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VARIABLE STARS IN THE PLEIADES CLUSTER II

From 1981 October 18 till November 17 we performed photometry on 16 K-type stars in the Pleiades cluster. All of these stars were known or suspected to be variable on the basis or earlier work. Five of the stars were also measured a year before by Alphenaar and Van Leeuwen (1981, hereafter referred to as Paper I). The other 11 stars formed a new selection. All stars were measured using the Walraven photometer and the Dutch 91 cm telescope at La Silla, ESO (Lub, 1979). Positions and search maps of the previously measured stars can be found in Paper I, those for the new selection are given in Fig. 1. The diameter of each field is 12 arcmin and the magnitudes indicated are photographic magnitudes. The limiting magnitude is around $m_{pg} = 14.5$. Table I lists the measured stars and their visual magnitudes. The star numbers are from Hertzsprung (1947).

Ten of the eleven newly selected stars were found to be variable and for the other, Hz883, no conclusions could be drawn. For 7 of these stars periods and lightcurves could be obtained, as well as for the 5 remeasured stars. All lightcurves and periods are presented in Fig. 2a, 2b, 2c and 2d as differences in 10log(I) for the V channel between the given star and the substandard for the cluster, Hz804. The zeropoints for the phase calculations are at JD=2444896.5.

The periods of the five previously measured stars did not need to be changed. For Hz879 the shorter period given in Paper I turned out to be the right one. The lightcurve of Hz1883 was repeated accurately, but for all others there seem to be disturbing sources active.

The 7 new stars for which periods and lightcurves were obtained are also of the BY Dra type. Four of them, viz. Hz882, 1531, 2034 and 3163, resemble the lightcurve of Hz1883. Hz625 shows a broader minimum than

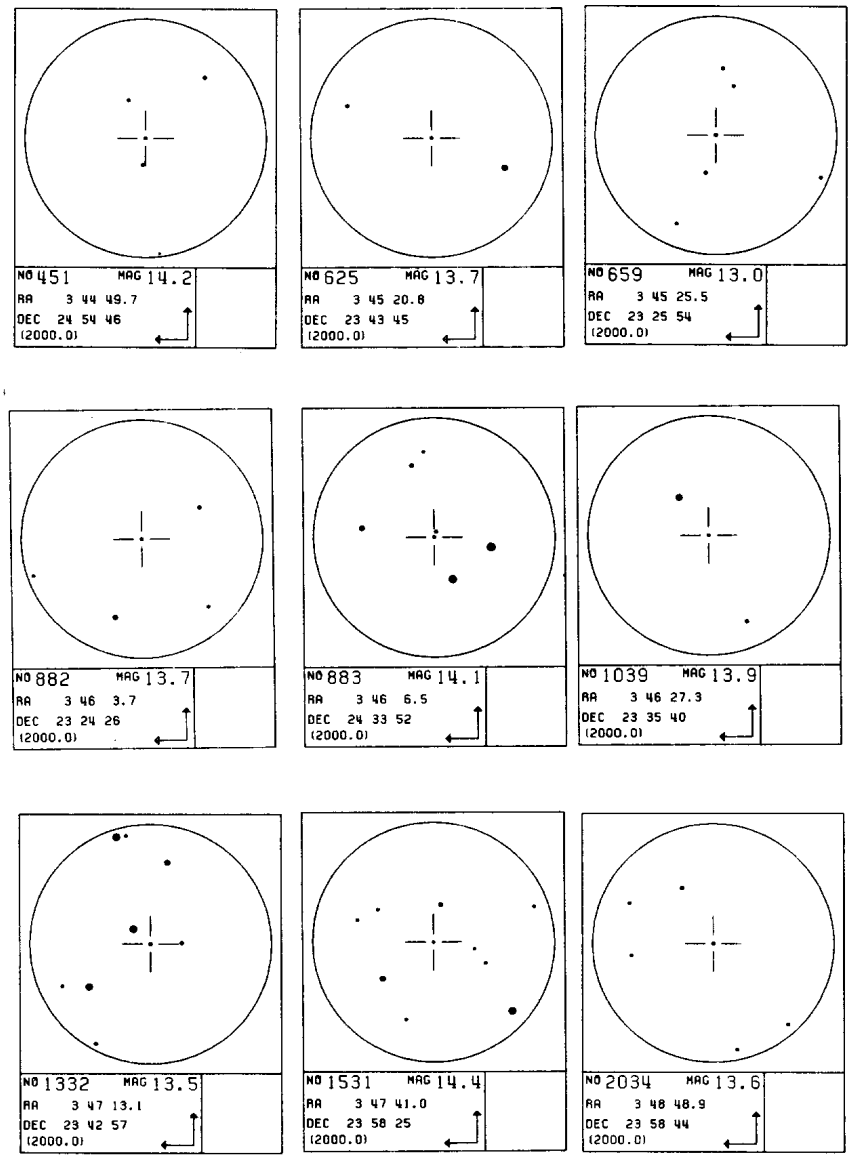
NO 451 MAG 14.2
RA 3 44 49.7
DEC 24 54 46
(2000.0)
NO 625 MAG 13.7
RA 3 45 20.8
DEC 23 43 45
(2000.0)
NO 659 MAG 13.0
RA 3 45 25.5
DEC 23 25 54
(2000.0)
NO 882 MAG 13.7
RA 3 46 3.7
DEC 23 24 26
(2000.0)
NO 883 MAG 14.1
RA 3 46 6.5
DEC 24 33 52
(2000.0)
NO 1039 MAG 13.9
RA 3 46 27.3
DEC 23 35 40
(2000.0)
NO 1332 MAG 13.5
RA 3 47 13.1
DEC 23 42 57
(2000.0)
NO 1531 MAG 14.4
RA 3 47 41.0
DEC 23 58 25
(2000.0)
NO 2034 MAG 13.6
RA 3 48 48.9
DEC 23 58 44
(2000.0)

