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A Catalogue of Fundamental Data for Classical Cepheids in Our Galaxy

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Abstract

Fundamental data for 400 classical cepheids have been compiled. The PC-relation is derived and compared with similar relations for the Magellanic Clouds; it is found that the differences are not great.

I. Introduction

Recently Kim (in preparation, hereafter Paper I) have compiled color excesses of 446 cepheids. Of the 446 cepheids investigated (Paper I), 68 were suspected of being Type II cepheids and in some cases different classifications (classical cepheid or Type II cepheid) for the same star can be found. Evidently observers are not always consistent in their classification criteria. For example, Harris (1981) assigned Type II classifications to cepheids based only on distance from the Galactic plane. It was found that color excesses of his Type II cepheids such as V554 Oph, V717 Sco, and V541 Oph are much smaller than color excesses found by other investigators which had yeilded greater distances from the Galactic plane and hence led to his Type II classifications. In this investigation, we exclude 45 stars (probably Type II cepheids) with distances from the Galactic plane greater than 500 pc, and also cepheids with distances from the Sun greater than 10 kpc. The discription of the catalogue (Table 1) used in our discussion of the distribution of cepheids in the Galaxy is given below.

Table 1. Basic Data of Classical Cepheids.

(1) Star	(2) P	(3) Log P	(4) l	(5) b	(6) ΔB	(7) ΔV	(8) Δ(B-V)	(9) <B>	(10) <V>	(11) <B>o-<V>o	(12) E	(13) <Mv>	(14) R	(15) Z	(16) Rgc	(17) Ref
AS CAS	1.494	0.174	120.13	1.49					11.5		0.54	-1.73	2.10	55	9.83	(4)
446 MON	1.919	0.283	210.97	-1.28		0.8			14.52		0.86	-2.06	6.31	-141	14.39	(16)
SU CAS	1.949	0.290	133.47	8.51	0.537	0.387	0.172	6.687	5.969	0.44	0.27	-2.08	0.26	41	8.79	
+GR NOR	1.960	0.292	326.01	-5.20					12.4		0.66:	-2.09	3.18	-289	6.22	(4)
GP PER	2.042	0.310	157.90	-3.79		1.10			13.95		0.56	-2.14	7.63	-504	15.93	(16)
EU TAU	2.105	0.323	188.80	-5.34	0.46	0.32	0.14	8.74	8.08	0.39	0.27	-2.18	0.77	-72	9.37	(2)
IR CEP	2.114	0.325	103.41	4.91	0.55	0.38	0.17	8.63	7.76	0.47	0.40	-2.19	0.56	48	8.75	(2)
FF AUR	2.121	0.326	165.02	-2.20		1.04			13.78		0.50	>2.19	7.84	-301	16.30	(16)
+TU CAS	2.139	0.330	118.92	-11.40	1.183	0.818	0.380	8.300	7.717	0.46	0.12	-2.20	0.82	-161	9.02	
+BB GEM	2.308	0.363	199.38	2.26	0.61	0.99	0.38	12.12	11.39	0.30	0.43:	-2.30	3.04	120	11.52	(3)
+AU PEG	2.392	0.379	69.12	-22.26	0.575	0.395	0.234	10.043	9.205	0.49	0.35	-2.35	1.26	-478	8.24	
447 MON	2.484	0.395	208.12	0.46		0.82			14.16		0.98	-2.40	5.29	43	13.50	(16)
DT CYG	2.499	0.398	76.54	-10.78	0.441	0.294	0.152	6.323	5.780	0.47	0.08	-2.41	0.39	-73	8.52	
U TrA	2.568	0.410	323.23	-8.03	1.149	0.774	0.377	8.541	7.930	0.51	0.10	-2.44	1.03	-144	7.80	
AX VEL	2.594	0.414	263.33	-7.70	0.625	0.436	0.203	8.937	8.226	0.51	0.21	-2.46	1.03	-138	8.78	
BW GEM	2.635	0.421	187.88	3.34					11.4		0.63	-2.48	2.50	145	11.08	(4)
EW AUR	2.660	0.425	165.95	-3.90		0.82			13.58		0.56	-2.49	7.55	-513	16.03	(16)
526 MON	2.675	0.427	215.13	1.81	0.39	0.28	0.11	9.16	8.58	0.44	0.14	-2.50	1.36	43	9.74	(2)
AY CAS	2.871	0.458	127.93	2.57	0.912	0.617	0.323	12.840	11.567	0.52	0.75	-2.59	2.41	108	10.26	
+BE PUP	2.871	0.458	240.55	-3.00					13.8		0.73	-2.59	6.91	-362	13.42	(4)
EY CAR	2.876	0.459	288.00	-2.09	0.621	0.490	0.134	11.189	10.343	0.51	0.33	-2.59	2.44	-89	8.18	
493 AQL	2.988	0.475	32.99	-1.54	0.797	0.567	0.284	12.289	11.049	0.53	0.71	-2.64	2.05	-59	6.97	
VX PUP	3.012	0.479	237.01	-1.31	1.036	0.727	0.326	8.770	8.179	0.47	0.12	-2.65	1.24	-28	9.33	
BV MON	3.014	0.479	209.51	3.24					11.4		0.73	-2.65	2.37	134	10.73	(4)
RT MUS	3.086	0.489	296.53	-5.26	1.081	0.726	0.367	9.867	9.001	0.50	0.37	-2.68	1.31	-120	8.10	
EV SCT	3.090	0.490	23.97	-0.46	0.473	0.344	0.142	11.280	10.128	0.50	0.65	-2.68	1.49	-12	7.26	
VZ CMa	3.126	0.495	239.86	-4.44	0.590	0.415	0.194	10.370	9.420	0.39	0.56:	-2.70	1.22	-95	9.28	(5)
+AP VEL	3.128	0.495	262.98	-1.37	1.308	0.920	0.390	11.069	10.028	0.56	0.48	-2.70	1.81	-43	9.00	(3)
DX GEM	3.136	0.496	198.07	2.75	0.46	0.35	0.21	11.63	10.76	0.45	0.42:	-2.70	2.75	132	11.25	(3)
+SZ TAU	3.149	0.498	179.48	-18.75	0.512	0.344	0.179	7.400	6.546	0.54	0.32	-2.71	0.46	-147	9.06	
CM PUP	3.173	0.501	235.50	-0.98					13.8		0.82	-2.72	6.48	-111	13.38	(4)
BK CEN	3.174	0.502	295.96	-1.04	1.036	0.692	0.355	10.872	9.993	0.54	0.34	-2.72	2.18	-39	7.89	
DF ORI	3.181	0.503	199.41	-0.66					13.1		0.92	-2.72	4.10	-47	12.54	(4)
AZ CEN	3.211	0.507	292.79	-0.20	0.470	0.312	0.188	9.304	8.621	0.51	0.17	-2.74	1.47	-5	8.14	
BY CAS	3.223	0.508	129.55	-0.74	0.537	0.373	0.167	11.553	10.275	0.44	0.84	-2.74	1.26	-16	9.46	

Table 1. (Continued)

Star	P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
GO CAS	3.239	0.510	135.79	-0.88					13.7		1.26	-2.75	3.41	-52	11.30	(4)
532 CYG	3.283	0.516	88.95	-3.04	0.496	0.336	0.168	10.167	9.085	0.54	0.55	-2.76	1.10	-58	8.65	
FI MON	3.290	0.517	221.47	1.01		1.65	0.34	14.02	12.90	0.44	0.69:	-2.77	5.28	93	13.03	(6)
UZ CEN	3.334	0.523	294.95	-0.91	1.111	0.772	0.339	9.535	8.770	0.54	0.23	-2.78	1.49	-24	8.08	
BG CRU	3.343	0.524	300.42	3.35	0.6	1.2	0.1	6.08	5.48	0.49	0.11	-2.79	0.39	23	8.41	(5)
GL CYG	3.371	0.528	75.26	4.26		0.74	0.37	14.32	13.18	0.55	0.59	-2.80	6.95	516	9.58	(7)
R TrA	3.389	0.530	316.97	-7.75	0.847	0.544	0.306	7.404	6.675	0.57	0.16	-2.81	0.63	-85	8.15	
YY MON	3.450	0.538	220.07	-2.88		0.95	0.34	14.90	13.80	0.37	0.73:	-2.83	7.78	-391	15.39	(6)
GU NOR	3.453	0.538	330.54	-1.73	0.744	0.593	0.228	11.690	10.406	0.59	0.70	-2.83	1.69	-51	7.18	
BC PUP	3.544	0.549	238.26	-2.68					13.7		0.72	-2.86	7.65	-358	14.20	(4)
CV ORI	3.560	0.551	196.36	-2.25					13.2		1.01	-2.87	4.05	-159	12.54	(4)
FZ CAR	3.578	0.554	288.39				0.350	13.227	12.009	0.69	0.52:	-2.88	4.60	0	8.37	(8)
AV TAU	3.616	0.558	181.60	-0.96					12.4		0.81	-2.89	3.73	-63	12.33	(4)
BF CAS	3.630	0.560	118.41	-1.56					12.6		0.71	-2.90	4.71	-128	11.61	(4)
Y CAR	3.640	0.561	285.68	-0.33	0.884	0.587	0.297	8.756	8.133	0.52	0.11	-2.90	1.39	-8	8.33	
DW PER	3.650	0.562	136.56	-3.12	0.982	0.664	0.330	12.719	11.564	0.55	0.61	-2.90	3.38	-184	11.30	
SS SCT	3.671	0.565	25.17	-1.80	0.716	0.458	0.269	9.189	8.227	0.60	0.36	-2.91	1.03	-32	7.68	
UX CAR	3.682	0.566	284.78	0.16	1.175	0.812	0.402	8.973	8.316	0.55	0.10	-2.91	1.53	4	8.34	
MY CEN	3.719	0.570	305.26	1.16	1.294	0.958	0.364	13.896	12.146	0.65	1.10	-2.93	2.25	46	7.53	
RT AUR	3.728	0.571	183.14	8.90	1.205	0.800	0.406	6.047	5.446	0.54	0.06	-2.93	0.43	67	9.03	
AD GEM	3.788	0.578	193.27	7.62	0.949	0.637	0.316	10.557	9.855	0.51	0.19	-2.95	2.81	372	11.35	
CT CAS	3.811	0.581	119.40	0.51					12.5		0.70	-2.96	4.66	42	11.62	(4)
DF CAS	3.832	0.583	136.02	1.53	0.899	0.599	0.304	12.018	10.858	0.61	0.55	-2.96	2.72	73	10.72	
AG CRU	3.837	0.584	301.67	3.06	1.214	0.813	0.408	8.977	8.212	0.52	0.24	-2.97	1.23	66	8.02	
SU CYG	3.846	0.585	64.76	2.51	1.070	0.728	0.347	7.449	6.884	0.45	0.12	-2.97	0.80	35	8.29	
Y AUR	3.860	0.587	166.75	4.32	1.171	0.816	0.375	10.531	9.612	0.54	0.38	-2.98	1.96	147	10.52	
CS ORI	3.889	0.590	197.96	-4.52	1.168	0.855	0.318	12.310	11.385	0.57	0.35	-2.99	4.60	-362	13.05	
CM SCT	3.917	0.593	27.16	-0.44	0.913	0.703	0.222	12.424	11.063	0.59	0.77	-2.99	2.23	-17	6.70	
BD PUP	3.918	0.593	239.22	-3.03					13.4		0.61	-2.99	8.18	-433	14.59	(4)
AA MON	3.938	0.595	217.03	-0.43					13.3		0.82	-3.00	5.85	-44	13.73	(4)
EK MON	3.958	0.597	215.27	-0.82	0.897	0.640	0.304	12.288	11.069	0.62	0.60	-3.01	2.86	-41	11.06	
+ α UMI	3.970	0.599	123.28	26.46	0.270	0.193	0.084	2.579	1.988	0.57	0.02	-3.01	0.10	44	8.65	
BB CEN	3.997	0.602	296.38	-0.72	0.709	0.583	0.191	11.091	10.146	0.55	0.40	-3.02	2.48	-31	7.82	
GL CAS	4.008	0.603	132.93	-2.08					12.6		1.00	-3.03	3.37	-122	11.17	(4)
TY MON	4.023	0.605	213.36	1.23					11.4		0.61	-3.03	3.34	72	11.53	(4)

