

MINISTRY OF EDUCATION AND SCIENCE OF UKRAINE
RESEARCH INSTITUTE “NIKOLAEV ASTRONOMICAL OBSERVATORY”

**METHODS AND INSTRUMENTS
IN ASTRONOMY: FROM GALILEO
TELESCOPES TO SPACE PROJECTS**

International Workshop

ABSTRACT BOOK

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Dawn. Based on the spectral and polarimetric observation data the possible composition of asteroids Lutetia and Steins has been proposed. The albedo of asteroid Steins recently obtained by Rosetta mission confirmed well the reliability of polarimetric method of albedo determination;

- the Asteroid Polarimetric Database (APD) has been created, which contains all published and the majority of unpublished results of polarimetric observations of about 280 asteroids and is updated annually. The APD, as a part of database Planetary Data System (NASA), is freely accessible to users via the links [http:// PDS.jpl.nasa.gov](http://PDS.jpl.nasa.gov) and <http://www.psi.edu/pds/resource/apd.html> and extensively used in planetary astrophysics.

USING VO TOOLS FOR RESEARCH OF STARS WITH HIGH-PROPER MOTIONS

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The Axial Meridian Circle (AMC) of Nikolaev Observatory carries out regular CCD-observations of the stars in the ecliptical zone in drift scan mode since 2003 year. AMC (diameter $D=180$ mm, focal length $F=2480$ mm) is equipped with a CCD-camera with a matrix of size 1040×1160 pixels. The motivation for this project was to make the astrometric fields in the ecliptical zone within the framework of maintenance of the Hipparcos reference frame and research of high proper motion stars. At present the catalogues of astrometric positions on epoch of observation can be used for getting more specific information about stellar proper motions. All observational data over a period of time 2008-2009 years was cross-identified with the 2MASS catalogue to find out early epoch positions of our data. The cross-matching was made with a 1×1 arcsec window, which gave 95.5% identifications. There is no enlargement of windows size whereas no photometric criteria used. There were obtained proper motions in calibration fields of the ecliptical zone for 48883 stars that have been observed in 2008 and for 84666 stars that have been observed in 2009. The TYCHO2 and PPMX catalogues were used for estimating the external accuracy of our data. Cross-identification with PPMX gave about 43% identifications. The comparison of our proper motions with

the PPMX data shows that the external accuracy is 8mas/year for ARIHIP and AC2002.2 stars and 14 mas/year for GSC1.2 stars, and it changes in depending on the index of source catalogue stars. Additional cross-identification of our data with CMC14 will make further improvement to the problems with false entries, and it will increase the accuracy of the obtained proper motion. Cross-matching with the TYCHO2 catalogue gave about 3800 common stars. The external accuracy of our data with TYCHO2 is 12 mas/year.

The LSPM catalogues and the compiled catalogue of stars with high proper motions by Ivanov G.A. were used for search and identifications of stars with high proper motions. There were mark out two samples of stars. There are about 100 stars with proper motions more than 150 mas/year and about 1500 stars with proper motions more than 40 mas/year.

The cross-matching our sample of high proper motion stars with the LSPM and PPMX catalogues shows no significant differences in the proper motions. The external accuracy obtained in result of cross comparison is about 20 mas/year.

INTERNATIONAL VIRTUAL OBSERVATORY: 10 YEARS LATER

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International Virtual Observatory (IVO) is a collection of integrated astronomical data archives and software tools that utilize computer networks to create an environment in which research can be conducted. Several countries have initiated national virtual observatory programs that will combine existing databases from ground-based and orbiting observatories and make them easily accessible to researchers. As a result, data from all the world's major observatories will be available to all users and to the public. This is significant not only because of the immense volume of astronomical data but also because the data on stars and galaxies have been compiled from observations in a variety of wavelengths: optical, radio, infrared, gamma ray, X-ray and