IDENTIFICATION OF THE NATURE OF ASTEROID DON QUIXOTE FROM OBSERVATIONS IN THE SANGLOKH OBSERVATORY. G.I..Kokhirova[1] A.V.Ivanova[2], F.Dzh..Rakhmatullaeva[1]

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Introduction: The physical and dynamic properties of the near-Earth asteroid (3552) Don Quixote were investigated on the basis of multicolor optical observations carried out at the Sanglokh observatory. Photometric processing was performed and the visible and apparent brightness of asteroid in VRI bands were determined.

Analysis: An analysis of the light curves has showed a significant variation in brightness during the observation period, which points an outburst of the asteroid. Consequently, we recorded its activity typical for the objects of a comet origin. According to our observations, the color indexes correspond to the values for the nuclei of extinct comets and D type asteroids. The estimation of asteroids effective diameter based on observations performed later 10 days after the outburst is in good agreement with the available data.

It is proposed indicates that the outburst has stopped by this time. Astrometric processing has been carried out and coordinates, apparent trajectory have been determined, and the orbit asteroid has been calculated.

It is shown that the accuracy of astrometric measurements does not exceed 0.80 and 0.57 arc seconds in the right ascension and declination, respectively. New results are consisting with the accessible dynamic features. It is shown that, despite the recorded outburst, the asteroid's orbit is stable. A conclusion was made that a possible collision with another object was not catastrophic and did not lead to a significant change in the orbit.

Key words: asteroid, extinct comet, observations, photometry, outburst, activity absolute magnitude, light curve, color index, diameter, coordinates, orbit.