Figure 1

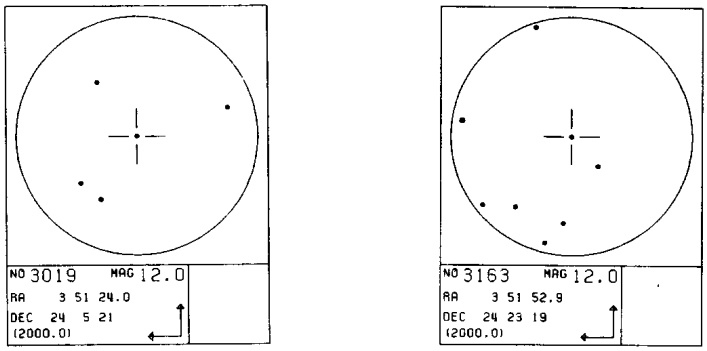

Figure 1 (cont.)

the other stars. The small amplitudes of the stars Hz1039 and 1332 do not permit detailed interpretation. Five of the new selection of stars, viz. Hz451, Hz883, Hz1039, Hz1531 and Hz2034, are known as flare stars (Haro, 1976).

Table I, Measured Stars

Hz	m_V	(V-B)
34	12.06	.43
451	13.43	.57
625	12.66	.53
659	12.02	.41
686	13.44	.52
879	12.83	.50
882	12.90	.49
883	13.05	.53
1039	13.05	.57
1124	12.32	.44
1332	12.52	.47
1531	13.58	.56
1883	12.61	.48
2034	12.65	.45
3019	13.49	.57
3163	12.73	.46

