

What comets 252P/LINEAR and P2016 BA14 have in common?

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A concerted effort is underway to identify the parent bodies of Earth's meteor showers [1]. Several now dormant comets have been identified as the parent bodies of the Quadrantids (2003 EH1), the alpha Capricornids (2002 EX12) and the kappa Cygnids (2008 ED69). In order to find more associations, ongoing work is focused on improving the meteor shower observations [2, 6, 11, 12, 14] and create new research tools for meteor shower identification [5, 7, 8, 9].

At the same time, however, automated surveys of Near-Earth Objects (NEOs) continue to discover objects in cometary-like orbits ($2 < T < 3$) that are likely candidate parent bodies [10]. Some of them unexpectedly produce a comet-like comae and tails [3, 4]. Here, we study one such case, namely asteroid 2016 BA14 recently discovered by the Pan-STARRS survey, which shows cometary appearance and has a Tisserand parameter of 2.8. Moreover, the orbital similarity between P/2016 BA14 and comet 252P/LINEAR was pointed. If those Jupiter Family Comets split in the past, significant dust would have been released. If P/2016 BA14 and 252P/LINEAR are the remaining objects after such fragmentation, they are relatively large objects with a diameter of about 1 km.

In our talk, we present a survey of results dealing with investigating the association of comets P/2016 BA14 and 252P/LINEAR with meteor showers observed on Earth. We carry out a further search to investigate the possible genetic relationship between the comets themselves as well. To confirm the reality of the relation between a comet and a meteoroid stream it is necessary to investigate the evolution of their orbits. The model of generation and evolution of meteoroid stream in the solar system is taken from Vaubaillon et al. [13]. The objects' orbital elements and physical properties are taken from JPL horizons website. The ejections of meteoroids from the possible parent body surface took place when it was passing its perihelion between 1800 A.D. and 2016 A.D. Next, the orbits of ejected meteoroids were integrated to year 2079. We will show the similarities and differences of the two streams, and will conclude regarding the possible relationship between P/2016 BA14 and 252P/LINEAR.

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