COMMISSION 27 OF THE I. A. U.
INFORMATION BULLETIN ON VARIABLE STARS
Number 1879

Konkoly Observatory
Budapest
1980 December 5

HU ISSN 0374-0676

ON THE SUSPECTED ULTRASHORT PERIOD W UMa TYPE BINARIES BG CrA AND AB Tel *

Investigations of W UMa stars with periods shorter than $0^d.25$ are particularly interesting with respect to the stability limit of such objects. CC Comae ($P=0^d.22$) is so far the shortest period object photoelectrically confirmed. There are, however, still some objects listed in the fifth edition of the "Finding List" and the "GCVS" with shorter periods. In 1980 some southern short period W UMa stars have been observed photoelectrically with the ESO 1m telescope and a two channel UBV photometer. Inferior weather conditions affected the measurements reported here and prevented a completion of the light curves. However, the measurements are sufficient for a number of important conclusions. BG CrA has been observed on JD 2444440 (July 20).The observed run of $0^d.25$ shows only one minimum. Together with the discovery observations by van Gent (1932), a period of approximately twice the value previously determined for this star has been assumed as the best fit. The B and V light curves, shown in Figures 1 and 2, obey the ephemeris

$$2444440.5125 + 0^d.4446 \cdot E.$$

The assignment of phase 0.50 to the observed minimum is essentially arbitrary. Only a part of the light curve irregularities can be related to atmospheric influences. The general nature of the light curve resembles a complicated semidetached binary or magnetic active short period RS CVn stars. So BG CrA is possibly not a W UMa system.

*Based on observations made at the European Southern Observatory, La Silla, Chile.

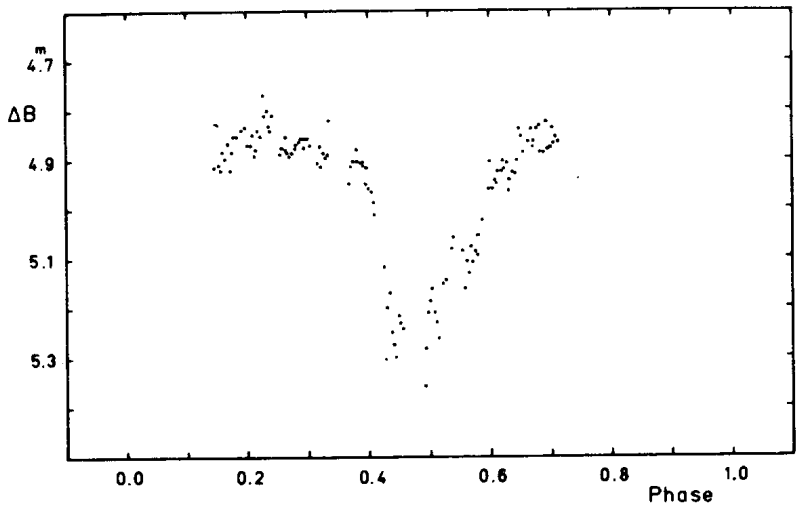

Figure 1 : B measurements of BG CrA

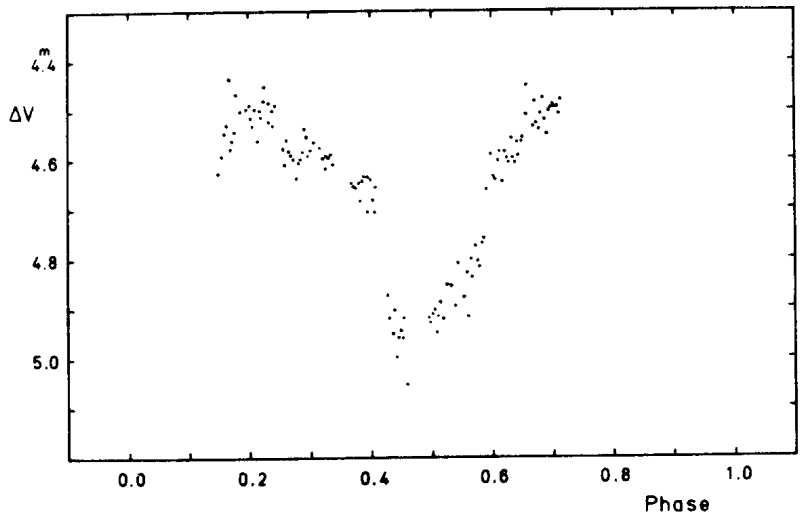

Figure 2 : V measurements of BG CrA

AB Tel has been discovered by Shapley et al. (1939). According to them, its period is $0^d.17$, and they classified it as eclipsing binary of W UMa type. The object has been observed on JD 2444435, 2444440 and 2444441 with the same instrument as BG CrA. The measurements are shown in Figures 3 and 4.