Table 1. (Continued)

Star	P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
+ST TAU	4.034	0.606	193.12	-8.06	1.104	0.769	0.361	9.081	8.199	0.56	0.32	-3.03	1.13	-159	9.71	
520 CYG	4.049	0.607	87.50	1.60					10.8		0.80	-3.04	1.94	54	8.73	(4)
GS CAR	4.055	0.608	289.15	-1.83					12.5		0.61	-3.04	5.56	-178	8.57	(4)
BF OPH	4.068	0.609	9.94	7.09	0.960	0.631	0.348	8.246	7.369	0.60	0.28	-3.04	0.83	102	7.79	
SY CAS	4.071	0.610	118.18	-4.12	1.152	0.797	0.376	10.855	9.872	0.53	0.45	-3.05	2.06	-148	9.74	
508 MON	4.134	0.616	208.91	0.86	0.63	0.44	0.29	11.41	10.58	0.57	0.26	-3.06	3.74	56	12.01	(3)
GZ CAR	4.159	0.619	284.74	-1.95	0.422	0.296	0.165	11.215	10.216	0.59	0.41	-3.07	2.57	-87	8.33	
+BC CMa	4.175	0.621	235.38	-3.46					13.3		0.60	-3.08	8.24	-497	14.91	(4)
X SCT	4.198	0.623	18.99	-1.56	1.294	0.909	0.389	11.177	10.015	0.57	0.59	-3.09	1.84	-50	6.88	
AH VEL	4.227	0.626	262.44	-6.96	0.536	0.373	0.196	6.301	5.708	0.55	0.04	-3.09	0.54	-66	8.69	
+EW CAR	4.239	0.627	285.81	-3.49					13.7		0.80	-3.10	7.63	-464	9.82	(4)
RZ CMa	4.255	0.629	231.15	-1.11	0.851	0.610	0.244	10.704	9.681	0.52	0.50	-3.10	1.80	-35	9.83	
UZ CAS	4.260	0.629	125.48	-1.55	1.184	0.765	0.435	12.422	11.354	0.59	0.48	-3.10	4.02	-110	11.42	
CY CAR	4.266	0.630	289.49	-0.87	0.808	0.517	0.308	10.740	9.785	0.59	0.37	-3.11	2.28	-35	8.13	
CO VEL	4.276	0.631	259.04	-0.75		0.75			12.57		1.28	-3.11	2.32	-30	9.32	
AW CAS	4.278	0.631	125.85	-1.12					12.5		0.89	-3.11	3.84	-75	11.29	(4)
VW PUP	4.285	0.632	235.36	-0.62	0.953	0.714	0.285	12.513	11.382	0.60	0.53	-3.11	3.80	-41	11.21	
EP CYG	4.289	0.632	66.58	3.49	1.174	0.813	0.363	13.945	12.750	0.58	0.61	-3.11	6.40	390	8.44	
+SX PER	4.290	0.632	158.87	-6.36	1.154	0.796	0.362	12.305	11.151	0.57	0.58	-3.11	3.20	-354	11.64	
EX CAS	4.305	0.634	117.26	-0.42					12.4		1.04	-3.12	3.02	-22	10.34	(4)
Y LAC	4.324	0.636	98.71	-4.03	0.963	0.653	0.317	9.909	9.157	0.55	0.21	-3.12	2.15	-151	9.18	
554 CYG	4.328	0.636	76.50	4.19					13.7		1.14	-3.12	4.80	350	8.82	(4)
402 CYG	4.365	0.640	74.14	2.27	0.793	0.563	0.278	10.916	9.893	0.57	0.46	-3.14	2.15	85	8.28	
CG CAS	4.366	0.640	116.84	-1.31	1.220	0.827	0.399	12.577	11.344	0.53	0.70	-3.14	2.99	-68	10.30	
V VEL	4.371	0.641	276.57	-4.19	1.060	0.733	0.351	8.369	7.579	0.58	0.21	-3.14	1.04	-76	8.54	
496 CEN	4.424	0.646	304.36	1.96	0.924	0.617	0.312	11.138	9.946	0.61	0.58	-3.15	1.88	64	7.70	
GI CAR	4.431	0.647	290.26	2.55	0.462	0.296	0.173	9.043	8.301	0.53	0.21	-3.16	1.45	65	8.21	
T VUL	4.436	0.647	72.13	-10.15	0.923	0.621	0.336	6.419	5.778	0.56	0.08	-3.16	0.54	-96	8.45	
FF AQL	4.471	0.650	49.20	6.37	0.518	0.347	0.174	6.151	5.384	0.53	0.23	-3.17	0.37	41	8.36	
CEb CAS	4.479	0.651	116.56	-1.01	1.023	0.680	0.354	12.106	10.968	0.57	0.55	-3.17	3.20	-56	10.43	
DF LAC	4.479	0.651	102.21	-2.18	0.928	0.667	0.328	13.050	11.870	0.61	0.57	-3.17	4.64	-176	10.60	
FG MON	4.497	0.653	221.65	-0.09					12.9		0.94	-3.18	4.51	-7	12.34	(4)
XY CAS	4.502	0.653	122.75	-2.76	0.856	0.569	0.305	11.095	9.963	0.62	0.51	-3.18	2.11	-101	9.90	
482 SCO	4.528	0.656	354.36	0.18	0.985	0.667	0.320	8.959	7.970	0.60	0.39	-3.18	0.99	3	7.62	
UX PER	4.566	0.660	133.58	-3.10	1.348	0.952	0.403	12.587	11.602	0.55	0.44	-3.20	4.98	-269	12.56	

Table 1. (Continued)

Star	P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
FN CAR	4.586	0.661	289.61	-0.12	0.947	0.655	0.296	12.720	11.595	0.58	0.54	-3.20	4.29	-9	8.22	
+383 CYG	4.612	0.664	73.92	-2.76	0.800	0.550	0.265	12.472	10.880	0.61	0.98	-3.21	1.70	-82	8.29	
T VEL	4.640	0.667	265.54	-3.78	1.013	0.639	0.400	8.874	7.996	0.57	0.31	-3.22	1.14	-75	8.76	
+WW MON	4.662	0.669	202.71	0.26	1.420	0.945	0.484	13.565	12.458	0.56	0.55	-3.22	6.43	29	14.74	
TV CMa	4.670	0.669	227.21	-2.37	1.126	0.799	0.337	11.782	10.561	0.64	0.59	-3.22	2.54	-105	10.50	
DY CAR	4.675	0.670	288.81	-0.95	1.189	0.689	0.506	12.416	11.394	0.62	0.40	-3.23	4.83	-80	8.40	
WW CAR	4.677	0.670	288.20	0.02	1.069	0.762	0.326	10.641	9.742	0.58	0.32	-3.23	2.53	1	8.17	
RY CMa	4.678	0.670	226.01	0.27	1.092	0.737	0.381	8.954	8.089	0.61	0.26	-3.23	1.29	6	9.54	
S CRU	4.690	0.671	303.31	4.44	1.078	0.695	0.386	7.370	6.588	0.61	0.17	-3.23	0.73	56	8.22	
CC CAR	4.760	0.678	289.38	-1.59	0.850	0.578	0.305	13.244	12.028	0.62	0.60	-3.25	4.99	-138	8.39	
DT CAS	4.790	0.680	113.29	-2.08					12.9		1.23	-3.26	3.14	-114	10.25	(4)
EE MON	4.809	0.682	219.97	-3.78					12.5		0.84	-3.26	4.48	-296	12.38	(4)
+FT MON	4.835	0.684	205.88	-4.76					12.4		0.84	-3.27	4.29	-356	12.60	(4)
EX CYG	4.851	0.686	67.51	1.72	1.036	0.791	0.379	14.587	12.991	0.61	0.99	-3.27	4.56	137	8.05	
SX CAR	4.850	0.687	286.72	1.33	1.166	0.749	0.423	10.019	9.120	0.61	0.29	-3.28	2.03	47	8.25	
VZ CYG	4.865	0.687	91.52	-8.51	1.006	0.665	0.348	9.865	8.960	0.59	0.31	-3.28	1.82	-269	8.84	
CF CAS	4.875	0.688	116.58	-1.00	0.828	0.543	0.297	12.320	11.110	0.64	0.57	-3.28	3.44	-60	10.60	
CR ORI	4.911	0.691	195.94	-3.86	0.808	0.585	0.237	13.446	12.304	0.62	0.53	-3.29	6.35	-428	14.81	
1154CYG	4.925	0.692	77.21	8.75	0.58	0.38	0.20	10.01	9.12	0.54	0.35	-3.29	1.86	283	8.39	(2)
CN CAR	4.933	0.693	283.56	-1.29	0.965	0.699	0.317	11.793	10.676	0.64	0.48	-3.30	3.20	-72	8.44	
TZ MUS	4.945	0.694	296.62	-3.01	0.849	0.635	0.290	12.998	11.656	0.66	0.69	-3.30	3.79	-199	7.69	
AS PER	4.972	0.697	154.14	-0.88	1.361	0.957	0.411	11.010	9.659	0.65	0.70	-3.31	1.49	-23	9.96	
LV CEN	4.975	0.697	294.27	-1.69					12.1		0.64	-3.31	5.02	-148	7.98	(4)
V LAC	4.983	0.697	106.46	-2.58	1.413	0.968	0.454	9.855	8.944	0.59	0.32	-3.31	1.81	-81	9.28	
TY CRU	4.989	0.698	297.80	-0.18					11.7		0.74	-3.31	3.64	-11	7.62	(4)
DW CAS	4.998	0.699	113.77	-2.22	0.864	0.595	0.286	12.574	11.121	0.66	0.80	-3.31	2.56	-99	9.91	
WZ PUP	5.027	0.701	241.77	3.33	1.303	0.897	0.461	11.099	10.318	0.61	0.17	-3.32	4.23	246	11.24	
AP SGR	5.058	0.704	8.11	-2.43	1.254	0.820	0.439	7.800	6.983	0.62	0.20	-3.33	0.87	-37	7.74	
356 CYG	5.058	0.704	88.34	-0.56					12.1		1.02	-3.33	2.96	-29	9.01	(4)
+381 CEN	5.079	0.706	310.84	4.38	1.028	0.689	0.350	8.463	7.668	0.61	0.19	-3.34	1.22	93	7.86	
VZ MON	5.083	0.706	200.10	0.97					13.2		1.13	-3.34	4.29	73	12.71	(4)
AP PUP	5.084	0.706	255.50	-5.72	0.997	0.677	0.361	8.281	7.427	0.63	0.23	-3.34	1.04	-104	8.92	
HS CAR	5.092	0.707	285.28	-1.80					12.3		0.69	-3.34	5.21	-164	8.80	(4)
514 CYG	5.099	0.707	84.95	1.46					11.4		1.02	-3.34	2.15	55	8.68	(4)
CEa CAS	5.140	0.711	116.56	-1.01	0.815	0.519	0.324	12.115	10.919	0.64	0.55	-3.35	3.33	-59	10.52	

