

Don Quixote — a possible parent body of a meteor shower

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This talk addresses the topic of meteoroid stream parent body in relation to meteor showers observed on the Earth. We carry out a further search to investigate the possibility of meteor shower observations caused by particles ejected from (3552) Don Quixote.

The (3552) Don Quixote asteroid was discovered in 1983 as an Amor asteroid. The Tisserand parameter for the orbit has a value of 2.315 with respect to Jupiter, which indicates a comet-like orbit. The diameter of the object calculated from the absolute magnitude, is in the range of 12.3–24.5 km. It all makes Don Quixote a good candidate for a short-period comet among known near-Earth objects, which the recently observed cometary activity confirms [1].

We have investigated the orbital evolution of the meteoroid stream originated from Don Quixote. If the object was active in the past, it might be a parent body for a meteor shower observed on the Earth. The model for the generation and evolution of the meteoroid stream in the Solar System is taken from [2]. The asteroid's orbital elements and physical properties are taken from the JPL horizons website. The ejections of meteoroids from the asteroid surface took place when the asteroid was passing its perihelion between 5000 B.C. and 2013 A.D. Next, the orbits of ejected meteoroids were integrated to the year 2050. If a meteoroid is sufficiently close to the Earth, its orbital parameters are saved and compared with known showers.

References: [1] Mommert, M. et al., 2014, *The Astrophysical Journal*, 781, 25. [2] Vaubaillon, J., Colas, F., and Jorda, L., 2005, *Astronomy and Astrophysics*, 439, 751.