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A SEARCH FOR MAIA VARIABLES

The Maia variables are a mysterious group of possibly intrinsically variable stars. In the Hertzsprung-Russell Diagram they are situated between the Beta Cephei variables (B3) and the Delta Scuti stars (A2). Struve (1955) reported the possible light variability of the star Maia (B7III), but concluded later that Maia was not variable. The reported periods and sometimes even the reality of the reported variability of most other Maia variables cannot be regarded as established either. However, the variability of some stars in the B4 - A1 spectral range is quite certain. Some (or all) of this variability can be identified with known types of variable stars in this spectral range. Examples are the 53 Per variables (53 Per: B5, nonradial pulsation, see Buta and Smith 1979), and some peculiar A stars, which can show light variability due to rotation of a spotted surface or short-period pulsation. The observed hot border of the Delta Scuti instability strip at A2V cannot be regarded as absolute, and occasional short-period pulsation might occur in the A0 - A1 region. The incidence and amplitudes of pulsation, however, should decrease with increasing distances from the hot "border".

Some searches for variability in the Maia temperature domain have been negative (e.g. Percy 1978, Breger 1969). This is in contrast to various reports of variability in the literature for other individual stars. It therefore appears prudent to observe more stars and to document the observed variability as well as constancy.

Photoelectric millimag photometry of five promising candidates was obtained with the 0.76 meter telescope at McDonald Observatory. To decrease

TABLE I

## OBSERVED CONSTANCY OF PROGRAM STARS

STAR	SPECTRAL TYPE	(b-y)	CONSTANCY (mag)	TIME OBS. (hours)	DATE (U.T.)
6555	A2	0.176	0.002	3.8	78 Jun 10
			0.004	8.0	78 Jun 11
			0.005	5.3	78 Jun 12
6618	A0	0.016	0.002	3.8	78 Jun 10
			0.004	8.0	78 Jun 11
			0.005	5.3	78 Jun 12
6917	A2V	0.045	0.003	4.5	78 Jun 12
			0.003	6.0	78 Jul 3
			0.003	6.0	78 Jul 2
7091	A0	0.038	0.003	2.5	78 Jul 1
COMPARISON STARS					
6554	Am	0.173	0.002	3.8	78 Jun 10
			0.004	8.0	78 Jun 11
			0.005	5.3	78 Jun 12
6831	G0	0.374	0.003	6.0	78 Jul 3
6876	Am	0.143	0.003	4.5	78 Jun 12
			0.003	6.0	78 Jul 3
7044	dF2	0.242	0.003	4.5	78 Jun 12
7061	F6V	0.314	0.003	2.5	78 Jul 1
7071	G5	-	0.003	6.0	78 Jul 2
7154	dF4	0.286	0.003	6.0	78 Jul 2

the possibility of systematic observational errors, the conventional three-star millimag technique was applied: the program star was measured together with two comparison stars with the V filter. Every star was observed for one minute, and the telescope was then moved to the two comparison stars. The consecutive cycling allowed a close examination of the residuals.

No systematic variability could be detected, e.g. the residuals appeared random for all stars. This applied to the nights of highest photometric quality ( $\sigma \sim 0.002$ ) as well as the less perfect nights ( $\sigma \sim 0.004$ ). Table I lists the properties and observational results for the stars examined.

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