

USING A SCHMIDT TELESCOPE TO OBSERVE METEORS, COMETS AND ASTEROIDS

***Yu.M. Gorbaney¹, S.V. Podlesnyak¹, S.R. Kimakovskiy¹
and V.M. Andruk²***

¹ *Astronomical Observatory of the I.I. Mechnikov
Odessa National University, Odessa, Ukraine
skydust@ukr.net, podlecniak@gmail.com,
keysunai@gmail.com*

² *Main Astronomical Observatory of the National
Academy of Sciences of Ukraine, Kyiv, Ukraine
andruk@mao.kiev.ua*

This paper presents the results obtained using a Schmidt telescope (with primary mirror diameter 271.25 mm; correcting plate diameter 219.2 mm; effective focal length 0.44 m and focal ratio 1/2) in different configurations to conduct television meteor patrol, as well as comet and asteroid observations.

The telescope is parallactically mounted on APT-4 at Kryzhanovka observation station. On the basis of the astrometric observations performed at Kryzhanovka station, it was registered in the Minor Planet Centre with the observatory code A85 as Odessa Astronomical Observatory, Kryzhanovka at the latitude $\varphi = 46^{\circ} 33' 38.6''$ N, longitude $\lambda = 30^{\circ} 48' 23.4''$ E and altitude 40 m.

In the initial configuration, the telescope was equipped with camera WATEC-LCL-902 K and intended to carry out television meteor patrol with temporal resolution of 20 ms and field of view 36 x 48 arc minutes. The initially configured telescope was used from 2003 to 2015 in the mode of

routine observation of meteor events as part of television meteor patrol. Over that period, 2,315 meteor events were recorded with angular resolution of 1 arc second. This paper reports relevant observational data and methods employed.

The software developed on LINUX/MIDAS/ROMAFOT for processing and reducing digitized photographic plates of the Photographic Observations of Northern Sky Survey (FON) programme was used to process a portion of CCD-frames. The errors of equatorial position and magnitude determinations in the Tycho-2 Catalogue are as follows: $\sigma\alpha = 0.34''$; $\sigma\beta = 0.20''$, $\sigma m = 0.30$ m.

In 2015, the telescope was upgraded; in particular, a quartz correcting plate and camera VIDEOSCAN 415-2001 were mounted. The camera can be run both in television and accumulation modes (exposure 0.0029-40 sec). The limiting magnitude is 19.2. In this configuration of the telescope, a photometric system similar to Johnson's V system is implemented. We present observations of comets and asteroids and consider advantages and disadvantages of the telescope's current configuration.

As of today, the second set of primary mirror and correcting plate has been manufactured and is available to build a new Schmidt telescope with a filter module assembly. We plan to redeploy the VIDEOSCAN 415-2001 camera for the new telescope and having the existing telescope equipped with a new camera WATEC WAT-902H2 continue using it to conduct meteor patrol. Hence, we discuss possible programmes of future observations.