1979, *Astron. Astrophys. Suppl.* **36**, 477-484.

PHOTOELECTRIC OBSERVATIONS OF PECULIAR A AND RELATED STARS I: STRÖMGREN PHOTOMETRY OF 341 Ap STARS

N. VOGT
European Southern Observatory, Santiago, Chile
and
M. FAÚNDEZ A.
Universidad Técnica del Estado, Santiago, Chile

Received September 12, revised November 14, 1978

Mean *uvby* values of 341 Ap stars from the list of Bidelman and MacConnell (1973) are presented. In addition, the individual observations are given for 51 of these stars which turned out to be suspected variables.

Key words: Peculiar A stars – intermediate-band photometry.

1. INTRODUCTION

The main criteria of peculiar A stars are based on spectroscopic observations: enhanced variable line intensities of some heavy elements and variable Zeeman shifts due to strong stellar magnetic fields led to the oblique rotator model. Abundance anomalies are currently explained either by magnetic accretion of surrounding interstellar matter or by the selective effect of diffusion due to radiation pressure. However, relatively few stars were studied in detail spectroscopically due to the extensive efforts that are required in telescope size and time, as well as in reduction procedures. As a consequence, little is known about the statistical distribution of principal Ap parameters (e.g. element abundances, rotation periods, magnetic field strengths) in view of the fact that more than 1600 Ap stars are catalogued at present. On the other hand, Maitzen (1976) has shown that some of these parameters can be investigated with intermediate-band photoelectric photometry.

Here we present, as a first part, the result of Strömgren photometry of 341 Ap stars. A second part will contain the photometry (in the system proposed by Maitzen, 1976) of the $\lambda 5200$ Å continuum depression for the same Ap stars and of numerous normal stars from the Bright Star Catalogue (spectral types O to G). A statistical discussion of all photometric results presented here will be published elsewhere.

2. OBSERVATIONS AND DATA REDUCTION

Our observing programme contains all Ap stars from the list of Bidelman and MacConnell (1973) with $V \leq 8\overset{m}{.}6$. The data were obtained in a total of 59 observing nights between September 1974 and June 1976 at the 50-cm telescope of the European Southern Observatory, La Silla, Chile. A single-channel photometer was used, equipped with an EMI 6256 photomultiplier, thermoelectric cooling and pulse counter. Every night at least five Strömgren standards taken from Crawford and Barnes (1970) were measured. The data were reduced with the ESO HP 2100 DOS-M computer system applying the standard reduction programme for *uvby* photometry written by F. Middelburg. This programme uses the following equations for the colour transformation:

$$
\begin{aligned}
V &= y' + k_1\,(b-y)' + q_1 \\
b-y &= k_2\,(b-y)' + q_2 \\
m_1 &= k_3\,m_1' + k_4\,(b-y)' + q_3 \\
c_1 &= k_5\,c_1' + k_6\,(b-y)' + q_4
\end{aligned}
$$

The V magnitude corresponds to the Johnson system; colours with an apostrophe represent the instrumental system, those without apostrophes the standard system. For nights with sufficient standard measurements ($N \geq 15$) the coefficients k were determined by a least square solution for each of the four equations. Normally, averaged colour coefficients k could be applied for a typical observing run of 5–10 subsequent nights. The actual standard measurements of each night, however, were used to determine the night zero points q.

The night extinction coefficients were determined comparing standard star measurements at different air-masses. The reduction procedures were applied iteratively, calculating first the colour transformation for low-air-mass standard stars (applying mean extinction coefficients). After determination of the mean colour transformation valid for the actual group of observing nights, the high-air-mass standards were included in order to determine individual extinction coefficients for each night. In case of insignificant night-to-night variations of the extinction, mean extinction coefficients for groups of subsequent nights were derived. The values thus determined of transformation and extinction coefficients were finally used in the calculation of the zero points q for each night individually.

Each programme star was measured at least in three different nights. The mean values of V, $b-y$, m_1 and c_1 and the corresponding standard deviations σ of the single measurements from their mean values are given in table 1 (σ in units of $0^m.001$). N corresponds to the total number of measurements.

Figures 1a–d show the standard deviations σ as a function of the V magnitude for standards and programme stars. The accuracy of a single measurement in our photometry – as derived from the results of different observing nights – is $0^m.008$ (V), $0^m.005$ $(b-y)$ and $0^m.007$ (m_1 and c_1) for the standard stars (left part of figure 1, $V=3.5\ldots6.0$). These values increase for the faintest programme stars ($V=9.0$) to $0^m.013$ (V), $0^m.008$ $(b-y)$, $0^m.011$ (m_1) and $0^m.013$ (c_1).

3. VARIABLE Ap STARS

The majority of the peculiar stars are variable with typical periods in the order of days to months and amplitudes of several hundredths of magnitude. The small number of measurements presented here for each star is not sufficient for a reliable determination of periods and lightcurves. On the other hand, the internal scatter of even 3–9 observations can give valuable hints for the amplitude of the expected variations: the measurements of most stars spread over several months, only for few stars were the three measurements obtained during subsequent nights. Intrinsic variables with large amplitudes (*large* compared to the accuracy mentioned in Section 2) can likely be detected, in spite of the fact that we did not observe constant comparison stars together with the Ap stars. Therefore, from figure 1 we selected those for which standard deviations of ≥ 2.5 σ_0 were obtained (σ_0 corresponds to the mean values given in Section 2). A total of 51 stars fulfilled this condition in one or more colours. They represent the variable stars with the largest amplitudes within the sample studied here. Table 2 contains the individual observation of these stars and could facilitate further observers to determine periods and lightcurves.

A publication of each measurement of the remaining stars does not seem to be justified since a single observation in our non-differential photometry is of little value for variations with amplitudes of the order of our photometric accuracy.

ACKNOWLEDGEMENTS

We are obliged to A. Blest, J. Pérez and G. Román for performing part of the observations in late 1974.

REFERENCES

Bidelman, W.P. and MacConnell, D.J.: 1973, *Astron. J.* **78**, 687.
Crawford, D.L. and Barnes, J.V.: 1970, *Astron. J.* **75**, 987.
Maitzen, H.M.: 1976, *Astron. Astrophys.* **51**, 223.

