

COMMISSION 27 OF THE I. A. U.  
INFORMATION BULLETIN ON VARIABLE STARS

Number 2066

Konkoly Observatory  
Budapest  
1982 January 5  
*HU ISSN 0374-0676*

VARIABLE STARS IN THE GENERAL CATALOGUE OF TRIGONOMETRIC  
PARALLAXES

In preparation for W. van Altena's forthcoming revision of the General Catalogue of Trigonometric Parallaxes, I have checked the earlier version and its supplement (Jenkins 1952, 1963) for variable stars. The 1958 edition of the GCVS and its 1960 supplement has 194 stars in common with the parallax catalogues. However, only two thirds of these (134 stars) are noted as variable in the parallax catalogues. Subsequently, of course, large numbers of new variables have been discovered. Now at least 458 of the nearly 6400 parallax stars are named variables (Kukarkin 1969-77, Kholopov 1977-81). A great many others are given in the catalogues of suspected variables (Kukarkin 1951, 1965) but they are not included in this survey.

The distribution of the parallaxes of the named variables is shown in the Figure. These represent nearly all types of variability, from supernovae down to stars of nearly negligible variability. 55 are eclipsing variables, 9 are of dubious variability, classified as "cst", and the types of variability are still lacking for 83. Only 27 of the variables have parallaxes over  $''100$ . Of these 18 are of the UV Ceti type and 3 are BY Dra stars (a group that may be related to the UV Cet). One (RT Lac) is an eclipsing binary, while the remaining 5 are of undetermined type. There are 10 additional UV Cet stars, all with parallaxes over  $''045$ . The lower part of the Figure shows the distribution of the parallaxes of the UV Cet and BY Dra stars. In 1958 the GCVS listed 11 stars as UV Cet type, of which 8 are included in the parallax catalogues, but only one being noted as variable, with no type assigned. These parallax stars had been chosen for

parallax determination on the basis of their proper motions,  
not because of their peculiar variability.

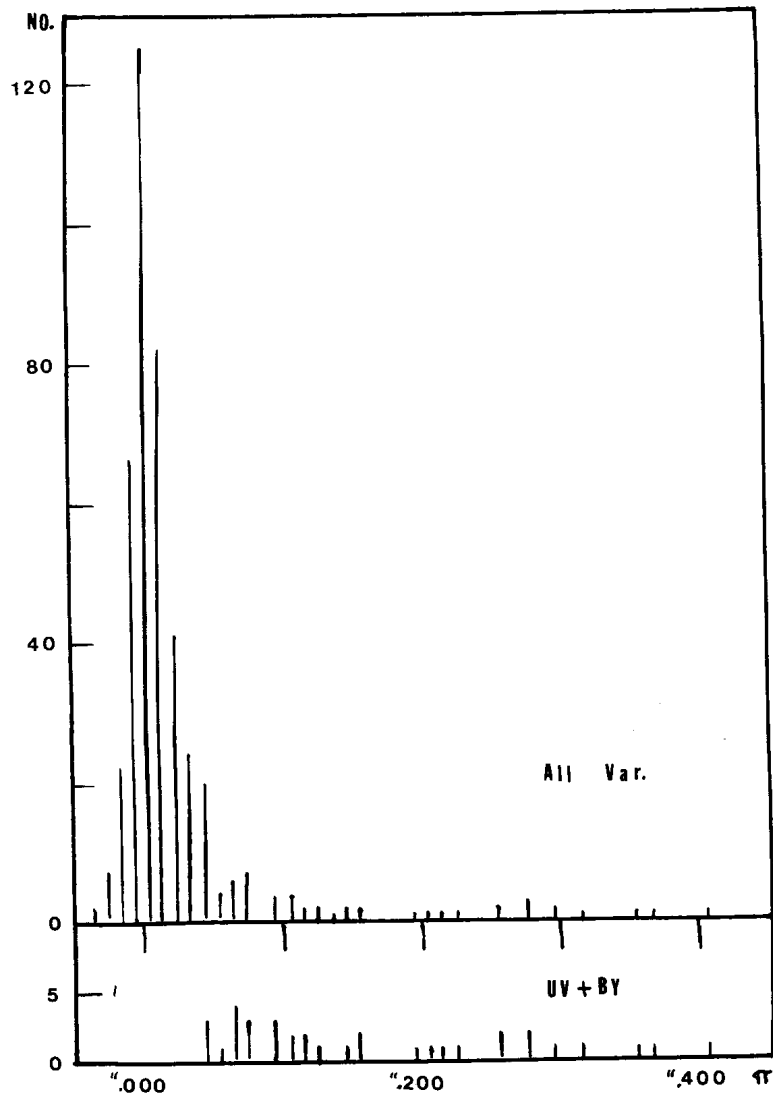


Figure 1

The available apparent magnitudes of the UV Ceti stars as given in the GCVS are on heterogeneous system, ranging from  $v$ ,  $p$ ,  $V$ ,  $B$  through  $U$ . Older visual magnitudes in the parallax catalogue are often grossly in error, especially for the fainter stars (see, for example, Hoffleit 1970 for a comparison of photographic estimates, indicating differences with a probable error of over a whole magnitude. Provisional estimates of visual magnitude of faint stars are often no better). A crude reduction of the parallaxes to absolute magnitude, using the published visual magnitudes of the UV Ceti stars, gives an unweighted mean  $M_V = 11.7 \pm .4$ , the individual values ranging from 8.5 to 16.5.

Parallaxes less than  $"030$  are rarely significant. Among the 72 stars with parallaxes larger than  $"030$ , in addition to the UV Ceti stars, there are 13 eclipsing variables and 9 Delta Scuti stars. Other types are represented by less than five stars each. In all, the parallax catalogues contain 33 known Delta Scuti stars. The 9 with parallaxes exceeding  $"030$  indicate a mean absolute magnitude,  $M_V = 2.1 \pm .1$ , the values ranging from 0.4 to 4.2. For no other types is there a sufficient number of significant parallaxes to warrant an estimate of the mean absolute magnitude.

The new catalogue of trigonometric parallaxes will contain not only revisions of the currently known parallaxes, and in many cases up-dated photometric data, but a few thousand additional stars, undoubtedly including many more variable stars. As it will be some time before this compilation is completed, the list of variables among the stars in the 1952 catalogue and its 1963 supplement will be furnished to interested users upon request.

DORRIT HOFFLEIT  
Yale University Observatory  
Box 6666, New Haven  
Conn. 06511, U.S.A.

## References:

- Hoffleit, D., 1970, Trans. Yale Univ. Obs. 30, (25).
- Jenkins, L., 1952, General Catalogue of Trigonometric Stellar Parallaxes, New Haven.  
1963, Supplement to the General Catalogue of Trigonometric Stellar Parallaxes, New Haven.
- Kukarkin et al., 1951, Catalogue of Stars Suspected of Variability, Moscow  
1965, Second Catalogue of Suspected Variable Stars, Moscow  
1969-71, General Catalogue of Variable Stars, Vols. I - III, Moscow  
1971, First Supplement to GCVS  
1974, Second Supplement to GCVS  
1976, Third Supplement to GCVS, Moscow  
1977, 62nd Name-List of Variable Stars, IBVS No.1248
- Kholopov et al., 1977, 63rd Name-List of Variable Stars, IBVS No. 1414  
1979, 64th Name-List of Variable Stars, IBVS No. 1581  
1981, 65th Name-List of Variable Stars, IBVS No. 1921