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UBV photometry of the short period pulsating variable V1719 Cyg

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Summary. — *UBV* observations of V1719 Cyg were performed at Merate Observatory during August 1983. The star is a short period pulsating variable showing variations in shape and amplitude of the light curve. Photometric characteristics are discussed and V1719 Cyg is found to be like other pulsating variables classified as RRc, but its nature is not completely determined. Other photometric and spectroscopic observations are discussed.

Key words : δ Sct stars — RR Lyr stars — photometry.

1. Introduction.

The variability of HD 200925 ≡ V1719 Cyg was discovered by Bedolla and Peña (1979) who monitored the star on 4 nights, from September 25 to 28, 1978. Later, an accurate period was determined and the star classified as a pulsating one by Padalia and Gupta (1982). A re-examination of all the measures previously published led them to conclude on an ephemeris :

$$\text{Max Hel. JD} = 2\,443\,776.715 + 0.267299 \times E . \quad (1)$$

They also concluded on the stability of the period and the absence of any noticeable change from one night to another, though they mentioned changes in the magnitude at minimum (0.11 for the *B*, 0.08 for the *V*). In a new discussion of the measures published by Bedolla and Peña, DuPuy (1981) pointed to the fact that the light curve differed notably from a sine wave interpolation and that in one night the variable was systematically brighter by 0.08 mag.

V1719 Cyg was observed spectroscopically by Imbert (1980) and measures performed with the CORAVEL showed changes in the amplitude of the radial velocity curve from one cycle to another.

2. New observations.

In an effort to get a better understanding of the star, new *UBV* observations were carried out during 6 nights between July 30 and August 27, 1983 with the 102 cm Zeiss reflector of the Osservatorio Astronomico di Merate, equipped with *UBV* filters, a cooled Lallemand photomultiplier and a Gardiner type integrator (integration time : 20 s).

As a rule, measures in three colours of the comparison star are alternated with measures of the star in the same colours : the comparison star was BD + 50°3256 ≡ HD 200739 (spectral type A0). In all about 900 measures were collected. For the reduction of data, the extinction coefficient for each colour was calculated for each night, thus correcting the differences in magnitude. This procedure, together with the vicinity of the comparison star, ensured a satisfactory correction of atmospheric effects.

Tables I, II, III list all the measures : ΔU, ΔB, ΔV (in the sense comparison minus variable) are in the instrumental *UBV* system, very close to the standard *UBV* system.

3. Analysis of the light curve and discussion.

3.1 DETERMINATION OF THE PERIOD AND NEW EPHEMERIS. — Table IV lists all the maxima observed for each colour : in order to avoid errors caused by various methods of reduction, all the maxima have been determined by the bisected chord method. As the results for each colour did not show any systematic differences, a mean maximum was calculated discarding, however, the *U* maximum observed by Padalia and Gupta at JD 2444212, because it was too distant in time from the *B* and *V* maxima.

The ephemeris obtained by means of a least-square fit is :

$$\text{Max Hel. JD} = 2\,444\,212.145 + 0.267298 \times E . \quad (2)$$
$$\pm .003 \quad \pm .000001$$

The calculation neglects the maximum at JD 2445568 as the light curve seems to be systematically in advance by 0.06 p. Such a sudden change is not surprising with short period pulsating variables : similar cases can be found, as for example DH Peg (Tifft, 1964) and BD +16°2356 (Oja, 1981). Comparing epheremis (2) and (1), the period can be said stable over a time-scale of 5 years. It must however be pointed out that the standard deviation of the O-C's is ± 0.0035 d while the one on the determination of a maximum is ± 0.0013 d. This suggests small changes in the period from one cycle to another.

3.2 GENERAL CHARACTERISTICS. — Together with the shift in phase mentioned above, the amplitude of the light curve varies from 0.36 to 0.31 mag in *V*, from 0.50 to 0.42 in *B* and from 0.49 to 0.40 in *U*. To get an idea of the general aspect of the light curve in three colours, the measures for JD 2445546, JD 2445560 and JD 2445562 (days for which the amplitude is very similar) have been combined. The result is shown in figure 1.