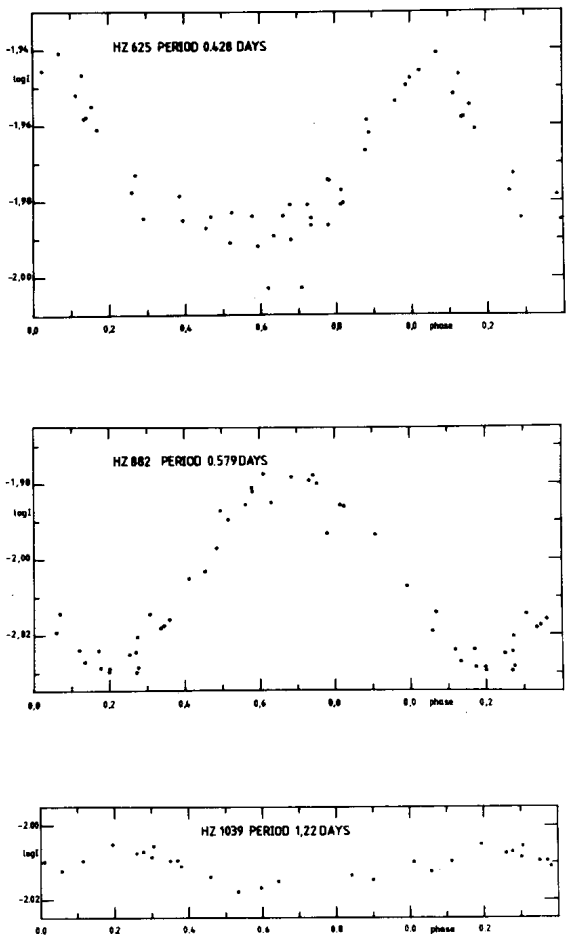
HZ 625 PERIOD 0.428 DAYS
HZ 882 PERIOD 0.579 DAYS
HZ 1039 PERIOD 1,22 DAYS

Figure 2.a

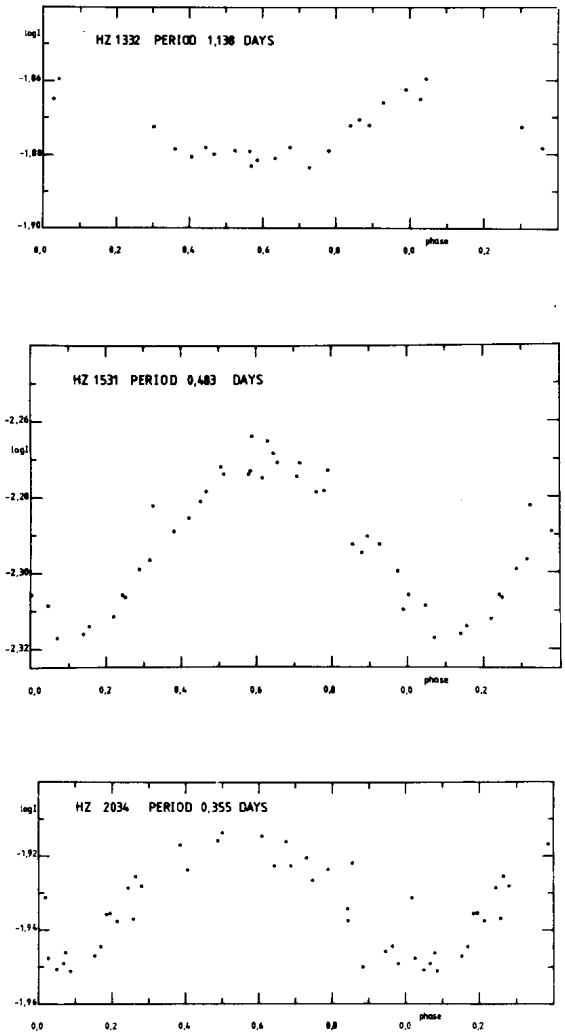
HZ 1332 PERIOD 1,138 DAYS
HZ 1531 PERIOD 0,483 DAYS
HZ 2034 PERIOD 0,355 DAYS
phase

