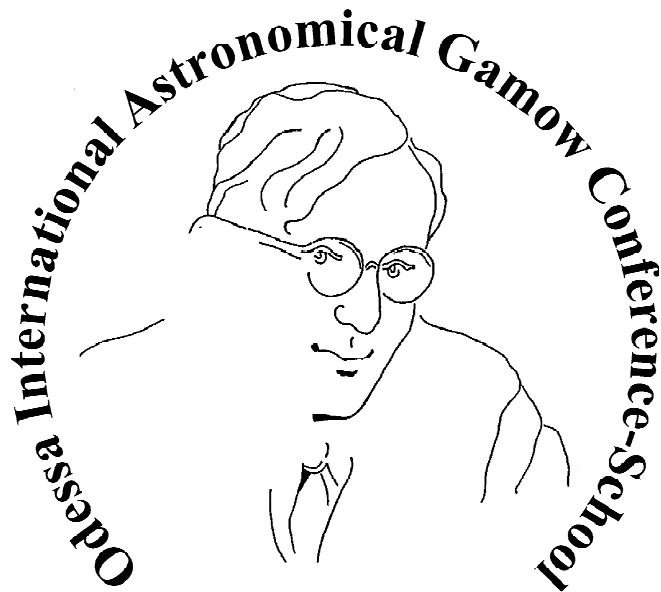


**21-th Gamow International Astronomical Conference-School  
"ASTRONOMY AND BEYOND: ASTROPHYSICS,  
COSMOLOGY AND GRAVITATION, HIGH ENERGY PHYSICS,  
ASTROPARTICLE PHYSICS, RADIOASTRONOMY  
AND ASTROBIOLOGY"**



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**ABSTRACTS**

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subtraction, dark and flat field corrections, and cleaning cosmic-ray tracks in the standard manner, using the IDL routines. The morning sky was exposed to provide a flat field correction for the non-uniform sensitivity of the CCD chip. Three fixed linear apertures of  $ra_1 = 2000$  km,  $ra_2 = 5000$  km and  $ra_3 = 10000$  km were chosen to measure the brightness of C/2017 K2 respectively. Some physical parameters were determined from photometric observations. A detailed analysis of coma morphology was made.

### RESULTS OF OBSERVATIONS OF NEW DISCOVERED NEAs DURING CLOSE APPROACH TO THE EARTH

*Maigurova Nadiia<sup>1</sup>, Pomazan Anton<sup>2</sup>, Shulga Olexandr<sup>1</sup>, Tang Zheng-Hong<sup>2</sup>*

<sup>1</sup>Research Institute "Mykolaiv astronomical observatory", Mykolaiv, Ukraine, [niiko4kulichenko@gmail.com](mailto:niiko4kulichenko@gmail.com)

<sup>2</sup>Shanghai Astronomical Observatory, China, [antpomaz@shao.ac.cn](mailto:antpomaz@shao.ac.cn)

Current investigation is devoted to ongoing follow-up observations of fast-moving Near-Earth Asteroids (NEAs) carried out with RDS CCD technique on small-aperture telescopes in China and Ukraine. The observations were obtained during close approach to the Earth in order to get more observational points and extend observational arc for new discovered NEAs when high-precision astrometry is required (necessary) to determine and improve the orbital elements. The astrometric results of NEAs observations, including new discovered one, are presented and analyzed in order to refine their orbits. The comparative analysis of astrometric and ephemeris positions were done regarding to JPL's HORIZONS system and NEODyS-2 service. The residual differences (O-C) often show high values for newly discovered NEAs during observation date as well as big differences between ephemerid positions of mentioned services. The data for such NEAs is presented.

### DETERMINATION AND ANALYSIS OF DISTRIBUTION OF COMETS OF THE SOLAR SYSTEM

*N.Miroshnik<sup>1</sup>, N.Volosova<sup>1,2</sup>, Z.Pysarevskiy<sup>1</sup>*

<sup>1</sup>Anatoliy Lyhun Technical Lyceum of Kamianska City Council, Ukraine, [nataliamiroshniklicey@gmail.com](mailto:nataliamiroshniklicey@gmail.com)

<sup>2</sup>Department of Applied and Higher Mathematics, Dniprovsk State Technical University, Kamianske, Ukraine, [volosonata@ukr.net](mailto:volosonata@ukr.net)

The work is devoted to the topical topic of statistical analysis of the spatial distribution of parameters of cometary orbits to confirm the hypothesis of the existence in the interplanetary space of a system of stable orbits, for which all elements are subject to some deterministic pattern. Estimates of its characteristics are obtained, and histograms act as information carriers on the distributions of the elements of the orbits of comets in the solar system.

