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SPECTROSCOPIC BINARY FREQUENCY AMONG CNO STARS

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ABSTRACT. Radial velocity variations are analyzed through a sample of 35 OB stars with CH anomalies. Bolton and Rogers' proposal (1978) is confirmed in the sense that the OBN stars appear preferably in short-period binary systems, in contrast to OBC stars.

Key words: STARS-BINARY — STARS-EARLY TYPE

With the purpose of studying the frequency of short-period spectroscopic binaries among the stars with carbon and nitrogen anomalies in the range of the OB stars, we obtained 12 spectra per star for a sample of 35 objects selected from the list of CNO stars published by Jaschek and Egret (1982). The spectrograms were photographed on IIIa-J emulsion using a Carnegie image-tube with the spectrograph of the lm-Yale telescope at Cerro Tololo. The plates were measured with a Grant machine. The observational results were analyzed statistically by using an analysis of variance (F test) and, establishing a significance level of 1%. For a non-random distribution of the radial velocities, we found that almost 80% ± 25% of the stars with nitrogen anomalies (OBN stars and moderate nitrogen stars altogether) are members of spectroscopic binaries of short period. The stars with carbon anomalies present only 9%±9% of spectroscopic binaries of short period. It is clear that the difference in the percentage of spectroscopic binaries of short-period between the OB stars with nitrogen and carbon anomalies is significant.

We believe that the high frequency of spectroscopic binaries among the nitrogen stars (almost 100% after completion factors are applied) is relevant to the mechanism for the production of this class of objects. This result confirms the findings of Bolton and Rogers (1978). Table 1 shows these results.

Table 1

Type of Object	N	variables	%
OBN (extremes)	11	8	73
OBC (extremes)	9	1	11
OBN (moderates)	12	10	83
OBC (moderates)	2	0	0
OBN Total	23	18	78
OBC Total	11	1	9

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