The magnitude at the extrema also varies : table V gives the magnitude at maximum obtained assuming $V = 8.46$, $B\text{-}V = +0.02$, $U\text{-}B = +0.06$ for the comparison star (Padalia and Gupta, 1982), while for the minima the data, which are not very numerous, show a variation of 0.03 mag. Owing to the small number of observed maxima, it is however difficult to establish whether these variations of the amplitudes and O-C's are periodical. If this were the case, V1719 Cyg could then be an RR Lyr variable affected by a Blazhko effect.

The amplitude of the *B-V* curve varies from 0.12 mag to 0.14 mag, in phase with the *B* and *V* curves (Fig. 2).

The variations of the *U-B* index appears much less noticeable and can be set at about 0.03 mag : for this reason the measures are grouped and figure 3 shows the means. The maximum occurs close to phase 0.70.

Table VI shows the close similarity between V1719 Cyg and other pulsating stars classified as RRc. In particular, the general aspect of the *U-B* curve makes the star very similar to DE Lac. Whereas all the other stars show a *U-B* curve almost opposed in phase to the *U, B, V, B-V* curves, there is only a small variation during the rise for DE Lac and V1719 Cyg. The classification of DE Lac has been discussed by Mc Namara and Laney (1976).

3.3 COMPARISON WITH THE MEASURES OF PADALIA AND GUPTA. — The photometric characteristics deduced from the observations carried out at Merate differ notably in the *U* colour from the measures published by Padalia and Gupta. As a matter of fact, they reported an *U* amplitude of 0.50 mag, greater than the *B, V* amplitudes (respectively 0.45 and 0.32), and a variation of the *U-B* index of 0.16 mag in phase with the *U, B, V, B-V* variations.

With the observed values for *P*, $(M\text{-}m)/P$, ΔV the latter characteristic, not confirmed by the measures discussed in the present paper, would make V1719 Cyg a unique object (Tsesevich, 1975 ; Bookmeyer *et al.*, 1977 ; Lub, 1977). It must also be noted that the mean *V* magnitude is 8.14, not 8.4.

3.4 COMPARISON WITH THE MEASURES OF RADIAL VELOCITY. — Table VII gives the extrema as calculated from the measures of radial velocity made by Imbert (1980). For the *V* light curve, the minimum occurs at phase 0.45 and the maxima at phase 0.00. There is therefore a shift in phase of 0.09 ± 0.03 p between the inverse radial velocity curve and the light curve.

Though the observations are not simultaneous, the stability of the period over a large time-scale makes the conclusion tenable. Breger *et al.* (1976) have drawn attention to this shift in phase which seems typical of the δ Sct stars.

4. Concluding summary.

V1719 Cyg exhibits a set of phenomena which is common to many pulsating stars : the period is stable on the time scale of many years, yet it shows variations which are either large and irregular or small. New observations are needed to ascertain the possible periodicity of the latter variations, since differences in brightness at maximum suggest a possible Blazhko effect. Indeed, V1719 Cyg seems to share some characteristics of the δ Sct stars. Its classification is impaired by the many problems, still unsolved, set by pulsating stars with periods shorter than 0.3 d (Breger, 1979). In this connection, new spectroscopic observations are needed to conclude safely.

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TABLE I. — *U measures of V1719 Cyg.*

