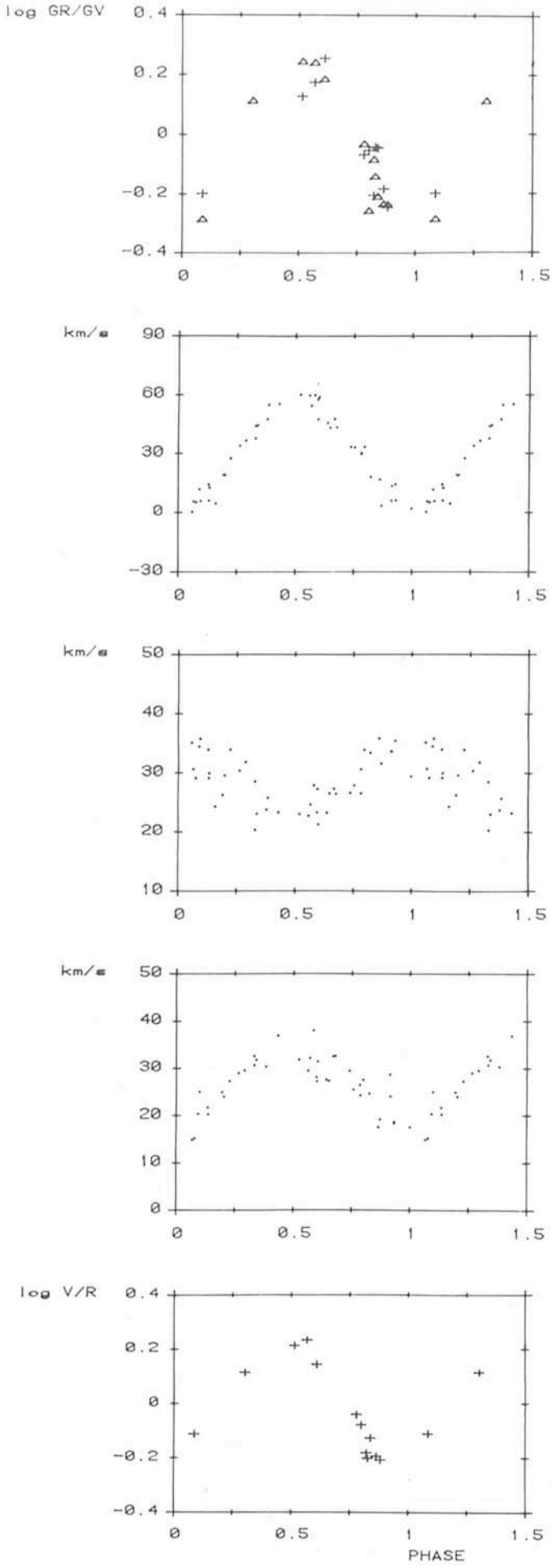

Fig. 2: *The principal spectral variations of 28 CMa: (a) ratio of the gradients of the red (GR) and the violet (GV) wings, crosses: He I 4009 Å, triangles: He I 4026 Å, (b) RV curve of the He I singlets, (c) RV curve of the total emissions in Hβ and Hγ, (d) RV curve of the central reversals of the emissions in Hδ to H10, (e) V/R ratio in Hδ.*

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the stellar surface in opposite sense to the direction of the stellar rotation. It is this direction of propagation of the waves which, together with the rotation, makes the actually observed period of the star appear longer than the one which would be observed in the rotating frame of the star.

The travelling wave itself is the cause of the variable asymmetric absorption-line profiles. Furthermore, since its velocity of propagation exceeds the speed of sound in the stellar atmosphere, an additional emission produced in the wake of the corresponding shockwaves can account for both, the V/R variation and the variable radial velocity of the total emission of a given line. The V/R variation is probably strengthened by the 180 degree phase shift between the RV curves of the emissions and the central reversals (cf. fig. 2).

A Few Conclusions

Keeping the "corotating" period constant, calculations show that the observed period is very sensitive to even small differences in stellar rotational periods and radii. With other words, one can expect for different stars periods as short as the one of 28 CMa or shorter and others which are longer, up to many years. Thus the explanation of the behaviour of 28 CMa provides an interesting working hypothesis for additional future examinations of other Be stars. In particular, nonradial pulsations may enable a Be star—in connection with its high rotational velocity—to maintain its envelope.

To verify nonradial pulsations in Be stars spectroscopically may be somewhat difficult because of the generally strong rotational broadening of their spectral lines. On the other hand, one is encouraged by the increasing number of known line-profile-variable B stars in all luminosity classes. This leads to the supposition that a surprisingly high fraction of all early-type B stars undergoes nonradial pulsations. Therefore, the observations of 28 CMa, which are until now in several aspects more or less unique for Be stars, will hopefully contribute to overcome the isolation of Be stars from other stars, which is probably a major reason for the above-mentioned, current unsatisfactory situation of the investigation of Be stars.

List of Preprints Published at ESO Scientific Group

September–November 1979

68. L. WOLTJER: High Energy Astrophysics and Cosmology (IAU Proceedings). September 1979.
69. G. CONTOPOULOS: The 4:1 Resonance. October 1979. *Celestial Mechanics.*
70. E. ATHANASSOULA: Bar-driven Spiral Structure. *Astronomy and Astrophysics.* October 1979.
71. J. MATERNE: Mass-to-light Ratios of Nearby Groups of Galaxies. *Astronomy and Astrophysics.* October 1979.
72. J. BREYSACHER and N. VOGT: Spectroscopy of Ex Hydrae. *Astronomy and Astrophysics.* November 1979.