N. Vogt
European Southern Observatory
Casilla 16317
Santiago–9 (Chile)

M. Faúndez A.
Universidad Técnica del Estado
Casilla 5659
Santiago–2 (Chile)

Table 1 Strömgren Photometry of 341 Ap Stars

IDENT	V	SIGV	B-Y	SIGBY	M1	SIGM1	C1	SIGC1	N
HD 2957	8.501	12	-0.006	6	0.207	8	0.993	12	8
HD 3580	6.716	14	-0.063	1	0.123	2	0.502	9	7
HD 3980	5.708	9	0.068	10	0.295	19	0.756	41	12
HD 5601	7.642	13	-0.056	10	0.219	13	0.782	23	9
HD 6783	7.947	6	-0.034	8	0.175	12	0.609	17	7
HD 8783	7.799	9	0.072	12	0.199	21	1.086	29	11
HD 15144	5.865	9	0.057	7	0.222	10	0.952	9	7
HD 16145	7.660	9	0.028	5	0.201	11	1.057	13	7
HD 18610	8.165	6	0.114	9	0.347	12	0.617	15	8
HD 19712	7.341	10	-0.060	9	0.248	29	0.848	39	6
HD 20880	7.956	7	0.094	8	0.208	12	1.030	13	8
HD 21201	8.949	8	0.114	8	0.295	14	0.808	19	8
HD 23207	7.560	12	0.106	8	0.259	11	0.856	12	8
HD 28299	7.575	9	-0.085	6	0.148	16	0.600	9	5
HD 28365	8.437	8	-0.041	4	0.118	5	0.460	4	4
HD 29009	5.706	7	-0.057	5	0.119	7	0.568	4	5
HD 29925	8.318	8	-0.066	4	0.168	4	0.564	11	4
HD 30849	8.857	11	0.162	20	0.286	20	0.775	58	8
HD 31225	7.018	12	0.093	9	0.190	12	1.079	8	9
HD 32145	7.237	19	-0.076	4	0.147	8	0.448	16	4
HD 32432	7.806	9	-0.061	7	0.201	13	0.864	4	5
HD 32966	7.114	45	-0.043	18	0.104	13	0.505	19	4
HD 34427	8.721	13	-0.014	4	0.209	2	0.821	14	4
HD 34631	6.998	25	-0.052	8	0.153	8	0.541	22	6
HD 34736	7.823	16	-0.043	6	0.141	9	0.536	13	4
HD 35177	8.142	5	-0.031	7	0.113	7	0.533	14	3
HD 35353	7.664	9	0.094	4	0.272	7	0.661	7	3
HD 36668	8.049	5	-0.052	2	0.135	6	0.597	4	3
HD 37189	8.638	7	-0.009	3	0.133	6	0.707	11	4
HD 37210	8.112	7	-0.041	7	0.148	9	0.565	26	4
HD 37642	8.032	25	-0.065	6	0.139	10	0.335	33	4
HD 37713	8.139	22	-0.023	6	0.143	7	0.545	17	4
HD 38698	9.097	5	-0.013	14	0.194	14	0.625	18	3
HD 38719	7.499	11	0.011	10	0.206	14	1.038	19	5
HD 38823	7.330	6	0.100	12	0.298	32	0.569	55	4
HD 39082	7.443	61	-0.028	12	0.226	15	0.889	14	5
HD 39353	7.570	15	-0.065	5	0.129	6	0.608	16	4
HD 39575	7.849	13	-0.074	12	0.267	19	0.905	8	4
HD 40071	8.067	14	-0.049	7	0.185	7	0.677	10	3
HD 40277	8.353	11	0.041	5	0.239	15	0.901	21	4
HD 40383	9.002	15	0.177	5	0.059	19	0.809	11	3
HD 40711	8.581	7	0.095	10	0.184	15	1.059	12	3
HD 40759	8.547	8	-0.013	12	0.226	20	0.899	12	3
HD 40998	7.150	10	-0.066	4	0.124	6	0.562	5	3
HD 41403	7.661	11	0.001	3	0.206	6	1.035	9	4
HD 42326	7.716	7	0.008	8	0.231	5	0.922	2	3
HD 42335	8.406	14	0.070	5	0.075	12	0.635	5	3
HD 42576	9.070	16	0.055	3	0.141	14	1.045	5	3
HD 42675	7.461	13	-0.017	5	0.141	12	0.612	7	3
HD 43408	8.015	9	-0.009	6	0.185	12	0.960	13	3
HD 43901	8.235	27	0.130	12	0.232	17	0.939	21	3
HD 44290	8.549	2	-0.028	4	0.200	0	0.923	6	3
HD 44293	7.752	27	-0.089	18	0.238	20	0.883	8	4
HD 44456	8.534	24	-0.009	5	0.187	7	0.765	30	3
HD 44947	8.763	5	0.105	6	0.233	5	0.924	12	3