HEL. J.D. 2445000.+	ΔU	HEL. J.D. 2445000.+	ΔU	HEL. J.D. 2445000.+	ΔU	HEL. J.D. 2445000.+	ΔU	HEL. J.D. 2445000.+	ΔU
546.3782	-0.082	559.4454	-0.124	560.3518	.112	562.4090	-0.067	568.5057	-0.117
.3807	-0.070	.4483	-0.134	.3550	.119	.4127	-0.100	.5087	-0.152
.3837	-0.076	.4512	-0.126	.3575	.121	.4162	-0.075	.5116	-0.148
.3863	-0.057	.4576	-0.141	.3631	.155	.4192	-0.058	.5164	-0.132
.3869	-0.064	.4644	-0.128	.3656	.176	.4217	-0.065	.5199	-0.129
.3897	-0.043	.4673	-0.115	.3680	.189	.4247	-0.048	.5224	-0.153
.3946	-0.030	.4702	-0.117	.3706	.204	.4299	-0.024	.5250	-0.139
.3995	-0.024	.4733	-0.100	.3736	.218	.4324	-0.017	.5275	-0.143
.4026	.000	.4761	-0.091	.3763	.213	.4351	-0.019	.5300	-0.159
.4054	-0.002	.4791	-0.081	.3837	.268	.4375	-0.016	.5325	-0.148
.4082	.022	.4850	-0.066	.3866	.285	.4398	.003	.5370	-0.119
.4109	.011	.4889	-0.057	.3893	.278	.4491	.024	.5400	-0.127
.4197	.015	.4916	-0.043	.3918	.283	.4566	.026	.5430	-0.200
.4228	.025	.4941	-0.040	.3995	.286	.4695	.053	.5470	-0.136
.4264	.038	.4966	-0.029	.4022	.285	.4729	.051	574.4343	-0.108
.4335	.048	.4992	-0.040	.4079	.267	.4826	.094	.4398	-0.106
.4388	.060	.5056	-0.001	.4110	.267	.4886	.087	.4424	-0.112
.4415	.056	.5083	-0.005	.4153	.260	.4943	.121	.4451	-0.117
.4447	.067	.5109	.002	.4182	.246	.4994	.202	.4508	-0.108
.4474	.098	.5173	.014	.4241	.205	.5028	.159	.4534	-0.081
.4502	.095	.5199	.031	.4271	.209	.5059	.177	.4561	-0.083
.4532	.111	.5251	.037	.4298	.182	568.3839	.284	.4586	-0.062
.4561	.112	.5276	.049	.4323	.181	.3863	.303	.4613	-0.029
.4647	.169	.5301	.064	.4352	.158	.3890	.229	.4647	-0.040
.4705	.199	.5326	.070	.4376	.138	.3924	.327	.4673	-0.044
.4763	.201	.5353	.072	.4401	.118	.3951	.313	.4701	-0.028
.4856	.275	.5378	.077	.4475	.103	.3976	.312	.4728	-0.014
.4925	.255	.5441	.116	.4505	.090	.4026	.319	.4802	-0.004
.4985	.278	.5467	.115	.4530	.056	.4051	.199	.4836	.011
.5013	.284	.5474	.101	.4562	.035	.4095	.291	.4862	.030
.5043	.263	.5497	.139	.4586	.028	.4123	.311	.4888	.030
.5070	.250	.5522	.159	.4611	.012	.4161	.320	.5033	.084
.5097	.289	.5548	.190	562.3390	-0.044	.4240	.269	.5064	.072
.5128	.253	.5575	.208	.3416	-0.049	.4269	.239	.5089	.101
.5207	.241	.5633	.235	.3445	-0.067	.4306	.241	.5171	.151
.5235	.219	.5678	.239	.3470	-0.044	.4332	.194	.5228	.188
.5243	.221	.5703	.290	.3495	-0.066	.4494	.141	.5280	.210
.5272	.191	.5728	.306	.3520	-0.056	.4519	.127	.5312	.245
.5297	.180	.5754	.325	.3569	-0.089	.4545	.107	.5338	.277
.5327	.184	.5780	.340	.3594	-0.085	.4574	.095	.5363	.285
.5417	.111	.5807	.340	.3620	-0.093	.4597	.091	.5393	.285
.5447	.094	.5865	.367	.3648	-0.109	.4634	.059	.5419	.324
.5475	.085	.5892	.360	.3701	-0.105	.4687	.024	.5449	.329
.5505	.075	.5918	.359	.3726	-0.104	.4719	-0.003	.5507	.312
.5531	.051	.5944	.353	.3760	-0.098	.4746	-0.018	.5534	.363
.5560	.048	.5970	.356	.3786	-0.097	.4792	-0.016	.5559	.346
.5635	.010	.5996	.345	.3840	-0.116	.4835	-0.074	.5586	.386
.5663	-0.013	.6023	.335	.3867	-0.104	.4866	-0.086	.5619	.352
.5747	-0.040	.6094	.327	.3895	-0.105	.4928	-0.092	.5656	.352
.5771	-0.049	.6149	.274	.3923	-0.110	.4957	-0.102	.5683	.357
.5828	-0.074	560.3438	.084	.3950	-0.107	.4981	-0.104	.5716	.343
.5860	-0.082	.3463	.089	.3976	-0.103	.5007	-0.121	.5746	.328
559.4396	-0.137	.3492	.090	.4007	-0.083	.5032	-0.134	.5759	.328
.4426	-0.122								

