

ASTRONOMERS CONFIRM EARTH HAS AN ASTEROID BUDDY

It's the best and most stable example to date of a near-Earth companion, or "quasi-satellite." It's a small asteroid called 2016 HO3. It travels along with Earth in orbit around the Sun.

Planetary astronomers – those who work on objects within our own solar system – are meeting last week in Provo, Utah. One of the presentations – from **Vishnu Reddy** at the University of Arizona Lunar and Planetary Laboratory – provided new data on an objects discovered in 2016 that appeared to be moving with Earth around the Sun. Was it a burned-out rocket booster, tumbling along a peculiar near-Earth orbit around the Sun? Only occasionally getting close enough to be studied with even the largest telescopes? Reddy's recent work says no. The object, called 2016 HO3, isn't space junk, but instead an ordinary asteroid, albeit a tiny one, similar to many near-Earth objects now known to be zipping past Earth continually. **Except 2016 HO3 isn't zipping past. It is travelling with us.**

Reddy's team used with one of the world's largest telescopes – the Large Binocular Telescope (LBT) on Mt. Graham in southeastern Arizona – to learn the true nature of this near-Earth object. A blog post from this observatory reported:

2016 HO3 is a small near-Earth object (NEO) measuring no more than 100 meters (330 feet) across that, while orbiting the Sun, also appears to circle around the Earth as a quasi-satellite. Only five quasi-satellites have been discovered so far, but 2016 HO3 is the most stable of them. The provenance (birthplace) of this object is unknown. On timescales of a few centuries, 2016 HO3 remains within 38 to 100 lunar-distances from us.

Observations also show that the HO3 rotates once every 28 minutes and is made of materials similar to asteroids. The astronomers know this because light reflected off the surface of 2016 HO3 is similar to that of other near-Earth objects and to meteorites on Earth's surface. Reddy said:

In an effort to constrain its rotation period and surface composition, we observed 2016 HO3 on April 14 and 18 with the Large Binocular Telescope and the Discovery Channel Telescope. The derived rotation period and the spectrum of emitted light are not uncommon amongst small NEOs, suggesting that 2016 HO3 is a natural object of similar provenance to other small NEOs.

The LBTO blog post explained the object's strange orbit:

One way to visualize HO3's orbit is by picturing a hula hoop dancer — the Sun in this analogy — twirling two hoops around the hips at the same time, ever so slightly out of sync. While it orbits the Sun, the object makes yearly loops around the Earth. As a result, the object appears to orbit t

Christian Veillet, director of the LBT Observatory, commented:

Of the near-Earth objects we know of, these types of objects would be the easiest to reach, so they could potentially make suitable targets for space exploration.

2016 HO3 is seen at the top left corner of this animation, made of ten 2minute long exposures in I band using MODS1 on the left side of LBT.

The telescope is tracking the moving asteroid, so background stars (and even a couple of galaxies) are trailed (stretched side-wise).

AK, with EarthSky
Notes



Astronomers meeting this week in Provo, Utah confirm that 2016 HO3 – a quasi-satellite to Earth – is a natural object and not space junk.