) ZAMS two-color calibration of SK82 by $\delta(U-B) \simeq 0\overset{m}{.}1$. Our best eyeball fit to the data is shown as the heavy solid curve in Figure 2. In the dereddened two-color diagram, the heavy line gives a value of $(U-B)_0 = -0\overset{m}{.}10 \pm 0\overset{m}{.}02$ at $(B-V)_0 = 0\overset{m}{.}44$, and at this same color index, the highest point of the SK82 hump has $(U-B)_0 = -0\overset{m}{.}02$. The resulting ultraviolet excess, $\delta(U-B) = +0\overset{m}{.}08 \pm 0\overset{m}{.}02$, has been converted to $\delta(0.6) = +0\overset{m}{.}10 \pm 0\overset{m}{.}02$ at

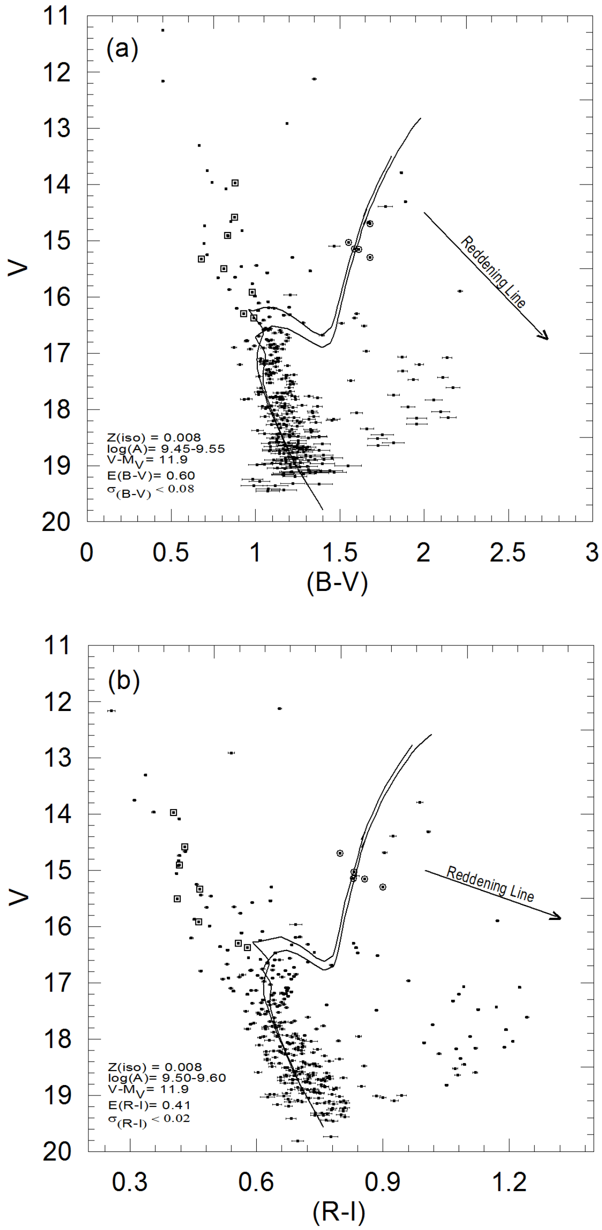

Fig. 3. CM diagrams, $(V,\ B-V)$ and $(V,\ R-I)$, for Be 89. Solid lines show the interpolated $Z = +0.008$ isochrones of MGBG (cf. Table 7 for the inferred metallicity). Big open circles denote the RC candidates, and open squares, the blue-straggler ones. See the text and Table 8 for the inferred values of the distance modulus and age.

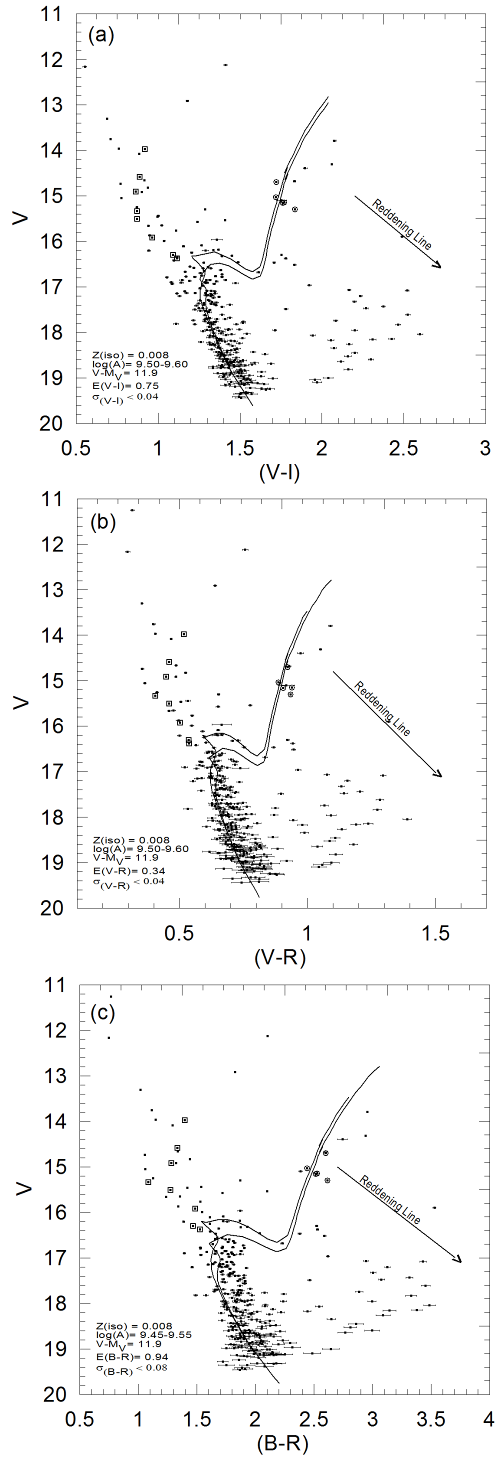

Fig. 4. CM diagrams, $(V,\ V-I)$, $(V,\ V-R)$, and $(V,\ B-R)$, (top, center and bottom panels, respectively) for Be 89. The isochrone curves and the symbols have the same meaning as in Figure 3. See the text and Table 7 for the inferred values of reddening and metallicity, and Table 8 for the distance modulus and age.