TABLE II. — *B measures of V1719 Cyg.*

HEL. J.D. 2445000.+	ΔB	HEL. J.D. 2445000.+	ΔB	HEL. J.D. 2445000.+	ΔB	HEL. J.D. 2445000.+	ΔB	HEL. J.D. 2445000.+	ΔB
546.3785	-0.057	546.5832	-0.040	559.5948	0.370	562.3836	-0.092	568.4795	-0.003
0.3811	-0.050	0.5863	-0.049	0.5974	0.371	0.3863	-0.093	0.4838	-0.038
0.3841	-0.049	0.5907	-0.090	0.6000	0.350	0.3891	-0.097	0.4872	-0.067
0.3873	-0.031	0.5932	-0.071	0.6027	0.348	0.3919	-0.082	0.4878	-0.047
0.3901	-0.022	0.5952	-0.093	0.6098	0.333	0.3946	-0.081	0.4931	-0.049
0.3942	-0.023	0.5971	-0.083	0.6125	0.297	0.3972	-0.088	0.4960	-0.072
0.3991	-0.020	0.6022	-0.090	0.6152	0.274	0.3998	-0.079	0.4984	-0.092
0.4022	0.004	0.6042	-0.093	560.3434	0.074	0.4079	-0.070	0.5010	-0.099
0.4051	-0.005	0.6063	-0.106	0.3460	0.070	0.4120	-0.064	0.5035	-0.098
0.4078	0.022	0.6082	-0.111	0.3488	0.081	0.4156	-0.053	0.5061	-0.097
0.4106	0.021	0.6105	-0.097	0.3514	0.081	0.4185	-0.049	0.5091	-0.114
0.4164	0.036	0.6123	-0.108	0.3547	0.088	0.4213	-0.044	0.5119	-0.114
0.4200	0.033	0.6169	-0.102	0.3572	0.114	0.4238	-0.041	0.5161	-0.110
0.4231	0.038	0.6190	-0.104	0.3627	0.174	0.4295	-0.018	0.5195	-0.117
0.4269	0.047	559.4392	-0.116	0.3652	0.167	0.4320	-0.012	0.5220	-0.117
0.4312	0.052	0.4423	-0.115	0.3677	0.178	0.4347	-0.013	0.5246	-0.110
0.4338	0.060	0.4451	-0.107	0.3702	0.217	0.4371	-0.005	0.5271	-0.122
0.4391	0.075	0.4480	-0.111	0.3730	0.234	0.4395	0.004	0.5296	-0.122
0.4419	0.072	0.4508	-0.104	0.3758	0.245	0.4466	0.025	0.5322	-0.117
0.4451	0.088	0.4579	-0.105	0.3819	0.283	0.4538	0.014	0.5366	-0.115
0.4478	0.109	0.4647	-0.095	0.3840	0.281	0.4563	0.036	0.5396	-0.091
0.4505	0.113	0.4677	-0.094	0.3870	0.296	0.4587	0.027	0.5426	-0.160
0.4536	0.130	0.4705	-0.089	0.3896	0.302	0.4622	0.028	0.5467	-0.090
0.4565	0.132	0.4736	-0.086	0.3922	0.301	0.4660	0.062	574.4339	-0.071
0.4622	0.164	0.4765	-0.083	0.3946	0.306	0.4691	0.080	0.4369	-0.097
0.4650	0.181	0.4795	-0.069	0.3999	0.306	0.4725	0.048	0.4395	-0.079
0.4681	0.195	0.4854	-0.047	0.4026	0.286	0.4781	0.093	0.4420	-0.061
0.4709	0.207	0.4882	-0.021	0.4057	0.293	0.4865	0.093	0.4448	-0.076
