

**PHOTOMETRIC PROPERTIES OF ACTIVE ASTEROID 248370 (2005 QN<sub>173</sub>) FROM OBSERVATIONS IN SLOVAKIA AND TAJIKISTAN.** G.I.Kokhirova<sup>1</sup>, F.Dzh.Rakhmatullaeva<sup>1</sup>, M. Husárik<sup>2</sup>, O.V.Ivanova<sup>2,3,4</sup>, S.A.Borysenko<sup>3</sup>.

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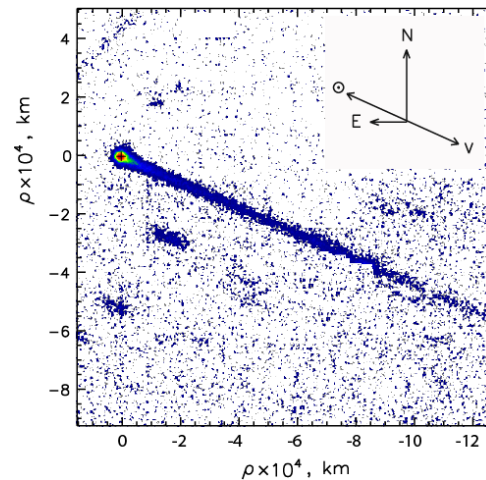
**Introduction:** The paper presents the results of optical observations of the outburst of asteroid 248370 (2005 QN<sub>173</sub>), which occurred on July 7, 2021 [1]. Observations were carried out at the Skalnaté Pleso Observatory in Slovakia and at the Sanglokh International Astronomical Observatory in Tajikistan in July-August 2021.

The object suddenly showed signs of cometary activity in the form of a compact coma and a long dust tail, and therefore was assigned to the class of active asteroids of the Main belt. The apparent and absolute brightness of the asteroid was determined in the BVR filters, and it was shown that the brightness of the asteroid remained stable during the observation period.

The dust production parameter is calculated, the values of which are typical for comets of the Jupiter family at large heliocentric distances. According to our estimates, the diameter of the asteroid was  $5.3 \pm 2$  km on average. Our photometric data confirm the active stage of the asteroid and are consistent with the results of other observations of this period.

**Observations:** The observations of asteroid 248370 (2005 QN<sub>173</sub>) (hereinafter 248370) were carried out over 7 nights - July 16, 22-24 and August 5-7, 2021 at the 1.3-m telescope of the Skalnaté Pleso observatory (SP) of the Astronomical Institute of the Slovak Academy of Sciences and at the Zeiss-1000 telescope of the Sanglokh International Astronomical Observatory (IAOS) Institute of Astrophysics of the National Academy of Sciences of Tajikistan.

**Analyses:** As a result, photometric parameters were obtained: visible and absolute brightness, dust production parameter, estimate of the upper limit of the asteroid diameter. The photometric data of our monitoring, along with other observations, confirm the active state of the asteroid during this period. We note the good compatibility of the results of our quasi-synchronous observations carried out with different telescopes, as well as their agreement with the results of other observations.



A composite image of asteroid 248370 (2005 QN<sub>173</sub>) obtained in the R filter on July 16, 2021 at the Skalnaté Pleso observatory.

**Conclusion:** The new active asteroid 248370 (2005 QN<sub>173</sub>) shows periodic comet-like activity, with the formation of a compact coma and a long tail. Such periodic activity can be caused by the possible sublimation of volatile components [2] on the surface during the passage of perihelion or bombardment of the surface by meteoroids during a possible passage through a meteoroid stream [3]. Another possible reason is a collision with another asteroid.

**Key words:** asteroid, outbreak, photometry, brightness, diameter.

**References:**

1. Hsieh H. et al. (2021) *Ast. Jour. Letters*, 922, Issue 1, id.L9, 10pp.
2. Kim Y. et al. (2022) *Astronomy and Astrophysics*, 666, A163.
3. Ivanova O. et al. (2020), *MNRS*, 496, Issue 3, pp.2636-2647.