A METHOD FOR STAR IMAGE SEPARATION FROM THE BACKGROUND IN AUTOMATIC COORDINATE MEASUREMENTS

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A method for star image separation from the background is suggested. Applicability of the method is shown on the basis of automatical coordinate measurements of the double star images on astroplates with the use of the "Fantazia-2" Automatic Measuring Complex (AMC) (Kiritchuk *et al.*, 1984). The method provides a minimal dispersion of distances between components of a binary if the statistics of the centre of mass (CM) of discretized image is used for measurements. It have been shown that the CM cannot be considered as an accurate characteristic of the star image position. Nevertheless, the CM showed to be a valuable tool for determination of some local astroclimate parameters (isoplanetic square size). It was assumed that the process of star image formation could be easily checked with the help of the CM statistics if considered level by level in the sense of optical density . Positions of the center of mass of each component in the binary were determined as a function of the threshold and then the cross-correlations between the trajectories were calculated. Strong correlation between images of components of the double star ADS 3353 (angular distance $r = 4''$) have been discovered, so the components of a binary should not be processed alone in this case. Additional experiments with the double stars ADS 8397 (angular distance between components $14''$) and ADS 1090 ($20''$) have shown that the correlation between the components of the binary became less, but still exists, while the distance is increasing.

References

Kiritchuk, V.S. et al., (1984), The Automatic Measuring Complex based on 'Zenit-2', *Avtometria*, **4**, pp. 97-101.