0.4766	0.237	0.4913	-0.053	0.4082	0.291	0.4890	0.098	0.4504	-0.060
0.4794	0.255	0.4938	-0.039	0.4118	0.294	0.4937	0.136	0.4530	-0.057
0.4829	0.251	0.4963	-0.026	0.4157	0.268	0.4991	0.143	0.4556	-0.054
0.4833	0.247	0.4989	-0.021	0.4186	0.252	0.5019	0.159	0.4582	-0.051
0.4860	0.278	0.5052	-0.006	0.4245	0.215	0.5051	0.185	0.4609	-0.029
0.4864	0.287	0.5079	-0.003	0.4274	0.219	568.3842	0.299	0.4651	0.000
0.4901	0.287	0.5105	0.006	0.4302	0.213	0.3867	0.308	0.4677	-0.005
0.4929	0.278	0.5130	0.015	0.4326	0.203	0.3895	0.234	0.4704	-0.025
0.4989	0.305	0.5169	0.019	0.4355	0.176	0.3928	0.341	0.4732	-0.013
0.5018	0.298	0.5196	0.031	0.4380	0.160	0.3954	0.340	0.4799	0.023
0.5047	0.274	0.5247	0.039	0.4405	0.146	0.3980	0.318	0.4859	0.029
0.5074	0.287	0.5272	0.043	0.4471	0.121	0.4030	0.337	0.4884	0.054
0.5104	0.302	0.5297	0.057	0.4501	0.106	0.4058	0.320	0.5030	0.066
0.5133	0.275	0.5323	0.066	0.4527	0.081	0.4099	0.313	0.5061	0.099
0.5211	0.255	0.5349	0.067	0.4589	0.045	0.4137	0.310	0.5086	0.110
0.5239	0.246	0.5382	0.092	0.4615	0.045	0.4164	0.321	0.5167	0.140
0.5268	0.216	0.5444	0.126	562.3387	-0.019	0.4243	0.253	0.5224	0.185
0.5300	0.202	0.5470	0.136	0.3413	-0.012	0.4247	0.271	0.5276	0.228
0.5331	0.193	0.5501	0.159	0.3440	-0.041	0.4277	0.248	0.5309	0.270
0.5334	0.195	0.5525	0.189	0.3466	-0.030	0.4309	0.256	0.5334	0.292
0.5421	0.143	0.5551	0.205	0.3491	-0.045	0.4344	0.234	0.5360	0.303
0.5424	0.135	0.5579	0.222	0.3517	-0.040	0.4351	0.231	0.5389	0.304
0.5451	0.135	0.5641	0.252	0.3564	-0.067	0.4490	0.166	0.5416	0.316
0.5479	0.117	0.5671	0.287	0.3591	-0.060	0.4516	0.139	0.5531	0.362
0.5508	0.096	0.5706	0.307	0.3617	-0.077	0.4542	0.124	0.5556	0.370
0.5535	0.079	0.5732	0.318	0.3644	-0.078	0.4570	0.104	0.5583	0.377
0.5564	0.079	0.5758	0.343	0.3669	-0.088	0.4594	0.101	0.5612	0.382
0.5639	0.030	0.5784	0.346	0.3697	-0.084	0.4630	0.072	0.5653	0.374
0.5667	0.020	0.5811	0.350	0.3722	-0.083	0.4684	0.048	0.5679	0.357
0.5703	0.004	0.5869	0.365	0.3753	-0.085	0.4722	0.024	0.5720	0.368
0.5742	-0.014	0.5895	0.372	0.3782	-0.087	0.4750	0.010	0.5750	0.343
0.5774	-0.022	0.5922	0.398						