Table 1 *(continued)*

IDENT	V	SIGV	B-Y	SIGBY	M1	SIGM1	C1	SIGC1	N
HD 45439	7.892	21	−0.021	9	0.142	16	0.583	23	3
HD 45530	7.366	22	−0.030	10	0.217	7	0.642	63	3
HD 45583	7.990	17	−0.093	12	0.174	15	0.516	20	3
HD 45698	8.183	18	0.069	8	0.244	5	0.846	17	3
BD+8 1369	8.780	15	−0.020	12	0.147	24	0.639	16	3
HD 46462	7.526	19	−0.054	8	0.130	10	0.422	22	3
HD 47116	7.705	21	−0.014	2	0.198	12	0.679	24	3
HD 47633	8.002	15	−0.018	8	0.139	20	0.848	10	3
HD 47714	7.964	5	−0.015	8	0.118	10	0.546	27	3
HD 47802	8.560	50	−0.028	5	0.142	7	0.588	28	3
HD 48729	9.446	9	−0.035	12	0.149	23	0.582	30	3
HD 50166	8.780	10	−0.022	14	0.166	21	1.091	14	3
HD 50221	8.867	18	−0.041	8	0.129	14	0.495	8	5
HD 50461	7.819	14	−0.079	4	0.217	7	0.660	13	4
HD 50825	8.177	9	−0.040	6	0.176	9	0.896	12	4
HD 51088	8.245	17	−0.086	9	0.149	7	0.550	14	4
HD 51172	8.672	21	−0.040	8	0.162	17	0.597	15	4
HD 51650	8.332	11	−0.003	6	0.157	17	1.151	20	4
HD 51684	7.975	20	0.134	23	0.264	20	0.783	28	4
HD 52589	8.070	22	−0.063	11	0.169	18	0.557	5	3
HD 52696	8.539	6	0.097	9	0.138	15	1.092	14	4
HD 53116	8.884	31	−0.046	11	0.268	17	0.818	91	4
HD 53204	7.651	5	−0.021	9	0.133	7	0.864	12	4
HD 53662	8.690	9	−0.036	8	0.178	8	0.730	30	4
HD 53851	7.594	9	−0.075	10	0.142	11	0.544	10	4
HD 54832	8.708	12	−0.035	4	0.142	5	0.540	11	4
HD 55309	8.767	35	−0.065	4	0.188	9	0.577	53	3
HD 55395	8.359	21	−0.036	15	0.156	15	0.529	14	3
HD 56273	7.922	21	−0.042	5	0.136	2	0.587	21	3
HD 56336	9.062	18	−0.019	10	0.124	14	0.558	19	3
HD 56632	8.486	12	−0.035	15	0.123	14	0.774	1	3
HD 56809	7.105	7	0.030	6	0.183	5	1.174	5	3
HD 56882	8.386	20	0.102	3	0.238	8	0.874	19	3
HD 57526	8.295	7	−0.056	5	0.184	4	0.801	3	3
HD 57946	8.378	30	0.016	18	0.136	23	0.573	37	3
HD 58292	7.947	6	−0.027	3	0.179	12	0.866	42	3
HD 59435	7.985	24	0.278	10	0.203	14	0.841	29	3
HD 60435	8.889	3	0.132	3	0.234	15	0.843	19	3
HD 61382	8.335	11	−0.026	17	0.199	12	0.955	1	3
HD 61622	8.561	10	−0.021	6	0.136	12	0.506	6	3
CoD−44 3656	8.671	13	−0.019	13	0.226	23	0.855	19	3
HD 62535	8.010	37	−0.035	7	0.193	8	0.726	16	3
HD 62530	8.175	26	−0.043	6	0.201	3	0.877	13	3
HD 62553	7.877	16	0.044	7	0.197	11	1.085	10	3
HD 62556	7.960	8	0.035	6	0.203	8	0.838	11	3
HD 62640	8.077	6	−0.063	11	0.131	18	0.374	13	3
HD 62752	9.528	3	0.085	5	0.140	13	1.086	12	3
HD 63401	6.333	24	−0.087	13	0.140	18	0.414	10	3
HD 63759	8.341	12	0.051	7	0.210	5	1.103	11	3
HD 64881	8.816	5	−0.055	9	0.190	9	0.832	11	3
HD 64901	8.555	14	−0.063	7	0.140	12	0.534	23	3
HD 64972	7.198	11	−0.045	7	0.098	7	0.401	9	3
HD 64988	7.872	21	−0.020	8	0.142	9	1.004	2	4
HD 66051	8.814	20	−0.029	15	0.166	17	0.584	8	3
HD 66195	8.653	12	0.043	8	0.227	14	0.886	52	3
HD 66273	8.804	11	−0.003	5	0.131	8	0.961	12	3
HD 66350	8.695	11	−0.030	6	0.197	8	1.050	12	3
HD 66605	6.537	17	−0.030	8	0.178	11	0.618	29	3
HD 66698	7.755	12	−0.026	4	0.170	11	0.932	14	3
HD 57165	8.486	7	−0.044	12	0.207	9	0.741	30	3
HD 67330	8.602	16	−0.013	3	0.179	10	1.062	6	3
HD 67835	7.307	12	−0.058	3	0.129	5	0.530	4	3
HD 68074	8.222	18	−0.041	10	0.106	18	0.433	32	3
HD 68292	7.512	10	−0.063	3	0.131	1	0.447	5	3
HD 68419	8.187	5	0.014	10	0.226	21	0.983	6	3
HD 68476	8.577	20	−0.020	11	0.136	10	0.651	37	3
HD 68561	8.016	19	−0.020	10	0.103	9	0.512	26	3
HD 68998	8.657	9	0.132	2	0.181	12	1.017	6	3
HD 69067	8.206	9	−0.088	11	0.183	5	0.553	16	3
HD 69913	8.216	20	0.112	8	0.058	7	0.537	1	3
HD 70325	7.337	16	−0.055	12	0.131	18	0.509	21	3
HD 70464	8.297	3	−0.062	5	0.135	9	0.491	18	3
HD 70507	7.828	6	−0.047	6	0.151	11	0.578	10	3
HD 70749	8.225	10	0.015	12	0.112	14	0.653	10	3
HD 70847	8.987	10	−0.019	7	0.116	12	0.523	27	3
HD 71808	8.853	33	0.026	21	0.191	21	0.657	53	4
HD 72055	8.127	9	−0.053	6	0.114	14	0.600	6	3
HD 72295	7.977	13	−0.023	3	0.179	8	1.064	28	3
HD 72611	7.020	8	−0.062	4	0.192	6	0.748	4	3
HD 72634	7.288	6	−0.011	13	0.185	20	1.025	14	3
HD 72881	7.447	3	−0.032	13	0.162	12	0.569	12	3
HD 72976	7.486	26	−0.058	6	0.132	5	0.454	5	3
HD 73340	5.772	5	−0.071	6	0.131	9	0.400	12	3
HD 73737	8.310	9	−0.014	6	0.220	14	0.937	10	4
HD 74169	7.220	6	−0.046	5	0.215	8	0.848	16	3
HD 74555	8.977	3	0.006	8	0.203	7	0.944	20	3
HD 74888	6.828	27	−0.055	10	0.131	11	0.533	21	3
HD 75445	7.143	6	0.159	1	0.218	8	0.729	19	3
HD 76104	8.007	3	0.026	6	0.148	12	0.806	8	3
HD 76439	7.991	8	−0.075	3	0.131	8	0.479	14	3
HD 76650	8.442	23	−0.042	12	0.117	20	0.544	4	3
HD 76897	7.501	5	−0.037	6	0.151	6	0.870	4	3
HD 77609	8.036	15	0.029	7	0.153	4	0.905	2	3
HD 77669	8.461	33	−0.065	13	0.145	22	0.409	26	3
HD 78201	6.094	14	−0.077	3	0.153	9	0.808	9	3
HD 78568	7.824	14	−0.032	3	0.124	14	0.565	24	3
HD 79606	8.156	10	0.035	5	0.069	8	0.509	10	3
HD 79976	8.556	18	0.011	9	0.176	26	1.051	8	3
HD 80282	7.592	6	−0.073	2	0.147	10	0.502	19	3
HD 80316	7.808	12	0.122	20	0.295	8	0.657	64	4
HD 81141	8.028	12	0.019	7	0.139	18	0.619	22	3
HD 81269	8.429	19	−0.012	8	0.201	15	0.725	47	4
HD 81588	8.454	4	0.113	1	0.238	2	0.843	10	3
HD 81847	8.309	29	−0.044	9	0.172	14	0.533	32	3
HD 82093	7.087	12	0.050	6	0.201	23	1.073	10	3
HD 82154	8.622	18	0.007	8	0.219	8	0.682	37	2
HD 82567	7.754	19	−0.016	12	0.118	25	0.565	1	2
HD 83266	8.709	20	−0.062	21	0.264	42	0.852	24	4
HD 83368	6.174	9	0.146	5	0.203	6	0.796	8	3
HD 83625	6.899	9	−0.067	6	0.168	5	0.600	16	4

