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SEARCH FOR VARIABLE STARS IN A FIELD IN THE LMC

The region $0^{\circ}6 \times 0^{\circ}9$ of the Large Magellanic Cloud centered near NGC 1854 ($05^{\text{h}}10^{\text{m}} -68^{\circ}.9$) was surveyed for new variable stars. 7 exposures of the LMC made in 1967-72 (JD 2439849-2441385) with the 50-cm Maksutov reflector of the Chilean Station of Pulkova Observatory and 7 plates obtained in September-October 1988 with the 66-cm astrograph at the Mount Stromlo Observatory by A.A. Tokovinin and A. Loggins were used.

The positive-negative ("Harvard") technique was used for the discovery of variable stars. The plates are of different quality and only 2-3 pairs could be selected for the comparison. The 16 stars not identified with known variables were suspected of variability. The identification charts for the suspected variables are given in Figure 1, north is up, the size of the squares is $3'$ if not indicated otherwise in the corner. Despite the use of the Harvard technique the variability is not certain at low amplitudes, such cases are marked with ?, e.g. VAR?-1.

The Table contains coordinates for 1950.0, magnitude estimates and ranges of variation in the color system close to B. Photoelectric standards from Tifft et al. (1971,1973) were used directly as comparison stars for the estimation of magnitudes. The moments of observation of some Chilean plates and of the 2 plates taken in Australia appear to be recorded with $\lesssim 1$ day error. These moments were corrected from the lightcurves of known short-period cepheids, e.g. TU Dor and SZ Dor.

Most of the variable stars in this field are cepheids and the same applies to the newly discovered stars as well. Their periods must be in the 2-12 day range as estimated from the mean magnitudes. About 50 cepheids have been discovered previously in this field at the Harvard Observatory. The new stars have typically low amplitudes and low discovery probabilities. It is likely that no more than 50-75% of such stars have

Table I.

JD 24....	VAR?-1	VAR-2	VAR-3	VAR?-4	VAR?-5	VAR?-6	VAR-7	VAR-8
R.A.	050616	050644	050716	050745	050802	050805	050820	050913
Dec.	-6910.5	-6858.1	-6846.6	-6851.3	-6842.0	-6906.7	-6845.0	-6854.7
39849.9	16.40:	16.40	14.86	16.25	15.18	16.70	16.40	16.40
39852.75	16.58:	16.35	15.15	16.20	15.38	16.65	16.42	15.45
39948.6	16.82	16.35	14.85	15.96	15.40	16.80	16.25	15.18
40270.6	16.77	16.25	15.10	15.80	15.35	16.75	16.32	16.45
40272.55	16.58	15.93	15.18	15.80	15.15	16.70	16.35	15.70
40885.65	16.40	16.25	15.02	15.90	15.03	15.70:	15.75	16.23
41384.65	17.12	16.38	15.20	16.00	15.40	16.85	15.85	16.30
47410.125	-	15.50	15.13	15.83	15.12	-	15.70	15.98
47418.120	16.65	15.65	15.24	15.80	15.25	16.75	16.00	16.50
47423.172	16.82	16.20	15.20	15.90	15.13	16.40	16.45	16.18
47428.160	16.93:	16.12	15.30	15.95	14.90	16.63	15.67	15.16
47429.125	16.72	15.60	15.40	15.75	15.13	16.65	16.35	15.75
47441.169	-	15.58	15.12	16.00	15.16	-	16.60	15.12
47446.139	17.34	15.75	15.00	15.70	14.82	16.63	15.73	15.62
Max	16.4	15.5	14.85	15.7	14.8	15.7:	15.7	15.1
Min	17.3	16.4	15.4	16.25	15.4	16.85	16.6	16.5

