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THE DELTA SCUTI VARIABLE GG Vir

The star 27 Vir=GG Vir was announced to be a Delta Scuti variable with a period of $0^d.05$ by Bartolini et al.(1975). Sterken (1977) confirmed this variability and pointed out by means of six colour photometry that the period was variable from $0^d.042$ to $0^d.056$ during two nights.

Furthermore this star presents radial velocity variations (Palmer et al. 1968; Plaskett et al. 1922).

27 Vir was observed during 13 nights since February 7, 1975 to February 1, 1980 with the three colour photoelectric photometer described by Piccioni (1972) mounted on the 60cm reflector telescope of Bologna Observatory. 31 Vir and 33 Vir were used as comparison stars; the reductions were accomplished taking into account the colour effects of the atmosphere.

The collected data were analysed by means of a program written by F. Grilli in order to search for multiperiodicities using the Barning (1963) method; the range of periods investigated was from $0^d.022$ to $0^d.133$. The results for the comparison stars 31 Vir and 33 Vir are summarized in Table 1 and 2, respectively.

Table I

J.D.	Period	Amplitude	R.F.
2442451.	P1 0.037 ± 0.001	0.008 ± 0.002	13.3%
	P2 0.030 ± 0.001	0.006 ± 0.002	11.6%
	P3 0.064 ± 0.004	0.004 ± 0.002	6.7%
2442467.	P1 0.027 ± 0.001	0.012 ± 0.002	13.7%
	P2 0.031 ± 0.001	0.008 ± 0.002	10.1%
	P3 0.056 ± 0.003	0.006 ± 0.002	7.1%
2442468.	P1 0.064 ± 0.004	0.012 ± 0.002	18.5%
	P2 0.047 ± 0.002	0.012 ± 0.002	19.7%
	P3 0.027 ± 0.001	0.008 ± 0.002	12.6%

Table II

J.D.	Period	Amplitude	R.F.
2442467.	P1 0.027±0.001	0.014±0.002	24.4%
	P2 0.050±0.002	0.006±0.002	6.3%
	P3 0.033±0.001	0.006±0.002	4.3%
2442468.	P1 0.059±0.003	0.016±0.003	24.8%
	P2 0.031±0.001	0.012±0.003	18.1%
	P3 0.024±0.001	0.012±0.003	18.7%
2442833.	P1 0.030±0.001	0.010±0.002	18.4%
	P2 0.083±0.006	0.006±0.002	12.1%
2442836.	P1 0.030±0.002	0.008±0.002	25.0%
	P2 0.083±0.006	0.008±0.002	20.0%
	P3 0.042±0.003	0.004±0.002	13.0%
2442837.	P1 0.037±0.002	0.007±0.003	12.4%
	P2 0.061±0.005	0.008±0.003	17.4%
2442838.	P1 0.033±0.002	0.008±0.003	7.0%
	P3 0.023±0.001	0.006±0.003	6.0%

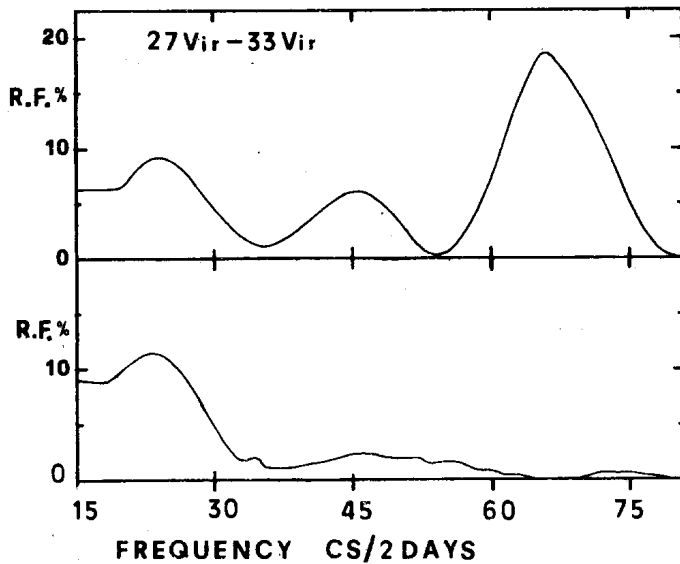


Figure 1

In the Figure the Reduction Factor (R.F.) defined by Barning(1963) is plotted against frequency (number of cycles in 2 days) for the night of February 24, 1976.

Analysing all the observations collected in the nights of February 23 and 24, 1975 together the values of the R.F. and the amplitude become smaller, as shown by Table 3. This result

Table III

J.D.	Period(Days)	Amplitude	R.F.
2442467/8	P1 0.02745±0.00008	0.010±0.002	12%
	P2 0.0559 ±0.0003	0.008±0.002	7%
	P3 0.0320 ±0.0001	0.006±0.002	6%
2442833/6	P1 0.0302 ±0.0003	0.008±0.002	20%
	P2 0.0813 ±0.0002	0.007±0.002	12%

confirms that 27 Vir has also variable period in a time scale of one day as Sterken (1977) found. However in both nights (February 24 and 27, 1976) the same periods $0^d.030$ and $0^d.083$ are found.

Beside these the periods $0^d.027$, $0^d.037$ and others close to $0^d.060$ often occur. According to the formulae given by Breger and Bregman (1975) and the values $M_v=1.92$ and $b-y=0.12$ published by Breger (1979), for the fundamental period and the overtones the values $P_0=0^d.057$, $P_1=0^d.043$, $P_2=0^d.035$ and $P_3=0^d.030$ are deduced that fit fairly well with the observed values.

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