Table 1 *(continued)*

IDENT	V	SIGV	B-Y	SIGBY	M1	SIGM1	C1	SIGC1	N
HD 84451	8.079	28	0.057	5	0.092	8	0.829	4	3
HD 84907	8.868	9	0.020	7	0.141	13	1.087	15	4
HD 85892	7.767	12	0.035	9	0.075	15	0.590	20	4
HD 86976	8.389	9	0.124	8	0.275	20	0.803	14	4
HD 88385	8.084	14	-0.022	16	0.236	38	0.884	38	3
HD 89103	7.812	13	-0.095	10	0.194	10	0.631	15	3
HD 89192	6.858	10	0.009	18	0.190	22	0.984	4	3
HD 89217	8.368	12	0.014	12	0.107	28	0.691	22	3
HD 89385	8.382	12	0.015	4	0.194	13	0.937	18	3
HD 89393	8.019	12	0.134	6	0.209	16	0.952	20	3
HD 89519	8.302	18	0.022	6	0.153	12	0.863	8	3
HD 89680	8.412	25	0.033	5	0.182	4	1.104	4	4
HD 90612	9.502	9	-0.019	13	0.156	15	0.582	13	4
HD 91089	7.521	21	-0.074	8	0.124	8	0.484	8	4
HD 91134	8.415	12	-0.036	8	0.144	17	0.700	11	4
HD 91239	7.367	4	-0.077	8	0.232	11	0.852	4	4
HD 92385	6.733	12	-0.040	5	0.139	8	0.760	23	3
HD 92379	7.910	9	-0.051	10	0.162	4	0.616	16	4
HD 92664	5.498	12	-0.082	5	0.115	9	0.391	31	6
HD 93500	8.760	21	0.031	6	0.183	7	1.014	8	3
HD 93821	7.927	13	-0.050	4	0.146	4	0.775	11	4
HD 94455	8.025	4	0.112	8	0.180	17	1.114	4	3
HD 94873	8.286	6	-0.056	9	0.135	10	0.694	8	4
HD 95198	7.854	12	-0.039	9	0.162	14	0.836	29	4
HD 95413	8.736	13	-0.052	16	0.217	20	0.750	4	3
HD 95442	7.851	18	0.013	8	0.206	14	1.035	22	3
HD 95569	8.533	31	0.121	11	0.110	14	0.845	16	6
HD 95699	7.757	11	0.070	3	0.224	8	0.941	14	4
HD 96910	8.089	24	0.015	24	0.238	26	0.934	87	6
HD 97394	8.784	14	0.126	8	0.290	35	0.786	61	7
HD 97986	7.842	20	0.045	10	0.116	18	0.720	31	6
HD 98340	7.136	3	-0.034	9	0.161	13	0.803	14	4
HD 98457	7.917	49	-0.039	12	0.153	2	0.644	72	3
HD 98486	8.588	18	0.110	8	0.043	8	0.594	5	3
HD 101600	8.554	18	0.022	11	0.108	21	0.872	30	4
HD 101724	8.022	14	0.034	7	0.090	10	0.416	10	4
HD 102354	8.829	6	0.157	2	0.024	1	0.561	4	3
HD 103302	8.307	14	0.004	13	0.217	16	0.968	20	3
HD 103457	7.763	12	-0.010	9	0.184	10	0.586	9	4
HD 104810	7.374	12	0.067	12	0.072	21	0.555	12	3
HD 105379	8.016	20	0.027	6	0.182	10	1.063	13	3
HD 105457	9.008	37	0.058	18	0.181	17	0.481	68	6
HD 105770	7.372	14	0.138	6	0.032	4	0.538	17	3
HD 106204	8.575	13	0.017	10	0.115	12	0.737	8	3
HD 109809	8.396	9	0.081	14	0.075	15	0.739	6	3
HD 112252	8.386	23	0.276	6	0.036	13	0.814	6	3
HD 112381	6.511	18	-0.099	6	0.257	11	0.859	15	3
HD 112528	8.259	21	0.188	7	0.228	9	0.813	25	3
COD-67 1384	7.323	0	0.091	0	0.269	0	0.705	0	1
HD 115440	8.233	18	0.044	6	0.131	12	0.586	6	3
HD 115599	9.008	25	0.150	7	0.118	9	0.559	1	3
HD 116114	7.040	6	0.176	1	0.215	7	0.852	1	3
HD 116423	8.483	16	0.087	16	0.174	10	0.813	30	6
HD 117057	8.138	50	-0.019	3	0.101	9	0.491	25	6
HD 118242	7.546	20	0.001	7	0.123	9	0.673	13	3

