Contribution ID: **131** Type: **Oral**

POLARIZATION PROPERTIES OF QUARTZ-WEDGE DEPOLARIZER. SIMULATION AND EXPERIMENT

We describe the quartz-wedge depolarizer composed of two wedges of the anisotropic quartz. The wedges have the same geometry but the differently directed optical axes, which lay in plain, that are parallel to straight faces of wedges. The adjoined by inclined faces wedges form the depolarizer which depolarization power depends on the incident light beam radius: the larger depolarization power correspond to increasing light beam radius. Since the polarization of light at the output of the wedge depolarizer is changed periodically across the beam section, the integral polarization of a whole output beam is approximately neutral. The polarimetric model of the proposed depolarizer is described by the Stokes-Mueller matrix approach. In the model, the depolarizer is described as the sequence of two birefringent layers which thickness (and thereby phase shift) are the linear function of coordinates across the beam's section. The angle between optical axes of layers is 45 degrees. The total thickness of the depolarizer-adjoined wedges is a constant. We show that the depolarization power of the mentioned type of depolarizer depends on the polarization's azimuth of the input linearly polarized light and of the beam's radius. The simulation and experimental results are presented. The wedges depolariser is designed to use for the multispectral imager-polarimeter (MSIP) calibration during the Aerosol-UA space experiment to study the aerosol microphysics in the terrestrial atmosphere.

Primary authors: Mr OSIPENKO, R (Taras Shevchenko National University of Kyiv); Dr OBEREMOK, Ye. A. (Taras Shevchenko National University of Kyiv); Prof. SAVENKOV, S. N. (Taras Shevchenko National University of Kyiv); Mr SYNIAVSKY, I (Main Astronomical Observatory of National Academy of Sciences of Ukraine, Ukraine); Mr IVANOV, Yu (Main Astronomical Observatory of National Academy of Sciences of Ukraine, Ukraine); Dr MILINEVSKY, G (Main Astronomical Observatory of National Academy of Sciences of Ukraine, Ukraine); Dr KOLOMIETS, Ivan (Taras Shevchenko National University of Kyiv)

Presenter: Mr OSIPENKO, R (Taras Shevchenko National University of Kyiv)

Track Classification: Laser Physics and Optoelectronics