

**RESULTS OF MODERN PROCESSING OF THE
PHOTOGRAPHIC OBSERVATION OF URANUS AND
NEPTUNE FROM ARCHIVES OF UKRVO**

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We continue work, started in 2014, to use accumulated resources of UkrVO digital archive, containing images of Uranus and Neptune. Main part of used archives are from Research Institute - Nikolaev Astronomical Observatory (NAO) and Main Astronomical Observatory of National Academy of Science (MAO). Also some plates from Ulugh Beg Astronomical Institute of the Uzbek Academy of Sciences (AI UAS) were used. Numbers of plates containing images of Uranus and Neptune are, respectively, the following: 220 and 218 plates in NAO, 64 and 35 plates in MAO, 15 and 3 plates in AI UAS. Most of plates have 3 exposures per plate. The epoch of observation for most plates is 1960 to 1998.

All plates were scanned with the resolution not less than 1200 dpi. Each plate of NAO was scanned 5 to 6 times. Plates containing images of Uranus and Neptune were, respectively, scanned more than 1200 and 1100 times in NAO. All plates of other observatories were scanned only once. Raw image processing was conducted for all scans obtained in observatories.

Star identification for scans was conducted for more than 2300 scans in NAO and for 75 scans in MAO and 18 scans in AI UAS. Coordinates of all objects were obtained. Positional accuracy of reference stars has value of 0.04"-0.20". Standart deviation of planet's position is in ranges 0.10-0.12 pixel in main part of archive, that corresponds depending on the scale from 0."08 to 0."26. The comparison of the new topocentric positions of planets with Horizons ephemeris was made for calculation (O - C) residuals and their RMS.

CATALOGUE OF POSITION AND PROPER MOTIONS OF STARS IN THE VICINITY OF OPEN CLUSTERS

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In the Research Institute - Nikolaev Astronomical Observatory (NAO) catalogue of position and proper motions of stars in the areas around the Galactic open clusters was created by using photographic and CCD observations obtained with different telescopes in the 20-21 century.

Near 290 plates (20x20cm, 5x5e) obtained with the Zonal Astrograph of NAO (D = 116 mm, F = 2040 mm, scale = 101"/mm) in 1962-1993. More than 20 thousands CCD frames obtained with KT-50 telescope (D = 500 mm, F = 3000 mm, 43rx43r, scale = 0.8"/pix) in 2011-2015. Also we downloaded more than 270 thousands FITS files from MAVO image archives with observational epoch from 1953 to 2010.

Catalogue of position and proper motions of about 2.7 million stars (7-16)^m in Tycho-2 system (NAO2015pm) was obtained. The accuracy of positions on both coordinates is ranged from 0.02-0.04" for the stars of (7-12)^m to 0.08-0.11" for the stars of (14-16)^m. Inner accuracy of proper motions is near 0.04"/year. Systematic difference between common stars of NAO2015pm and XPM catalogues less than 0.005"/year on both coordinates.