Table 1. (Continued)

Star	P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
350 SGR	5.154	0.712	13.75	-7.95	1.087	0.734	0.396	8.383	7.461	0.61	0.31	-3.35	0.94	-130	7.69	
UZ CAR	5.205	0.716	287.28	-2.31	0.943	0.598	0.362	10.220	9.334	0.65	0.24	-3.37	2.49	-100	8.21	
WY PUP	5.251	0.720	241.78	2.70	1.239	0.785	0.498	11.421	10.599	0.52	0.30	-3.38	4.12	194	11.16	
367 SCT	5.255	0.721	21.63	-0.83	0.76	0.54	0.26	13.34	11.58	0.44	1.32	-3.38	1.59	-23	7.15	(9)
386 CYG	5.257	0.721	85.52	-4.89	1.024	0.706	0.326	11.199	9.635	0.60	0.97	-3.38	1.05	-90	8.58	
VW CRU	5.265	0.721	300.91	-0.70	0.889	0.600	0.298	10.935	9.623	0.65	0.66	-3.38	1.60	-20	7.90	
AX CIR	5.273	0.722	315.83	-4.01	0.577	0.444	0.141	6.606	5.880	0.64	0.09	-3.38	0.63	-44	8.16	
CR SER	5.301	0.724	16.16	2.80	1.158	0.786	0.381	12.559	10.900	0.66	1.00	-3.39	1.81	88	6.88	
AY CEN	5.310	0.725	292.57	0.39	0.831	0.582	0.310	9.861	8.852	0.64	0.37	-3.39	1.68	11	8.11	
CQ CAR	5.319	0.726	286.24	-1.73					13.4		0.83	-3.40	7.31	-221	9.60	(4)
+BG LAC	5.332	0.727	92.97	-9.26	0.937	0.626	0.318	9.844	8.870	0.63	0.34	-3.40	1.78	-286	8.87	
IM CAR	5.336	0.727	289.11	-0.83					12.3		0.68	-3.40	5.39	-78	8.52	(4)
UW CAR	5.346	0.728	285.59	-1.75	1.222	0.854	0.376	10.446	9.450	0.65	0.35	-3.40	2.30	-70	8.28	
UY PER	5.365	0.730	135.94	-1.42	1.302	0.890	0.412	12.860	11.306	0.64	0.91	-3.41	2.48	-62	10.53	
δ CEP	5.366	0.730	105.19	0.53	1.286	0.854	0.450	4.601	3.941	0.57	0.09	-3.41	0.26	2	8.67	
CV MON	5.379	0.731	208.56	-1.80	1.056	0.714	0.346	11.643	10.296	0.56	0.79	-3.41	1.85	-58	10.26	
BV CAS	5.400	0.732	127.40	-0.26					12.1		1.02	-3.41	3.07	-14	10.75	(4)
SW CAS	5.441	0.736	109.67	-1.61	0.985	0.667	0.334	10.805	9.685	0.63	0.49	-3.43	2.13	-60	9.53	
X LAC	5.445	0.736	106.56	-2.51	0.595	0.400	0.210	9.337	8.400	0.57	0.36	-3.43	1.41	-62	9.10	
XX MON	5.456	0.737	215.52	-1.12	1.160	0.692	0.563	13.079	11.099	0.58	0.60	-3.43	5.04	-99	13.04	
DP VEL	5.484	0.739	275.38	-1.30	1.099	0.687	0.420	13.319	11.886	0.66	0.77	-3.43	4.00	-91	9.14	
V CEN	5.494	0.740	316.44	3.31	1.184	0.783	0.405	7.701	6.818	0.59	0.29	-3.44	0.75	44	8.07	
CF CAR	5.495	0.740	289.43	-0.38					12.4		0.68	-3.44	5.79	-38	8.62	(4)
OP CAS	5.510	0.741	122.39	0.68					12.1		1.02	-3.44	3.13	37	10.61	(4)
419 CEN	5.507	0.741	292.06	4.27	0.433	0.292	0.165	8.972	8.181	0.59	0.20	-3.44	1.59	119	8.14	
WW PUP	5.517	0.742	237.38	0.97	1.383	0.956	0.435	11.454	10.553	0.57	0.33	-3.44	4.00	68	11.27	
RZ GEM	5.530	0.743	187.72	-0.10	1.247	0.889	0.385	11.052	9.982	0.54	0.53	-3.45	2.35	-4	10.93	
VY PER	5.532	0.743	135.07	-1.68	1.265	0.865	0.413	12.795	11.183	0.62	0.99	-3.45	2.14	-63	10.23	
UY CAR	5.544	0.744	287.23	-3.23	1.103	0.755	0.358	9.775	8.936	0.63	0.21	-3.45	2.26	-127	8.22	
924 CYG	5.571	0.746	66.88	5.33	0.354	0.223	0.159	11.558	10.695	0.55	0.31	-3.46	4.38	407	7.97	
IO CAS	5.604	0.748	129.93	-2.50					13.4		1.12	-3.46	5.05	-220	12.46	(4)
FH CAR	5.664	0.753	288.41	-1.30					12.5		0.68	-3.48	6.17	-140	8.86	(4)
CZ CAS	5.665	0.753	114.70	0.66	1.187	0.801	0.393	13.125	11.720	0.66	0.75	-3.48	3.89	45	10.82	
MY PUP	5.695	0.755	261.31	-12.86	0.26	0.20	0.10	6.32	5.67	0.48	0.17	-3.48	0.53	-118	8.70	(5)
GH CAR	5.726	0.758	290.93	-0.24	0.482	0.339	0.222	10.119	9.156	0.59	0.38	-3.49	2.01	-8	8.10	

Table 1. (Continued)

Star		P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
RW	CMa	5.729	0.758	232.04	-3.82					11.8		0.57	-3.49	5.19	-346	12.48	(4)
773	SGR	5.750	0.760	2.85	-0.52					12.5		0.92	-3.50	4.47	-41	4.14	(4)
Y	SGR	5.773	0.761	12.79	-2.13	1.081	0.707	0.398	6.597	5.736	0.64	0.22	-3.50	0.52	-19	8.09	
GI	CYG	5.783	0.762	70.20	2.10	0.961	0.608	0.365	13.179	11.745	0.58	0.85	-3.50	3.47	127	8.11	
AB	CAM	5.788	0.763	143.93	3.22	1.457	0.984	0.491	13.066	11.868	0.63	0.57	-3.51	5.44	305	13.38	
FM	CAS	5.809	0.764	117.78	-6.25	0.874	0.568	0.313	10.141	9.119	0.70	0.32	-3.51	2.15	-234	9.79	
R	CRU	5.826	0.765	299.63	1.07	1.244	0.816	0.443	7.584	6.793	0.63	0.16	-3.51	0.92	17	8.18	
ST	VEL	5.858	0.768	268.81	-4.79	0.996	0.675	0.334	10.929	9.709	0.66	0.56	-3.52	2.03	-169	8.88	
CS	VEL	5.905	0.771	277.09	-0.77	1.19	0.80	0.39	13.04	11.70	0.63	0.71	-3.53	4.18	-56	9.09	(10)
621	CYG	5.864	0.768	93.03	-1.77					11.9		0.58	-3.52	5.49	-169	10.44	(4)
IZ	CEN	5.893	0.770	294.87	-0.49					12.5		0.77	-3.53	5.54	-47	8.04	(4)
LT	CAS	5.905	0.771	135.38	3.23					12.6		0.92	-3.53	4.75	268	12.44	(4)
MW	CYG	5.955	0.775	70.92	-0.63	1.043	0.695	0.386	10.887	9.513	0.72	0.65	-3.54	1.66	-18	8.21	
VW	CAS	5.994	0.778	124.63	-1.08	1.030	0.667	0.382	11.950	10.716	0.68	0.56	-3.55	3.31	-62	10.83	
RV	SCO	6.061	0.783	350.41	5.68	1.311	0.874	0.442	8.040	7.061	0.61	0.37	-3.57	0.80	79	7.81	
FM	AQL	6.114	0.786	44.34	0.90	1.094	0.718	0.383	9.588	8.282	0.62	0.69	-3.58	0.91	14	7.98	
538	CYG	6.119	0.787	95.32	-0.40	0.846	0.512	0.336	11.777	10.466	0.65	0.67	-3.58	2.57	-18	9.20	
VV	CRU	6.121	0.787	299.92	-1.76					12.3		1.21	-3.58	2.82	-87	7.60	(4)
NP	CAS	6.171	0.790	119.81	0.26					13.2		1.21	-3.59	4.31	20	11.38	(4)
RS	NOR	6.198	0.792	329.08	-1.18	1.061	0.710	0.353	11.295	10.000	0.66	0.64	-3.59	2.16	-45	6.83	
VV	CAS	6.207	0.793	130.36	-2.13	1.323	0.895	0.437	11.869	10.741	0.63	0.50	-3.60	3.71	-138	11.36	
X	CRU	6.220	0.794	302.28	3.75	0.892	0.591	0.302	9.387	8.384	0.67	0.33	-3.60	1.57	103	7.87	
547	CYG	6.225	0.794	71.64	3.40	1.390	0.957	0.466	14.885	13.391	0.57	0.92:	-3.60	7.02	416	9.23	
CR	CEP	6.233	0.795	107.63	0.33	0.577	0.372	0.209	11.093	9.627	0.71	0.76	-3.60	1.56	9	9.19	
FW	CAS	6.237	0.795	121.23	-0.56					12.4		1.11	-3.60	3.42	-33	10.78	(4)
AB	VEL	6.246	0.796	283.01	0.59					13.5		1.21	-3.61	4.99	51	8.92	(4)
CX	VEL	6.255	0.796	272.37	-3.36					11.3		0.80:	-3.61	3.19	-187	9.05	(4)
BP	CAS	6.272	0.797	125.36	2.84	1.126	0.773	0.385	12.448	10.926	0.64	0.88	-3.61	2.38	118	10.17	
RS	CAS	6.296	0.799	114.46	0.78	1.161	0.778	0.397	11.410	9.936	0.69	0.79	-3.61	1.73	23	9.45	
X	VUL	6.319	0.801	63.85	-1.28	1.168	0.755	0.421	10.323	8.876	0.60	0.85	-3.62	0.98	-22	8.22	
S	TrA	6.323	0.801	322.13	-8.22	1.190	0.791	0.417	7.147	6.393	0.65	0.10	-3.62	0.88	-125	7.93	
AD	CRU	6.398	0.806	298.45	0.45	1.119	0.744	0.378	12.338	11.039	0.63	0.67	-3.64	3.40	27	7.59	
BX	SCT	6.411	0.807	28.89	-1.70					12.5		1.00	-3.64	4.22	-125	5.32	(4)
RR	LAC	6.416	0.807	105.64	-2.01	1.187	0.792	0.402	9.758	8.841	0.64	0.28	-3.64	2.13	-75	9.40	