Figure 2.b

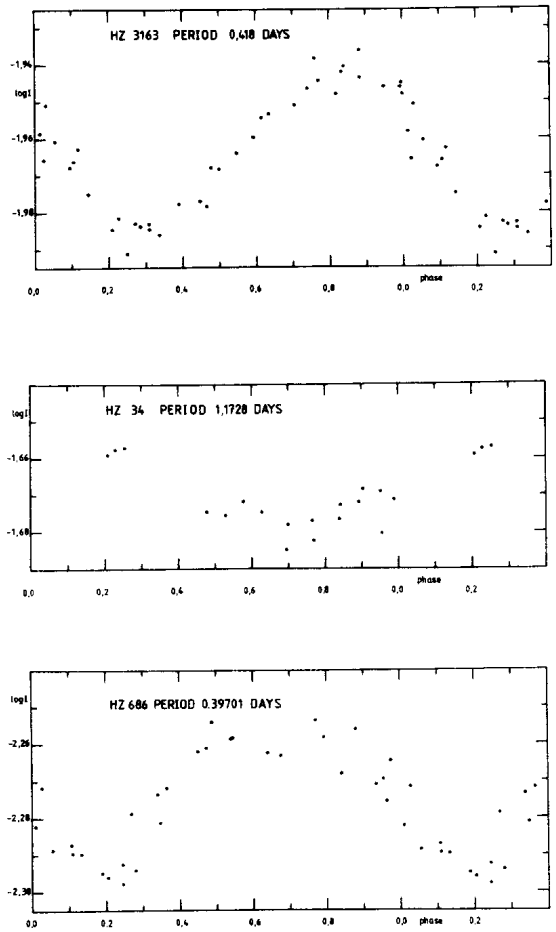
HZ 3163 PERIOD 0,418 DAYS
-1,94
logI
-1,96
-1,98
0,0
0,2
0,4
0,6
0,8
0,0
phase
0,2
HZ 34 PERIOD 1,1728 DAYS
logI
-1,66
-1,68
0,0
0,2
0,4
0,6
0,8
0,0
phase
0,2
HZ 686 PERIOD 0,39701 DAYS
logI
-2,26
-2,28
-2,30
0,0
0,2
0,4
0,6
0,8
0,0
phase
0,2

Figure 2.c

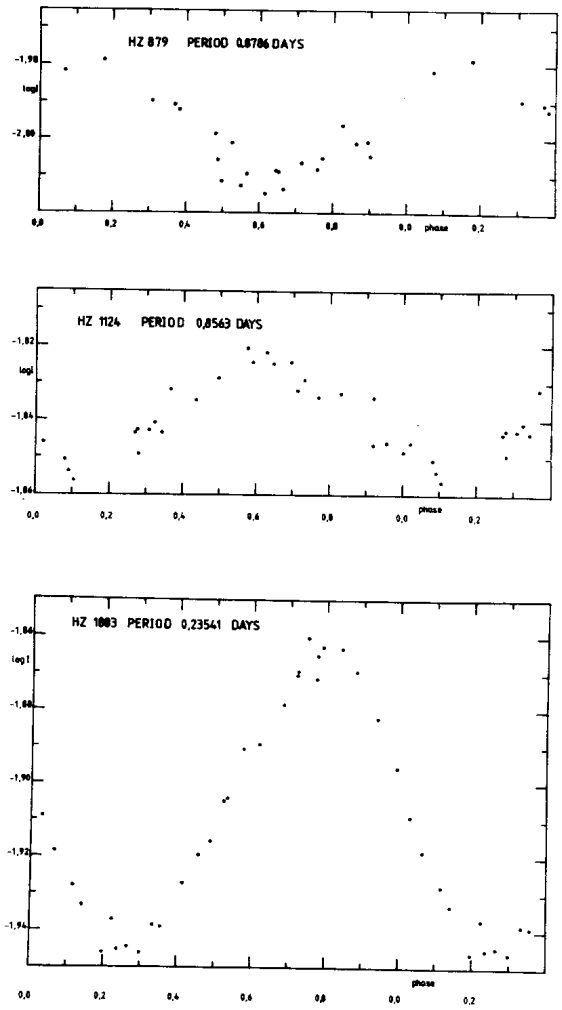
HZ 879 PERIOD 0.8786 DAYS
-1,98
logI
-2,00
0,0
0,2
0,4
0,6
0,8
0,0
phase
0,2
HZ 1124 PERIOD 0,8563 DAYS
-1,82
logI
-1,84
-1,86
0,0
0,2
0,4
0,6
0,8
0,0
phase
0,2
HZ 1883 PERIOD 0,23541 DAYS
-1,84
logI
-1,88
-1,90
-1,92
-1,94
0,0
0,2
0,4
0,6
0,8
0,0
phase
0,2

Figure 2.d

In a recent letter to Astronomy and Astrophysics the observations presented here and in Paper I are discussed in more detail, including also some spectroscopic data.

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References :
Alphenaar, P. and Van Leeuwen, F.: 1981, IBVS 1957
Lub, J.: 1979, ESO Messenger 19, 1
Haro, G.: 1976, Ton. Obs. Bol. 2, 3
Hertzsprung, E.: 1947, Leiden Annalen 19 part A