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PHOTOELECTRIC OBSERVATIONS OF 20 Leo (HR 3889)

20 Leo is a spectroscopic - visual triple system in which a component is a δ Scuti variable star; the photometric variability was discovered by Danziger and Dickens (1967) and Elliott (1974). Fekel and Bopp (1977) have shown that component A is a spectroscopic binary ($P = 4.15$ d) consisting of two nearly equal, perhaps marginal Am stars, and the visual companion B ($P \sim 200$ y) is the δ Scuti star. The three stars have nearly like mass, rotational velocity and evolutionary state.

Elliott (1974) has found photometric variability with a period of about 0.082 d; he reports that little evidence was found for beats, and the amplitude ΔV of the light curve is ~ 0.02 mag.

Table I

J.D.Hel.	ΔV	σ	n	J.D.Hel.	ΔV	σ	n
2445031.371	1.286	.002	4	2445031.484	1.292	.002	3
.392	1.294	.001	6	.496	1.291	.004	6
.403	1.284	.003	6	.507	1.291	.003	6
.415	1.286	.003	5	.518	1.288	.004	5
.426	1.290	.002	4	.528	1.291	.001	4
.437	1.296	.002	5	.537	1.291	.005	6
.449	1.296	.004	6	.548	1.300	.004	6
.458	1.295	.001	4	.559	1.290	.006	6
.466	1.294	.001	4	.570	1.285	.005	6
.476	1.290	.002	6	.579	1.291	.006	4

We have observed 20 Leo during the night of March 2, 1982 at the 102 cm reflector of the Merate Observatory; we have used a standard V filter, a Lallemand photomultiplier and a Weitbrecht-Gardiner amplifier. The comparison (CF) and the check (CK) stars were HD 84739 and 84497, respectively. The results of the observations are reported in Table I and Figure 1. One can see that the variability of 20 Leo is small during the whole observing time; the amplitude is of order 0.01 mag and the curve does not seem to be regular. If we compare our results to Elliott's ones, we can conclude

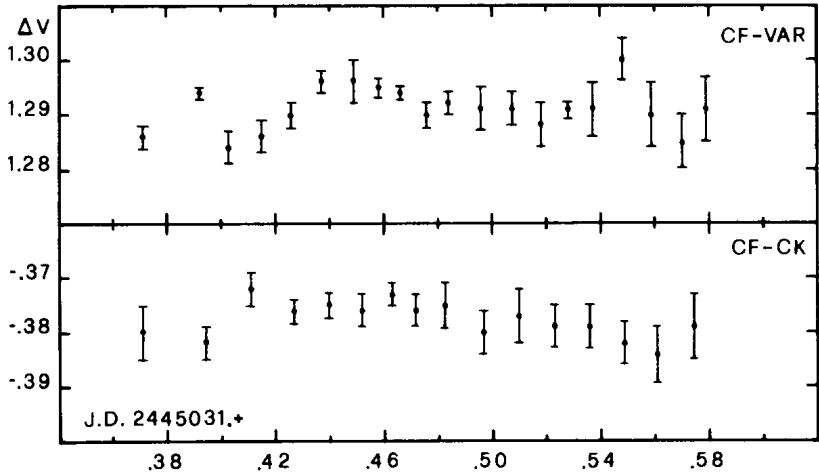


Figure 1

that there are amplitude changes and there exists probably more than one pulsation mode.

Since the δ Scuti component cannot be separated photometrically from its companions, the intrinsic amplitude is larger than that observed. If we use the ΔV -L-P relation (Antonello et al., 1981) to predict the intrinsic probable maximum amplitude, and, following Fekel and Bopp, assume three equal luminosities for the three components, we obtain a probable observed maximum amplitude $\Delta V \lesssim 0.03$ mag.

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