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DETERMINATIONS WANTED
OF THE GAMMA-VELOCITY
OF BETA CEPHEI IN 1964—67

Beta Cep has been reported by B. Smith (1) to be a spectroscopic binary with the elements:

$$K_1 \sin i = 16.0 \text{ km/sec}, \quad e = 0.66$$

$$\omega = 187^\circ, \quad P = 50 \text{ years.}$$

The binary nature of the star and Smith's period are also mentioned in the second edition of Kukarkin and Parenago's "General Catalogue of Variable Stars".

The reality of this period was however called in question by Struve (2), and it is easy to show that the whole set of elements is not self-consistent. The mass-function, for instance, admits only a maximum orbital velocity of 11 km/sec for the period and the eccentricity given, and for an assumed mass of $20 M_\odot$ (chosen deliberately high) and a mass ratio = 2 (which seems not exaggerate, since the secondary is invisible). This excludes Smith's value for the projected orbital velocity.

But Smith's value for $K_1 \sin i$ was based on a few very low gamma-velocities determined at Yerkes and Pulkovo in the years 1914-17. Since then 50 years have elapsed, hence it would be desirable to follow the run of the gamma-velocity in the course of this and the coming years.

The interest of accurate determinations of the orbital elements of Beta Canis Majoris stars which are at the same-time members of binary systems lies in the fact that in this case the mass function enables one to make a fair estimate of the probable inclination of the orbital and hence of the equatorial plane. This in turn enables

one to derive the probable velocity of rotation. And the knowledge of the real velocity of rotation provides an experimental test of the soundness or the incorrectness of some recent interpretations of the beat phenomena observed in those stars. (3) (4) (5).

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References

- (1) B. Smith, *Astroph. Journ.* , 98, 82, 1943.
- (2) O. Struve, D. H. McNamara, S. M. Kung and C. Beymer, *id.* , 118, 39, 1953.
- (3) S. Chandrasekhar and N. R. Lebovitz, *id.* , 136, 1105, 1962.
- (4) E. Böhm-Vitense, *Publ. Astr. Soc. Pacific* , 75, 154, 1963.
- (5) A. van Hoof, *Zeitschr. f. Astroph.* , in print.