Table 1. (Continued)

Star	P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
XX SGR	6.424	0.808	14.98	-1.87	1.260	0.862	0.424	9.988	8.836	0.65	0.50	-3.64	1.57	-51	7.09	
FG VEL	6.453	0.810	275.52	-0.76	0.878	0.588	0.365	13.409	11.828	0.70	0.89	-3.65	3.66	-49	9.02	
+378 CEN	6.459	0.810	306.11	0.33	0.546	0.390	0.190	9.481	8.455	0.57	0.45	-3.65	1.41	8	7.85	
AW PER	6.463	0.810	166.61	-5.40	1.114	0.812	0.319	8.544	7.460	0.59	0.49	-3.65	0.85	-80	9.43	
+AY SGR	6.570	0.818	13.25	-2.39	1.242	0.816	0.427	12.047	10.526	0.66	0.87	-3.67	2.09	-87	6.58	
BB SGR	6.637	0.822	14.66	-9.00	0.925	0.598	0.330	7.970	6.967	0.68	0.32	-3.68	0.86	-135	7.77	
CS CAR	6.662	0.824	285.61	0.18					12.4		0.66	-3.69	6.64	21	9.34	(4)
AT PUP	6.665	0.824	254.32	-1.61	1.359	0.866	0.499	8.759	7.987	0.60	0.17	-3.69	1.70	-48	9.21	
HK CAR	6.696	0.826	290.11	-0.48		0.64	0.30		10.00		0.39	-3.70	3.19	-27	8.08	(4)
V CAR	6.696	0.826	275.25	-12.28	0.935	0.596	0.347	8.235	7.362	0.68	0.19	-3.70	1.25	-266	8.58	
CS MON	6.731	0.828	204.82	-1.34	0.962	0.570	0.393	12.149	10.965	0.60	0.58	-3.70	3.84	-90	12.19	
T CRU	6.733	0.828	299.44	0.39	0.758	0.474	0.288	7.516	6.587	0.70	0.23	-3.70	0.83	6	8.22	
U SGR	6.745	0.829	13.70	-4.45	1.131	0.732	0.402	7.828	6.714	0.67	0.45	-3.71	0.66	-51	7.96	
AO AUR	6.763	0.830	177.60	1.98			0.45	11.93	10.88	0.78	0.27	-3.71	5.73	198	14.33	(11)
+636 SCO	6.797	0.832	343.51	-5.21	0.813	0.527	0.288	7.570	6.645	0.69	0.24	-3.71	0.85	-77	7.79	
FO CAS	6.799	0.832	118.74	-1.81					13.7		1.40	-3.71	4.39	-139	11.38	(4)
496 AQL	6.807	0.833	28.20	-7.12	0.571	0.384	0.210	8.948	7.775	0.70	0.47	-3.72	1.04	-129	7.70	
AP CAS	6.847	0.836	120.86	0.10	0.909	0.620	0.298	12.939	11.541	0.59	0.80	-3.73	3.73	7	10.99	
BG VEL	6.924	0.840	271.86	-2.56	0.738	0.476	0.270	8.840	7.648	0.70	0.49	-3.74	0.96	-43	8.62	
XX VEL	6.985	0.844	284.80	2.00	1.446	0.973	0.474	11.862	10.671	0.69	0.50	-3.75	3.82	133	8.47	
TW CMa	6.995	0.845	229.12	0.12	0.962	0.648	0.325	10.562	9.565	0.58	0.41	-3.75	2.61	5	10.49	
SV CRU	7.004	0.845	296.82	-0.40					12.4		0.91	-3.75	4.87	-34	7.74	(4)
X SGR	7.012	0.846	1.16	0.22	0.934	0.610	0.325	5.319	4.560	0.58	0.18	-3.76	0.36	1	8.24	
U AQL	7.024	0.847	30.90	-11.64	1.174	0.774	0.402	7.508	6.470	0.65	0.39	-3.76	0.65	-132	8.05	
+IP CAR	7.123	0.853	291.35	-3.91					13.2		0.90	-3.78	7.17	-489	8.97	(4)
AE VEL	7.134	0.853	276.10	-0.61	1.216	0.851	0.409	11.515	10.258	0.63	0.63	-3.78	2.69	-29	8.73	
UX MUS	7.142	0.854	299.45	-3.10					12.8		1.00	-3.78	5.24	-283	7.56	(4)
η AQL	7.177	0.856	40.93	-13.07	1.228	0.801	0.432	4.686	3.884	0.65	0.15	-3.79	0.28	-63	8.39	
GX CAR	7.197	0.857	281.57	-3.06	1.188	0.805	0.411	10.403	9.327	0.68	0.40	-3.79	2.43	-129	8.45	
BM PUP	7.199	0.857	244.46	-1.01		0.84			10.84		0.50:	-3.79	4.26	-75	11.12	(4)
BH VEL	7.201	0.857	259.77	-1.26					11.6		1.25	-3.79	2.14	-47	9.22	(4)
AK CEP	7.233	0.859	105.06	0.37	1.009	0.659	0.352	12.514	11.183	0.68	0.65	-3.80	4.03	26	10.40	
600 AQL	7.238	0.860	43.89	-2.62	0.993	0.656	0.348	11.548	10.035	0.67	0.84	-3.80	1.82	-83	7.40	
459 CYG	7.251	0.860	90.46	0.69	1.115	0.714	0.439	12.104	10.642	0.67	0.79	-3.80	2.58	31	9.00	
336 AQL	7.304	0.864	34.19	-2.13	1.152	0.779	0.376	11.215	9.861	0.68	0.68	-3.81	2.12	-79	6.95	

Table 1. (Continued)

