THE THREE-COMPONENT MODEL OF ECLISPING BINARY SYSTEM

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The three-component model is based on the following assumption:

1. The orbits of both components are circular
2. The primary and the secondary components are spherical
3. The flat disc is centerd around the primary component.

The syntetic light curve (Fig. 1) calculated from this three-component model showed a suprising result: the shape of the three-component model light curve is almost the same as the one from the classical two-component model.

Thus, the common practice based on a look at the observed light curve, and claiming "this is a typical Algol system which should be interpreted by a classical two-component model" can be misleading.

The unexcepted fact, that one cannot recognize whether the binary is represented by a two- or a three-component model after the shape of the observed light curve only, is worth of notice.

When we analyse a synthetic three-component light curve using the two-component model, we can come at wrong results.

The geometrical elements of the original three-component model differ drastically from the photometric elements and luminosities obtained by the analysis which assumes a classical two component model. Moreover, the two-component model analysis gives the unrealistic values of the third light in the system. The results of this investigation confirmed results of previous analyses of the eclipsing system TW Cas (Horák and Chochol, 1987). The "masking effect" is a result of a wrong model interpretation of the observed light curve. Thus, there is a danger at least some intepretations of Algol-type light curves may be wrong. No changes of the photometric elements in the two-component model can remove these discrepancies.

This is due to the presence of disc around one component in the three-component model.

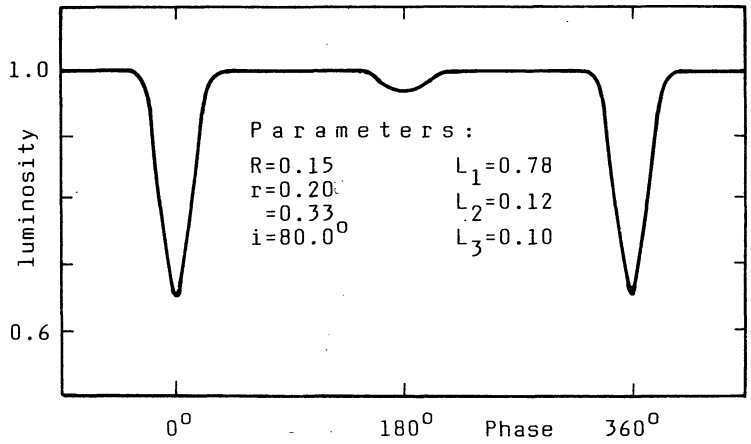

Fig. 1. Synthetic light curve of a three-component model.

REFERENCES

Horák, T.B., Chochol, D.: 1987, Publ. Astron. Inst. Czechosl. Acad. Sci. 70, 277.