

COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS

Number 1159

Konkoly Observatory
Budapest
1976 July 27

MAGNITUDES AND ELEMENTS OF VARIABLE STARS
IN THE REMOTE GLOBULAR CLUSTER NGC 2419

Mean B magnitudes and elements of 41 variable stars in the remote globular cluster NGC 2419 have been derived by examining 109 plates (103a-0 + GG13) obtained at Asiago, at the cassegrain focus of the Copernicus 182 cm telescope of Mount Ekar from 1973 to 1976. Comparison sequences were selected among the program stars of Racine and Harris (1975). The observations of the variables made by Baade (1935) on forty Mt. Wilson plates were also discussed, after reduction of the magnitudes to the present system. Five new variables have been discovered in the course of this research.

The results are summarized in Table 1 and Notes. The cluster contains 36 RR Lyrae variables, one 1-day cepheid and four semiregular or irregular red stars. The frequency distribution of the periods of the RR Lyr variables indicates that the cluster belongs to Oosterhoff's class II, with a concentration of the periods around $0^d.654$ for 25 RR-a and $0^d.384$ for 7 RR-c. The mean median magnitude of 36 RR Lyrae variables is 20.49 ± 0.11 . Assuming for the corresponding median absolute magnitude the value $M_B = +0.8$, the uncorrected distance modulus is 19.7 and the distance of the same order (87 kpc) than found by Racine and Harris.

Further details and light curves will be given in a forthcoming publication.

G. PINTO

L. ROSINO

Astrophysical Observatory of the
University of Padova

References:

1. Baade, W. 1935, Ap.J. 82, 396.
2. Racine, R., Harris, W.E. 1975, Ap.J. 196, 413.

Table 1
Magnitudes and elements of variable stars in NGC 2419

No	x	y	max	min	med	To	P	Notes
244								
1	+ 40"	- 52"	18.40	19.20	18.80	----	----	1
2	- 4	- 19	19.80	21.10	20.45	2076.50	0.6692	2
3	+ 52	- 24	19.95	21.15	20.55	2043.50	0.625967	3
4	+ 80	- 15	20.25	21.10	20.68	1986.53	0.39257	
5	+ 33	+ 47	19.91	20.95	20.43	2345.63	0.655880	4
6	+ 56	-127	20.25	20.95	20.60	2035.55	0.371667	
7	+ 91	+ 87	19.96	21.09	20.53	2076.62	0.627331	5
8	- 17	+ 41	18.30	19.10	18.70	----	----	
9	- 32	+ 88	19.86	20.95	20.41	2361.61	0.644733	6
10	+ 20	- 51	18.19	18.94	18.57	2515.50	81.30	
11	+ 95	- 8	19.84	20.93	20.39	2128.44	0.589322	7
12	+133	+111	19.90	21.16	20.53	2076.62	0.661814	
13	+101	- 10	19.93	21.06	20.50	2361.61	0.640258	8
14	-115	- 13	19.83	21.06	20.45	2345.60	0.741371	
15	+ 62	+ 40	19.91	21.04	20.48	2076.50	0.640006	9
16	+ 47	+ 72	19.92	21.09	20.51	2045.46	0.666084	
17	+109	+111	19.81	21.18	20.50	2396.59	0.649033	10
18	- 15	+114	18.66	19.65	19.16	2402.52	1.578524	
19	-107	- 40	19.93	21.01	20.47	1986.52	0.702620	11
20	- 28	+ 45	18.20	19.20	18.70	----	----	
21	- 55	+ 30	19.98	21.00	20.49	2123.44	0.686094	12
22	+109	- 5	19.85	21.15	20.50	2119.37	0.576645	
23	+ 27	+ 79	19.69	20.73	20.21	2121.30	0.62648:	13
24	-147	- 10	19.92	21.00	20.46	2451.32	0.652697	
25	- 59	+ 38	19.95	21.01	20.48	2424.42	0.636328	14
26	- 70	- 30	19.56	20.69	20.13	2361.58	0.664924	
27	+ 19	-103	20.34	20.79	20.57	2345.67	0.34896	14
28	-192	+ 59	19.91	20.90	20.41	2402.63	0.646539	
29	- 58	- 7	20.23	21.00	20.62	2045.46	0.725543	14
30	- 26	+ 23	20.00	21.10	20.55	----	----	
31	+154	-146	20.27	20.93	20.60	2035.53	0.38753	14
32	- 19	+ 48	19.93	20.96	20.45	2416.43	0.642240	
33	+ 47	- 17	20.30	20.94	20.62	1985.65	0.377620	14
34	+ 21	+157	20.33	20.95	20.64	2071.43	0.403485	
35	+ 43	+ 8	20.15	21.06	20.61	2121.35	0.677178	14
36	+ 23	+ 44	20.04	21.13	20.59	2121.41	0.648311	
37	+ 21	+ 12	19.95	21.05	20.50	2424.43	0.661044	14
38	- 1	- 65	19.90	20.90	20.40	----	----	
39	+ 28	-128	20.23	20.88	20.56	1989.60	0.40703	14
40	+ 58	- 9	19.90	21.10	20.50	----	----	
41	- 5	+ 21	20.00	20.90	20.45	----	----	14

Notes to Table 1

1. Red irregular variable. Mean B-V color index: +1.8.
2. The variable is situated within the central part of the cluster, in a crowded area. Estimates of the magnitude are difficult and this explains the large dispersion of the points in the light curve.
3. RR-c. Baade's observations are not represented in the light curve.
4. Red irregular variable. Mean B-V color index: +1.7.
5. Red semiregular variable. Mean B-V color index: +1.6.
6. This star belongs to the group of cepheids with period between 1 and 3 days which are well represented in globular clusters. Mean B-V color index: +0.35.
7. Red irregular variable. Mean B-V color index: +1.7.
8. The variable is the south-east component of a double star. Only on some of the best plates the two stars are separated. The presence of the companion strongly influences the estimates of magnitude, which appears brighter than in the other RR Lyr variables of the cluster.
9. The variable is close to a star of about 20.5 which influences the estimates.
10. RR-c. The period is somewhat uncertain and does not represent the Baade's observations.
11. The Baade's observations fit in the light curve, but are somewhat scattered.
12. In the most part of the plates the variable is blended with the images of nearby stars so that reliable estimates are not possible. Very likely RR-a, but the elements have not been found.
13. The variable is deeply inside the cluster. Very likely RR-a but the period has not been found.
14. The variable is in the central crowded area of the cluster and only a small number of estimates are available. The elements have not been found.