



Tally of Asteroids Harboring Moons Grows Beyond 30

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A newfound asteroid companion brings the total number of known space-rock pairs to 31 and further illustrates that no matter where you go in the solar system, it takes two (or more, maybe) to tango.

The discovery, made Sept. 28 was led by William Merline of the Southwest Research Institute using the Keck II telescope in Mauna Kea, Hawaii. The International Astronomical Union made the announcement this week.

The new object orbits a known asteroid, 121 Hermione, which is an irregularly shaped giant boulder with an average diameter of about 130 miles (209 kilometers). Hermione and its smaller companion travel around the Sun in the outer portion of the main Asteroid Belt between Mars and Jupiter.

The asteroidal moon is about eight miles (13 kilometers) in diameter, Merline said. But he told *SPACE.com* that this estimate is uncertain because in examining such relatively small bodies so far away an astronomer can't be sure how much light the rocks reflect and whether they were viewed broadside or possibly showing a narrower profile, two key factors in determining size.

The satellite is thought to orbit the Hermione every 3 or 4 days at about 620 to 930 miles out (1,000 to 1,500 kilometers).

Rapid pace of discovery

Asteroid pairs were unknown until 1993, when the [Galileo spacecraft](#) spotted the moonlet Dactyl orbiting asteroid Ida. Merline and his colleagues reported the second known moonlet in 1999, circling asteroid [Eugenia](#).

Merline said the growing number of known asteroid pairs over the past three years and the [diversity of configurations](#) -- object of roughly equal size circling each other, as well as tiny "moonlets orbiting large rocks" -- mean that more than one formation mechanism will be needed to explain them all. In general, however, most are probably the result of collisions.

He added that while the Hermiones are not a threat to Earth, learning about binary asteroids in general would help scientists decide what to do if a pair of space rocks were ever found to be headed our way.

The new pair is the ninth known to populate the main Asteroid Belt, Merline said. Some 14 pairs inhabit space closer to our planet and are classified as Near Earth Objects ([NEOs](#)) -- things that merit investigation to make sure they're not on

a [collision course](#) with Earth. None pose an imminent threat, based on present knowledge.

Seven asteroid pairs have been found beyond Neptune, in a vast sea of frozen Trans-Neptunian Objects (TNOs); these are sometimes called [Kuiper Belt Objects](#). Finally, one dancing duo is part of a special class of "Trojan" asteroids locked into orbits ahead of or behind Jupiter.

How many are there?

Based on these numbers, some estimates can be made about the percentages of asteroids that might actually be pairs (but which require detailed observations to be discovered as such). Overall, there are thought to be roughly 1,000 to 1,200 large NEOs (1 kilometer or bigger) and hundreds of thousands of smaller ones.

Merline said some 16 percent of NEOs might be binary systems. About 2 percent of asteroids in the main belt might have companions, he said. There are millions of asteroids out there. More than 1 percent of Trans-Neptunian Objects are thought to be binaries, but this number will likely climb as observation tools and techniques improve for the outskirts of the solar system.

Why do a greater percentage of asteroids roaming near Earth seem to have orbital partners?

"We believe that the NEOs are formed by a distinctly different mechanism than the main-belt binaries," Merline said. "And this is more than likely the reason that different populations show different frequencies of binaries."

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