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HD 154973, A NEW SHORT PERIOD  
 VARIABLE STAR

It is estimated that about a third of the stars in the instability strip of the HR diagram are pulsators (Breger, 1979). Keeping this in mind, whenever a known variable star is going to be observed, systematically an additional comparison star is chosen with the spectral characteristics of a Delta Scuti star.

In the present case, when HR 6391 was observed, three comparison stars were chosen according to the criteria stated by Warman et al. (1974) or Baglin et al. (1973), namely that they must be of approximately the same magnitude and spectral type of the problem star and that they should be closer than two degrees to it. It is expected that at least two of them should behave alike and probably the third could be variable. The characteristics of the observed stars are shown in Table I.

Table I

STAR	$M_V$	Sp. T.	$\alpha$ (1982)	$\delta$ (1982)	Type
V HR 6391 (=V620 Her)	6.8	A8V	17 <sup>h</sup> 10 <sup>m</sup> 18 <sup>s</sup>	+24° 16'	Variable
C <sub>1</sub> HD 155543	7.0	F2	17 <sup>h</sup> 03 <sup>m</sup> 35 <sup>s</sup>	+24° 17'	Standard
C <sub>2</sub> HD 155104	6.8	A0	17 <sup>h</sup> 07 <sup>m</sup> 53 <sup>s</sup>	+24° 31'	Standard
C <sub>3</sub> HD 154973 (=BD+24°3124)	8.2	A2	17 <sup>h</sup> 07 <sup>m</sup> 05 <sup>s</sup>	+24° 37'	New variable

The observations were made with the 60-inch reflector telescope at the Observatorio Nacional, San Pedro Mártir, México, during the nights of May 20, 21, 22 and 23, 1982. A dry-ice cooled 1P21 photocell was used with the Johnson's V filter.

Each observation is the result of at least four ten-second integrations of every star and two ten-second integrations of the sky. The sequence  $C_1$  sky V sky  $C_2$  sky  $C_3$  sky was followed uninterruptedly. The photometric points reported in Figure 1 are the magnitude differences between HD 154973 and the average of the standard stars  $C_1$  and  $C_2$  interpolated to the time of the observation. The average of the points was then subtracted to establish the zero baseline. Our data points are accurate to 0.005 mag; the average time span between successive points is 0.008 day and the accuracy in time is of 0.001 day.

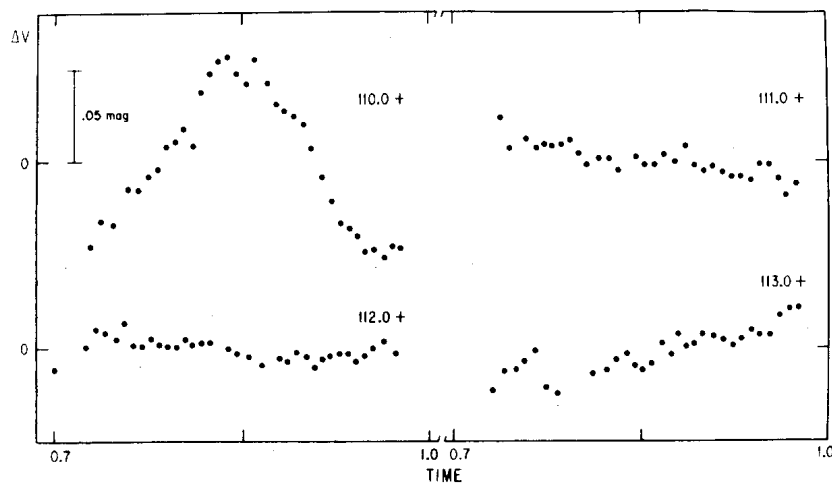


Figure 1.: Photoelectric photometry of HD 154973.

Ordinate is in magnitudes; to convert  
time shown to HJD add 2445000.0.

From Figure 1 it can be seen that the amplitude of variation changes from night to night from 0.10 mag on May 20, 1972 to basically a constant star on May 22. On one night (May 20) the calculated standard deviation of the difference in magnitudes of the comparison stars is about a third that of the magnitude of the variable star while, on May 22 is about a half.

This same behavior has been observed in HR 5005. This star was first reported by Danziger and Dickens (1967) but later, Valtier (1971) failed to detect any light variability on an observing run of almost five hours but the variability of the star was later confirmed by Jerzykiewicz (1975), and Peña et al. (1982). This is a behavior one could expect if more than one pulsation mode is present since at times destructive interference may occur.

By now, nothing can be said about the period of this star, but it is of the order of hours. Due to the fact that it has a spectral type A2, low amplitude and short period of variation, it could be said that it is a probable  $\delta$  Scuti star. More detailed observations are encouraged since they are necessary to determine its periodic content.

The observations reported in this paper have been submitted to the IAU Archives of Unpublished Observations of Variable Stars (Breger, at the University of Texas-Austin).

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