



**Figure caption:** The asteroid Dinkinesh was imaged by the NASA mission Lucy this month. The Lucy Long-Range Reconnaissance Imager found the asteroid has its own moon, held in orbit by their mutual gravity. **Photo credit:** NASA/Goddard

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## **An Asteroid with a Moon** By Lauren Likkel

NASA was surprised this month to find that asteroid Dinkinesh has its own moon! This cool discovery extends the list of asteroids known to have moons (Ida, Eugenia, Pulcova, Eurybates, and many more).

The asteroid belt between Mars and Jupiter is home to most of the rocky bodies known as ‘asteroids’. There are also “Trojan asteroids” that travel on Jupiter’s orbit, leading or following Jupiter like paparazzi. The Trojan asteroids are trapped by the combination of Jupiter’s gravity and the sun’s gravity.

All the asteroids are smaller than any of the 8 planets, since the “dwarf planet” category catches the objects that are in-between the sizes of planets and asteroids – like Pluto (formerly known as a planet) and Ceres (formerly known as an asteroid). If the same object was instead orbiting a planet, it would get to be called a “moon”. Most dwarf planets have moons, including Pluto. Pluto’s largest moon Charon has almost half the diameter of Pluto, and back when Pluto was a planet they considered calling Pluto and Charon a binary planet system since if Pluto was a planet, Charon should qualify too.

Asteroids with moons are sometimes called “binary asteroids” since an asteroid’s moon is basically just an asteroid itself. If an asteroid is made of two bodies that are touching, it is called a “contact binary”. It turns out that Dinkinesh’s moon is a contact binary! That’s a first. So Dinkinesh has two moons, and the moons happen to be in contact with each other.

The discovery of the moons of Dinkinesh is an early success of the NASA mission Lucy, which is a couple of years along in its 12 year mission to investigate Jupiter’s Trojan asteroids. The Lucy mission is named after “Lucy” the fossilized skeleton of a pre-human female discovered in 1974 in Ethiopia. They say that the name “Lucy” that was chosen for the skeleton came from the Beatles song “Lucy in the Sky with Diamonds”. The Ethiopian name for the Lucy skeleton is Dinkinesh (which means ‘marvelous’ in Amharic), and this name was assigned to “Asteroid 152830” after it was chosen as a target for the Lucy mission. The Lucy skeleton has provided insights into the origin of humans, and the Lucy Mission hopes to provide insights into the origin of our planetary system.

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