

## SEVERAL TWILIGHT BOLIDES OVER KIEV IN 2013-2015 - FRAGMENTS OF COMETS NUCLEI.

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If the fireball's track has noticeable angular size, it can be seen even in the daytime. After the flight, bolide remains a noticeable trace of a dust, dark against the light sky. If such a dust trail illuminated by the rays of the Sun, which had just hid behind the horizon (or even in the moonlight), it is visible as bright lanes in the night sky or in twilight. That's why we call it the twilight bolides. Usually, astronomical observations using of meteor patrols, carried out at night after the evening astronomical twilight. But from March 2013 to October 2015, the authors have obtained several thousands of different tracks in the sky over Kiev. Therefore, we have identified a special class of twilight observations of fireballs. We register the traces of invading to atmosphere of meteoroids of natural and artificial origin. At the same time, observe the traces of fireballs at the day-time are also possible. But they are less effective than in the twilight. Night observations of bright meteoric tracks can usually observe some seconds. While traces of the twilight bolides we observed from some minutes up to two hours, before they be scattered by atmospheric currents. It opens the great prospects for low-cost direct experiments probing of these tracks by using, for example, the astronomical aviation. We propose the twilight tracks are classified into the following types: AMT – aero-meteorological tracks, AST – aero-space, ATT – aero-technical, and NST – not yet classified tracks of an unknown nature.

During the short period of our observations (from March 2013 to 2015), was fixed falling at least a dozen fragments of cometary nuclei, at least five of sufficiently large and dozens of smaller fragments of meteoroids. The results of our observations also showed that during the morning and evening twilight over Kiev clearly visible the plume of aerosols of technical nature from the plants, factories and other production facilities.