IDENT	V	SIGV	B-Y	SIGBY	M1	SIGM1	C1	SIGC1	N
HD 118816	7.810	14	0.009	7	0.114	13	0.658	5	3
HD 118913	7.692	14	0.017	9	0.200	8	0.982	7	3
HD 119308	7.857	6	0.006	6	0.207	7	0.937	6	5
HD 120059	8.810	11	0.035	5	0.101	9	1.047	14	3
HD 121661	8.560	30	0.027	8	0.239	12	0.831	8	3
HD 122208	7.947	11	0.045	6	0.238	15	0.961	30	6
HD 123627	8.158	9	0.142	7	0.180	11	1.063	15	3
HD 124051	7.245	4	0.053	2	0.122	1	0.807	8	3
HD 125532	9.231	11	0.054	8	0.109	9	0.527	12	3
HD 125630	6.762	44	0.041	36	0.279	31	0.630	99	6
HD 126198	7.979	39	0.070	7	0.061	8	0.413	12	3
HD 126515	7.102	22	0.044	15	0.263	28	0.915	28	3
HD 126876	8.342	10	0.178	6	0.027	3	0.602	8	3
HD 127453	7.358	5	0.048	7	0.087	14	0.624	5	3
HD 127575	7.745	30	0.019	9	0.155	4	0.594	23	3
HD 128896	3.198	17	0.152	18	0.195	30	0.780	7	3
HD 129899	6.444	8	-0.026	11	0.178	17	0.838	9	6
HD 130335	7.768	2	0.120	10	0.071	6	0.797	9	3
HD 131505	8.627	10	-0.006	7	0.122	10	0.503	9	3
HD 132322	7.377	7	0.126	20	0.219	21	0.967	19	3
HD 133281	8.964	5	-0.008	13	0.159	6	0.557	22	3
HD 133757	8.168	10	0.016	5	0.115	9	0.610	3	3
HD 135297	7.973	9	-0.014	2	0.186	6	0.970	18	3
HD 135396	7.994	16	0.299	2	0.147	3	0.732	2	3
HD 135415	7.905	10	-0.051	9	0.137	7	0.565	10	3
HD 135728	8.615	13	0.244	10	0.191	14	0.917	13	7
HD 136347	6.478	6	-0.042	10	0.191	20	0.651	19	3
HD 137160	8.028	10	0.047	4	0.160	5	0.986	6	3
HD 137193	7.390	13	-0.018	6	0.205	6	0.731	7	3
HD 137509	6.872	28	-0.095	12	0.183	16	0.411	10	3
HD 137949	6.674	5	0.188	6	0.321	10	0.584	4	3
HD 138519	7.933	9	0.101	16	0.040	20	0.524	7	3
HD 138758	7.933	14	-0.074	13	0.221	19	0.795	5	3
HD 138773	7.658	5	0.081	11	0.126	8	0.747	51	3
HD 141461	8.430	7	0.053	7	0.134	14	0.599	8	3
HD 141641	8.935	37	-0.042	15	0.120	12	0.397	7	3
HD 142884	6.768	8	0.039	4	0.092	5	0.383	5	3
HD 143474	7.429	34	0.073	15	0.126	20	0.534	11	3
HD 143592	8.645	12	0.066	10	0.095	10	0.747	14	3
HD 143658	6.477	6	0.029	7	0.090	7	0.551	12	3
HD 144231	6.895	10	-0.072	9	0.117	10	0.645	2	3
HD 144748	8.619	7	0.080	8	0.210	10	1.068	9	3
HD 146971	8.634	10	0.147	4	0.159	4	1.094	5	3
HD 147890	7.676	39	0.186	3	0.039	3	0.821	32	3
HD 148848	7.458	33	0.134	13	0.178	13	0.813	48	6
HD 149764	6.961	20	0.010	7	0.116	14	0.499	33	6
HD 149831	8.485	19	0.066	9	0.094	2	0.501	17	3
HD 149911	6.062	6	0.083	5	0.192	5	1.070	18	3
HD 150035	8.665	22	0.153	2	0.136	19	1.050	8	3
HD 150040	8.115	23	0.037	8	0.149	10	0.885	8	3
HD 150323	7.600	38	0.062	9	0.113	10	0.591	6	3
HD 150486	7.692	31	0.113	5	0.086	15	0.784	25	3
HD 150500	7.053	21	0.027	5	0.070	7	0.433	8	3
HD 150714	7.588	42	0.068	7	0.135	8	0.853	24	3
HD 151742	8.513	3	0.197	0	0.031	8	0.721	9	3

Table 1 *(continued)*

IDENT	V	SIGV	B-Y	SIGBY	M1	SIGM1	C1	SIGC1	N
HD 151860	8.975	27	0.327	4	0.221	9	0.538	11	3
HD 151965	6.325	22	-0.078	10	0.143	23	0.387	12	3
HD 152366	8.083	6	0.046	10	0.119	32	0.667	9	3
HD 153707	8.448	17	0.041	13	0.112	17	0.834	10	3
HD 154253	9.033	32	0.106	6	0.238	9	0.809	6	3
HD 154308	8.772	23	0.095	12	0.187	24	0.943	8	3
HD 154458	8.273	12	-0.026	7	0.129	11	0.522	23	3
HD 155127	8.350	19	0.136	8	0.136	5	1.082	22	6
HD 155778	7.767	19	0.105	9	0.055	18	0.805	8	3
HD 156300	8.681	24	0.206	2	0.082	6	0.889	18	3
HD 156853	7.597	14	0.008	6	0.109	10	0.614	11	3
HD 156869	7.940	20	0.041	8	0.165	18	0.990	14	3
HD 157678	8.128	12	-0.040	9	0.118	5	0.523	25	3
HD 157751	7.663	7	-0.102	11	0.282	10	0.892	8	3
HD 158128	8.173	18	0.034	6	0.170	16	0.788	10	3
HD 158175	7.548	13	-0.024	14	0.137	26	0.636	20	3
HD 158450	8.571	42	0.234	22	0.167	22	0.946	28	3
HD 158596	8.917	17	0.202	6	0.115	8	0.750	10	3
HD 159376	6.471	25	0.047	12	0.088	18	0.677	6	3
HD 159545	7.727	12	0.152	3	0.044	3	0.747	16	3
HD 159846	7.804	13	0.043	1	0.096	5	0.618	6	3
HD 160127	8.102	17	0.128	7	0.177	11	1.074	13	3
HD 161277	7.078	12	0.010	6	0.155	10	0.770	23	3
HD 161349	8.424	17	-0.009	11	0.109	17	0.518	14	3
HD 161841	7.560	6	-0.009	17	0.089	14	0.464	9	3
HD 162651	7.228	7	0.205	10	0.045	7	1.045	31	3
HD 162725	6.420	16	0.012	16	0.151	7	1.001	32	6
HD 163555	7.601	9	0.024	9	0.076	13	0.595	13	3
HD 164224	8.511	14	0.105	9	0.181	15	0.903	24	3
HD 164258	6.353	8	0.086	7	0.181	3	1.108	20	3
HD 166053	8.373	26	0.138	6	0.039	15	0.482	26	3
HD 166469	6.514	15	0.010	14	0.127	10	0.860	18	3
HD 166473	7.953	15	0.213	12	0.311	17	0.538	21	3
HD 166596	5.439	6	-0.047	6	0.065	10	0.154	15	3
HD 166921	7.807	12	0.030	4	0.120	7	0.729	24	4
HD 166968	7.159	12	0.016	16	0.082	35	0.566	29	3
HD 168656	7.017	4	0.120	3	0.070	7	0.583	12	3
HD 169021	7.013	45	-0.008	10	0.118	34	0.562	43	5
HD 170397	6.038	6	-0.028	7	0.192	20	0.925	23	3
HD 171279	7.337	15	0.064	7	0.157	4	1.066	11	3
HD 172032	7.746	4	0.335	3	0.124	13	0.747	7	3
HD 172690	7.506	7	0.024	9	0.102	7	0.724	21	3
HD 173406	7.417	12	0.101	10	0.076	11	0.616	23	3
HD 173562	7.922	4	0.038	7	0.174	10	1.121	6	3
HD 174646	8.221	13	0.067	3	0.137	6	0.643	26	3
HD 174779	6.651	10	-0.045	3	0.164	3	0.836	5	3
HD 176555	7.589	16	-0.031	6	0.136	12	0.599	6	3
HD 181550	8.692	10	-0.012	5	0.151	14	0.803	35	3
HD 184020	8.149	16	-0.015	6	0.169	11	0.957	29	3
HD 185280	9.447	17	0.056	7	0.193	13	1.023	23	5
HD 187473	7.329	23	-0.021	12	0.160	14	0.682	15	4
HD 189502	7.915	11	-0.046	7	0.213	11	0.691	18	5
HD 191439	8.883	19	-0.026	10	0.244	25	0.938	22	4
HD 191796	7.794	4	-0.032	4	0.205	6	0.998	4	5
HD 197417	8.006	12	0.032	6	0.231	26	0.975	50	7
HD 199728	6.246	20	-0.062	16	0.133	19	0.621	23	3
HD 200623	9.076	6	0.067	7	0.233	24	0.900	24	4
HD 203932	8.820	10	0.169	5	0.196	15	0.736	10	6
HD 206653	7.191	13	-0.031	8	0.137	6	0.549	42	4
HD 207188	7.632	23	-0.042	7	0.157	8	0.547	14	4
HD 208217	7.207	11	0.091	6	0.251	11	0.697	26	5
HD 212385	6.850	22	0.067	10	0.225	25	0.946	22	6
HD 212432	7.502	15	-0.056	20	0.125	30	0.639	17	4
HD 215966	7.890	14	-0.037	6	0.169	8	1.050	8	6
HD 217522	7.520	4	0.289	6	0.215	7	0.487	8	5
HD 218994	8.564	9	0.155	9	0.187	9	0.827	9	6

