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THE UNIQUE DOUBLE-MODE CEPHEID CO Aur

Recently, Mantegazza (1983) has analysed the photoelectric observations of the irregular variable star CO Aur made by Smak (1964) and DuPuy and Randall (1974), and has shown that this star is a double-mode, short period Cepheid pulsating in the first and second radial overtones. At the present, notwithstanding several surveys have been performed, only eleven double-mode Cepheids are known, and all of them are pulsating in the fundamental and first overtone radial modes.

In order to confirm that CO Aur is a double-mode Cepheid, we observed this star in the UBV colours with the photometer attached to the 102 cm telescope of Merate Observatory, from January to March, 1983

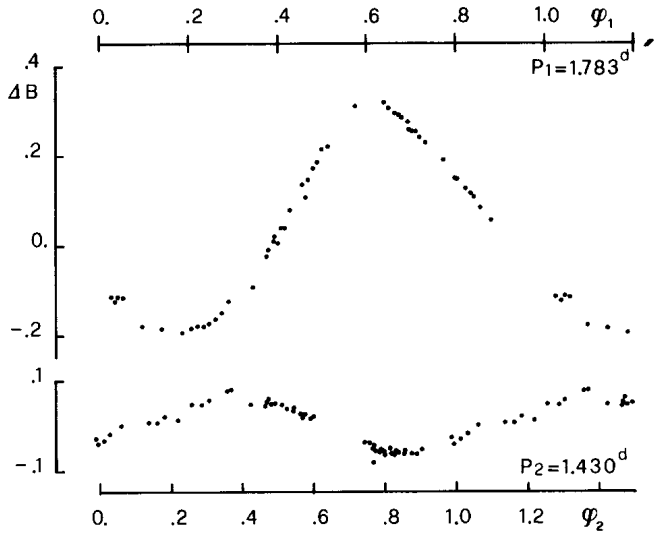

Figure 1

(thirteen nights). The instruments and the observational techniques are the same as those described by Antonello and Mantegazza (1982); in particular, in order to check the accuracy of our measurements, two comparison stars, BD+35°1308 and BD+35°1311, were adopted.

The observations confirm the previous result, that is there are two periodicities, P_1 = 1.783 d and P_2 = 1.430 d. The figure shows the B data prewhitened for the second periodicity and the first order coupling terms and phased with P_1, and the B data prewhitened for the first periodicity and the first order coupling terms and phased with P_2.

Full details on the data and a discussion on the importance of the Fourier analysis of the double-mode Cepheid light curves for the determination of the pulsating modes in Cepheids will be published elsewhere.

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