$(B-V) = +0\overset{\mathrm{m}}{.}60$ with the normalization ratios given by Sandage (1969, his Table 1A). These values have been listed in Table 7, together with the corresponding photometric metallicity [Fe/H]$= -0.35\pm0.02$ dex derived with help of the calibration [Fe/H]-$\delta(0.6)$ of

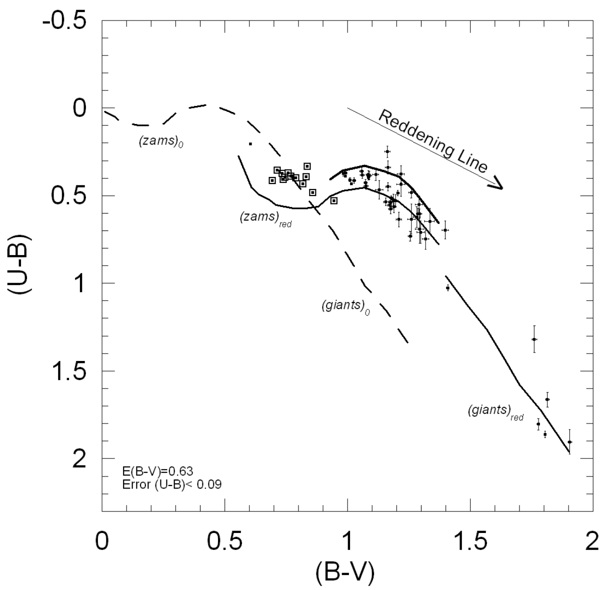

Fig. 5. The CC diagram of Ru135. The SK82 curves and the symbols have the same meaning as in Figure 2. See the text and Table 7 for the inferred values of the reddening and metallicity.

Karataş & Schuster (2006). Note that the $\delta(0.6)$ in the notation of the latter authors corresponds to delta(0.6) in the notation of Sandage (1969). Applying the above relation between [Fe/H] and Z, where [Fe/H] has been estimated as -0.35 ± 0.02 dex, gives $Z = +0.008 \pm 0.0003$. The online isochrones of MGBG have been iterated using this metal abundance when further analyzing Be 89.

In Figures 3 and 4, the isochrones of MGBG for $Z = +0.008$ have been over-plotted in five CM diagrams: $(V,\ B-V)$, $(V,\ R-I)$, $(V,\ V-I)$, $(V,\ V-R)$, and $(V,\ B-R)$ after reddening the isochrones along the color axis with a color excess corresponding to $E(B-V) = 0\overset{\mathrm{m}}{.}60$, converted with help of Table 6, and adding a visual extinction of $A_{\mathrm{V}} = 3.1 \cdot E(B-V) = 1\overset{\mathrm{m}}{.}86$ to the absolute magnitudes of the isochrones. The isochrones have then been shifted vertically to obtain the best fit to the observed lower-MS and and RC sequences. This vertical shift is the (true) distance modulus, $DM = (V_0 - M_{\mathrm{V}})$. The best fit for Be 89 is $DM = 11\overset{\mathrm{m}}{.}90 \pm 0\overset{\mathrm{m}}{.}06$ ($d = 2.4 \pm 0.06$ kpc, cf. Table 8).

To derive an age estimate for Be 89, the isochrones of MGBG for $Z = +0.008$ have been shifted in the CM planes as above, i.e., $M_V + 3.1E(B-V) + DM$ and $C_0(\lambda_1 - \lambda_2) + E[C(\lambda_1 - \lambda_2)]$, respectively, where the latter color excesses have been computed from $E(B-V)$ with help of Table 6, and then the isochrone ages have been varied until a satisfactory fit to the data has been obtained through the observed upper-MS, TO, and RC sequences of the cluster (cf. Figures 3–4). The resulting inferred mean age of Be 89 is $\log(A) = 9.58 \pm 0.06$ dex ($A = 3.8 \pm 0.6$ Gyr).

For all of these CM diagrams of Be 89, two isochrones have been plotted to provide a means for appreciating the uncertainties of the derived distances and ages. In Table 8 the range in ages provided by these isochrone pairs, the final values for the distances and ages from each CM diagram, and the mean values for each cluster are given. Error estimates of $(V_0 - M_{\mathrm{V}})$ and $\log(A)$ are discussed in § 3.4 below, and the mean results given in Table 8 have been calculated with equations (8) and (9) inserting the corresponding parameters summarized in the table.

3.2. *Ru 135*

The same procedures outlined in § 3, and § 3.1 for Be 89, have also been used for the clusters Ru 135 and Be 10. A reddening of $E(B-V) = 0\overset{\mathrm{m}}{.}63 \pm 0\overset{\mathrm{m}}{.}12$ has been derived for Ru 135 (cf. Figure 5). However, a clump of A-type stars at $(B-V) \simeq 0\overset{\mathrm{m}}{.}8$ and $(U-B) \simeq 0\overset{\mathrm{m}}{.}4$ seems to be present, with a horizontal-like distribution which does not fit satisfactorily the reddened two-color ZAMS curve of SK82. These stars (Sp $\approx$ A-types) are probably less reddened than Ru 135 by $\simeq 0\overset{\mathrm{m}}{.}3$ in $E(B-V)$, nearer, and most probably not cluster members (cf. the open squares in the CC and CM diagrams of Figures 5, 6, and 7), or they could be blue stragglers belonging to the cluster. For this latter case, they would be peculiar because of an ultraviolet-flux excess present in their spectral energy distributions (SEDs), and only a spectroscopic study with good signal-to-noise ratios would reveal more about their true nature.

Ru 135 contains a considerable number of F- and later-type stars, and appears to have its blue-most turn-off limit at $(B-V) \approx +1\overset{\mathrm{m}}{.}0$ and $(U-B) \approx 0\overset{\mathrm{m}}{.}4$, corresponding to a dereddened $(B-V) \approx +0\overset{\mathrm{m}}{.}43$ (i.e., Sp $\approx$ F5V). The best fit to the observed F-hump sequence in the $(U-B,\ B-V)$ diagram is the solid curve shifted blue-ward with respect to the two-color SK82 curve (cf. Figure 5). From the ultraviolet excess of these cluster F stars and following the procedure outlined at the beginning of § 3, [Fe/H]$= -0.71 \pm 0.02$ dex ($Z = +0.004 \pm 0.0002$) has been derived. The isochrones of MGBG with this metallicity have been computed on line and used in the following analyses.