Table 2 Individual measurements of the variable Ap Stars

	HJD −244 2000	V	b-y	m_1	c_1
HD 3980	316.686	5.709	0.068	0.317	0.713
	317.718	5.712	0.074	0.261	0.813
	319.754	5.717	0.065	0.268	0.815
	320.779	5.700	0.052	0.325	0.746
	340.657	5.708	0.066	0.296	0.742
	341.593	5.704	0.074	0.293	0.764
	342.593	5.701	0.087	0.314	0.686
	346.636	5.702	0.079	0.305	0.714
	347.609	5.715	0.062	0.292	0.774
	350.674	5.695	0.073	0.292	0.732
	351.596	5.712	0.060	0.287	0.789
	682.761	5.726	0.056	0.296	0.788
HD 19712	317.806	7.346	-0.055	0.232	0.873
	319.815	7.357	-0.055	0.222	0.880
	320.773	7.331	-0.079	0.285	0.831
	340.730	7.336	-0.055	0.223	0.892
	341.667	7.343	-0.061	0.223	0.892
	342.666	7.332	-0.058	0.282	0.793
HD 30849	316.848	8.860	0.163	0.280	0.739
	317.849	8.862	0.155	0.266	0.775
	318.761	8.869	0.137	0.264	0.818
	320.813	8.843	0.138	0.301	0.761
	340.768	8.850	0.185	0.296	0.667
	341.728	8.846	0.169	0.293	0.711
	342.763	8.870	0.157	0.267	0.767
	354.864	8.857	0.194	0.319	0.643
HD 32966	316.844	7.075	-0.056	0.116	0.485
	317.874	7.136	-0.033	0.088	0.522
	318.775	7.167	-0.023	0.100	0.493
	366.675	7.077	-0.061	0.113	0.522
HD 38823	316.891	7.335	0.188	0.295	0.592
	317.887	7.335	0.195	0.266	0.634
	320.854	7.328	0.199	0.342	0.510
	356.759	7.322	0.216	0.291	0.541
HD 39082	317.889	7.420	-0.008	0.202	0.900
	319.883	7.412	-0.030	0.240	0.866
	320.860	7.407	-0.034	0.234	0.898
	340.785	7.551	-0.037	0.225	0.883
	341.869	7.424	-0.031	0.231	0.897
HD 45530	354.845	7.346	-0.026	0.222	0.610
	500.532	7.361	-0.023	0.220	0.602
	686.841	7.390	-0.041	0.209	0.715
HD 47802	355.850	8.577	-0.022	0.135	0.607
	368.768	8.503	-0.030	0.148	0.555
	686.867	8.599	-0.031	0.142	0.601
HD 51684	356.780	7.952	0.141	0.254	0.798
	368.783	7.965	0.131	0.253	0.798
	499.582	7.994	0.159	0.254	0.741
	780.713	7.988	0.104	0.293	0.794
HD 53116	366.810	8.848	-0.045	0.320	0.711
	502.515	8.918	-0.059	0.247	0.918
	744.749	8.900	-0.049	0.250	0.862
	781.678	8.872	-0.032	0.255	0.780
HD 55309	503.515	8.727	-0.061	0.190	0.517
	744.778	8.789	-0.065	0.178	0.619
	781.708	8.786	-0.069	0.196	0.595
HD 57946	356.817	8.344	0.036	0.111	0.533
	368.804	8.391	0.000	0.157	0.607
	781.756	8.400	0.013	0.141	0.580
HD 58292	356.822	7.953	-0.026	0.165	0.921
	368.810	7.942	-0.030	0.183	0.898
	781.758	7.946	-0.025	0.189	0.839
HD 62535	368.799	7.980	-0.031	0.193	0.708
	500.557	8.051	-0.043	0.200	0.734
	782.749	7.998	-0.031	0.185	0.736
HD 66195	499.656	8.663	0.051	0.230	0.858
	503.539	8.641	0.041	0.240	0.853
	784.723	8.655	0.036	0.212	0.946
HD 71808	502.631	8.829	0.034	0.217	0.604
	503.578	8.884	0.005	0.197	0.683
	784.782	8.880	0.014	0.168	0.719
	959.487	8.821	0.051	0.181	0.622
HD 80316	380.821	7.817	0.124	0.286	0.623
	500.687	7.810	0.093	0.294	0.749
	785.803	7.790	0.128	0.305	0.608
	959.490	7.814	0.141	0.294	0.648
HD 81289	383.760	8.433	-0.016	0.186	0.768
	503.657	8.424	0.000	0.196	0.677
	785.792	8.407	-0.015	0.222	0.692
	959.494	8.453	-0.018	0.201	0.762
HD 81847	383.778	8.285	-0.048	0.188	0.513
	503.663	8.302	-0.034	0.162	0.517
	785.781	8.341	-0.051	0.165	0.570
HD 83266	383.771	8.685	-0.076	0.302	0.826
	503.689	8.723	-0.037	0.210	0.871
	785.798	8.700	-0.082	0.292	0.838
	959.497	8.729	-0.053	0.250	0.875
HD 88385	502.747	8.097	-0.013	0.226	0.881
	503.703	8.087	-0.013	0.204	0.924
	785.827	8.069	-0.041	0.278	0.848
HD 89217	502.758	8.370	0.014	0.113	0.691
	503.713	8.378	0.026	0.076	0.713
	785.832	8.355	0.003	0.131	0.669
HD 92664	500.706	5.477	-0.078	0.123	0.350
	503.742	5.510	-0.082	0.107	0.404
	859.621	5.506	-0.089	0.128	0.399
	958.525	5.502	-0.085	0.110	0.434
	959.528	5.495	-0.079	0.116	0.361
	960.538	5.500	-0.077	0.106	0.398
HD 96910	500.728	8.129	-0.003	0.194	1.041
	503.771	8.092	0.024	0.255	0.887
	860.569	8.103	-0.024	0.224	1.041
	958.535	8.074	0.025	0.240	0.924
	959.535	8.073	0.032	0.264	0.860
	960.547	8.064	0.039	0.255	0.853
HD 97394	380.842	8.776	0.139	0.305	0.710
	503.778	8.809	0.114	0.239	0.885
	860.589	8.765	0.123	0.343	0.715
	862.759	8.774	0.121	0.309	0.781
	958.536	8.792	0.127	0.296	0.802
