

UNIVERSAL REDUCER FOR SMALL TELESCOPES

**R. I. Uklein, V. R. Amirkhanyan, A. E. Perepelitsyn, E. A. Malygin,
E. S. Shablovinskaya, I. V. Afanasieva and V. L. Afanasiev***

Special Astrophysical Observatory of RAS, Nizhny Arkhyz, Russia

E-mail: uklein@sao.ru, male@sao.ru

This talk is devoted to the memory of Dr. Victor Afanasiev and his immense legacy. The report highlights the capabilities of two new instruments tested on the 1-meter Zeiss-1000 telescope of the SAO RAS: Stokes Polarimeter (StoP) and MAGIC reducer (within the ongoing project entitled "Monitoring of Active Galaxies by Investigation of their Cores"). Although optimized for the study of active galactic nuclei (AGN), methodically, these instruments are suitable for a wide range of small telescope tasks. The design of the instruments is based on the SCORPIO universal reducer one, which has been in use for more than 20 years in observations in various modes at the 6-meter BTA telescope of the SAO RAS. The fields of view of StoP and MAGIC are 6' and 13', respectively. The StoP device allows one to conduct photometric observations and polarimetric ones with a double Wollaston prism; the spectral mode was added to MAGIC. For targets up to 16 mag in medium-band filters, the accuracy of photometry is 0.01 mag, the accuracy of polarimetry reaches 0.1%. For a starlike target up to 14 mag in medium-band filters with a seeing of 1'' for 20 minutes of total exposure, the photometry accuracy is better than 0.01 mag and the polarization accuracy is better than 0.6%. The available spectral range obtained with the volume phase holographic grating in MAGIC is 4000-7400Å with a dispersion of 2Å/px. StoP and MAGIC received the first light in 2020 and are used in test mode at the Zeiss-1000. As a modern observational multitool, MAGIC reducer together with the developed software is an effective solution for small telescopes. The report discusses the first results obtained by the authors with new instruments, as well as further prospects.

This work was supported by the Russian Science Foundation (grant no. 20-12-00030 "Investigation of geometry and kinematics of ionized gas in active galactic nuclei by polarimetry methods").

*Deceased