TABLE 7

NORMALIZED (U-B) EXCESSES AND DERIVED METALLICITIES

Cluster	$(U-B)_{\rm SK82}$ [mag]	$(U-B)_{0,\rm fit}$ [mag]	$\delta(U-B)$ [mag]	$\delta(0.6)$ [mag]	[Fe/H] [dex]	Z
Be 89	−0.02	−0.10	0.08	0.10	−0.35	0.008
Ru 135	−0.02	−0.16	0.14	0.14	−0.71	0.004
Be 10	−0.02	−0.09	0.07	0.11	−0.49	0.006
error	$\leq \pm0.01$	±0.02	±0.02	±0.02	±0.02	$\leq \pm0.001$

TABLE 8

DISTANCE AND AGE ESTIMATES OF THE CLUSTERS

Color	(V_0-M_V) [mag]	d [kpc]	$\log(A)$ range	$\log(A)$	A [Gyr]
	Be 89: $E(B-V)=0.60\pm0.09$ & $Z=+0.008\pm0.001$				
$(B-V)$	11.90 ± 0.10	2.4 ± 0.1	9.45–9.55	9.55 ± 0.15	3.6 ± 1.4
$(R-I)$	11.90 ± 0.20	2.4 ± 0.2	9.50–9.60	9.60 ± 0.20	4.0 ± 2.3
$(V-I)$	11.90 ± 0.15	2.4 ± 0.2	9.50–9.60	9.60 ± 0.20	4.0 ± 2.3
$(V-R)$	11.90 ± 0.10	2.4 ± 0.1	9.50–9.60	9.60 ± 0.15	4.0 ± 1.6
$(B-R)$	11.90 ± 0.20	2.4 ± 0.2	9.45–9.55	9.55 ± 0.10	3.6 ± 0.9
Mean	11.90 ± 0.06	2.4 ± 0.06		9.58 ± 0.06	3.8 ± 0.6
	Ru 135: $E(B-V)=0.63\pm0.12$ & $Z=+0.004\pm0.001$				
$(B-V)$	9.50 ± 0.15	0.75 ± 0.05	9.60–9.70	9.60 ± 0.15	4.0 ± 1.6
$(R-I)$	9.70 ± 0.15	0.87 ± 0.06	9.55–9.65	9.55 ± 0.15	3.6 ± 1.5
$(V-I)$	9.60 ± 0.20	0.83 ± 0.08	9.55–9.65	9.55 ± 0.15	3.6 ± 1.5
$(V-R)$	9.60 ± 0.15	0.83 ± 0.06	9.55–9.65	9.60 ± 0.15	4.0 ± 1.5
$(B-R)$	9.50 ± 0.20	0.75 ± 0.07	9.60–9.70	9.60 ± 0.15	4.0 ± 1.6
Mean	9.58 ± 0.07	0.81 ± 0.03		9.58 ± 0.06	3.8 ± 0.7
	Be 10: $E(B-V)=0.75\pm0.09$ & $Z=+0.006\pm0.001$				
$(B-V)$	11.20 ± 0.11	1.7 ± 0.1	9.05–9.15	9.05 ± 0.10	1.1 ± 0.3
$(R-I)$	11.10 ± 0.20	1.7 ± 0.2	9.10–9.20	9.10 ± 0.10	1.3 ± 0.3
$(V-I)$	11.15 ± 0.15	1.7 ± 0.1	9.05–9.15	9.05 ± 0.15	1.1 ± 0.3
$(V-R)$	11.15 ± 0.20	1.7 ± 0.2	9.05–9.15	9.05 ± 0.10	1.1 ± 0.3
$(B-R)$	11.20 ± 0.10	1.7 ± 0.1	9.05–9.15	9.05 ± 0.05	1.1 ± 0.1
Mean	11.16 ± 0.06	1.70 ± 0.05		9.06 ± 0.05	1.08 ± 0.08

The five CM diagrams, $(V,\ B-V)$ through $(V,\ B-R)$, of Ru 135 are displayed in Figures 6 and 7 together with the reddened isochrones that best fit the data for the derived color excess and metallicity, $E(B-V)=0^{\rm m}\!.63$ and $Z=+0.004$. The distance moduli, (V_0-M_V), and ages, A, found from these five CM diagrams and their respective isochrone fittings are given in Table 8.

In these CM diagrams a significant number of stars are seen extending to brighter magnitudes and red-ward from the fainter and redder observational limits of the main sequences, i.e., the stars extending red-ward and upward from $(V,\ B-V)\approx(18^{\rm m}\!.5, 1^{\rm m}\!.5)$ or $(V,\ R-I)\approx(18^{\rm m}\!.5, 0^{\rm m}\!.9)$ (cf. Figure 6). These are probably field red-giant stars contributed by the Galactic bulge, as suggested by the Galactic longitude and latitude of Ru 135, $\ell\simeq16.4°$ and $b\simeq+6.2°$ (see Binney & Merrifield 1998; Stanek et al. 1996, Figures 3.5 and 2, respectively). The fact that Ru 135 lies near the direction of the Galactic central region also explains the significant number of brighter and bluer foreground stars seen in its CC and CM diagrams.

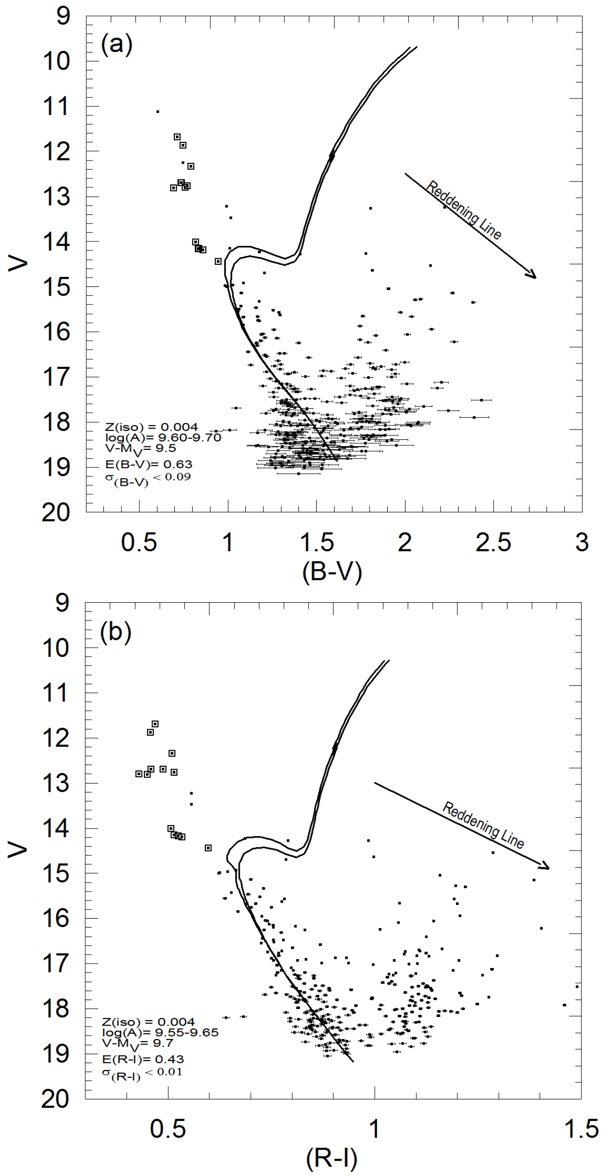

Fig. 6. The $(V,\ B-V)$ and $(V,\ R-I)$ diagrams for Ru 135. Solid lines show the isochrones of MGBG interpolated to $Z=+0.004$. See the text, and Tables 7 and 8, for the inferred values of reddening, metallicity, distance modulus, and age. Stars shown with open-square symbols are most likely field, or blue-straggler, stars.