	959.552	8.788	0.127	0.279	0.782
	960.560	8.786	0.128	0.259	0.826
HD 97986	502.780	7.842	0.054	0.109	0.697
	503.785	7.877	0.048	0.105	0.748
	859.672	7.822	0.028	0.149	0.688
	958.564	7.842	0.040	0.117	0.738
	959.558	7.822	0.049	0.115	0.696
	960.569	7.848	0.055	0.098	0.758
HD 98457	500.733	7.966	-0.048	0.151	0.714
	859.699	7.916	-0.043	0.154	0.648
	860.595	7.868	-0.026	0.154	0.570
HD 105457	500.754	9.060	0.032	0.187	0.546
	503.805	8.976	0.073	0.193	0.392
	859.719	8.988	-0.055	0.205	0.449
	958.593	9.024	0.049	0.170	0.501
	959.573	9.034	0.050	0.159	0.565
	960.588	8.965	0.082	0.170	9,434
HD 117057	500.809	8.149	-0.021	0.114	0.462
	503.832	8.181	-0.018	0.093	0.513
	860.662	8.150	-0.023	0.107	0.489
	958.618	8.118	-0.022	0.103	0.461
	959.587	8.176	-0.016	0.099	0.503
	960.611	8.157	-0.015	0.089	0.518
HD 125630	500.862	6.782	0.041	0.272	0.646
	560.736	6.703	0.085	0.323	0.488
	861.612	6.794	0.012	0.267	0.707
	958.634	6.791	0.016	0.251	0.715
	959.599	6.710	0.086	0.311	0.492
	960.620	6.794	0.007	0.248	0.734
HD 126198	500.866	7.952	0.071	0.058	0.414
	560.738	8.024	0.076	0.054	0.424
	861.669	7.961	0.063	0.070	0.400
HD 126515	502.850	7.093	-0.050	0.272	0.907
	560.681	7.127	-0.027	0.232	0.891
	861.673	7.086	-0.054	0.286	0.946
HD 128898	500.888	3.178	0.132	0.230	0.788
	859.813	3.206	0.160	0.180	0.777
	861.629	3.210	0.165	0.178	0.775
HD 138773	502.904	7.652	0.087	0.134	0.708
	503.858	7.661	0.088	0.119	0.728
	860.759	7.661	0.069	0.126	0.804
HD 141641	859.849	8.978	-0.027	0.109	0.402
	860.786	8.914	-0.056	0.132	0.400
	861.759	8.913	-0.042	0.119	0.389
HD 143474	503.864	7.465	0.090	0.104	0.545
	859.856	7.390	0.061	0.143	0.523
	861.791	7.433	0.069	0.132	0.535
HD 147890	560.797	7.711	0.188	0.035	0.845
	860.813	7.683	0.186	0.040	0.832
	861.818	7.634	0.183	0.041	0.785
HD 148848	560.799	7.474	0.133	0.163	0.855
	859.881	7.428	0.136	0.199	0.771
	861.801	7.466	0.120	0.171	0.876
	958.656	7.510	0.122	0.174	0.808
	959.620	7.420	0.155	0.186	0.750
	960.640	7.451	0.135	0.178	0.818
HD 149764	560.801	6.946	0.002	0.127	0.455
	859.863	6.973	0.006	0.122	0.514
	861.799	6.979	0.007	0.119	0.518
	958.666	6.947	0.012	0.127	0.511
	959.622	6.983	0.022	0.091	0.536
	960.644	6.936	0.014	0.110	0.461
HD 150323	560.816	7.596	0.066	0.103	0.585
	686.507	7.639	0.068	0.114	0.596
	862.802	7.564	0.051	0.122	0.529
HD 150486	560.814	7.694	0.117	0.072	0.811
	686.514	7.722	0.108	0.102	0.761
	862.807	7.660	0.115	0.084	0.780
HD 150714	560.821	7.590	0.094	0.133	0.836
	686.518	7.628	0.089	0.128	0.881
	862.812	7.545	0.081	0.143	0.842
HD 152366	682.519	8.089	0.036	0.155	0.657
	683.520	8.076	0.056	0.092	0.627
	862.814	8.083	0.045	0.110	0.672
HD 158450	682.549	8.543	0.222	0.183	0.954
	686.537	8.620	0.259	0.142	0.970
	687.497	8.551	0.221	0.176	0.915
HD 162725	560.862	6.433	0.013	0.146	1.012
	681.553	6.420	0.000	0.152	1.061
	687.550	6.417	0.011	0.145	0.990
	958.681	6.444	0.042	0.161	0.984
	959.632	6.405	0.010	0.145	0.983
	960.653	6.401	0.004	0.155	0.974
HD 166968	681.583	7.157	0.034	0.042	0.599
	682.619	7.147	0.004	0.106	0.543
	687.577	7.172	0.011	0.097	0.556
HD 169021	560.874	7.005	-0.015	0.143	0.564
	682.627	6.965	-0.006	0.128	0.496
	686.586	7.000	-0.013	0.135	0.550
	958.698	7.087	0.009	0.059	0.605
	959.640	7.009	-0.013	0.126	0.594
HD 197417	316.639	8.016	0.023	0.241	0.984
	317.660	7.991	0.036	0.271	0.902
	350.557	7.989	0.035	0.235	0.939
	351.591	8.022	0.027	0.209	1.028
	355.566	8.010	0.038	0.206	1.012
	356.581	8.007	0.036	0.204	1.023
	679.664	8.009	0.031	0.254	0.935
HD 206653	319.721	7.194	-0.024	0.134	0.542
	350.570	7.208	-0.042	0.133	0.606
	351.574	7.177	-0.030	0.136	0.506
	356.586	7.186	-0.029	0.146	0.543
HD 212385	311.731	6.825	0.062	0.223	0.930
	316.661	6.849	0.060	0.237	0.955
	317.693	6.849	0.080	0.216	0.941
	350.576	6.837	0.060	0.246	0.919
	355.592	6.847	0.058	0.245	0.948
	356.567	6.890	0.080	0.181	0.982
HD 212432	317.697	7.490	-0.050	0.122	0.662
	319.730	7.491	-0.049	0.125	0.625
	350.580	7.522	-0.086	0.164	0.642
	356.570	7.507	-0.040	0.091	0.628

