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PHOTOELECTRIC PHOTOMETRY OF Ap STARS IN IC 2602,
NGC 6281 AND IN THE SCORPIO-CENTAURUS GROUP:
PRELIMINARY RESULTS

New photometric periods have been obtained for five Ap stars and for one He-weak star which are members of clusters and associations. Observations were carried out at the European Southern Observatory at La Silla (Chile) with the Swiss telescope, using the Geneva photometry, during April, May and June 1983.

The measurements are absolute ones, i.e. no comparison stars were used. However, standard stars were measured sufficiently often and at about the same airmass (i.e. within a few hundredths), so that the V, [U-B] and [B-V] values of the variables could be estimated fairly accurately at the end of each night, with only a rough preliminary reduction procedure.

The data were analyzed with three techniques of period determination: Deeming's (1975) method of discrete Fourier transform, Renson's (1978) θ_1 test and Stellingwerf's (1978) phase dispersion minimization method. The lightcurves were fitted by a function of the type

$$f(t) = A_0 + A_1 \cos\left(\frac{2\pi}{p}(t-t_0) + \phi_1\right) + A_2 \cos\left(\frac{4\pi}{p}(t-t_0) + \phi_2\right)$$

which is generally sufficient.

The stars HD 145102 (DM-26^o11240 following the HD practice, Si) and HD 147105 (DM-25^o11483, Sr), although measured 34 and 30 times respectively, do not show any really conclusive period because their amplitude is extremely small. HD 147105 might have a greater amplitude than HD 145102, but it is fainter ($m_V=8.794$), so that the signal-to-noise ratio is poorer. The very strange peculiar star HD 144667 (HR 6000), which seems extremely young (Thé and Tjin A Djie, 1978) and is strongly deficient in silicium (Cas-

telli et al., 1981) was measured six times and seems quite stable. The integration time was three times longer than usual, in order to have better precision. The possibility remains, however, that HR 6000 may vary on a very long timescale, since its projected rotational velocity is lower than 20 km/s (Castelli et al., 1981). The values are given in Table I.

Table I

Preliminary values of the colours and of the magnitude of HD 144667 (HR 6000). A more refined reduction procedure is being made at Geneva Observatory. Brackets mean that the indices are relevant to the Geneva system and not to Johnson's. The V band may be considered as equivalent to Johnson's.

JD-	[U-B]	[V-B]	V	Remark
2440000				
5442.847	.879	1.054	6.629	
5443.794	.881	1.054	6.630	
5444.740	.880	1.055	6.635	
5445.797	.877	1.054	6.629	
5449.751	.880	1.053	6.639	V magnitude value slightly doubtful
5451.773	.884	1.053	6.632	

The star NGC 6281-15 was detected as peculiar by the Geneva photometry alone, through the $\Delta(V1-G)$ and Z parameters (North and Cramer, 1981). A variation is undoubtedly present, although it is not possible at the present time to make a choice between two possible periods. Measurements are going on in order to get a better phase coverage, but it is already worth noticing that for the first time, a lightcurve is established for an Ap star known as such from photometry alone.

The star IC 2602-17 rotates very rapidly, since it has one of the shortest periods known. HD 147890, on the contrary, has a rather long period, strengthening the impression that young Ap stars do not necessarily rotate much faster than older ones (North, 1982)

HD 137193 seems to have a relatively long period too; another, shorter period could be possible, but gives a greater residual dispersion in both the B and V bands.