3.3. *Be 10*

In Figure 8 the loci of stars observed in the direction of Be 10 are shown in the $(U-B,\ B-V)$ diagram, together with the standard interstellar reddening vector and the two-color curve of SK82, shifted along this vector to procure the best fit to the data. From the fits along the $(B-V)$ and $(U-B)$ axes, $E(B-V) = 0\overset{\text{m}}{.}75 \pm 0\overset{\text{m}}{.}09$ and ([Fe/H],

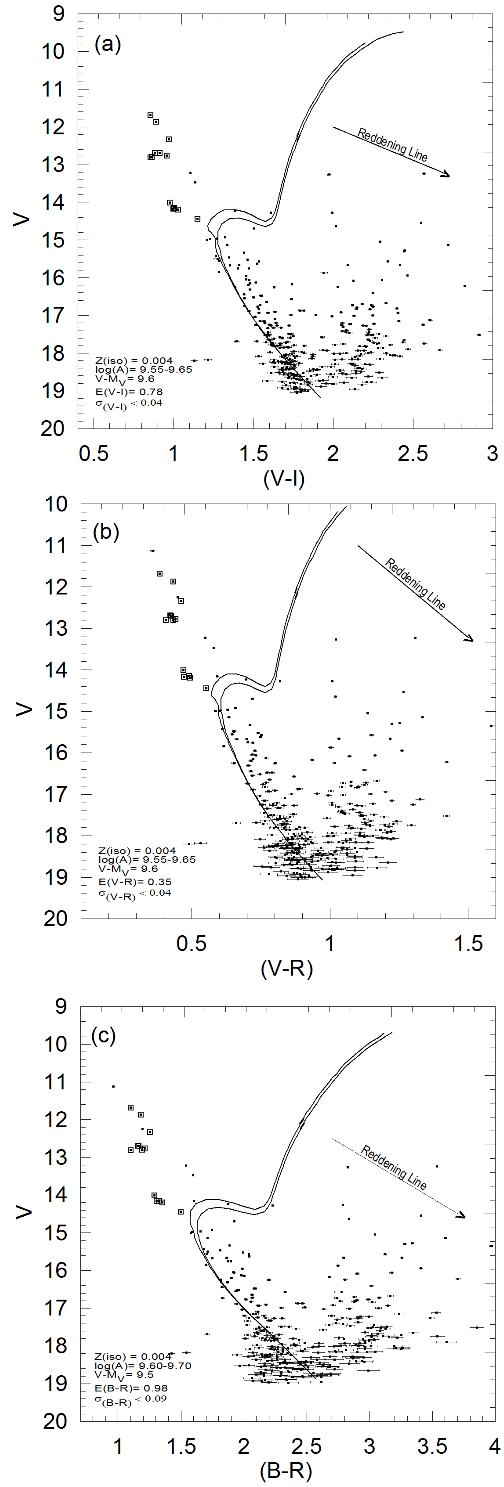

Fig. 7. The $(V,\ V-I)$, $(V,\ V-R)$ and $(V,\ B-R)$ diagrams for Ru 135. The symbols are the same as in Figure 6. See the text, and Tables 7 and 8, for the inferred values of reddening, metallicity, distance modulus, and age.

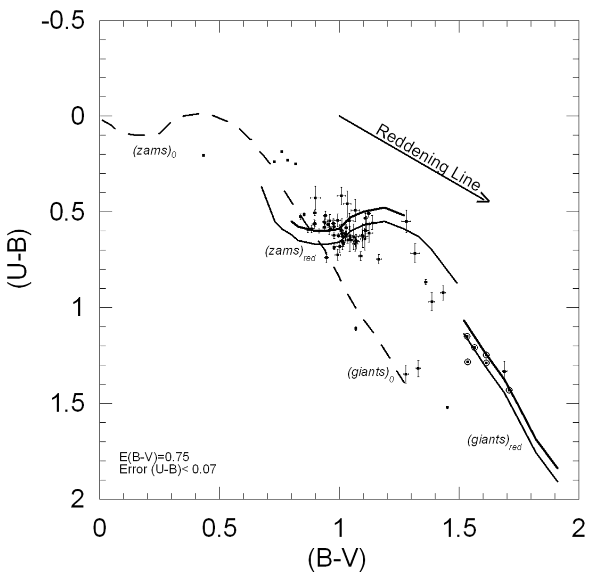

Fig. 8. The $(U-B,\ B-V)$ plot of Be 10. The symbols and the curves are the same as in Figure 2.

$Z) = (-0.49 \pm 0.02$ dex, $+0.006 \pm 0.0003)$ are found, following the procedures described in § 3 and § 3.1 (see Table 8 for partial and mean results). Again, the appropriate isochrones of MGBG have been computed online with this corresponding metallicity and are used below for further analyses of Be 10.

For Be 10, $DM = (V - 3.1 \cdot E(B-V) - M_V) = 11^{\mathrm{m}}.16 \pm 0^{\mathrm{m}}.06$, the distance, $d = 1.7 \pm 0.05$ kpc, the metallicity, $Z = +0.006 \pm 0.0003$, $\log(A) = 9.06 \pm 0.05$, and the age, $A = 1.08 \pm 0.08$ Gyr have been measured. Our results are listed in Tables 7 and 8. The resulting (best) isochrone fitting to the corresponding Be 10 data in the $(V,\ B-V)$, $(V,\ R-I)$, $(V,\ V-I)$, $(V,\ V-R)$ and $(V,\ B-R)$ diagrams are displayed in Figures 9 and 10, where one can see that the isochrones reproduce well the observed lower and upper MS, the TO, and RC sequences of this cluster.

