

# Galactic Visitors



Image: 2I/Borisov comet, the second confirmed interstellar object, photographed in late-2019 beside a distant galaxy

Autor: NASA, ESA, and D. Jewitt (UCLA)

[https://en.wikipedia.org/wiki/Interstellar\\_object#/media/File:Comet\\_2I\\_Borisov\\_and\\_Distant\\_Galaxy\\_in\\_November\\_2019.tif](https://en.wikipedia.org/wiki/Interstellar_object#/media/File:Comet_2I_Borisov_and_Distant_Galaxy_in_November_2019.tif)

The solar system is part of the Milky Way. The Milky Way consists of billions of stars and probably trillions of other objects. Due to this large number of objects, the solar system occasionally encounters foreign objects that come to us from the galaxy.

Two such objects have been detected so far. The proof of the extra-solar origin is based on the orbital data and the speed of the object. If the object's orbit is hyperbolic and its speed is greater than the third cosmic speed (approx. 16.7 km/s), it is a visitor from our galaxy. It has only been possible to detect such objects in our solar system thanks to the extreme improvement in measuring equipment. So far, two objects have been clearly identified as visitors:

- 1I/Oumuamua
- 2I/Borisov

The cigar-shaped form of Oumuamua and its acceleration stimulated the imagination. Was it an alien spaceship? No, the acceleration was caused by vapours of gases when the body was heated by the proximity to the sun. The strange shape is a freak of nature. We must therefore continue to wait for visitors from outer space.

However, objects from the Milky Way could have travelled through our solar system in the past. There could also be objects in our solar system that originated far away from us. On their way through the Milky Way, they crossed the path of the sun and were captured by it. These

captured objects are now orbiting our sun. However, only a chemical and physical analysis of their components could determine their extra-solar origin.

But the reverse is also conceivable. As objects in our solar system approach the planets, they can be accelerated by the so-called swingby mechanism and eventually set off on a lonely journey through our Milky Way. However, finding such objects that have undergone this process is difficult and currently unrealisable. Two man-made artificial objects are currently on a course out of the solar system. The two Voyager probes will leave our solar system in a few tens of thousands of years. By swinging by Jupiter and Saturn, they too have reached a speed that will take them away from the sun.

The solar system is not an isolated island; it has a lively exchange with its surroundings in our galaxy.

**Link:** [https://en.wikipedia.org/wiki/Interstellar\\_object](https://en.wikipedia.org/wiki/Interstellar_object)

**Link:** <https://en.wikipedia.org/wiki/%CA%BBOumuamua>

**Link:** <https://en.wikipedia.org/wiki/2I/Borisov>