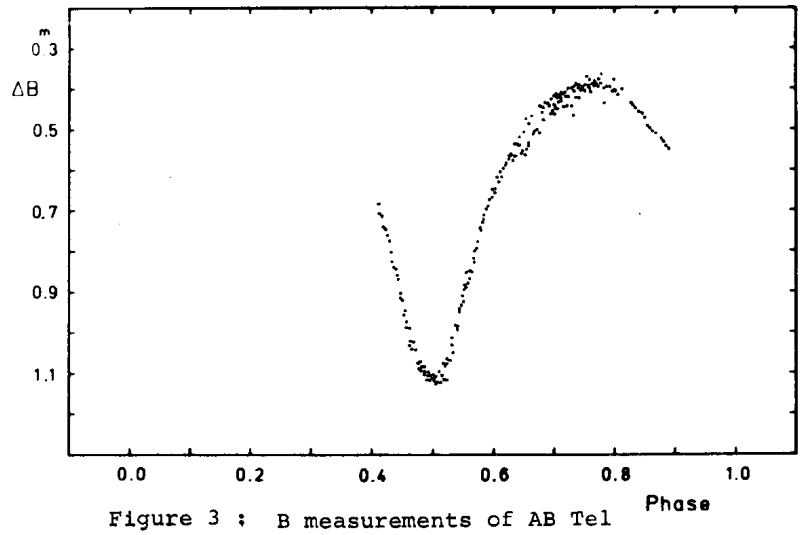

Figure 3 : B measurements of AB Tel

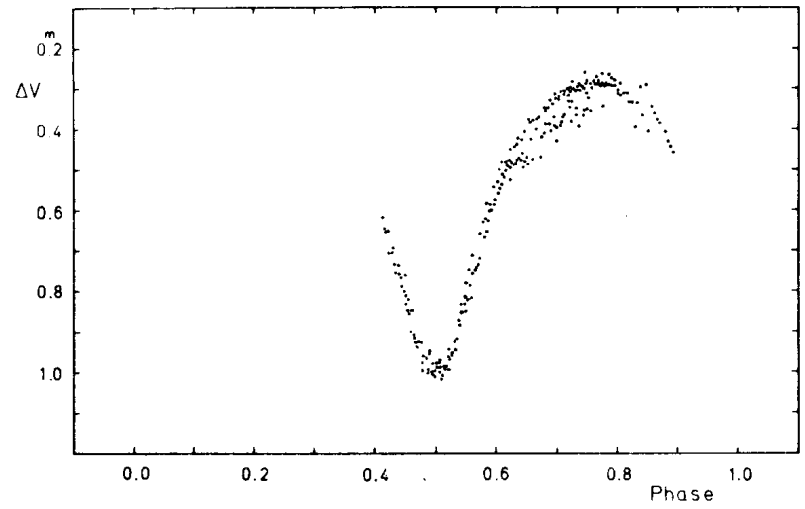

Figure 4 : V measurements of AB Tel

From the minima times

JD 2444435.5645

JD 2444441.7580

which refer to the same phase, a period of $0^d.32597$ has been determined. It is not known, however, if this minimum is a primary or a secondary one. So again a phase assignment of 0.50 to it is arbitrary. Obviously this object is indeed a genuine W UMa system. The minimum shows a slightly declining profile. There are indications that it represents an annular eclipse. From the large amplitude it is concluded that the mass ratio of the components is at least 0.5.

My thanks go to the ESO staff members who assisted me in the observations.

M. HOFFMANN
Observatorium Hoher List
5568 Daun / Eifel, BRD

References:

van Gent, H., 1932, Bull.Astr.Inst. Netherlands 6, 163

Shapley, H., Boyce, E.H., and Boyd, C.D., 1939, Harvard Ann. 90, No. 9