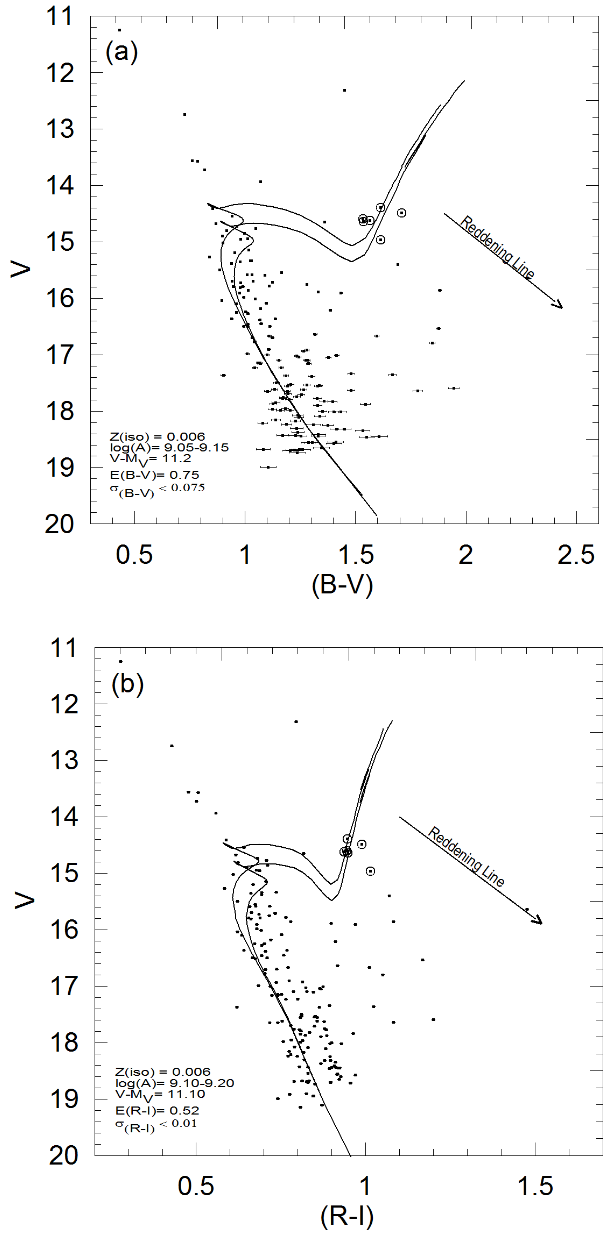

Fig. 9. The $(V,\ B-V)$ and $(V,\ R-I)$ diagrams for Be 10. Solid lines show the isochrones of MGBG interpolated to $Z = +0.006$. The larger open circles identify the RC candidates. See the text, and Tables 7 and 8, for the inferred values for reddening, metallicity, distance modulus, and age.

3.4. *Estimated errors and weighted averages*

In Table 7, the ultraviolet excesses and the metallicities are given for Be 89, Ru 135, and Be 10, and in Table 8, the mean values for the distance moduli, heliocentric distances, logarithmic ages, and ages, together with the corresponding estimates of precision. The errors were calculated in a straightforward manner (cf. Bevington & Robinson 2003, and references therein). In the following the details of this error analysis are presented.

3.4.1. *Errors in $E(B-V)$ and Z*

The random errors in the color excess $E(B-V)$ and photometric metallicity [Fe/H] were estimated as follows:

(i) By moving the two-color curve of SK82 backward and forward along the standard reddening

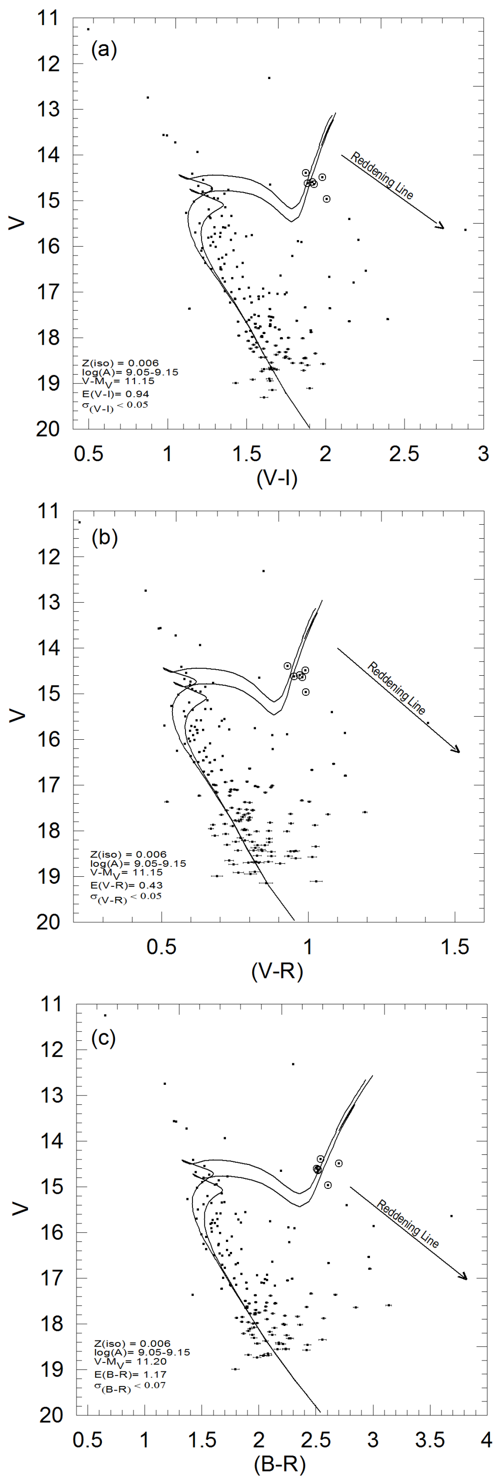

Fig. 10. The $(V,\ V-I)$, $(V,\ V-R)$ and $(V,\ B-R)$ diagrams for Be 10. The symbols are the same as in Figure 9. See the text, and Tables 7 and 8, for the inferred values for reddening, metallicity, distance modulus, and age.

vector in the $(U-B,\ B-V)$ diagram until a good fit with the observed GK-type, RC, and F-hump sequences was achieved. (No BA-type sequences were present for these clusters.) The precision of the determinations also depends on the scatter of the data points (cf. Figure 5 of Ru 135 and Figure 8 of Be 10 for good and fair cases, respectively). The uncertainties given in Tables 7 and 8 reflect this. Following this procedure, a typical error in $E(B-V)$ for the quality of the reduced data of our clusters is (conservatively) $\approx 0\overset{\mathrm{m}}{.}04$. The systematic error in $E(B-V)$ depends on the color calibration used. In the case of SK82, the uncertainty can be safely assumed to be, at the most, of the order of the difference between two adjacent spectral subclasses.

(ii) The random photometric-metallicity uncertainty has then been estimated from the parabolic (eyeball) fit to the data of the maximum characterizing the ultraviolet flux excess of the stars at the dereddened color $(B-V)_0 \simeq 0\overset{\mathrm{m}}{.}44$ (Sp $\simeq$ F5) and then following Sandage's (1969) normalization procedure.

The uncertainty of the metal content Z was determined from the relation (e.g., Bevington & Robinson 2003):

$$\sigma_Z = \ln\ 10\ \times Z\ \times \sigma_{[\mathrm{Fe/H}]}\,. \qquad (7)$$

$\sigma_{[\mathrm{Fe/H}]}$ has been estimated from the uncertainty in the ultraviolet excess $\delta(U-B)$ at the F hump between the observed and the SK82 two-color curves and is typically $\pm 0\overset{\mathrm{m}}{.}02$. Assuming $\langle Z\rangle = 0.006$ (the mean of the three clusters) $\mid \sigma_Z \mid \leq\ 0.0003$ is obtained with equation (7) above. Assuming an error of about 0.001 for Z is, in our case, a quite conservative estimate.