Star	P	Log P	l	b	Δ B	Δ V	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
510 MON	7.307	0.864	210.24	0.26		0.59			12.70		0.84	-3.81	6.28	29	14.38	(16)
CK SCT	7.415	0.870	26.30	-0.46	0.736	0.494	0.250	12.207	10.602	0.73	0.87	-3.83	2.30	-18	6.61	
TZ MON	7.428	0.871	214.01	1.28	1.111	0.723	0.391	11.921	10.763	0.67	0.49	-3.83	4.23	94	12.34	
+BB HER	7.507	0.875	43.34	6.81	0.987	0.632	0.363	11.163	10.090	0.66	0.41	-3.84	3.47	412	6.52	
R MUS	7.510	0.876	302.10	-6.54	1.246	0.800	0.450	7.069	6.317	0.64	0.12	-3.85	0.92	-105	8.15	
AM VEL	7.523	0.876	265.64	-4.24					12.2		0.80	-3.85	5.40	-399	10.50	(4)
IT CAR	7.533	0.877	291.47	-1.11	0.544	0.356	0.188	9.069	8.089	0.75	0.23	-3.85	1.77	-34	8.12	
RS ORI	7.567	0.879	196.57	0.34	1.197	0.801	0.413	9.389	8.408	0.61	0.37	-3.86	1.70	10	10.24	
492 CYG	7.580	0.880	72.91	0.96					11.6		1.00	-3.86	3.12	52	8.24	(4)
W SGR	7.595	0.881	1.57	-3.97	1.198	0.775	0.430	5.421	4.677	0.61	0.13	-3.86	0.42	-29	8.18	
FM CAR	7.639	0.883	289.88	-0.96					12.4		0.80	-3.87	5.98	-100	8.64	(4)
ER CAR	7.719	0.888	290.08	1.48	0.843	0.519	0.335	7.666	6.813	0.71	0.14	-3.88	1.13	29	8.28	
CD CAS	7.801	0.892	115.48	1.09	1.206	0.779	0.436	12.292	10.740	0.78	0.77	-3.89	2.91	55	10.20	
GH CYG	7.818	0.893	66.52	-0.07	1.085	0.761	0.334	11.202	9.918	0.65	0.64	-3.90	2.41	-3	7.95	
VY CYG	7.857	0.895	82.89	-4.62	1.250	0.835	0.437	10.837	9.579	0.64	0.61	-3.90	2.13	-171	8.60	
RX CAM	7.912	0.898	145.89	4.70	1.174	0.769	0.421	8.910	7.668	0.65	0.59	-3.91	0.91	75	9.37	
W GEM	7.914	0.898	197.42	3.37	1.280	0.826	0.458	7.875	6.943	0.63	0.30	-3.91	0.98	58	9.54	
U VUL	7.991	0.903	56.07	-0.28	1.048	0.702	0.363	8.448	7.136	0.69	0.63	-3.93	0.69	-3	8.24	
DL CAS	8.000	0.903	120.26	-2.55	0.915	0.607	0.321	10.141	8.942	0.69	0.51	-3.93	1.84	-82	9.66	
BK AUR	8.003	0.903	158.98	5.88	1.020	0.691	0.361	10.490	9.429	0.64	0.43	-3.93	2.61	267	11.07	
AC MON	8.014	0.904	221.76	-1.86	1.067	0.687	0.386	11.213	10.037	0.63	0.54	-3.93	2.93	-95	10.96	
KK CAS	8.192	0.913	115.32	-2.06					11.9		0.99	-3.96	3.78	-136	10.77	(4)
IQ NOR	8.232	0.916	322.45	2.68	1.007	0.644	0.378	11.457	9.736	0.70	1.02	-3.97	1.34	63	7.58	
S SGE	8.382	0.923	55.16	-6.11	1.167	0.757	0.425	6.440	5.631	0.67	0.14	-3.99	0.70	-74	8.22	
GQ ORI	8.616	0.935	199.77	-4.48	1.05	0.70	0.35	10.01	9.34	0.63	0.04:	-4.02	4.44	-342	12.87	(2)
HQ PER	8.637	0.936	163.01	-3.30		0.4			11.6		0.54	-4.03	6.33	-364	14.77	(16)
TX MON	8.702	0.940	214.14	-0.78	0.933	0.642	0.338	12.126	10.970	0.66	0.49	-4.04	5.07	-69	13.11	
347 CYG	8.737	0.941	86.03	1.16					12.4		1.33	-4.04	3.12	63	8.94	(4)
+PZ AQL	8.752	0.942	30.88	-2.30	1.100	0.727	0.424	13.074	11.622	0.70	0.75	-4.05	4.82	-194	5.10	
WX PUP	8.938	0.951	241.50	-1.37	0.933	0.566	0.382	10.083	9.063	0.66	0.36	-4.07	2.59	-62	10.09	
GH LUP	9.285	0.968	324.95	3.34		0.21	0.10		7.62		0.46:	-4.12	1.18	68	7.67	(12)
CPD*	9.297	0.968	299.30	-0.50		0.50	0.12	10.75	9.80	0.67	0.28	-4.12	4.16	-36	7.50	(12)
500 SCO	9.317	0.969	359.02	-1.35	1.088	0.728	0.362	10.030	8.744	0.66	0.62	-4.13	1.59	-37	7.01	
339 CEN	9.467	0.976	313.48	-0.53	1.150	0.766	0.395	9.903	8.698	0.74	0.47	-4.15	1.95	-18	7.39	
+FN AQL	9.482	0.977	38.54	-3.11	0.929	0.666	0.287	9.622	8.382	0.72	0.52	-4.15	1.56	-84	7.45	

Table 1. (Continued)

Star		P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
CN	CEP	9.504	0.978	113.93	3.44					12.1		1.17	-4.15	3.54	212	10.54	(4)
SX	VEL	9.550	0.980	265.49	-2.18	1.022	0.683	0.356	9.142	8.263	0.62	0.26	-4.16	2.13	-81	9.02	
YZ	SGR	9.553	0.980	17.75	-7.11	1.079	0.742	0.340	8.361	7.337	0.71	0.32	-4.16	1.28	-159	7.39	
S	MUS	9.659	0.985	299.64	-7.52	0.749	0.543	0.230	6.964	6.137	0.59	0.24	-4.17	0.83	-109	8.22	
S	NOR	9.755	0.989	327.75	-5.39	1.000	0.655	0.355	7.363	6.414	0.75	0.19	-4.19	1.01	-95	7.77	
CR	CAR	9.762	0.990	285.67	-0.37	0.791	0.562	0.293	12.895	11.578	0.72	0.60	-4.19	6.23	-40	9.16	
AQ	CAR	9.769	0.990	285.77	-3.30	0.889	0.592	0.327	9.778	8.844	0.73	0.20	-4.19	3.05	-175	8.31	
DD	CAS	9.811	0.992	116.77	0.48	0.924	0.590	0.372	11.081	9.858	0.70	0.52	-4.20	3.14	26	10.40	
CP	VEL	9.841	0.993	267.64	-3.20					12.1		0.91	-4.20	5.15	-287	10.20	(4)
β	DOR	9.842	0.993	271.74	-32.78	0.984	0.622	0.370	4.558	3.754	0.71	0.10	-4.20	0.34	-184	8.60	
CN	SCT	9.992	1.000	28.06	0.02					11.9		1.06	-4.22	3.82	1	5.53	(4)
BZ	CYG	10.141	1.006	84.80	1.38	0.770	0.516	0.269	11.826	10.223	0.75	0.85	-4.24	2.40	58	8.72	
SY	AUR	10.144	1.006	164.74	2.13	0.894	0.620	0.314	10.121	9.060	0.60	0.46	-4.24	2.42	90	10.96	
ζ	GEM	10.151	1.007	195.74	11.89	0.781	0.501	0.293	4.709	3.893	0.76	0.06	-4.24	0.39	80	8.98	
FQ	CAR	10.274	1.012	290.91	-0.35					12.3		0.82	-4.26	6.60	-40	8.77	(4)
AN	AUR	10.291	1.012	164.88	-1.00	1.034	0.667	0.414	11.662	10.441	0.63	0.59	-4.26	3.84	-67	12.35	
Y	SCT	10.342	1.015	23.96	-0.85	1.226	0.779	0.471	11.188	9.631	0.72	0.84	-4.27	1.89	-28	6.92	
MZ	CEN	10.353	1.015	305.37	-1.55	1.27	0.75	0.47	13.15	11.56	0.71	0.88	-4.27	4.36	-118	7.04	(12)
FO	CAR	10.356	1.015	290.53	-2.09	0.896	0.603	0.304	12.051	10.777	0.76	0.52	-4.27	4.99	-182	8.29	
FR	CAR	10.717	1.030	291.09	0.57	1.060	0.683	0.402	10.824	9.676	0.76	0.39	-4.31	3.66	36	8.04	
BI	CAS	10.767	1.032	122.02	-0.20					12.1		1.26	-4.32	3.37	-12	10.77	(4)
TW	NOR	10.784	1.033	330.36	0.31	1.31	0.91	0.44	13.67	11.67	0.73	1.27	-4.32	2.74	15	6.36	(13)
Z	LAC	10.886	1.037	105.76	-1.63	1.443	0.915	0.540	9.575	8.427	0.77	0.37	-4.33	2.12	-60	9.40	
VX	PER	10.894	1.037	132.80	-2.96	1.049	0.699	0.355	10.520	9.300	0.69	0.53	-4.33	2.57	-133	10.52	
XX	CEN	10.956	1.040	309.46	4.64	1.334	0.886	0.453	8.792	7.817	0.71	0.26	-4.34	1.87	151	7.55	
TY	SCT	11.053	1.043	28.05	0.12	1.333	0.881	0.453	12.520	10.791	0.76	0.97	-4.35	2.80	6	6.27	
SV	PER	11.129	1.046	162.59	-1.52	1.134	0.787	0.404	9.965	8.953	0.67	0.37	-4.36	2.78	-74	11.28	
DR	VEL	11.200	1.049	273.22	1.33	0.902	0.570	0.342	11.104	9.543	0.77	0.79	-4.37	2.03	47	8.73	
438	CYG	11.211	1.050	77.63	2.28					11.0		1.21	-4.37	2.24	89	8.41	(4)
AD	CAM	11.253	1.051	141.24	3.31		1.00			12.46		1.00	-4.37	5.86	338	13.67	(16)
HZ	PER	11.279	1.052	157.19	-2.55		0.74			13.86		1.50	-4.38	5.59	-249	13.92	(16)
AA	GEM	11.302	1.053	184.59	2.69	1.088	0.672	0.434	10.811	9.705	0.72	0.39	-4.38	3.85	181	12.44	
RX	AUR	11.624	1.065	165.77	-1.29	1.036	0.692	0.356	8.645	7.676	0.67	0.30	-4.42	1.74	-39	10.29	
UU	MUS	11.636	1.066	296.82	-3.23	1.561	1.031	0.582	10.907	9.778	0.72	0.41	-4.42	3.93	-221	7.67	
EZ	CYG	11.660	1.067	67.06	0.59	1.291	0.778	0.525	12.514	11.060	0.69	0.76	-4.42	4.37	45	7.98	

Table 1. (Continued)