### USE OF THE MAIN SPHERICAL MIRROR IN TELESCOPES WITH COMPLEX OPTICAL SYSTEMS

*Podlesnyak S.V., Fashchevsky N.N., Bondarenko Yu.N., Andrievsky S.M.*

*Astronomical Observatory, Odessa I.I.Mechnikov National University, Odessa, Ukraine*

In this talk, we discuss a possibility of replacing the main telescope mirrors with surfaces of the second order and having different eccentricities with a spherical one with zero eccentricity using planoidal mirrors with a surface of higher orders.

### MONITORING OF THE ORBITAL COORDINATES OF ARTIFICIAL SPACE OBJECTS WITH UKRAINIAN NETWORK OF OPTICAL STATIONS

*YA.O. Romanyuk<sup>1</sup>, O.V. Shulga<sup>2</sup>, M.I. Koshkin<sup>3</sup>, Ye.B. Vovchik<sup>4</sup>, A.I. Bilinsky<sup>4</sup>, Y.S. Kozyryev<sup>2</sup>, M.O. Kulichenko<sup>2</sup>, V.F. Kriuchkovsky<sup>2</sup>, L.S. Shakun<sup>3</sup>, S.M. Melikyants<sup>3</sup>, S.S.Terpan<sup>3</sup>, A.V.Ryabov<sup>3</sup>, K.A. Martyniuk-Lototskiy<sup>4</sup>, R.T. Nogacz<sup>4</sup>, V.P. Epishev<sup>5</sup>, V.I. Kudak<sup>5</sup>, I.F. Neubauer<sup>5</sup>, V.M. Perig<sup>5</sup>, V.I. Prysiazhnyi<sup>6</sup>, A.P. Ozeryan<sup>6</sup>, O.M. Kozhukhov<sup>6</sup>, D.M. Kozhukhov<sup>6</sup>, Yu.M. Ivaschenko<sup>7</sup>*

<sup>1</sup>Main Astronomical observatory of NASU, Kyiv, Ukraine, [romanyuk@mao.kiev.ua](mailto:romanyuk@mao.kiev.ua)

<sup>2</sup>RI «MAO», Mykolaiv Ukraine, [shulga@nao.nikolaev.ua](mailto:shulga@nao.nikolaev.ua)

<sup>3</sup>Astronomical Observatory, Odessa I.I.Mechnikov National University, Odessa, Ukraine, [nik-koshkin@yahoo.com](mailto:nik-koshkin@yahoo.com)

<sup>4</sup>Astronomical Observatory of Ivan Franko National University of Lviv, Lviv, Ukraine, [slr1831@ukr.net](mailto:slr1831@ukr.net)

<sup>5</sup>LSR UzhhNU, Uzhhorod National University, Uzhhorod, Ukraine, [lkd.uzhgorod@gmail.com](mailto:lkd.uzhgorod@gmail.com)

<sup>6</sup>National Space Facilities Control and Test Center, Kyiv, Ukraine, [a.m.kozhukhov@gmail.com](mailto:a.m.kozhukhov@gmail.com)

<sup>7</sup>Andrushivka Astronomical Observatory, Andrushivka, Ukraine, [aao.ivashchenko@gmail.com](mailto:aao.ivashchenko@gmail.com)

We report on the state and efforts of the Ukrainian network of optical stations (UMOS) in recent years in the field of astrometric and photometric observations of artificial space objects for Low Earth Orbit (LEO) and Geostationary Earth Orbits (GEO).

UMOS was established in 2012 as a joint partnership of organizations interested in satellite observations for scientific purposes and practical monitoring. The main purpose of the UMOS is to combine scientific and technical means and regular optical (positional and/or non-positional) observation of objects in Earth orbits. The UMOS maintains its own "partial" catalog of the current osculating orbits of resident space objects (RSO), maintains operational interaction with the Space Observation Center of the State Space Agency of Ukraine.

Statistic information is done in a form of the tables and graphs. We developed a method of the photometric synchronous observations from several points (observatories) to improve accuracy of RSO attitude determination and practical use it.