(iii) On the other hand, the deviation of the assumed reddening vector from the "true" one depends on the quotient $E(U-B)/E(B-V)$, which can strongly deviate locally from its canonical value of 0.72 (see Chavarría, de Lara, & Hasse 1987; Johnson 1977). This uncertainty may produce errors larger than the precision quoted above. For a crude estimate, using the extremes of the cited values of $E(U-B)/E(B-V)$ and a typical color excess of $E(B-V) = 0\overset{\mathrm{m}}{.}50$, the uncertainty in $\delta(U-B)$ could be as large as $0\overset{\mathrm{m}}{.}15$-$0\overset{\mathrm{m}}{.}20$. However, since our displacements of the SK82 curve in the CM-diagrams are consistent with the canonical value for the interstellar extinction law, we assume that this error contribution is negligible statistically.

(iv) Another systematic uncertainty results from the two-color calibration of SK82: from the uncertainty of $(U-B)$ or $(B-V)$ in the two-color calibration curve of SK82, which is expected to be of the order of the difference between two typical spectral subclasses (in our case $\lesssim 0\overset{m}{.}05$) for the (U-B) index; and from the fit of the whole curve to a cluster data set, of the order $\lesssim \left(0\overset{m}{.}05/\sqrt{N}\right)$, where there are N pivotal points considered when adjusting the SK2 two-color curve (the BA-type, the F-hump, the GK-type, and the RC sequences; i.e., $N \gtrsim 3$). Summarizing, the systematic uncertainty in $\delta(U-B)$ should be less than roughly three times that given by the precision of the flux measurements.

3.4.2. *Errors in the distance moduli and ages*

(i) The uncertainties $\sigma_{\rm DMi}$ for the moduli given in Table 8 that result from fitting the appropriate isochrones to the data in the CM diagrams depend on the photometric uncertainties (flux measurement and standard-transformation errors), the absolute magnitude and intrinsic color calibration errors (see for example, SK82), the color excess uncertainty of a given color [which depends on $E(B-V)$], and on the reddening law adopted. We assume that the isochrones only contain the errors of the absolute magnitude and intrinsic-color calibrations and that the photometric and transformation errors are small ($\approx 0\overset{m}{.}03$) when compared to the other sources of error. In our case, the largest contribution to the distance modulus uncertainty is due to the uncertainty in the absolute-magnitude scale, followed by the uncertainty in the slope of the reddening vector, and the color-excess error, about $0\overset{m}{.}3$, $0\overset{m}{.}15$ and $0\overset{m}{.}12$, respectively, which combine to give an expected total uncertainty as large as $\sigma_{\rm DMi} \cong 0\overset{m}{.}25$.

The moduli resulting from the CM diagrams of each object and the mean moduli for the three clusters are given in Table 8, and the mean of the moduli has been derived from the five moduli, weighted with their respective (usually unequal) precisions, with the following expression:

$$\overline{DM} = \frac{\Sigma(DM)_i/\sigma^2_{DMi}}{\Sigma\left[1/\sigma^2_{DMi}\right]};\ (i=1,...,5), \qquad (8)$$

and the associated mean uncertainty is estimated from the individual uncertainties of the five CM-diagrams of a given cluster by the relation:

$$\frac{1}{(\sigma_{\rm mean})^2} = \sum \frac{1}{(\sigma_{DM})^2_i} \qquad (9)$$

The combined error is the square root of the sum of the squared uncertainties and is expected to be about $0\overset{m}{.}15$, or even less.

(ii) The uncertainty in the $\log(A)$ has a random error due to the (eyeball) fit of the isochrone with the appropriate metallicity to a given CM diagram of a cluster in question, and a quantitative estimate is obtained by jiggling brightward and faint-ward the isochrone curve until a good fit of the lower main sequence produces the DM. Then the age of the isochrone is varied until a good fit to the upper main sequence, the TO, and the RC sequences is achieved. The two isochrones shown in the CM diagrams of the program clusters give a quantitative estimate of this last error. Several different authors have computed isochrones as function of the metallicity, and the physics behind seems to be well understood. One does not expect a large variation in the $\log(A)$ error due to any uncertainty in the physics, and the uncertainties of $E(B-V)$ and (V_0-M_V) play a secondary role because the age errors depend more on the form of the isochrone curve and how it embraces the data (i.e., the the upper main-sequence and TO regions and the RC sequence) and, less significantly, on the reddening law (except perhaps the blue and near-ultraviolet filters). More problematic is the case when the TO region is not well defined (i.e., isolated from field stars) and/or the RC sequence is not present. In our case, the errors for the different colors of Table 8 reflect these uncertainties.

4. COMPARISON OF FUNDAMENTAL PARAMETERS OF THE THREE CLUSTERS

The reddening values of our three clusters have been compared to ones derived from the dust maps of Schlegel, Finkbeiner & Davis (1998; hereafter, SFD); these are based on the COBE/DIRBE and IRAS/ISSA maps, and take into account the dust absorption all the way to infinity. $E(B-V)(\ell,b)_\infty$ values of our three clusters have been taken from SFD maps using the web pages of NED[8]. These $E(B-V)(\ell,b)_\infty$ values are $0\overset{m}{.}99$ for Be 89, and $1\overset{m}{.}06$ for both Ru 135 and Be 10. However, Arce &

[8] http://nedwww.ipac.caltech.edu/forms/calculator.html.

TABLE 9

FUNDAMENTAL PARAMETERS OF BE 89, RU 135, AND BE 10

Cluster	(l°, b°)	$E(B-V)$ [mag]	[Fe/H] [dex]	Z	$(V_0 - M_V)$ [mag]	d [kpc]	log(A)	Isochrone	R_{GC} [kpc]	Reference
Be 89	83.16, +4.82	0.60	−0.35	+0.008	11.90	2.40	9.58	m8†	8.55	this work
		1.03	–	solar	12.40	3.00	8.93	b4	–	Tadross 2008a
		1.05	–	solar	11.54	2.04	9.02	g0	–	Subramaniam et al. 2010
Ru 135	16.42, +6.23	0.63	−0.71	+0.004	9.58	0.81	9.58	m8	7.72	this work
		1.10	–	solar	11.33	1.85	8.70	b4	–	Tadross 2008b
Be 10	138.62, +8.88	0.75	−0.49	+0.006	11.16	1.70	9.06	m8	9.84	this work
		0.87	–	+0.008	11.80	2.30	8.80	g2	–	Lata et al. 2004
		0.71	–	solar	11.26	1.79	9.00	B4	–	MN07

†Isochrone sources: B4 = Bertelli et al. (1994); b4 = Bonatto et al. (2004); g0 = GBBC; g2 = Girardi et al. (2002); m8 = MGBG.