TABLE III. — *V measures of V1719 Cyg.*

HEL. J.D. 2445000.+	ΔV	HEL. J.D. 2445000.+	ΔV	HEL. J.D. 2445000.+	ΔV	HEL. J.D. 2445000.+	ΔV	HEL. J.D. 2445000.+	ΔV
546.3789	.189	546.5871	.183	559.5554	.369	562.3488	.196	568.4753	.247
.3814	.188	.5910	.160	.5583	.379	.3513	.196	.4810	.221
.3844	.187	.5936	.167	.5644	.408	.3560	.176	.4841	.197
.3877	.197	.5955	.155	.5674	.432	.3588	.179	.4881	.187
.3905	.210	.5975	.161	.5709	.448	.3614	.172	.4935	.178
.3938	.200	.6018	.166	.5735	.458	.3641	.170	.4963	.165
.3988	.214	.6038	.155	.5761	.480	.3666	.168	.4988	.154
.4018	.222	.6059	.153	.5787	.485	.3694	.171	.5013	.133
.4047	.225	.6079	.153	.5815	.487	.3719	.160	.5038	.154
.4074	.237	.6101	.149	.5872	.491	.3749	.164	.5066	.159
.4102	.242	.6120	.154	.5899	.504	.3779	.162	.5094	.148
.4172	.255	.6165	.146	.5925	.506	.3832	.151	.5123	.136
.4176	.252	.6186	.138	.5951	.502	.3859	.160	.5158	.116
.4205	.241	559.4385	.143	.5977	.502	.3888	.158	.5192	.138
.4208	.247	.4389	.144	.6004	.489	.3916	.167	.5217	.135
.4238	.259	.4416	.147	.6030	.481	.3943	.140	.5243	.143
.4316	.265	.4419	.146	.6101	.455	.3969	.160	.5267	.138
.4342	.268	.4444	.149	.6129	.447	.3994	.189	.5293	.137
.4395	.274	.4447	.145	.6156	.430	.4073	.179	.5318	.136
.4422	.274	.4472	.142	.6160	.433	.4117	.176	.5363	.142
.4454	.294	.4476	.144	560.3431	.271	.4147	.169	.5393	.165
.4481	.299	.4501	.161	.3456	.279	.4181	.193	.5418	.158
.4510	.301	.4505	.160	.3485	.295	.4210	.194	.5458	.150
.4539	.310	.4531	.144	.3511	.297	.4235	.199	574.4335	.152
.4569	.316	.4535	.139	.3543	.304	.4292	.206	.4366	.147
.4626	.343	.4582	.155	.3569	.315	.4317	.217	.4391	.165
.4654	.353	.4585	.151	.3624	.340	.4343	.213	.4417	.176
.4685	.363	.4650	.157	.3649	.340	.4368	.215	.4444	.181
.4713	.372	.4654	.153	.3673	.347	.4391	.221	.4501	.164
.4770	.397	.4680	.152	.3699	.377	.4459	.219	.4527	.179
.4799	.414	.4684	.152	.3727	.385	.4535	.232	.4553	.185
.4837	.425	.4709	.159	.3755	.396	.4559	.248	.4579	.183
.4871	.437	.4713	.155	.3816	.424	.4583	.249	.4606	.193
.4905	.438	.4739	.175	.3844	.430	.4619	.245	.4655	.201
.4932	.434	.4743	.173	.3873	.452	.4811	.276	.4680	.215
.4993	.447	.4768	.177	.3900	.449	.4868	.289	.4708	.221
.5022	.441	.4772	.173	.3925	.446	.4898	.293	.4735	.212
.5051	.432	.4798	.178	.3949	.452	.4940	.316	.4795	.247
.5078	.449	.4802	.169	.4002	.449	.4984	.332	.4828	.219
.5108	.447	.4857	.191	.4029	.438	.5016	.352	.4855	.235
.5136	.430	.4861	.192	.4060	.442	.5055	.339	.4881	.247
.5214	.409	.4886	.189	.4086	.437	568.3846	.446	.5022	.253
.5265	.394	.4909	.188	.4125	.425	.3870	.431	.5057	.283
.5276	.393	.4934	.198	.4161	.418	.3931	.468	.5082	.303
.5304	.383	.4959	.195	.4189	.409	.3957	.469	.5130	.281
.5338	.356	.4985	.199	.4248	.397	.3983	.462	.5164	.336
.5428	.322	.5049	.213	.4278	.380	.4033	.475	.5220	.356
.5454	.331	.5076	.221	.4305	.383	.4062	.464	.5272	.367
.5483	.310	.5102	.220	.4329	.364	.4103	.444	.5306	.404
.5512	.296	.5127	.229	.4359	.352	.4141	.460	.5331	.422
.5538	.286	.5166	.236	.4383	.340	.4168	.450	.5356	.440
.5567	.287	.5192	.236	.4408	.334	.4281	.412	.5386	.440
.5642	.249	.5244	.247	.4468	.317	.4313	.416	.5413	.432
.5671	.244	.5269	.252	.4498	.313	.4487	.343	.5504	.443
.5706	.236	.5294	.265	.4523	.286	.4512	.324	.5527	.465
.5737	.224	.5319	.270	.4593	.261	.4538	.318	.5553	.492
.5751	.213	.5346	.276	.4618	.259	.4566	.305	.5579	.511
.5778	.205	.5371	.281	562.3384	.218	.4590	.297	.5609	.513
.5781	.209	.5448	.314	.3409	.219	.4626	.293	.5649	.512
.5836	.203	.5478	.319	.3436	.196	.4680	.270	.5723	.510
.5840	.191	.5504	.336	.3463	.195	.4707	.269	.5753	.483
.5867	.185	.5529	.361						

