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A NEW ATTEMPT TO IDENTIFY ARCHER'S VARIABLES IN COMA CLUSTER

I) INTRODUCTION

Archer (1959) reported the variability of 24 stars in the vicinity of the Coma star cluster, using visual estimates on photographic plates. Most of them were declared to be rapid eclipsing variables. On these informations, the stars were included in the NSV catalogue (Kukarkin et al, 1982). The identification of these stars is a real problem because Archer published only coordinates and a poor finder chart. Nevertheless, Faulkner (1983) identified Archer's star number 5 with RZ Com. Tan et al. (1984), Faulkner (1986), Boninsegna (1996) reported photoelectric observations on 16 of these suspected variables. None of these showed light variations, casting serious doubts on the remaining objects. However, Dedoch (1992) and Martignoni et al. (1994) visually observed EW type variations on the star number 6, which were not confirmed by CCD observations made by Vojtech (1995) who recorded a short period 0.25 magnitude amplitude. A new attempt on the identification of these stars is presented in this paper.

II) IDENTIFICATION

All the results are presented in Table 1. The first four columns present Archer's original data, the three columns "identification" are devoted to the identification of the Archer's stars. For this paper, I used the CD-Rom programme Guide 4.0 along with the Atlas Stellarum to identify the 24 suspected stars. When the mention "O.K." appears, that means that I confirm the identification made by the previous authors, when I propose an other identification that one can be followed by a "?" which means that the identification is not sure. The column "photometry"summarizes which star was monitored by who, in relation with the references below.

III) CONCLUSIONS

The Archer's stars number 1, 7, 9, 14, 19, 21, 22, 23, 24 were correctly identified. They are certainly not large amplitude rapid variable stars (nobody can exclude a long period EA type!). It will probably be impossible to correctly identify the stars number 2, 4, 8, 11, 16, 18. However, photoelectrical measurements exist for stars number 4, 16 and 18. It would be interesting to know exactely which stars were monitored by Tan et al. (1984). All the other stars need confirmation for their real identification and variability (except number 5 = RZ Com). Especially, star number 15 which was never observed with a photometer, star number 6 which seems to be correctly identified, but for which there is a discrepancy between the variability results.

References:

Archer, S. 1959, Journal of the British Astronomical Association 69, 157.
(g) Boninsegna, R. 1989, Photométrie d'etoiles variables suspectes et mal connues 88-89
(f) Boninsegna, R. 1996, Information Bulletin on Variable Stars in preparation
(c) Dedoch, A. 1992, Contributions of the N. Copernicus Observ. and Planetarium in Brno Nr 30, 49.
Faulkner, D.R. 1983, Information Bulletin on Variable Stars Nr 2290.
(b) Faulkner, D.R. 1986, Information Bulletin on Variable Stars Nr 2930.
Kukarkin, B. V. et al, 1982, New Catalogue of Suspected Variables.
(d) Martignoni, M. and Dedoch, A. 1994, Note Circulaire GEOS Nr 757.
(a) Tan, H., Zhang, Z. and Zhang, Y. 1984, Information Bulletin on Variable Stars Nr 2537.
(e) Vojtech, S. 1995, Contributions of the N. Copernicus Observ. and Planetarium in Brno Nr 31, 77.

Notes of table 1:

(1) Also very near of star number 21 which seems to have almost the same characteristics according to Archer. However, both were identified seperately by Faulkner.
(2) = GM Com (low amplitude variable discovered in 1972).
(3) The identification proposed by Faulkner (1986) seems unlikely.
(4) BD +26° 2347 = IL Com (low amplitude variable discovered in 1983) See also note 3.
(5) Perhaps GSC 1447 0847.
(6) = NSV 5613 (presumed to be a low amplitude variable discovered in 1973).

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ARCHER'S DATA				NSV	IDENTIFICATION			PHOTOMETRY	NOTES
star number	position (1950.0) h m ° '	range	type	number	by Archer HD	by Faulkner BD	this paper		
1	12 02.9 +28 52	8.9 - 10.6	EA	5449	105020	+29° 2252	O.K.	(a)	
2	40.3 +24 46	10.2 - 11.5	RR	5885			not in Stellarum		not identified
3	18.7 +25 57	9.7 - 10.7	EW	5570		+26° 2333	GSC 1980 0070	(a) (b)	(1)
4	28.9 +22 46	10.4 - 11.1	EW	5679			not in Stellarum	(a)	not identified
5	32.3 +23 39	9.6 - 10.2	EW			= RZ Com	O.K.		
6	21.8 +26 20	9.7 - 10.6	EA ?	5598			GSC 1989 0108	(c) (d) (e) (f)	
7	32.3 +27 06	9.7 - 10.2	EW	5740		+27° 2151	O.K.	(a) (b)	
8	14.2 +27 18	9.8 - 10.3	EA?	5524			not in Stellarum		not identified
9	09.9 +27 38	9.8 - 10.3	EW?	5500		+28° 2087	O.K.	(a)	(2)
10	35.6 +26 39	9.5 - 10.0	RR?	5800		+27° 2152	+27° 2154 ?	(b)	not surely identified
11	04.9 +26 21	10.0 - 10.8	EW	5465			not in Stellarum		not identified
12	22.4 +23 26	9.9 - 10.9	EA?	5604		+24° 2457	GSC 1989 1366	(b)	(3)
13	22.6 +25 57	9.8 - 10.5	RR?	5608	108102	+26° 2347	GSC 1989 0148	(a) (b)	(4)
14	03.5 +27 51	9.5 - 10.0	BCEP	5458		+28° 2077	O.K.	(a) (b)	
15	14.8 +22 27	10.3 - 11.1	RR?	5530			+22° 2456 ?		(5) not surely identified
16	14.5 +29 13	9.2 - 9.6	RR?	5528			not in Stellarum	(a)	not identified
17	33.0 +23 46	9.5 - 10.5	EW?	5755			GSC 1990 3321 ?	(a)	not surely identified
18	04.6 +27 57	9.6 - 10.3	RR?	5462			not in Stellarum	(a)	not identified
19	27.0 +29 48	9.3 - 9.7	EW?	5652		+30° 2281	+30° 2280 ?	(a) (b)	not surely identified
20	20.0 +26 07	9.7 - 10.1	EW	5580		+26° 2338	+26° 2339 ?	(b)	not surely identified
21	18.6 +26 01	10.0 - 10.8	EW?	5567	107468	+26° 2332	O.K.	(a) (b) (g)	
22	38.0 +23 17	9.2 - 9.5	RR?	5846		+23° 2483	O.K.	(a) (b)	
23	23.4 +27 03	9.3 - 9.8	RR	5615		+27° 2129	O.K.	(a) (b)	(6)
24	30.5 +21 59	9.0 - <11.5	UG?	5709	109216	+22° 2485	O.K.	(b)	

TABLE 1: Identification of Archer's variable stars