Goodman (1999) caution that SFD reddening maps overestimate the reddening values when the color excess $E(B-V)$ is more than $\approx 0\overset{m}{.}15$. For the revision of SFD reddening estimates, the equations of Bonifacio, Monai & Beers (2000) and Schuster et al. (2004) have been adopted. Then the final reddening, $E(B-V)_A$, for a given star is reduced compared to the total reddening $E(B-V)(\ell, b)_\infty$ by a factor $\{1 - \exp[-d \sin\ |b|/H]\}$, where b, d, and H are the Galactic latitude (Column 2 of Table 9), the distance from the observer to the object (Column 7 of Table 9), and the scale height of the dust layer in the Galaxy, respectively; here we have assumed $H = 125$ pc (Bonifacio et al. 2000). Note that Galactic latitudes of our three clusters are less than 10°. These reduced final reddenings are $E(B-V)_A = 0\overset{m}{.}54$ for Be 89, $0\overset{m}{.}36$ for Ru 135, and $0\overset{m}{.}64$ for Be 10.

For Be 89, our reddening value of $0\overset{m}{.}60$ is in good agreement with the value of $0\overset{m}{.}54$ obtained from the dust maps of SFD. For Be 10 our reddening value of $E(B-V) = 0\overset{m}{.}75$ is within about 1σ of the value $0\overset{m}{.}64$ derived from the SFD dust maps, and for Ru 135, our reddening value of $0\overset{m}{.}63$ differs by about 2σ from the value of $0\overset{m}{.}36$ obtained from these SFD maps. These reddening values derived by different methods are in reasonable agreement with each other, giving confidence to our results.

As can be seen from the summarized results given in Table 9, the reddening value $0\overset{m}{.}60$ found here for Be 89 is smaller than the $E(B-V) = 1\overset{m}{.}03$ of Tadross (2008a; hereafter T08a), and than the $E(B-V) = 1\overset{m}{.}05$ of Subramaniam, Carraro, & Janes (2010, hereafter S10). Our derived distance modulus and distance for Be 89, $[(V_0 - M_V), d(\mathrm{kpc})] = (11\overset{m}{.}90 \pm 0\overset{m}{.}06, 2.4 \pm 0.06)$, are smaller than the values of $(12\overset{m}{.}39, 3.00)$ of T08a and larger than the $(11\overset{m}{.}54, 2.04)$ of S10. Our inferred age $[\log(A), A(\mathrm{Gyr})] = (9.58,\ 3.8$ Gyr) for this cluster is considerably older than (8.93, 0.85 Gyr) given by T08a and larger than the estimate (9.02, 1.06 Gyr) by S10. For the analysis of Be 89, T08a used JHK photometry and the isochrones of Bonatto, Bica, & Girardi (2004) with a solar metallicity. This is, partially, the origin of the disagreement between the two age estimates, since our lower metallicity for Be 89 will necessarily lead to a larger age for a given TO. Also, most probably, the differences are partially due to the different procedural approaches for estimating the fundamental parameters; we derive in a straightforward manner the estimates for the interstellar extinction and metallicity: by fitting SK82's ZAMS to the data in the $(U-B, B-V)$ diagram, by then measuring the ultraviolet excess of the F-type stars to derive a cluster metallicity, and finally using the appropriate isochrones in CM diagrams to estimate the true distance modulus and age of Be 89. Two parameters (reddening and metallicity) are estimated in a CC diagram separately from the other two parameters (distance and age) from the CM diagrams. S10 have also assumed a solar metallicity ($Z_\odot$) for their isochrones (from GBBC) and have used only CM diagrams to estimate the reddening, distance, and age of Be 89.

Previous results in the literature for Ru 135 are found in the work by Tadross (2008b; hereafter T08b), and for Be 10 in the papers by Lata et al. (2004; L04) and Maciejewski & Niedzielski (2007; MN07). Our reddening value $E(B-V) = 0\overset{m}{.}63 \pm 0\overset{m}{.}12$ for Ru 135 is significantly smaller compared to the reddening value of $1\overset{m}{.}10$ given by T08b. Also, our derived distance modulus and distance, $[(V_0 - M_V), d(\mathrm{kpc})] = (9\overset{m}{.}58, 0.81)$, for Ru 135 are significantly smaller than $(11\overset{m}{.}33, 1.85)$, and our inferred age $[\log(A), A] = (9.58, 3.80$ Gyr) is considerably older than (8.70, 0.50 Gyr), values by T08b.

In defense of the present results, our value for $E(B-V)$ ($0\overset{m}{.}63$) falls between the value derived from SFD ($0\overset{m}{.}36$) and the value of T08b ($1\overset{m}{.}10$); our value is in much better agreement with SFD. T08b used the solar-metallicity isochrones of Bonatto et al. (2004), and his results are based on the comparison of isochrones to observed data in the $J,(J-H)$ and $K,(J-K)$ planes of infrared photometry. These differences between our values and those of T08b are probably due mainly to the largely different values for the interstellar reddening, but also to the difference in the assumed metallicities, to the use of different stellar models and isochrone sets, which make use of differing input physics and colour-temperature transformations, and to distinct photometric data sets.

For the Be 10 open cluster, our reddening value $E(B-V) = 0\overset{m}{.}75$ is in reasonable agreement with the value of $E(B-V) = 0\overset{m}{.}87$ given by L04, and in good agreement with $E(B-V) = 0\overset{m}{.}71$ by MN07. For the metallicity of the Be 10 cluster, L04 adopt the $Z = +0.008$ isochrones of Girardi et al. (2002), and MN07 adopt the solar isochrones of Bertelli et al. (1994). From our two-color diagram, $Z = +0.006$ has been derived (see § 3.3), which is in agreement, within the error bars, with the value of L04. Our distance modulus and distance for Be 10, $[(V_0 - M_V), d(\mathrm{kpc})] = (11\overset{m}{.}16, 1.70)$ differ from the values $(11\overset{m}{.}8, 2.3)$ of L04, but very little from the values of MN07, $(11\overset{m}{.}26, 1.79)$. Our inferred age $[\log(A),\ A] = (9.06, 1.08$ Gyr$)$ for this cluster disagrees by almost a factor of two (0.5 Gyr) with L04, but is in good agreement with MN07, (9.00, 1.00 Gyr). Again, our interstellar reddening for Be 10, $E(B-V) = 0\overset{m}{.}75$ falls between the value derived from SFD ($0\overset{m}{.}64$) and the value $0\overset{m}{.}87$ by L04.

