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VARIABILITY OF HR 904 AND HR 8421

In a recent photometric study of northern OB stars at intermediate galactic latitudes (Hill & Lynas-Gray 1977), UBV standards were selected from Johnson et al. (1966). Improved transformations were obtained by rejecting HR 904 and HR 8421 as standards. Both stars are listed as variable by Eggen (1966). Our individual observations are listed in Table I, the reductions having been effected in the manner described by Hill & Lynas-Gray (1977). Observations published by other authors are also listed in Table I, the means being presented in Table II if the individual observations were not published.

Significant systematic errors were not found for early-type stars (Hill & Lynas-Gray 1977) and as the colour coefficients show no significant night to night variation, any late-type stars observed should also be free of systematic errors. Observations over four nights of the late-type standards HR 2, HR 14, HR 201, HR 307 and HR 507 gave mean residuals and standard deviations, in the sense Johnson et al. - Lynas-Gray & Hill, of -0.006 ± 0.004 , 0.001 ± 0.007 and 0.006 ± 0.006 for ΔV , $\Delta(B-V)$ and $\Delta(U-B)$, respectively. This demonstrates the reality of the difference between our observations of HR 8421 and those obtained by Johnson et al. (1966) and Eggen (1966).

Light curves cannot be obtained as the temporal distribution of the observations is inadequate. Radial velocity determinations give -13 km/sec for HR 8421 (Harper 1934) and 81 km/sec for HR 904 (Przybylski & Kennedy 1965, Abt 1970). Small ampli-

tude irregular or semi-regular M-type variables have been discussed by Eggen (1973). HR 904 and HR 8421 may be of this type, though more observations are needed before a confident classification can be made.

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Table I
Individual Observations of HR 904 and HR 8421

HR	JD (Heliocentric)	V	B-V	U-B	Note
904	2438019.	6.16	1.65	2.17	1
	2438020.	6.14	1.67	2.18	1
	2439092.	6.24	1.74	2.05	1
	2439096.	6.29	1.73	2.04	1
	2439118.	6.13	1.77	2.07	1
	2439176.	6.22	1.70	2.00	1
	2441571.921	6.21	1.75	2.04	
8421	2438620.	6.09	1.58	1.68	1
	2438621.	6.15	1.60	1.73	1
	2438622.	6.18	1.58	1.72	1
	2439005.	6.12	1.60	1.76	1
	2439006.	6.13	1.61	1.73	1
	2439056.6281	6.139	1.591	1.767	2
	2439057.6465	6.144	1.608	1.753	2
	2439056.5985	6.118	1.599	1.788	2
	2439060.6046	6.081	1.613	1.768	2
	2439090.	6.14	1.61	1.71	1
	2439091.	6.13	1.60	1.74	1
	2439092.	6.10	1.62	1.68	1
	2439096.	6.10	1.61	1.77	1
	2439299.	6.23	1.50	1.93	1
	2441567.620	6.21	1.64	1.72	
	2441567.710	6.24	1.62	1.74	
	2441567.763	6.25	1.62	1.72	
	2441571.639	6.31	1.60	1.73	
	2441573.631	6.32	1.60	1.74	
	2441589.774	6.23	1.63	1.79	
	2441590.789	6.23	1.63	1.79	
	2441591.798	6.22	1.61	1.77	
	2441592.782	6.26	1.62	1.77	
	2441592.925	6.22	1.59	1.81	

1 - Observations by Eggen (1966)
2 - Observations by Johnson et al. (1966)

Table II
Mean UBV Photometry of HR 904

HR	V	B-V	U-B	N	MK	Referenes
904.	6.10	1.77	2.06	6		1
	6.12	1.73	1.99	2	M1 III	2
	6.11	1.77	2.07	3		3
	6.2V	1.74	2.04	8	M2 III	4
					M1 III	5
	6.2	1.74	2.06			6

Note: N - Denotes number of observations on which the mean is based
V - Denotes variability

References:

- 1 - Cousins (1962) : Observed range in V is 0^m06
- 2 - Przybylski & Kennedy (1965)
- 3 - Johnson et al. (1966)
- 4 - Eggen & Stokes (1970)
- 5 - Olson (1971):
Also gives $b-y=1.16$, $m_1=0.64$, $c_1=0.57$, $u-b=4.20$
- 6 - Cousins (1971)