Star		P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
RY	CAS	12.137	1.084	115.28	-3.25	1.439	0.969	0.494	11.305	9.944	0.72	0.64	-4.47	3.17	-180	10.36	
KK	CEN	12.180	1.086	294.18	2.71	1.498	0.979	0.539	12.823	11.500	0.78	0.55	-4.48	7.38	349	8.74	
VX	CRU	12.213	1.087	300.88	1.58	1.41	1.06	0.47	13.59	11.96	0.79	0.84	-4.48	6.07	167	7.56	(13)
AS	VUL	12.225	1.087	63.91	1.27					12.2		1.10	-4.48	4.75	105	7.78	(4)
+AA	NOR	12.251	1.088	324.95	-2.61					13.0		1.05:	-4.48	7.36	-335	4.95	(4)
SS	CMa	12.362	1.092	239.23	-4.21	1.437	0.992	0.457	11.105	9.874	0.70	0.53	-4.50	3.61	-265	10.90	
XY	CAR	12.435	1.095	291.42	-3.86	1.284	0.835	0.457	10.502	9.304	0.77	0.43	-4.51	3.20	-216	8.01	
U	NOR	12.641	1.102	325.64	-0.16	1.410	0.967	0.472	10.826	9.225	0.73	0.87	-4.53	1.70	-5	7.26	
SY	NOR	12.645	1.102	327.50	-0.67	1.192	0.890	0.334	10.851	9.497	0.72	0.63	-4.53	2.67	-31	6.51	
SU	CRU	12.848	1.109	299.21	-0.64	1.245	0.678	0.663	11.559	9.792	0.75	1.02	-4.55	1.81	-20	7.88	
OO	CEN	12.881	1.110	306.88	-0.55	1.75	1.05	0.42	13.77	12.02	0.68	1.07	-4.55	4.68	-45	6.90	(13)
Z	SCT	12.901	1.111	26.78	-0.76	1.516	1.001	0.549	10.940	9.604	0.79	0.54	-4.55	3.20	-42	5.92	
+AL	LYR	12.983	1.113	60.59	6.59					11.6		1.09	-4.56	3.78	434	7.50	(4)
1828	SGR	12.985	1.113	5.28	-4.09					11.7		1.49	-4.56	2.28	-163	6.33	(4)
+DD	VEL	13.195	1.120	271.51	-1.38	0.949	0.599	0.380	14.126	12.474	0.79	0.86	-4.58	7.85	-189	11.49	
EX	VEL	13.234	1.122	274.14	-2.23	1.157	0.839	0.351	13.312	11.722	0.72	0.87	-4.59	5.46	-213	9.85	
FI	CAR	13.454	1.129	287.78	0.70	1.024	0.588	0.451	13.244	11.647	0.84	0.76	-4.61	6.24	76	8.95	
VY	SGR	13.557	1.132	10.13	-1.07	1.467	1.065	0.403	13.499	11.529	0.84	1.13	-4.62	3.56	-67	5.13	
AD	PUP	13.594	1.133	241.93	-0.04	1.658	1.051	0.723	10.965	9.877	0.74	0.35	-4.62	4.88	-3	11.71	
+SZ	CAS	13.638	1.135	134.83	-1.18	0.608	0.414	0.222	11.323	9.826	0.69	0.80	-4.63	2.56	-53	10.56	
BN	PUP	13.673	1.136	247.89	1.06	1.53	0.96	0.64	11.06	9.87	0.75	0.45	-4.63	4.29	79	10.96	(13)
TT	AQL	13.755	1.138	36.00	-3.13	1.820	1.182	0.657	8.435	7.135	0.80	0.50	-4.64	1.13	-62	7.72	
CY	AUR	13.850	1.141	160.53	1.97					11.7		0.59:	-4.64	8.28	285	16.63	(4)
SV	VEL	14.097	1.149	286.00	2.37	1.735	1.139	0.645	9.646	8.566	0.71	0.37	-4.67	2.65	110	8.27	
CY	CAS	14.378	1.158	113.87	1.95	1.666	1.104	0.607	13.345	11.649	0.69	1.01	-4.70	4.62	157	11.29	
TX	CYG	14.708	1.168	84.35	-2.30	1.844	1.218	0.630	11.367	9.494	0.72	1.16	-4.73	1.41	-57	8.58	
UZ	SCT	14.744	1.169	19.16	-1.49	1.449	0.934	0.538	13.183	11.303	0.85	1.03	-4.73	3.90	-101	5.08	
RW	CAS	14.794	1.170	129.03	-4.58	1.840	1.138	0.706	10.459	9.213	0.84	0.41	-4.73	3.50	-280	11.14	
554	OPH	14.865	1.172	6.02	4.43		0.60	0.41		11.60		1.38	-4.74	2.75	213	5.87	(4)
VW	CEN	15.036	1.177	307.56	-1.56		1.02	0.64	11.57	10.21	0.84	0.52	-4.75	4.82	-131	6.83	(13)
CH	CAS	15.086	1.179	112.90	1.64	1.640	1.082	0.573	12.606	10.963	0.72	0.93	-4.76	3.87	111	10.72	
SZ	CYG	15.110	1.179	84.44	3.98	1.433	0.888	0.550	10.953	9.423	0.90	0.63	-4.76	2.89	201	8.80	
SV	MON	15.232	1.183	203.74	-3.68	1.973	1.276	0.711	9.295	8.246	0.77	0.28	-4.77	2.71	-174	11.13	
AV	SGR	15.409	1.188	7.53	-0.58	2.10	1.28	0.85	13.80	11.54	0.93	1.33	-4.79	2.94	-30	5.69	(14)
ER	AUR	15.691	1.196	165.47	1.72					11.2		0.65:	-4.81	6.46	194	14.94	(4)

Table 1. (Continued)

Star	P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Mv>	R	Z	Rgc	Ref
XX CAR	15.716	1.196	291.28	-4.88	1.881	1.220	0.686	10.394	9.346	0.72	0.33	-4.81	4.28	-364	8.10	
470 SCO	16.262	1.211	349.76	0.34					11.5		1.42	-4.86	2.62	16	6.04	(4)
FF CAR	16.329	1.213	286.93	0.59					12.3		0.94:	-4.86	7.43	77	9.59	(4)
+SZ MON	16.360	1.214	214.15	-0.63	0.983	0.849	0.256	10.974	10.133	0.83	0.01	-4.86	9.83	-108	17.62	
X CYG	16.387	1.215	76.87	-4.26	1.624	0.989	0.664	7.553	6.395	0.86	0.30	-4.87	1.18	-88	8.41	
RW CAM	16.414	1.215	144.85	3.79	1.231	0.908	0.331	10.064	8.669	0.69	0.70	-4.87	1.94	128	10.24	
XZ CAR	16.652	1.221	290.29	-0.76	1.628	1.080	0.561	9.836	8.594	0.84	0.40	-4.89	2.85	-38	8.07	
CD CYG	17.071	1.232	71.07	1.43	1.855	1.169	0.701	10.290	8.966	0.80	0.52	-4.92	2.90	72	8.14	
TX CEN	17.094	1.233	315.17	-0.60	2.004	1.299	0.714	12.234	10.530	0.80	0.91	-4.92	3.52	-37	6.59	
+Y OPH	17.123	1.234	20.60	10.13	0.723	0.466	0.271	7.562	6.180	0.71	0.67	-4.92	0.66	116	7.99	
AA SER	17.141	1.234	30.79	1.75					12.0		1.37	-4.92	3.68	112	5.76	(4)
SZ AQL	17.138	1.234	35.60	-2.34	2.096	1.326	0.785	10.087	8.655	0.85	0.58	-4.92	2.33	-95	6.84	
QY CEN	17.752	1.249	311.90	-0.20		1.08	0.75	13.93	11.78	0.84	1.31	-4.97	3.66	-13	6.73	(13)
CP CEP	17.856	1.252	100.44	1.07	1.379	0.896	0.530	12.183	10.542	0.91	0.73	-4.98	4.63	86	10.48	
YZ CAR	18.163	1.259	285.58	-1.39	1.252	0.814	0.466	9.829	8.708	0.74	0.38	-5.00	3.24	-79	8.34	
YZ AUR	18.193	1.260	167.28	0.93	1.547	0.991	0.569	11.789	10.378	0.75	0.66	-5.00	4.78	78	13.31	
VY CAR	18.948	1.278	286.55	1.22	1.721	1.123	0.642	8.577	7.446	0.83	0.30	-5.06	2.09	45	8.25	
N102*	19.537	1.291	302.80	-0.20		0.46	0.34		12.33		1.00	-5.10	7.72	-27	7.85	(12)
RU SCT	19.698	1.294	28.19	0.24	1.762	1.154	0.613	11.220	9.500	0.74	0.99	-5.10	2.14	9	6.79	
KX CYG	20.047	1.302	78.62	1.72					11.4		1.66	-5.13	2.04	61	8.44	(4)
VX CYG	20.132	1.304	82.17	-3.49	1.557	1.010	0.575	11.811	10.066	0.83	0.91	-5.14	3.12	-190	8.74	
717 SCO	20.175	1.305	357.13	-4.80					12.0		1.50	-5.14	3.35	-280	5.26	(4)
RY SCO	20.315	1.308	356.49	-3.41	1.292	0.915	0.412	9.440	7.992	0.78	0.66	-5.15	1.70	-101	6.91	
RZ VEL	20.397	1.310	262.88	-1.91	2.022	1.215	0.838	8.231	7.114	0.80	0.31	-5.15	1.84	-61	9.02	
340 ARA	20.809	1.318	335.19	-3.74	1.52		0.68	11.78	10.23	0.81	0.74:	-5.18	4.35	-284	5.00	(13)
+IY CYG	21.753	1.338	68.09	1.77	2.069	1.406	0.696	14.959	13.101	0.60	1.25:	-5.24	8.22	254	9.42	
WZ SGR	21.850	1.339	12.11	-1.31	1.678	1.081	0.686	9.408	8.018	0.89	0.50	-5.24	2.24	-51	6.43	
BH PER	22.952	1.361	155.66	-0.09					10.8		1.00	-5.31	4.16	-7	12.51	(4)
WZ CAR	23.008	1.362	289.29	-1.18	2.026	1.323	0.726	10.456	9.293	0.79	0.37	-5.31	4.97	-102	8.39	
VZ PUP	23.164	1.365	243.42	-3.32	2.068	1.399	0.740	10.774	9.609	0.71	0.46	-5.32	5.15	-298	11.84	
FK CAR	23.254	1.366	288.72	-0.37					12.2		0.95	-5.32	8.60	-56	10.02	(4)
SW VEL	23.474	1.371	266.19	-3.00	2.332	1.526	0.840	9.281	8.126	0.80	0.36	-5.34	3.01	-157	9.30	
X PUP	25.961	1.414	236.14	-0.78	2.094	1.416	0.750	9.776	8.528	0.81	0.43	-5.47	3.46	-47	10.91	
T MON	27.021	1.432	203.63	-2.56	1.575	1.006	0.588	7.332	6.137	0.93	0.26	-5.52	1.50	-67	9.99	
RY VEL	28.125	1.449	282.57	1.48	1.276	0.886	0.490	9.708	8.357	0.79	0.56	-5.57	2.80	72	8.45	

Table 1. (Continued)

Star		P	Log P	l	b	ΔB	ΔV	Δ(B-V)	<B>	<V>	<B>o-<V>o	E	<Hv>	R	Z	Mgo	Ref
+KQ	SCO	28.690	1.458	340.39	-0.74	1.359	0.948	0.525	11.789	9.849	0.90	1.04	-5.60	2.92	-38	5.93	
541	OPH	29.533	1.470	3.40	4.23					12.3		1.82	-5.63	3.15	232	5.46	(4)
AQ	PUP	29.857	1.475	246.15	0.10	1.960	1.275	0.804	10.151	8.786	0.79	0.57	-5.65	3.49	6	10.51	
609	CYG	31.072	1.492	96.02	2.68					10.8		1.47	-5.70	2.62	122	9.25	(4)
396	CYG	33.243	1.522	79.04	3.85					10.6		1.66	-5.79	1.92	129	8.45	(4)
KN	CEN	34.019	1.532	307.75	-2.10	1.364	1.069	0.393	11.404	9.836	0.85	0.72	-5.82	4.99	-183	6.81	
567	SCO	34.048	1.532	343.65	2.40					10.9		1.46	-5.82	2.94	123	5.84	(4)
EZ	VEL	34.535	1.538	274.93	-1.94		0.74	0.54	14.16	12.44	0.89	0.83	-5.84	14.38	-487	16.11	(13)
CoD	AQL	35.216	1.547	316.20	0.30		0.90	0.35	12.30	10.39	0.95	0.96	-5.87	4.75	25	6.13	(12)
l	CAR	35.536	1.551	283.20	-7.00	1.175	0.753	0.492	4.998	3.723	1.04	0.23	-5.88	0.60	-73	8.48	
U	CAR	38.765	1.588	289.06	0.05	1.890	1.218	0.689	7.462	6.273	0.89	0.30	-5.99	1.88	2	8.18	
+EV	AQL	39.599	1.598	47.95	3.45					11.2		1.30:	-6.02	4.61	278	6.49	(4)
RS	PUP	41.388	1.617	252.42	-0.19	1.662	1.092	0.584	8.438	7.006	0.94	0.49	-6.08	2.10	-7	9.45	
SV	VUL	45.035	1.654	63.94	0.33	1.679	1.035	0.672	8.688	7.221	0.94	0.53	-6.19	2.32	13	7.86	
CE	PUP	49.530	1.695	259.21	-4.42					10.8		1.23:	-6.31	4.83	-373	10.63	(4)
+S	VUL	68.830	1.838	63.44	0.83		0.55	0.37		9.0		0.87	-6.74	4.21	61	7.70	(15)

