

DATA PROCESSING OF PLATES CONTAINING IMAGES OF URANUS AND NEPTUNE FROM UKRVO DIGITAL ARCHIVE: STRUCTURE, QUALITY ANALYSIS

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Main goals

- To find and scan of all Ukrainian photoplate observations of Uranus and Neptune with a satellites.
- Processing of the received images.
- Receiving of a new coordinate of the planets and comparing results.
- Using of those coordinates for improvement of the orbital theory of the planet and its satellites.

Structure of archives: search results

	Telescope	Uranus, plates	Neptune, plates
RI NAO	ZA 1961-1998	220 x 3 exp	218 x 3 exp
MAO	DLFA, DWA, Z600 1963-1991	64 x 3 exp	35 x 3 exp
AO ONU	7CA 1960-1989	42+12	32+12
AO KNU	AZT8, DAMR 1988, 1908	3	1

The current status of the scanning

	Uranus, plates	scanned, plates/scans	Neptune, plates	scanned, plates/scans
RI NAO	220	105/630	218	160/960
MAO	64	39/39	35	35/45
AO ONU	42+12	48/54	32+12	38/38
AO KNU	3	3/3	1	1/1

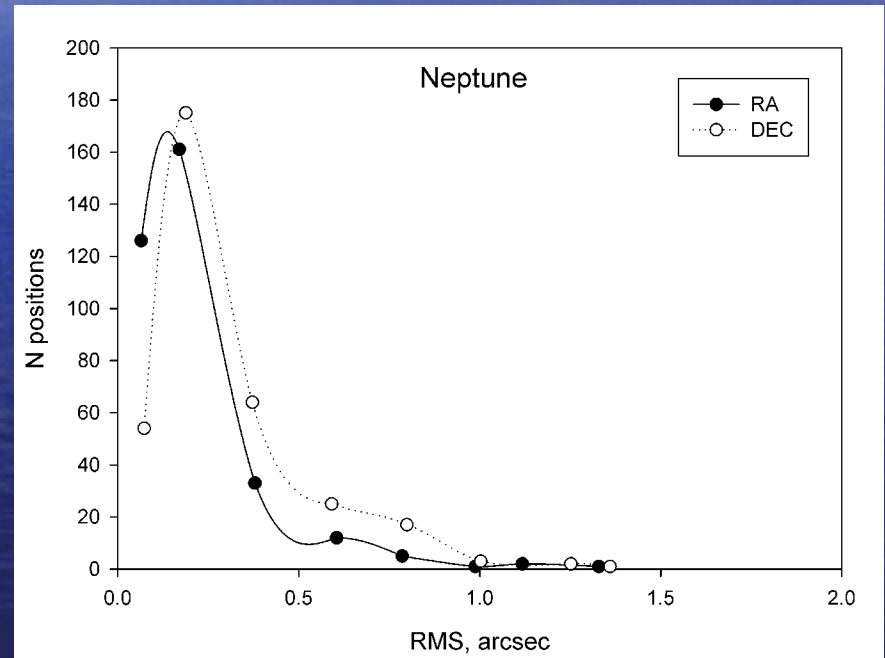
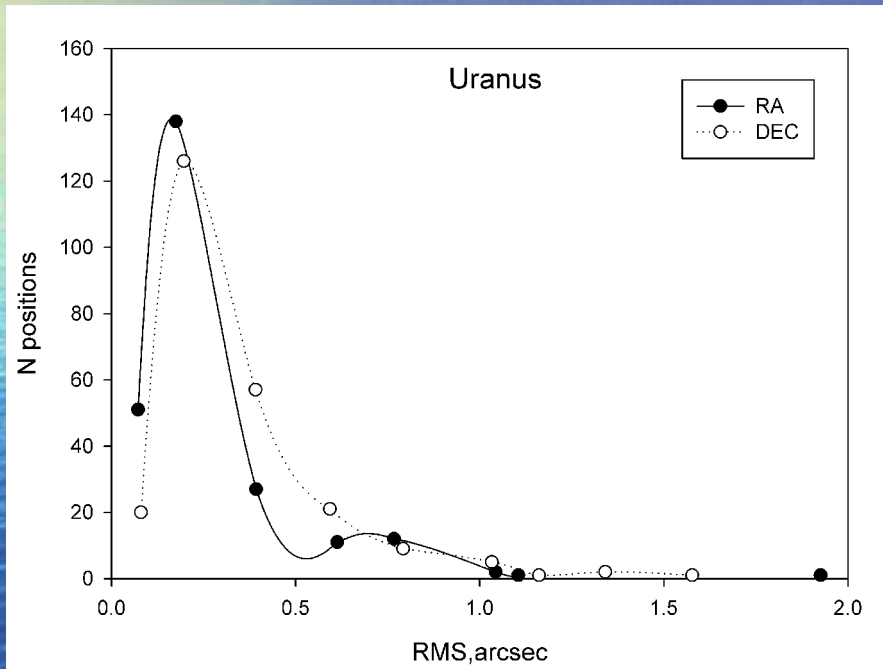
The current status of the identification

	ccaned, plates	processed in MIDAS, plates	identified, plates	no identified, plates
RI NAO	265	229	222	7
MAO	74	74	66	8
AO ONU	86	85	2	-
AO KNU	4	4	1	-