The age values in Table 9 have been compared to ages estimated with the (age, ΔV) calibration given by Carraro & Chiosi (1994; their equation 3). Note that this last calibration does not consider the metal abundance of the cluster. Here, ΔV means the magnitude difference between the RC and TO, which is well known as an age indicator. Both open clusters Be 89 and Be 10 have RC candidates (see the CM plots for these two clusters, Figures 3–4, and Figures 9–10, respectively). TO values occur at $V \approx 16\overset{m}{.}5$ for Be 89 and $V \approx 14\overset{m}{.}8$ for Be 10, whereas the RCs occur at $V \approx 15\overset{m}{.}3$ and $V \approx 14\overset{m}{.}7$, respectively. From this age-ΔV calibration of Carraro & Chiosi (1994), ages have been estimated as $\log(A) = 9.1$ (1.3 Gyr) for Be 89 and $\log(A) = 8.6$ (0.4 Gyr) for the Be 10.

The average age values given by us, $\log(A) = 9.58$ (3.8 Gyr) for Be 89 and $\log(A) = 9.06$ (1.08 Gyr) for Be 10 are somewhat older than the ones estimated from this relation of Carraro & Chiosi (1994). However, these age differences are at least partially explained by the sub-solar metallicities of these two clusters ([Fe/H]= −0.35 dex for Be 89 and −0.49 dex for Be 10; see § 3.1, § 3.3, and Table 9). Lower metallicities require larger ages for the same TO.

In Table 9 our results are summarized for Be 89, Ru 135, and Be 10: Columns 1 and 2 contain the cluster name and Galactic coordinates, respectively. The resulting reddening, $E(B-V)$, is given in Column 3. The metallicity and heavy-element abundances, [Fe/H] and (Z), are given in Columns 4 and 5, respectively. True distance modulus values, $(V_0 - M_V)$, and their corresponding heliocentric distances to the observer are given in Columns 6 and 7, respectively. Column 8 gives the average age (i.e., $\log(A)$; where A is in years), as derived from the five CM diagrams. Different isochrones used by us and by other authors are referenced in Column 9. Average Galactocentric distances are listed in Column 10. The corresponding references from the literature are listed in Column 11.

5. CONCLUSIONS

CCD *UBVRI* photometry of three poorly studied Galactic open clusters, Be 89, Ru 135, and Be 10, has been analyzed, based on new SPM observations. The fundamental parameters of reddening, metallicity, age, and distance of these open clusters have been inferred and presented in Tables 7–9.

The interstellar reddenings and metallicities of these three clusters have been determined from two-color, $(U-B,\ B-V)$, diagrams prior to the use of the CM diagrams. Heavy element abundances, Z, of the three clusters have been found from the ultraviolet excess, $\delta(U-B)$, of the F-stars by comparison with the two-color curve of SK82 ($Z_{\mathrm{SK82}} = Z_{\odot}$), by using the normalizations of Sandage (1969), and by applying the calibration, [Fe/H]-$\delta(0.6)$, of Karataş & Schuster (2006), with the advantage of reducing by two the number of free parameters of the isochrones when fitting to the data in the CM diagrams. When necessary, we have iterated slightly afterwards for a better, more consistent, solution for the four cluster parameters (reddening, metallicity, distance, and age). Deeper U frames would improve our determinations employing this method, which allows us to estimate the reddening and metallicity independently using a CC diagram, in contrast to the exclusive fitting of isochrones to CM diagrams and the use of the solar metallicity, which are the more common techniques used in the literature.

The present adjustments of the SK82, CC relations to the MS and RC stars, and of the MGBG isochrones to MS, TO, and RC stars in the CM diagrams show good consistency and appropriate fits for all three open clusters, in the one CC diagram and all five CM diagrams. Good consistency is seen in the Figures 2–4 for Be 89, Figures 5–7 for Ru 135, and Figures 8–10 for Be 10.

The CC and CM diagrams of Be 89 and Ru 135 suggest that they are metal-poor and old for their location in the Galaxy, compared to other open clusters.

For Be 89, stars with $V < 16\overset{m}{.}2$ and $(B-V) \leq 0\overset{m}{.}9$ are most likely foreground or blue-straggler stars. The blue-straggler and RC candidates in the field of Be 89 need spectroscopic and/or astrometric observations to test their cluster membership and to elucidate their nature.

Similar candidates for blue-straggler or bright foreground stars are seen in the CC and CM diagrams of Ru 135 and Be 10, Figures 5–7 and 8–10, respectively. In the case of Ru 135 and for stars with V fainter than about $14\overset{m}{.}2$, the onset of the cluster sequence in the CM diagrams is clearly seen. Objects brighter than this limit and with $(B-V) \leq 0\overset{m}{.}9$ are probably blue stragglers or bright foreground stars.

Despite its similar age to Be 89, no RC stars are noticeable in the CM diagrams of Ru 135. On the other hand, the CC and CM diagrams of Be 10 show clear evidence for an RC grouping, although it is somewhat younger than the other two clusters. The lack of any RC stars in the CM diagrams of Ru 135, contrasting with Be 89 and Be 10, may result either from relative differences in mass segregation and our emphasis on the inner regions of these clusters, or from the poorness of these cluster fields and small-number statistics. Ru 135, being closer to the Galactic center, may be more perturbed and less dynamically relaxed than the other two clusters. Also, Be 89 and Be 10 each show only eight, or fewer, RC candidate stars, and it is not clear that all of these are in fact cluster members.

For the typical accuracy of photometric observations (and we are no exception), the final error estimates are fixed by the accuracy of the cluster parameters as given by the systematic uncertainties in the absolute-magnitude, intrinsic-color, and reddening-vector calibrations, for example, the adequacies, or not, of the SK82 colors, the MGBG isochrones, and the standard interstellar-reddening curve.

Finally, further radial velocity and proper motion information for these clusters will allow us to clean with more assurance most non-members from the CC and CM diagrams in order to obtain better determinations of their physical parameters and to better understand the nature of the blue-straggler and red-clump candidates in these three open clusters. Deeper photometric observations, especially in the U and B bands, will provide clearer, cleaner, and more precise solutions from the CC diagram.

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İnci Akkaya: Department of Astronomy and Space Sciences, Faculty of Arts and Sciences, Erciyes University, Talas Yolu, 38039, Kayseri, Turkey (iakkaya@erciyes.edu.tr).
William J. Schuster, Raúl Michel, Carlos Chavarría-K, and Roberto Vázquez: Observatorio Astronómico Nacional, Instituto de Astronomía, Universidad Nacional Autónoma de México, Apdo. Postal 877, 22800 Ensenada, B. C., Mexico (schuster, rmm, chavarri, vazquez@astrosen.unam.mx).
André Moitinho: SIM/IDL, Facultade de Ciencias da Universidade de Lisboa, Ed. C8, Campo Grande, 1749-016, Lisboa, Portugal (andre@sim.ul.pt).
Yüksel Karataş: Istanbul University, Science Faculty, Department of Astronomy and Space Sciences, 34119, Üniversite-Istanbul, Turkey (karatas@istanbul.edu.tr).