R.A.	Dec.	VAR-9	VAR-10	VAR-11	VAR-12	VAR-13	VAR-14	VAR-15	VAR-16
39849.9	051006	051021	051058	051352	051419	051450	051453	051457	
39852.75	-6856.6	-6857.1	-6850.4	-6900.4	-6901.2	-6843.1	-6910.8	-6857.9	
39948.6	16.00	16.30:	15.13	17.3:	15.97	15.85	15.10	16.90	
40270.6	15.92	16.22	15.37	17.0:	15.63	16.05	15.15	16.95	
40272.55	15.62	17.4:	15.14	16.90:	15.65	15.10	15.20:	15.76	
40885.65	15.16	16.25	15.60	16.50:	16.17	15.70	15.15	15.84	
41384.65	15.12	17.20	15.78	16.95:	16.30:	15.65	15.08	16.87	
47410.125	15.70:	17.42:	15.50	17.10:	15.64	15.85	15.35	16.75	
47418.120	15.9:	17.35:	15.26	15.50:	15.77	15.62	15.30	15.70	
47423.172	15.23	17.05	15.57	-	-	-	-	-	
47428.160	15.11	17.32:	15.25	16.52	15.87	15.20	15.45	16.67	
47429.125	15.78	17.18:	15.70	16.95:	15.36	15.70	15.18	16.00	
47441.169	15.72	17.15:	15.50	16.78:	-	-	-	-	
47446.139	15.68	16.9:	15.44	16.82	-	-	-	-	
Max	15.43	16.73:	15.57	-	-	-	-	-	
Min	15.84	16.37	15.42	-	-	-	-	-	
	15.1	16.2	15.1	15.5:	15.4	15.1	15.1	15.7	
	16.0	17.4:	15.8	17.3:	16.3:	16.05	16.45	16.95	

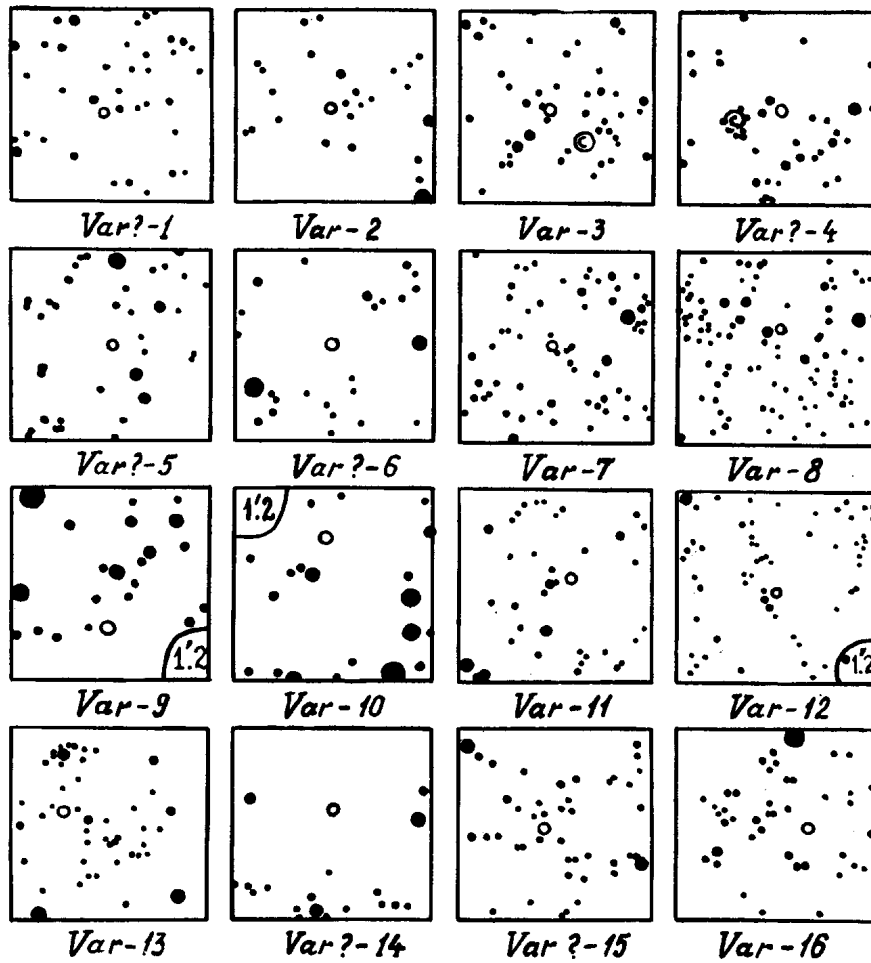


Figure 1

been discovered in the LMC. Further search for variable stars in LMC seems necessary.

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