

A LOST-IN-SPACE APPROACH TO REGISTRATION OF DIGITIZED WIDE FIELD PLATES OF ARCHIVAL ASTRONOMICAL OBSERVATIONS

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Abstract

The presumable image database of archival wide field plates (WFP) astronomical observations is evaluated worldwide to about 2 000 000 images, with a common volume of about 2TB and more. The WFPDB of the Institute of Astronomy of BAS contains (and/or links to) more than 150 000 WFP images from several European astronomical archives. The majority of these images are yet to begin attaching to the world catalog of observed stars, i.e. to be registered in universal stellar coordinates (Kounchev, Tsvetkov, Dimov et al, 2010). From one hand, as older are the plates as important they are for the contemporary astronomy. But the calibration tools of used optical telescopes as well as their positioning devices are quite “far away” from contemporary requirements (Starck, Murtagh, 2002). Something more, there are cases of irreparable damages in (some of) the registration and/or calibration parameters that means, these WFP images are to be registered in the whole stellar catalog, i.e. as lost-in-space object (Spratling, Mortari, 2009), but not in a restricted (and preliminary known) stellar region (Bertin, Arnouts, 1996). The current work proposes a method for registration of WFP ($\sim 2^\circ$) stellar images that are already annotated as lost-in-space. The method references the experience in the on-line space orientation of satellites using wide angle ($\sim 20^\circ$) cameras (Kolomenkin et al, 2008).

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