COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 3221

Konkoly Observatory
Budapest
28 July 1988
HU ISSN 0374-0676

A NEW SHORT PERIOD VARIABLE STAR IN ORION

During the observations of the W UMa type star ER Ori at the San Pedro Martir Observatory, Mexico on 10/11 and 12/13 December 1986, one of the comparison stars (C_2) clearly exhibited variation with respect to the other well-behaved comparison star. This behavior resembles that of a Delta Scuti type variable which has not been previously reported with a variable amplitude from one night to the other from two hundredths to 0.08 magnitude and a changing period on the order of hours, as shown in Figure 2.

The characteristics of these stars are summarized in Table I. They were observed with the 0.84 m telescope and a pulse counting system provided with Johnson's V filter. In order to increase the density of data points, the reference stars were considered as close to the variable star as possible. Therefore, the criteria of equal brightness and color was violated. The variable and reference stars are shown in the ID chart (Figure 1), taken from Taylor (1940), since the new variable star is not bright enough to appear in the BD catalogue.

In the original plan, the W UMa star ER Ori was going to be observed in differential photometry with respect to the two comparison stars. After the reductions, the dispersion in the magnitude difference C_1-C_2 was 0.014 on the first night and 0.012 on the second one, very large values for differential photometry.

The light curves obtained on these nights are presented in Figure 2. For each point, an integration time of 40s was used for each star and 10s was used for the sky background. The differences between the magnitude of the new variable star and the comparison star were calculated interpolating the latter to the times of observation of the new variable star. The precision of each point is of 0.003 in magnitude and 0.0035 d in time. On each night the mean value of the differences was subtracted to establish a zero base line. The resulting photometric values are presented in Table II.

To decide on the nature of this star more observations are needed, but one might speculate that because it has a period of the order of hours and a

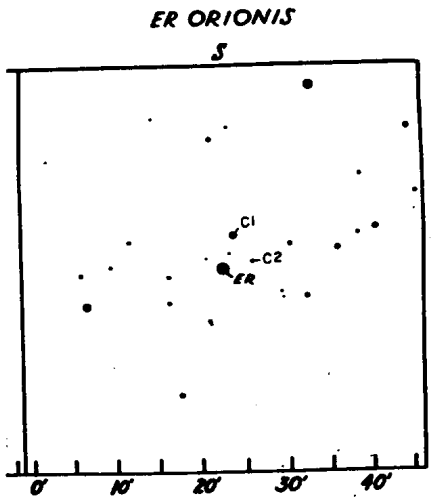

Figure 1: Identification chart of the new variable star.

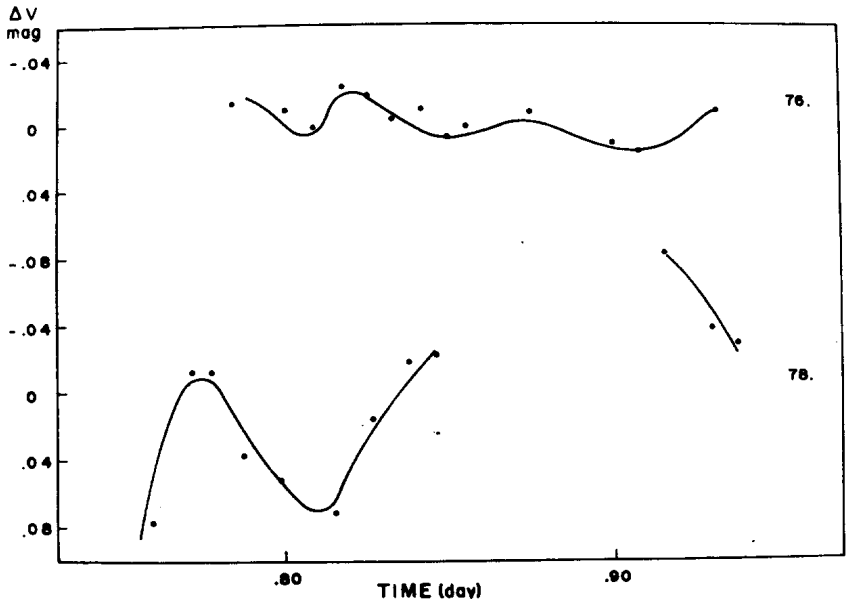

Figure 2: Light curve of the new variable star. On top: night HJD 2446776, bottom: night HJD 2446778.

Table I

Characteristics of the Observed Stars

	BD SAO	V	Sp	α (1950)	δ (1950)	Type
ER Ori	$-8^{\circ}1050$ 131854	$9^{m}.8$	G2	$05^{h}08^{m}51^{s}$	$-08^{\circ}36'59''$	W UMa
C1	$-8^{\circ}1051$ 131855	8.9	F8	05 08 56	-08 41 00	Comp.
C2				05 09 07	-08 37 59	New Var.

Table II

Photoelectric photometry of the new variable star with respect to the reference star

HJD 2446700+	ΔV	HJD 2446700+	ΔV
76.784	-0.014	78.760	+0.077
76.802	-0.009	78.772	-0.013
76.809	+0.002	78.777	-0.013
76.818	-0.024	78.788	+0.037
76.825	-0.019	78.798	+0.052
76.833	-0.004	78.815	+0.071
76.841	-0.009	78.827	+0.017
76.849	+0.007	78.838	-0.018
76.857	+0.002	78.846	-0.023
76.865	+0.002	78.915	-0.083
76.874	-0.009	78.930	-0.038
76.900	+0.012	78.938	-0.003
76.908	+0.017		
76.931	-0.009		

changing amplitude of variation of about 0.03 mag and possibly interacting modes of pulsation it should be a Delta Scuti pulsator.

We would like to thank the staff of the Observatorio Astronomico Nacional for their helpful assistance, to T. Gomez for typing and the drawings and to J.A. Miller for proofreading.

R. PENICHE[1,2] J.H. PENA[1,3]

[1]Instituto Nacional de Astrofisica, Optica y Electronica
Ap. Postal 51 y 216
C.P. 72000
Puebla, Pue

[2]Instituto de Astronomia - UNAM
Apdo. Postal 70-264
C.P. 04510
Mexico, D.F.

[3]On leave from Instituto de Astronomia - UNAM
Ap. Postal 70-264
C.P. 04510
Mexico, D.F.

Reference:

Taylor, Ph.H., 1940, Publ. Univ. Pennsylvania, Vol. VI., part I., 5.