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HR 1321 = ADS 3085 B : A NEW VARIABLE STAR

The bright star HR 1321 = HD 26913 is the fainter component of the visual binary ADS 3085. About 12 years ago the brighter component (HR 1322 = HD 26923) was found by Blanco et al. (1972) to be variable; later it was designated V774 Tauri by Kholopov et al. (1981). The photometry reported by Blanco et al. also showed some indication that HR 1321 was variable, with a range of approximately $0^m.03$ in V, but their data were neither tabulated nor plotted, so we cannot judge whether or not the suspected variability was periodic. On the strength of that reference HR 1321 was assigned the suspected variable star number NSV 1534.

In January and February of 1984 we observed HR 1321 differentially with respect to the comparison star HR 1360 on 18 nights. Care was taken to exclude light from HR 1322, which is only 65 arcseconds away. The telescope was the 11-inch Schmidt-Cassegrain at Gila Observatory, which has been described by Ziegler (1983). Table I lists the nightly means, where Δ is in the sense variable minus comparison and every value has been corrected for differential atmospheric extinction and transformed differentially to V of the UBV system. Figure 1 is a plot of those values using a period of $6^d.8$, which seems to represent the periodicity evident in the data, with an uncertainty of approximately $\pm\ 0^d.2$. The total range in brightness is approximately $0^m.06$ in V. A time of minimum brightness would be JD 2445719.7 .

We have found three references presenting measures of the Ca II H and K flux. Observations by Wilson (1978) between 1966 and 1972 showed no evidence of short-term variability but did indicate some "secular decrease". Similar observations by Middlekoop et al. (1981) over a 10-day interval did show short-term variability with a period (we estimate from their figure 2) of approximately 7 days. Nightly observations by Vaughan et al. (1981) over a 14-week interval also showed short-term variability, with a range of 11 % and a period of $7^d.2$.

Table I

Differential Photoelectric Photometry of HR 1321

JD(hel.) 2445000+	ΔV	JD(hel.) 2445000+	ΔV
719.71	+1.215	729.780	+1.172
720.79	+1.208	730.715	+1.185
722.687	+1.153	731.644	+1.194
723.717	+1.176	734.653	+1.200
724.707	+1.194	735.742	+1.164
725.756	+1.204	737.738	+1.181
726.692	+1.209	739.608	+1.197
727.825	+1.168	750.669	+1.185
728.699	+1.182	751.650	+1.190

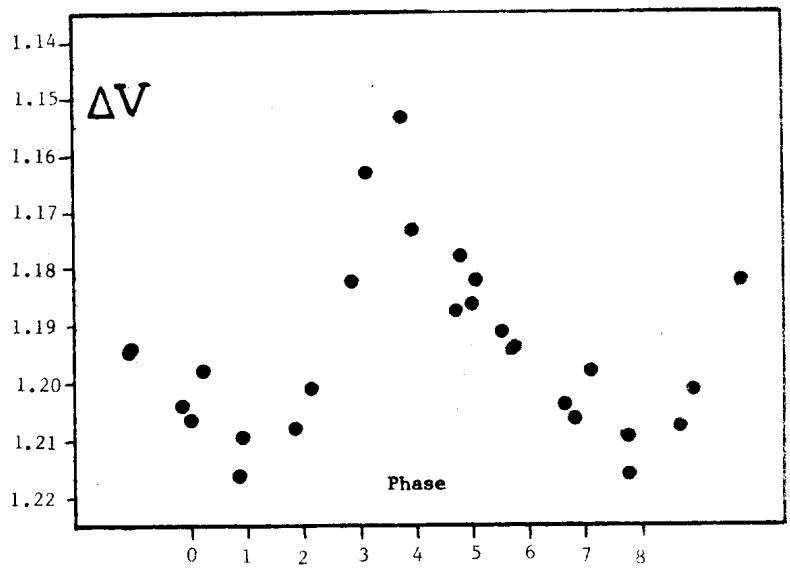

Figure 1

Light curve of the newly discovered variable star HR 1321. The ordinate is differential magnitude. The abscissa is phase, in days, based on a period of 6.8 days. Each point is a nightly mean although, in one case, two points overlap.

Vaughan et al. concluded that their $7^d.2$ period was the rotational period, traced by chromospherically active regions on the star's surface. Similarly, we believe that our $6^d.8 \pm 0^d.2$ period is the same rotational period, traced by areas of the photosphere which are darkened by large-scale star-spot activity.

With additional photometry during the next observing season we should be able to refine the accuracy of the photometric (= rotational) period of this interesting star, which is bright enough ($V = 6^m.93$) to be observed conveniently and important now that we see it belongs to a visual binary system both components of which are variable stars.

KENNETH ZIEGLER
MICHAEL SHIRLEY
BRIAN FRANCOM
WILLIAM FLORENCE

Gila Observatory
Claypool, Arizona

DOUGLAS S. HALL

Dyer Observatory
Vanderbilt University
Nashville, Tennessee

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