\+ possible Type II cepheid
* new cepheid from Grayzeck (1978)

Source in column (17)

(1) Cothrele (1978)
(2) Wachman (1976)
(3) Szabados (1977)
(4) Fernie and Hube (1968a)
(5) Stobie and Balona (1979)
(6) Eggen (1969)
(7) Janet-Pacheco (1976)
(8) Pike and Andrews (1979)
(9) Madore and van den Berg (1975)
(10) Harris and van den Berg (1976)
(11) Szabados (1980)
(12) Grayzeck (1978)
(13) Madore (1975)
(14) Grayzeck, Fitzgerald, and Luiken (1978)
(15) Fernie (1970)
(16) Harris (1981)

II. Catalogue Description

Column 1: Name of Cepeid.

The Second Edition of the General Catalogue of Variable Stars with Supplements (hereafter GCVS) contains about 700 cepheids in our galaxy, about 100 of which were in the spherical component. There are only about 380 classical cepheids identified in this catalogue, but undoubtedly most of the remaining cepheids also belong to the plane component. In Table 1, 401 cepheids have been selected for distance determinations. Those cepheids with uncertain classifications have been marked with "+" on the left shoulder of the name.

Columns 2 and 3 : Period and log period of cepheid.

The period values in days are taken from GCVS unless more recent values are available.

Columns 4 and 5 : Galactic longitude and latitude from GCVS.

Columns 6, 7, and 8 : Amplitude of B, V, and (B-V) in magnitudes from the light curve data by Schalterbrand and Tammann (1971, hereafter ST).

Columns 9, 10 : Apparent magnitude of B and V which had been converted from the average intensity from ST.

Column 11 : Intrinsic color index of B and V defined by $\langle B\rangle_0 - \langle V\rangle_0 = (\langle B\rangle - \langle V\rangle) - E(B-V)$.

Column 12 : Color excess E(B-V) from Table 1 in Paper I.

Column 13 : Absolute magnitude calculated from the period-luminosity relation (see the next section).

Column 14 : Distance (kpc) from the Sun.

The distance from the Sun has been calculated from the absolute magnitude, apparent magnitude, and color excess. It has been assumed that the ratio of total to selective interstellar absorption is 3.0.

Column 15 : Distance (pc) from the Galactic plane.

Column 16 : Distance (kpc) from the Galactic center.

It has been assumed that the distance from the Galactic center to the Sun is 8.6 kpc as determined by Stothers (1983).

Column 17 : Sources of data other than ST.

III. Discussion

For several decades classical cepheids have served as an effective tool for determining the

distances to nearby external galaxies. The period-luminosity(PL), period-luminosity-color (PLC), and period-luminosity-amplitude(PLA) relations have been used to determine distances. But we need to demonstrate that these relations are not fundamentally affected by differences in the physical properties of external galaxies before they can be universally applied. Because the cepheids in the Magellanic Clouds are at the same distance, suffer similar absorption, and are sufficiently numerous, the data on cepheids in these galaxies are particularly useful for testing the universality of these relations. In our galaxy the study is made difficult by the large relative variation of the distances of the cepheids and the differences in the interstellar absorption.

The PL-relation has for many years played a dominant role as a cosmic distance indicator. Prior to the discovery of PLC-relation, much interest centered on the exact coefficients of the PL-relation. While the value of the zero point in this relation is important for the determination of the distance modulus, the major interest has centered on the value of the slope of the relationship. It would be helpful if the slope proved to be constant for cepheids in different galaxies.

On the other hand PLC and PLA relations have been used to estimate absolute magnitudes by Sandage (1958) and Sandage and Tammann (1969, 1971). However Arp (1960) and Gascoigne (1969, 1974) have suggested that extragalactic cepheids, particularly those in the Magellanic Clouds, may not obey universal PL or PLC relationships. More recently Iben and Tuggle (1975) demonstrated that consistency between the observations and stellar pulsation and evolution theory implies that the dependence of a PLC-relationship on chemical composition is very strong as had already been pointed out by Gascoigne (1974). Iben and Tuggle also showed that the theoretical PL-relationship is not very sensitive to composition; the use of a single, PL-relation is therefore justified. Furthermore, recently Stift (1982) severely criticized the PLC-relation as an unsuitable distance indicator. He argued that residual reddenings and photometric errors are of the same order as the instability strip width; therefore the color coefficient cannot be determined with present-day photometry. Wayman, Stift, and Butler (1983) also have demonstrated that cepheid-based distance moduli are best obtained with the help of the PL-relation. Furthermore, in many cases, <B> values are not given which makes it difficult to use a PLC-relation and, in this sense, a simple PL-relation has utilized the PL-relation for classical cepheids which was recently determined by Stothers whose effort was directed toward a redetermination of the absolute magnitudes of classical cepheids, short-period Type II cepheids, and RR Lyrae stars by using five independent methods. A unique advantage of his approach is that none of the methods depends for its validity on the Hyades cluster distance modulus. He found that the empirical PL-relation for classical cepheids is probably universal and is given by,

$$\langle M_V \rangle = \underset{\pm 0.11}{-1.21} - \underset{\pm 0.10}{3.01} \log P. \qquad (1)$$

The $<M_V>$ values calculated from this equation are listed in column 13 of Table 1.

Next, we are interested in the PC-relation. The log P-($<B>_0$-$<V>_0$) diagram is shown in Fig. 1. There are two notable features, the smaller scatter for the short-period cepheids compared to the long-period cepheids, and the apparent discontinuity in the mean line at about log P = 0.9. The theory (Deupree, 1980) predicts a decrease in the color width with lower luminosity. Similar features of the PC-diagrams of both the LMC and SMC were found by Butler (1971, 1976, and 1978) through extensive work with photographic photometry but with different positions of discontinuity, about log P = 0.6 for the SMC and log P = 0.7 for the LMC. The existence of this discontinuity is more evident in the Milky Way diagram than in the SMC and LMC diagrams. A similar discontinuity is also found in the PC-diagram of RR Lyrae variables. It has been shown by Christy (1966) that these two sections of the PC-diagram for RR Lyrae variables are occupied by fundamental and by first harmonic pulsators. We can test the supposition that the apparent discontinuity in the PC-diagram results from a change of pulsation mode by plotting the residuals, Rv, from the mean PL-relation on the PC-diagram for cepheids with 0.8(log P(1.0 day, since first harmonic pulsators should be half a magnitude brighter than fundamental pulsators of the same

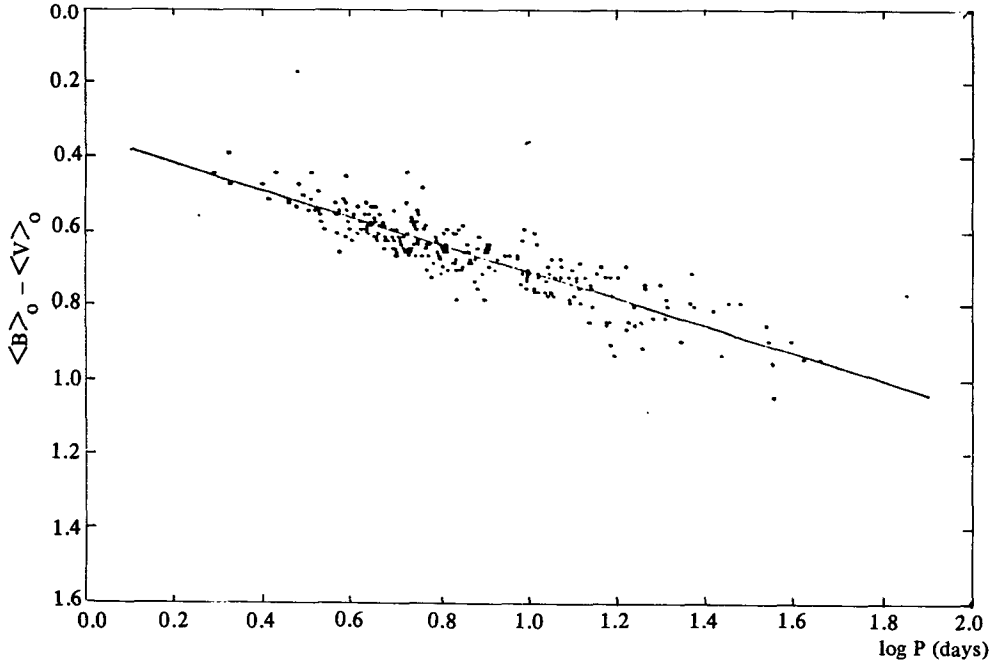

Fig. 1. The period-color relation for cepheids. Stars marked with a ':' or '+' in Table 1 are not included. The line is a least-squares fit to the all points.

period. If the supposition is correct we should expect the values of Rv above and to the left of the apparent discontinuity to be predominantly positive and the values of Rv below and to the right to be predominantly negative. As can be seen from Fig. 2, the suggestion that apparent discontinuity is related to the change in mode of pulsation seems to be incorrect for cepheids. The same results was found for SMC cepheids by Butler (1976).

