

## Trojan Asteroids in Our Solar System



What is a Trojan asteroid? In this case they are asteroids occupying a space 60 degrees in front of behind the planet Jupiter. Lagrange points I suppose. These points correspond to the areas where the gravitational influence of the Sun and the planet “cancel”, put another way, a gravitationally neutral position.

These are not rare objects, more than a thousand have been found so far. In fact some scientists believe there may be as many Trojan asteroids as there are main-belt asteroids.

One Trojan asteroid is unique as far as we know now. Asteroid Patroclus was once believed to be a single object about 150 km (90 miles) in diameter but observations from the Gemini North telescope in Hawaii has found that Patroclus is actually two objects, the first binary Trojan. Odd thing about the binary is the two pieces are about the same size, one being 122 km (76 miles) and the other 112 km (70 miles) at their widest points. The two orbit their center of mass at a distance of 680 (423 miles).

Might they actually be ancient comets? A team of astronomers being led by Dr. Franck Marchis of the University of California at Berkeley has discovered the composition and density of the binary system is very similar to comets. The components are less dense than water and are probably porous and possibly made out of water ice. The discoveries were based on observations made with the W. M. Keck Observatory on Mauna Kea, Hawaii.

How could a binary form? Heck, how do they get in such a position? It could be they formed in the Solar Nebula along with everything else in the solar system. Most things in space seem to move pretty fast, it doesn't seem possible for such an object to get caught up by gravity, at least not in a Lagrange point. Not to say that is impossible by a long shot. One way “regular” binary asteroids are thought to form is with an encounter with a planet and the tidal forces imparted on the asteroid could have ripped it apart. So perhaps if the Trojan to be was moving at the right speed and got caught it could have been split and still had enough velocity to acquire the right distance to get to the Lagrange point but no further – I can imagine that.

Much study and thought is going into the fact that the two pieces are the same size and how could that be. It seems to me, well why not? It is what it is, I can't see anything all that remarkable about it, sure most other binaries do not have equal masses, but seems like the luck of the draw.

You just wait, some remarkable finding will come out and I will be completely wrong. Wouldn't be the first time! See what you think, [read the article](#).

Source: W. M. Keck Observatory

Image Credit: Lynette Cook and W. M. Keck Observatory

Credit Tom's Astronomy Blog for this one!