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HD 172256 REVISITED+

Variations of the Be star HD 172256 (SAO 187112) have already been reported by Heck and Manfroid (1982) from 30 uvby observations obtained over seven consecutive nights in August 1981. The observed (peak-to-peak) amplitudes were $0^m.103$, $0^m.023$, $0^m.026$ and $0^m.099$ for V, b-y, m_1 and c_1 respectively, while the absolute internal accuracy for stars of a similar type was $0^m.011$, $0^m.005$, $0^m.007$ and $0^m.009$ respectively. The variations were therefore highly significant. In particular, significant variations of up to $0^m.1$ occurred within a single night. On that basis, HD 172256 was added to the growing list of Be stars showing variations on a time scale less than a day or two (Percy, 1982).

Table I

Variations of HD 172256 during June 1983 (observations at ESO 50 Danish telescope)

JD_o 2,445,000 +	V	b-y	m_1	c_1
500.6002	8.694	0.099	0.025	0.108
500.8347	8.759	0.115	0.003	0.129
501.8070	8.751	0.116	-0.008	0.141
502.5775	8.697	0.114	0.004	0.113
504.6313	8.713	0.112	0.005	0.121
504.7729	8.713	0.131	-0.023	0.123
505.5828	8.714	0.089	0.050	0.083
505.7601	8.698	0.119	-0.016	0.141
506.7184	8.731	0.119	-0.010	0.130
506.8243	8.731	0.115	-0.006	0.135
508.5654	8.686	0.125	-0.001	0.092
508.6523	8.725	0.128	-0.015	0.128
508.7458	8.731	0.120	-0.016	0.137
508.8312	8.704	0.110	0.005	0.122
508.8734	8.708	0.113	-0.013	0.133
509.6011	8.724	0.110	-0.011	0.145
509.7108	8.708	0.121	-0.007	0.120
509.8014	8.719	0.120	-0.013	0.130
509.8661	8.710	0.108	0.006	0.120
509.9035	8.706	0.111	-0.009	0.150

+Based on observations collected at the European Southern Observatory, La Silla, Chile

Table II

Variations of HD 172256 during July 1983 (observations at ESO 1m telescope)

JD_o	V	b-y	m_1	c_1
2,445,000 +				
518.5521	8.683	0.127	-0.015	0.142
518.6826	8.727	0.120	-0.013	0.145
518.8725	8.721	0.120	-0.014	0.131
542.6204	8.733	0.119	-0.004	0.142
542.6631	8.745	0.122	-0.008	0.141
542.7812	8.725	0.117	-0.002	0.126
545.5036	8.707	0.116	-0.004	0.108
545.5936	8.746	0.077	0.043	0.120
546.5020	8.692	0.119	-0.002	0.128
546.5913	8.723	0.121	-0.006	0.137
546.7245	8.820	0.116	-0.013	0.160
546.7508	8.802	0.116	-0.001	0.138
547.4952	8.677	0.125	-0.015	0.126
547.5527	8.708	0.125	-0.014	0.127
547.6415	8.747	0.112	0.001	0.129
547.6751	8.736	0.117	0.000	0.126
547.7302	8.743	0.112	0.012	0.101
547.7727	8.752	0.114	-0.012	0.114
548.4856	8.712	0.115	-0.002	0.139
548.6516	8.725	0.106	0.014	0.116
548.6761	8.719	0.109	0.004	0.123
548.6965	8.743	0.102	0.014	0.116

Table III

Peak-to-peak amplitudes of HD 172256 variations

	V	b-y	m_1	c_1
August 1981	0.103	0.023	0.026	0.069
June 1983	0.073	0.042	0.073	0.042
July 1983	[illegible]	[illegible]	0.058	0.059
June-July 1983	[illegible]	[illegible]	[illegible]	[illegible]

In several stars, such variations have been attributed to non-radial pulsation. Models involving rotation or duplicity have also been proposed. The observations of Heck and Manfroid (1982) were analyzed for periodicity using Deeming's (1975) method. The V observations could be fit by periods of $0^d.308$, $0^d.236$ or $0^d.444$ (in order of decreasing significance: these periods are related by 1 cycle/day), but the c_1 observations could not.

Additional observations have therefore been carried out in June and July 1983 at La Silla, Chile, with the 50 cm Danish and 1 m ESO telescopes, respectively. The data collected are presented in Tables I and II. The amplitudes

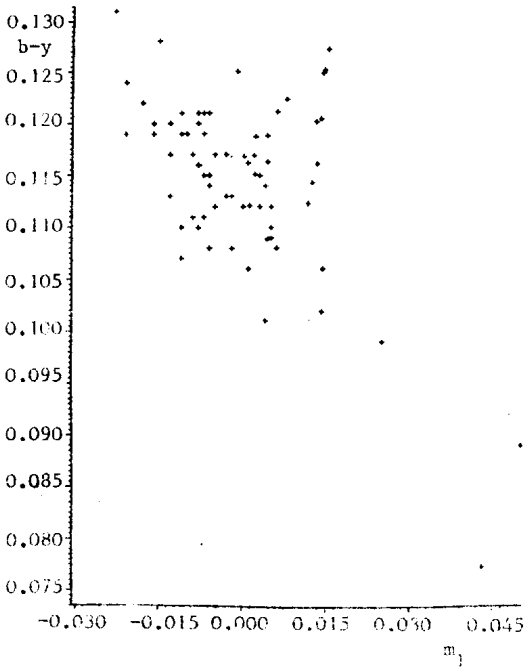

Figure 1

Correlation between b-y and m_1 for [illegible] observations carried out in August 198[illegible], June 1983 and July 1983.

are given in Table III and are large compared to the absolute internal errors estimated here to be $0^m.011$, $0^m.005$, $0^m.007$ and $0^m.009$ for V, b-y, m_1 and c_1 respectively in June 1983, and $0^m.012$, $0^m.006$, $0^m.008$ and $0^m.011$ in July 1983.

Again, there are variations of several hundredths of a magnitude on many nights, including a variation of $0^m.128$ within $0^d.22$ on JD 2445546. It has not been possible, however, to extract any strict periodicity from the data, and in particular, those mentioned earlier are not present again. Moreover, the variations in the different colours are mostly uncorrelated.

Only b-y and m_1 seem clearly anticorrelated (see figure), with m_1 varying more than b-y. Since $m_1 = (v-b) - (b-y)$, this would mean that (v-b) is also anticorrelated to (b-y).

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