The current status of the reduction

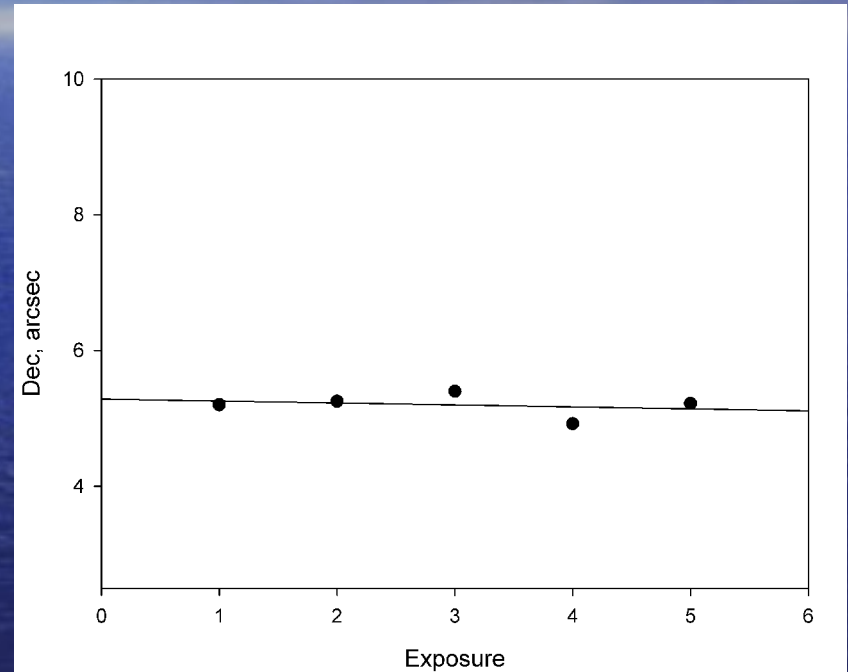
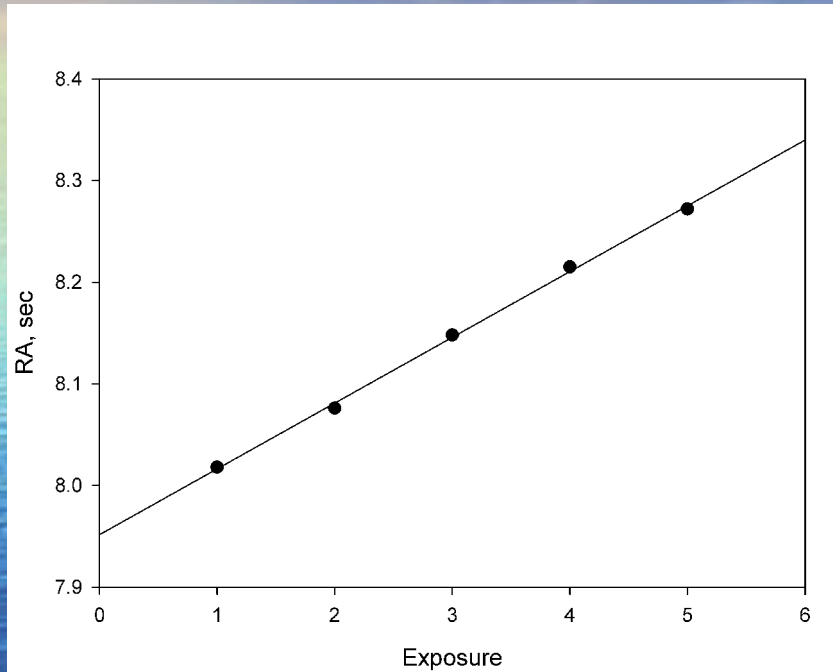
	Proc., plates	Ident., plates	RMS of planet RA position, arcsec pix	RMS of planet DEC position, arcsec pix	RMS of mag
RI NAO	229	222	0.19 0.11	0.19 0.11	0.01-0.07
2.1 1.6		97 125			
MAO	74	66	DLFA 0.09 0.11	0.08 0.10	0.01-0.03
0.8 2.2			DWA 0.22 0.10	0.26 0.12	0.04-0.05
AO ONU	85	2	2.2 0.13	2.7 0.16	0.01-0.03
16.9					
AO KNU	4	1	-	-	

Inner accuracy of the NAO's reduction



Distribution of RMS errors of a position of the planets obtained from six scans

Track of the Uranus on one plate with 5 exposure



Conclusions

- Were found in UkrVO archive 627 plates with 1701 exposures of the Uranus and Neptune
- Were scanned 429 plates and were processed in MIDAS software 392 plates
- Were identified 291 plates with 867 positions of Uranus and Neptune
- Obtained positions were compared with known orbital theories and were received (O-C) for them

For next period: modify program for processing Odessa observation, finishing scanning, reduction and identification of all UkrVO plates, include in workset satellites of the planets, using of those data for improvement of the orbital theory of the planets and their satellites.



Thank you for attention!