TABLE IV. — *UBV maxima of V1719 Cyg. For the maxima at JD 2444212 and JD 2444568 see text. The O-C's are referred to (2). References : BP = Bedolla and Peña, PG = Padalia and Gupta, EP = this paper.*

U	B	V	Mean	O-C	Ref.
-	-	2443776.715	2443776.715	- 0.002	BP
-	-	3777.788	3777.788	+ 0.002	BP
-	-	3779.659	3779.659	+ 0.002	BP
2444164.295	2444164.296	2444164.292	2444164.294	- 0.005	PG
4173.117	4173.116	4173.116	4173.116	- 0.004	PG
4178.194	4178.192	4178.196	4178.194	- 0.004	PG
4212.158	4212.150	4212.148	4212.151	+ 0.006	PG
2445546.500	2445546.499	2445546.501	2445546.500	+ 0.003	EP
5559.590	5559.592	5592.592	5559.591	- 0.003	EP
5560.396	5560.396	5560.396	5560.396	0.000	EP
5568.399	5568.400	5568.400	5568.400	- 0.015	EP
5574.560	5574.562	5574.564	5574.562	- 0.001	EP

TABLE V. — *Magnitudes at maximum ; instrumental UBV system.*

Maxima	U	B	V
2445546.500	8.25	8.18	8.01
559.590	8.18	8.10	7.96
560.396	8.25	8.18	8.01
568.399	8.22	8.14	7.99
574.560	8.18	8.10	7.96

TABLE VI. — *Photometric characteristics of the brightest RRc stars. References : PA = Paczynski, TI = Tifft, EP = this paper, TS = Tifft and Smith, OJ = Oja.*

Star	Period	ΔV	ΔB	ΔU	Δ(B-V)	Δ(U-B)	Ref.
DE Lac	0.253..	0.31	0.45	0.44	0.14	—	PA
DH Peg	0.255..	0.49	0.62	0.54	0.13	0.08	TI
V1719 Cyg	0.267..	0.36	0.50	0.49	0.14	—	EP
RZ Cep	0.308..	0.54	0.68	0.60	0.14	0.08	PA
TV Boo	0.312..	0.55	0.67	0.58	0.12	0.09	PA
T Sex	0.324..	0.43	0.60	0.48	0.12	0.08	TS
RU Psc	0.390..	0.47	0.61	0.53	0.14	0.08	PA
BD +16°2356	0.448..	0.40	0.52	0.48	0.12	0.04	OJ

TABLE VII. — *Maxima and minima of the radial velocity curve. Phases calculated from (2).*

Maxima		Minima	
Hel. JD	Phase	Hel. JD	Phase
2444118.471	0.55	244116.342	0.07
122.482	0.56	118.605	0.05
124.357	0.57	124.498	0.10