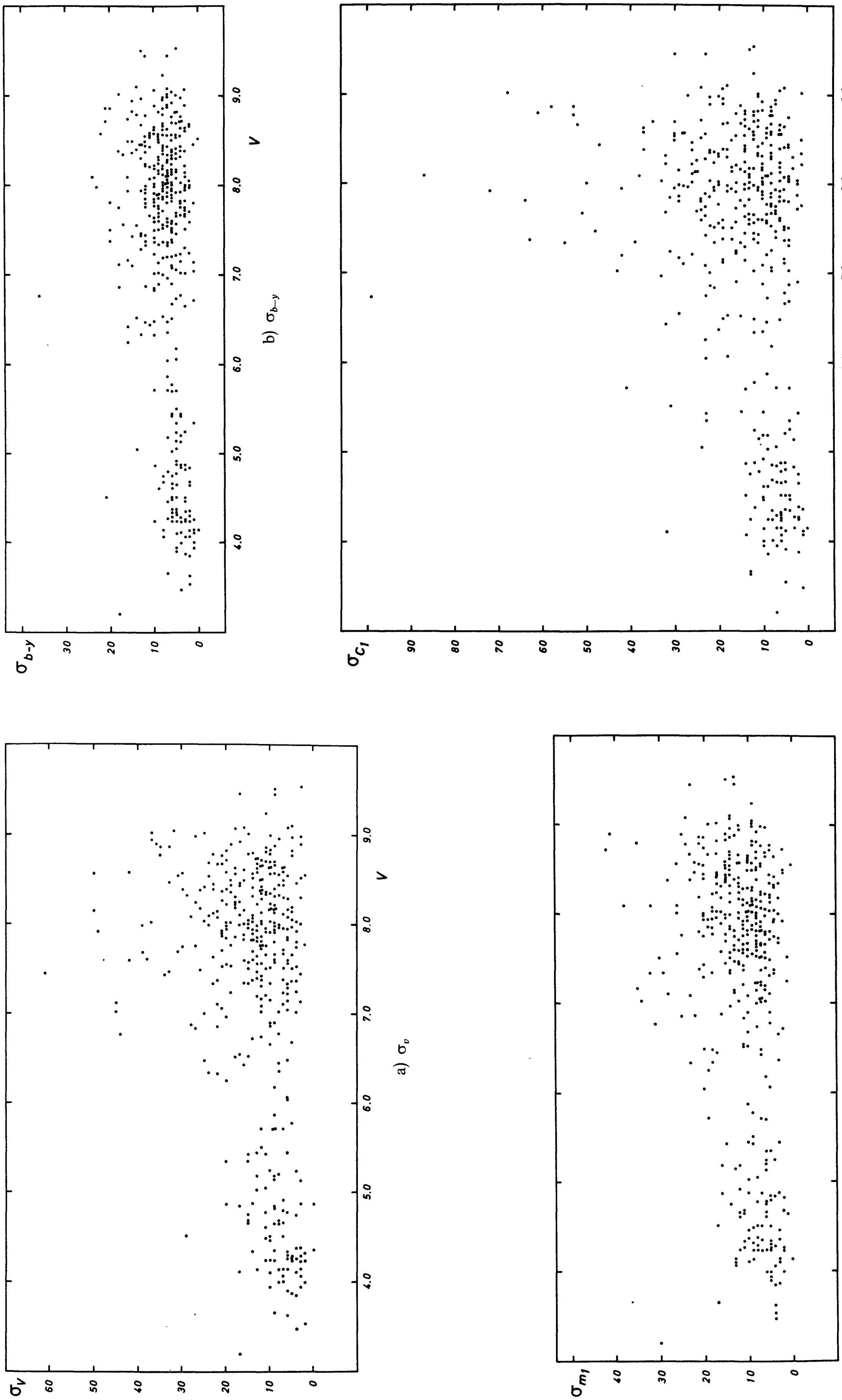

Figure 1a-d Standard deviations σ of the single measurements from their mean values (in units of 0^{m}001) vs. V magnitude.