THE EIGHT–CHANNEL PHOTOMETER–POLARIMETER 1. THE SELECTION AND REGISTRATION SYSTEM

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ABSTRACT. This paper presents the selection and registration system of the eightchannels photometer-polarimeter,which was developed at the Lviv Astronomical observatory for observations of the artificial satellite of the Earth. As feeding optics are two Cassegren system telescopes with diameter 3500 mm and equivalent focus 3.5 m installed at the four-axes guide-mounting. The device allowed to produce the measurements in UBV system to measure the degree of linear polarization and location of oscillations plane simultaneously in eight spatial-timing divided channels with automatically subtraction of background. The lights fluxes of each channels were registrated by four photomultipliers.The selection and registration system is the separated block, which allowes to carry out primary working up the signals and to enter the resulting signals to the computer at the real time.

Key words: photometric observations; polarimetric observation

For solution of problems connected with studying of the surface of artificial space objects (ASO) especially value presents colorimetric polarimetric observations. At present there are great number of different photometric and polarimetric equipment. At the same time, the problem of observations ASO with rapid variations and impossibility of repeating obtained information is very actually. Because unique of analogous observations there is the problem of getting more information about given object. Therefore, it is very important to have synchronous observations in several photometric bars in wide spectrum diapazon and polarimetric parameters.

For this purpose at Astronomical Observatory of Lviv State university is developed multichannel electrophotometer - polarimeter. This instrument consists of optical-mechanical part, which is strengthening on guide-mounting and system of selection and registration of signal.

Feeding optics consist of two Cassegren telescope systems .The main mirror of both telescopes have diameter 350 mm,the focus distance of this system - 3500mm. Optical details of this system were produced in the optical workshop at Crimea Astrophysical Observatory. The telescopes were installed on the four-axes guide-mounting from laser range-finger (type LD -2). Each optical channel is eguiped by segments with set of double diaphragms, which mechanical sector modulator coveres in turn for automatically subtraction of background. The modulators of both channels formes united system, strictly connected with gear and are rotating by one synchronous engine. Feeding of electro-engine is realized by quartz generator. The modulators are connected in one system with the blocks of polaroids, which are rotating twice as quickly as modulators. This gives a possibility during one circle of modulator to measure the polarization and photometric parameters signal+background and background apart, what allowes to give data about polarization quasisimultaneously with photometry of signal+background and background. The modulators were installed and adjusted in such manner,that by one optical system we can measure (signal+background),at the same time,that we have take data about background from other system. The realization of this scheme allowes not to lose useful signal in semi-period of measuring of background.

After polaroids in optical channel of each telescopes were set the filters under angle 45 degrees to optical axis. That divides each channel on two spectral parts according to blue or red regions of spectrum. The light from each of four created channels are registered by photomultipliers .Each photomultiplier have pulse amplifier - discriminator,which input pulses are send in the selection system and registration system of signals.The system is the separated on electronic block allowed to carry out primary working up the signals and to enter the resulting signals from each channel to the computer . All operation and synchronization systems are on modulator"s disk and consist of thick openings and optic pairs. At present time the possibility to change synchronic engine to step engine is developed.

As been mentioned above, the polarization parameters are taken by rapidly rotating polarizational analyzers. Registration of measurements is conducted by accumulation of pulses from photomultipliers in four counters at the each of 8 channels switching synchronously with rotation of analyzers. The first counter countes the pulses from photomultiplier in angle intervals of turning analyzer from 315 to 45 degrees and

from 135 to 225 degrees,secound counter - from 45 to 135 degrees and from 225 to 315 degrees , third counter - from 0 to 90 degrees and from 180 to 270 degrees, fourth counter - from 90 to 180 degrees and from 270 to 360 degrees . Then for few turns of analyzers having the total number of pulses from four counters, we have got an opportunity to count the degree of linear polarization and location of plane primary oscillations.

All instrument is composed in the block system allowed father modernization and changes of separate nodes for most wide use of this device.There was predicted the possibility of hand output polaroidal filter from optical channel. Therefore, having two independent optical channels we can give simultaneously and polarization and photometric measurements in the same or different spectral ranges.

At present are finished the stand investigations of this device and the stage assembling at the observational base of the Lviv Astronomical Observatory.

THE MOUNTING OF THE NEW 2-M RCC TELESCOPE AT TERSKOL IN 1994-1996

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ABSTRACT. In 1996 "Carl Zeiss Jena" and Centre of Astronomical and Medico-Ecological Investigations had mounted new 2-m RCC telescope, named as ZTT (Zerkalny Telescop v Terskole). The general review of the telescopes and buildings on the hiltop Terskol (3100m) are given. The basic design of ZTT are described. The results of first engineering tests of the new 2-m RCC telescope have been discussed.

Key words: Astronomical instruments.