

**ASTRONOMICAL MEASURERS AND A FUNCTION OF CEPHEID
IN THE DETERMINATION OF ASTRONOMICAL DISTANCES**

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Abstract. A detail classification of astronomical measurers is given with a specific retrospective view to Cepheid and their function of standard candle. The goal was determination of the relation of period of variability and absolute luminosity for the set of Galactic Cepheid. For that sake a new quasi-method is used and it is consisted of three steps: 1. the determination of the period-radius relationship, $P - R$; 2. the determination of the surface brightness-color index relationship, $F_v - (V - R)_0$; 3. the determination of the period-luminosity relationship, $P - M_v$. The quasi-method is a special mix of Wesselink's (Wesselink 1969) classical method and Barnes and Evans's method (Barnes et al. 1976, 1977). From the set of 258 classical Cepheid 246 are used and the new relation of the period-luminosity is obtained: $M_v = -2.767(\pm 0.002) \log P - 4.929(\pm 0.002) + const$. The most uncertain step of the quasi-method is the determination of period-radius relationship. The assumptions in this step influence the accuracy of other two relationships. The using of HIPPARCOS parallaxes (in the second step) is another inaccuracy source for the period-luminosity relationship. The constant of the period-luminosity relationship is not determined and once again it is the main source of dilemmas and questions connecting with this relation.

References

- Barnes, T. G., Dominy, J. F., Evans, D. S., Kelton, P. W., Parsons, S. B., Stover, R. J.: 1977, *Mon. Not. R. Astron. Soc.*, **178**, 661.
Barnes, T. G., Evans, D. S.: 1976, *Mon. Not. R. Astron. Soc.*, **174**, 489.
Barnes, T. G., Evans, D. S., Parsons, S. B.: 1976, *Mon. Not. R. Astron. Soc.*, 503.
Fermie, J. D., Beattie, B., Evans, N. R. and Seager, S.: 1995, *IBVS*, No. 4148.
Wesselink, A. J.: 1969, *Mon. Not. R. Astron. Soc.*, **144**, 297.