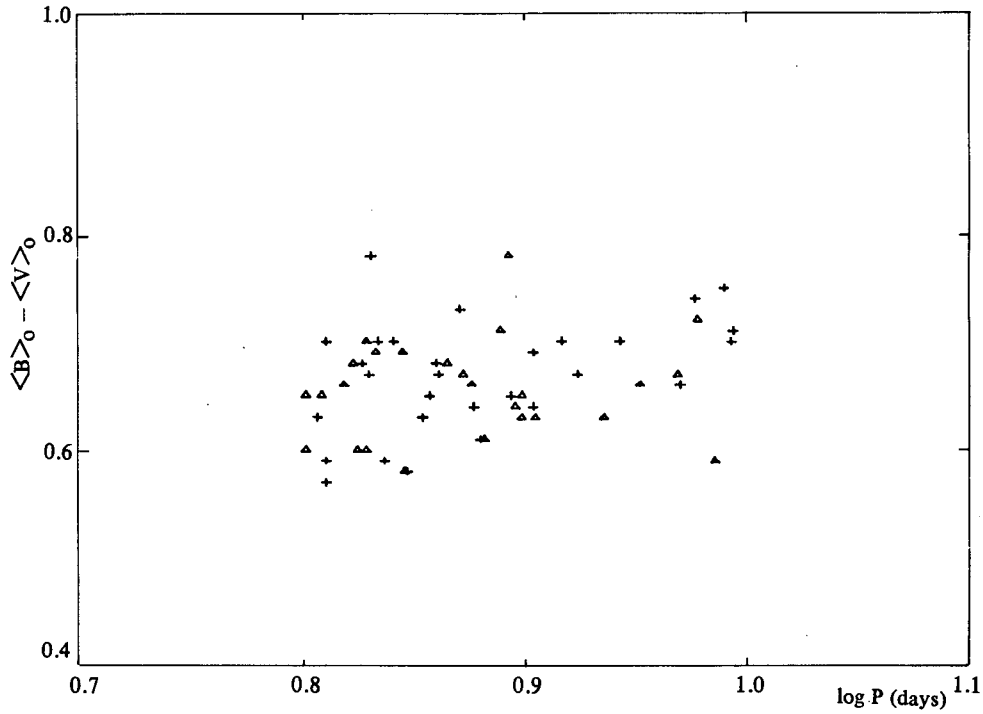

Fig. 2. The position of the cepheids with $0.8 < \log P < 1.0$ day in the period-color diagram. '△' and '+' are for $Rv > 0.0$ and $Rv < 0.0$.

As was pointed out by Butler (1976), it seems likely that the small scatter of the short period cepheids in the PC-diagram and the apparent discontinuity may have the same underlying cause. Stobie has pointed out, such effects may arise from a different degree of penetration of the stellar evolutionary tracks into the instability strip for long- and short-period variables and if this is the case then both effects are due to a lack of short-period cepheids at the blue side of the instability strip, as a result of the non-penetration of the evolutionary tracks into this region (Butler, 1978). It was shown by Hofmeister (1967) that the behavior of the tracks is very dependent on the chemical composition of the atmosphere and particularly on the metal abundance. Since the discontinuity position changes from 0.6 to 0.7 and 0.9 for the SMC, LMC, and Milky Way, we can

attribute the effect to increasing metallicity. Discontinuities at a period of nine days can be seen in several other known relations (Kurkakin, 1975). Close to a period of 9 days, the hump in cepheid light curves is so great that the curves sometimes have two nearly identical peaks. A minimum number of cepheids lie on P = 9 days in period-frequency diagram and a change in slope of PL-relations in the Magellanic Clouds cepheids have been found at this period. The period-spectrum relations goes through a discontinuity at a period of nine days. In this sense, a discontinuity at a P = 9 days in PC-diagram does not seem unusual and this again supports the conclusion that there exists two types of oscillation, one prevailing up to a period of nine days and the other prevailing at longer periods.

Both the slope and the zero point of the PC-relation are affected by the degree of penetration of the cepheid evolutionary tracks into the instability strip. One can assume that the long-period cepheids cover the whole width of the instability strip, if the apparent discontinuity at log P = 0.9 is due to reduced penetration by the shorter period cepheids. Then the computed slope of any mean PC-relation will depend on the ratio of the number of cepheids with log P$\rangle$0.9 to the number with log P$\langle$0.9. In general, the larger the number of short period cepheids the lower will be the slope in the computed PC relation. This makes it very difficult to determine observationally the true slope of the instability strip in the PC-diagram. We determined the PC relation by a least-squares fit to four different data sets, avoiding entries with marks of ":" or "+" in Table 1:

$$\langle B\rangle_0 - \langle V\rangle_0 = \underset{\pm 0.011}{0.367} \log P + \underset{\pm 0.010}{0.341} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (2)$$

$$\langle B\rangle_0 - \langle V\rangle_0 = \underset{\pm 0.020}{0.392} \log P + \underset{\pm 0.018}{0.306} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots \quad (3\text{-a})$$

$$\langle B\rangle_0 - \langle V\rangle_0 = \underset{\pm 0.031}{0.364} \log P + \underset{\pm 0.036}{0.341} \text{ for } \log P \rangle 0.9 \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3\text{-b})$$

$$\langle B\rangle_0 - \langle V\rangle_0 = \underset{\pm 0.026}{0.414} \log P + \underset{\pm 0.018}{0.310} \text{ for } \log P \langle 0.9 \quad \ldots\ldots\ldots\ldots\ldots\ldots \quad (3\text{-c})$$

Eq. (2) was derived with the aid of 294 cepheids, Eq. (3-a) was derived by considering only cepheids having color excesses in the three most reliable color excess data sets, 139 cepheids with the highest weights in Paper I. Eq. (3-b) and Eq. (3-c) were derived by considering 104 cepheids with log P$\rangle$0.9 day and 190 cepheids with log P$\langle$0.9 day. Note that the slope values in Eq. (2) and Eq. (3-b) are nearly same and that the slope for short-period cepheids is steeper than that for long-

period cepheids. To compare the PC relation in the Milky Way to those in the SMC and LMC, Butler's SMC and LMC relation were adopted because the relations were determined by the same investigator with the same method using a relatively large amount of data:

$$\langle B\rangle_0 - \langle V\rangle_0 = 0.270 \log P + 0.205 \text{ for SMC} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (4)$$

$$\langle B\rangle_0 - \langle V\rangle_0 = 0.310 \log P + 0.346 \text{ for LMC} \quad \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots (5)$$

Fig. 3 was plotted to compare the PC-relation for the Milky Way from Eq. (2) to those for the SMC and LMC. The difference in the slopes of the SMC and LMC is barely significant considering the standard errors of the coefficients. However, the differences of slope between the Milky Way and SMC or LMC are quite evident, even more evident if we compare the SMC and LMC slopes to that of Eq. (3-a). There is no significant difference in the zero points of the equations of the cepheids in the Milky Way and LMC, but the minimum difference in slope of 0.082, between the Milky Way and LMC may show that the LMC is slightly metal-poor relative to the Galaxy. Other investigators (Walborn, 1977: Humphrey, 1979: Maeder, Lequeux, and Azzopardi, 1980: Laney,

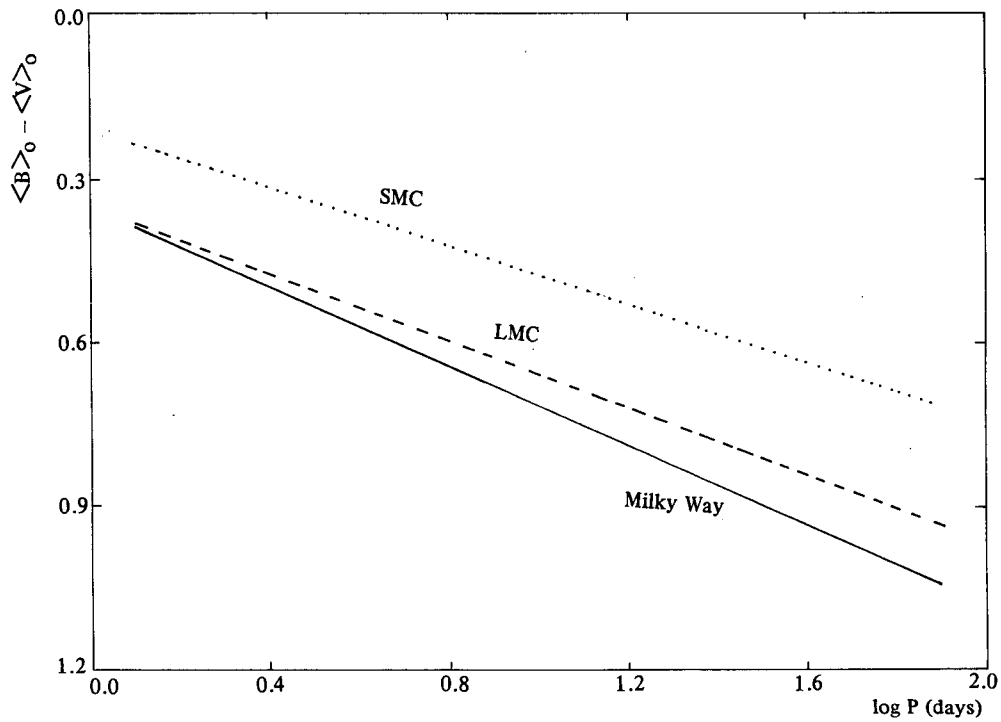

Fig. 3. The period-color relation for Milky Way (solid line), MSC (dotted line), and LMC (dashed line).

1982) have reached similar conclusions.

If most of the dispersion in color at a given period in Fig. 1 is intrinsic, Galactic cepheids populate an instability strip about 0.2 mag in width in ($\langle B\rangle_0 - \langle V\rangle_0$) in agreement with Stift (1982), Butler (1978), Pel and Lub (1978) for LMC cepheids. Iben and Tuggle (1972) showed through theoretical work that the upper limit to the instability strip width in the PC-diagram could be fixed at about 0.20 mag for the LMC. Nearly the same value is also evident in the PC-diagram of the SMC cepheids (Butler, 1976 and Cogan, 1980). To investigate whether this 0.2 mag width in Fig. 1 is really intrinsic, we determined the width by considering the color excess data of cepheids with hightest weight. We found little decrease in the scatter, therefore, the 0.2 mag width is probably intrinsic. Finally, the PC-relationships, determined by others are given in Table 2.

Table 2. Comparison of PC-relationship for cepheids, $\langle B\rangle_0 - \langle V\rangle_0 = A \log P + B$.

A	B	Source
0.56	0.16	Efremov (1966)
0.49	0.20	Fernie (1967)
0.26	0.37	Sandage & Tammann (1968)
0.39	0.30	Trarevskii & Yakimova (1970)
0.48	0.27	van den Bergh (1976)
0.32	0.29	Sandage and Tammann(1971)
0.46	0.27	Dean, et al (1978)
0.37	0.34	This paper

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