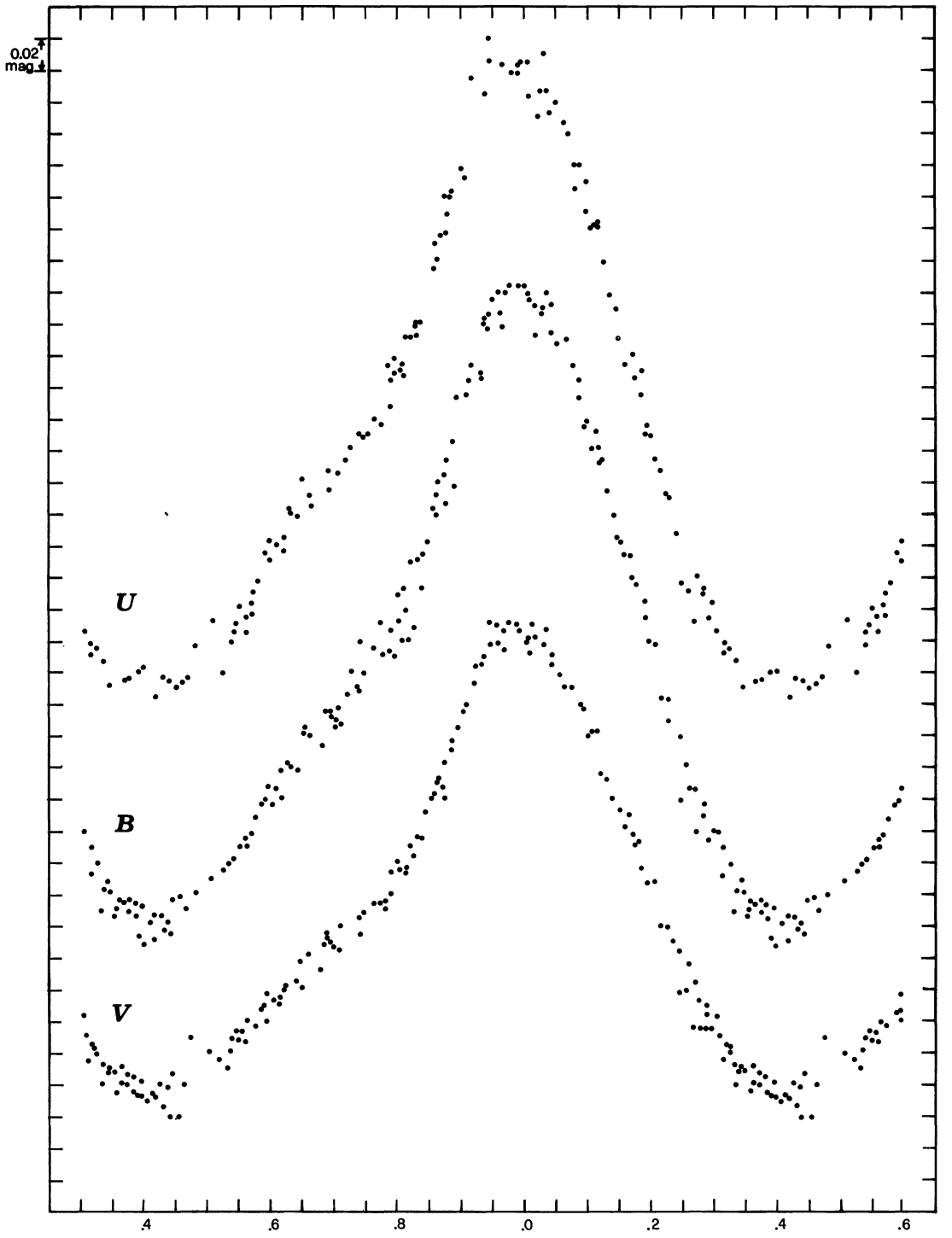

FIGURE 1. — *UBV* light curves of V1719 Cyg.

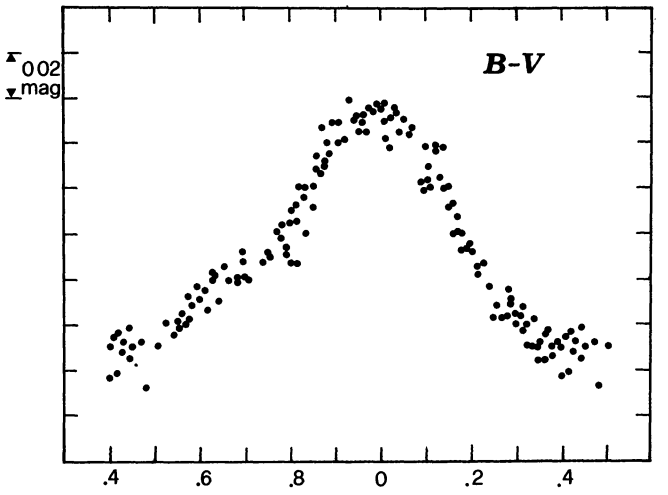

FIGURE 2. — *B-V* index curve.

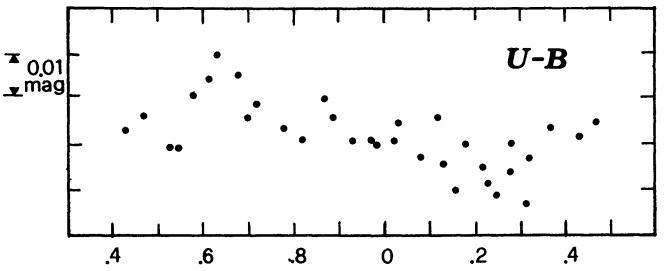

FIGURE 3. — *U-B* index curve.
The dots are means of 4-5 measures.