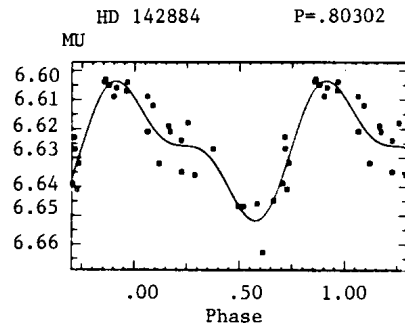
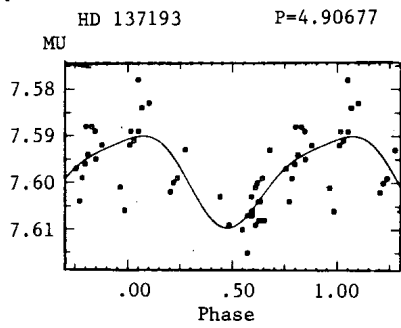
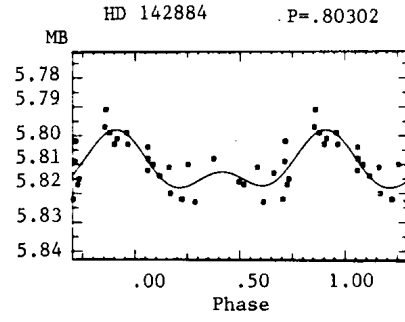
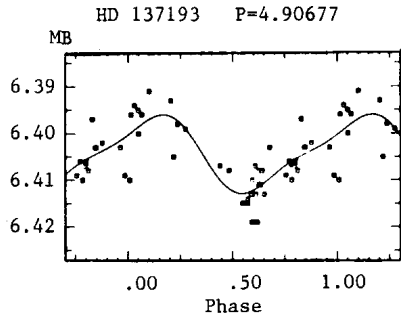
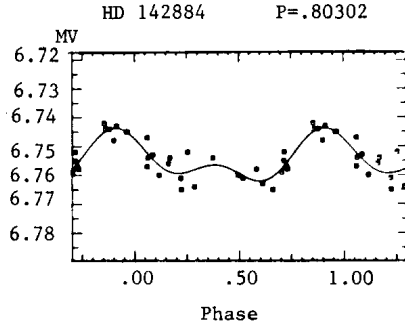
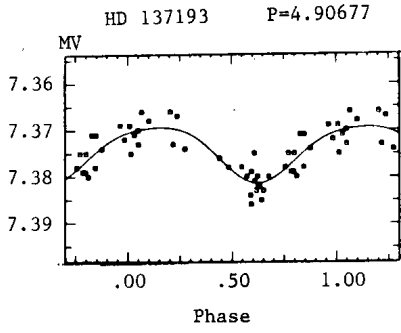


Figure 1

Figure 2

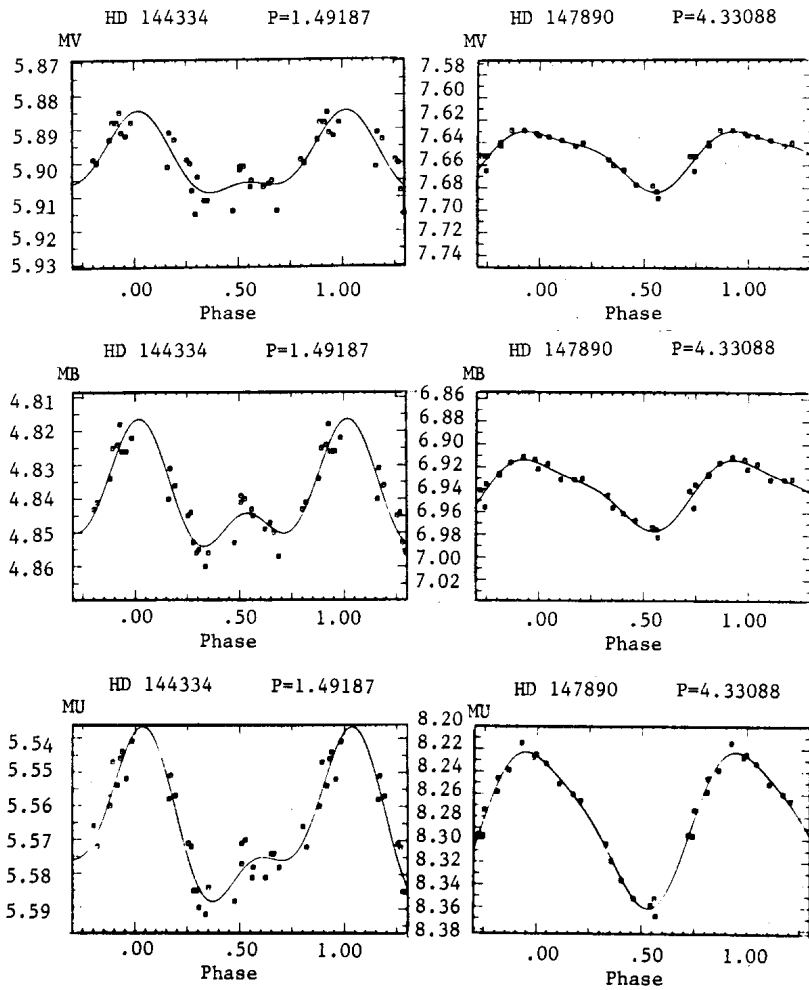


Figure 3

Figure 4

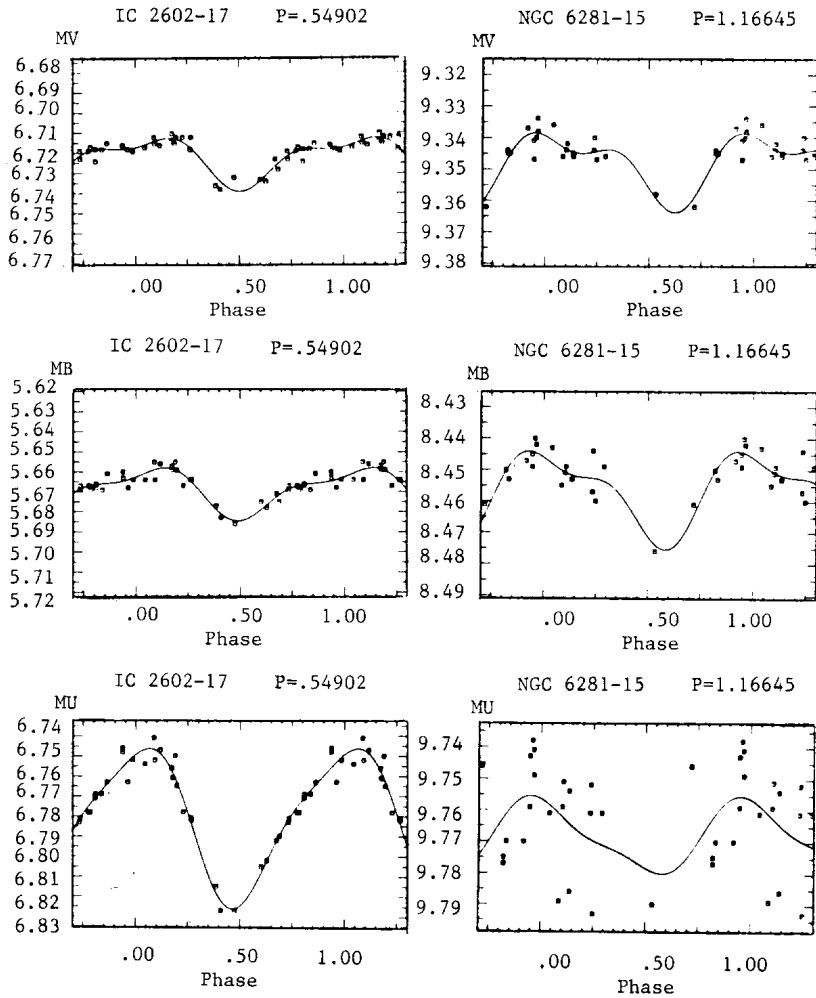


Figure 5

Figure 6

Table II

Cluster or association	HD	DM	Peculiarity	Period	Resid. [U]	dispersion [B]	No. of V meas.	Remark
Upper Cen	137193	-39°9848	Si	4.907	.0054	.0041	.0027	40
				0.8291	.0053	.0047	.0031	Less probable
Upper Sco	142884	-23°12597	Si	0.8030	.0061	.0049	.0033	29
Upper Sco	144334	-23°12700	He wk	1.492	.0048	.0042	.0042	29
				0.5982	.0047	.0055	.0047	Much less probable
Upper Sco	147890	-29°12529	Si	4.331	.0055	.0048	.0037	20
IC 2602-17	92385	-64°1374	Si	0.5490	.0046	.0028	.0028	30
NGC 6281-15	153948	-37°11216	$\Delta(V1-G)$	1.166	.0150	.0039	.0031	21
			=.034 or	8.119	.0120	.0051	.0035	Ph.metric AP star

The results are summarized in Table II, where the standard mean deviations of the residuals are also given, and in Figures 1 to 6.

P. NORTH

Institut d'Astronomie de
l'Université de Lausanne et
Observatoire de Genève
CH-1290 Chavannes-des-Bois
Switzerland

C. WAELEKENS

Astronomisch Instituut
Naamsestraat 61
B-3000 LEUVEN
Belgium

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