

Flying mountains and other worlds



The asteroid Vesta, 575 km long (Dawn Probe, NASA) - background (ESO/Digitized Sky Survey 2)

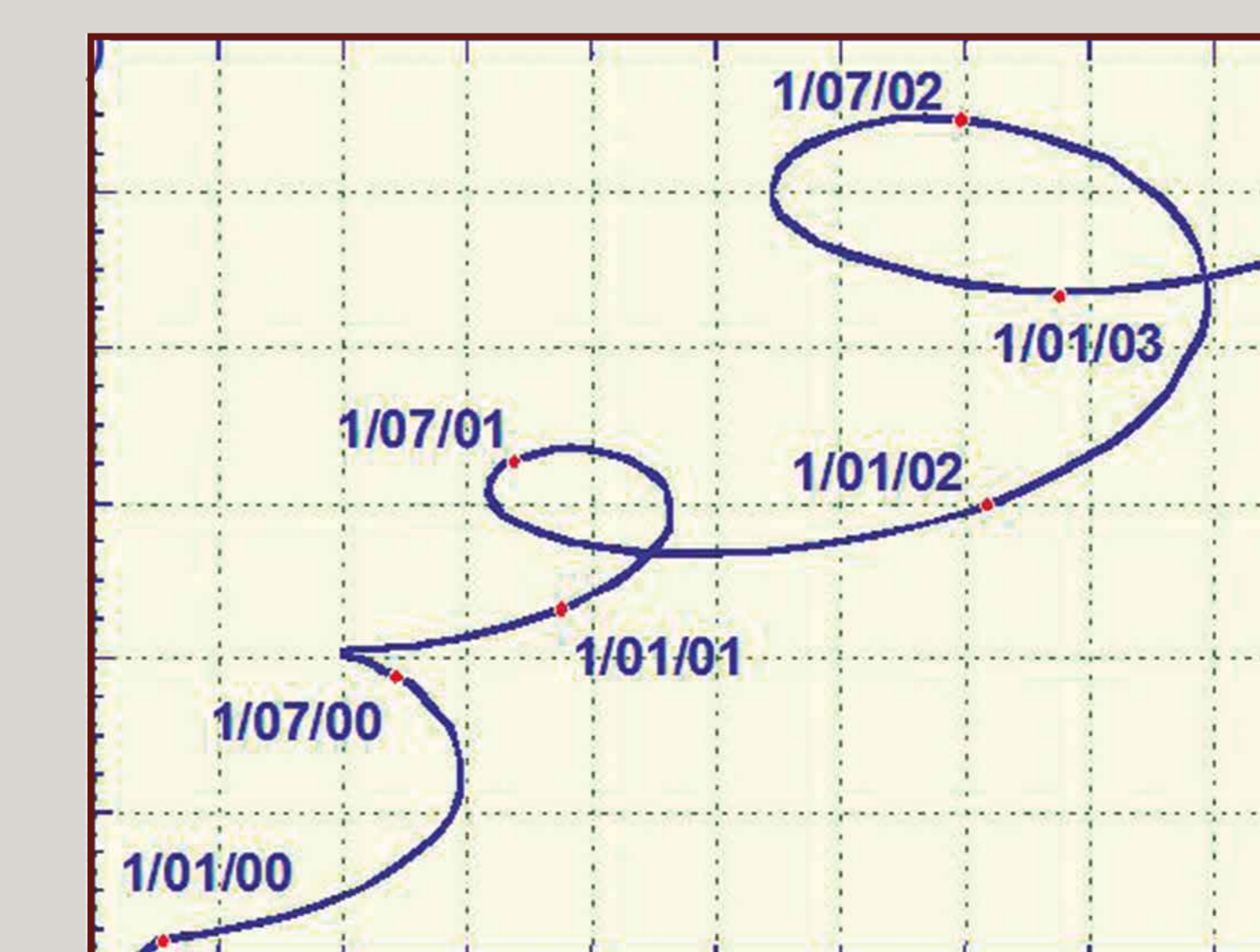
Gaia can determine the orbits of more than 200,000 asteroids and detect thousands of objects which could come close to the Earth.

Extrasolar planets

About a thousand planets have been discovered orbiting other stars. Gaia can detect nearly 5000 new planets with the photometric method and 2000 more with the astrometric method.

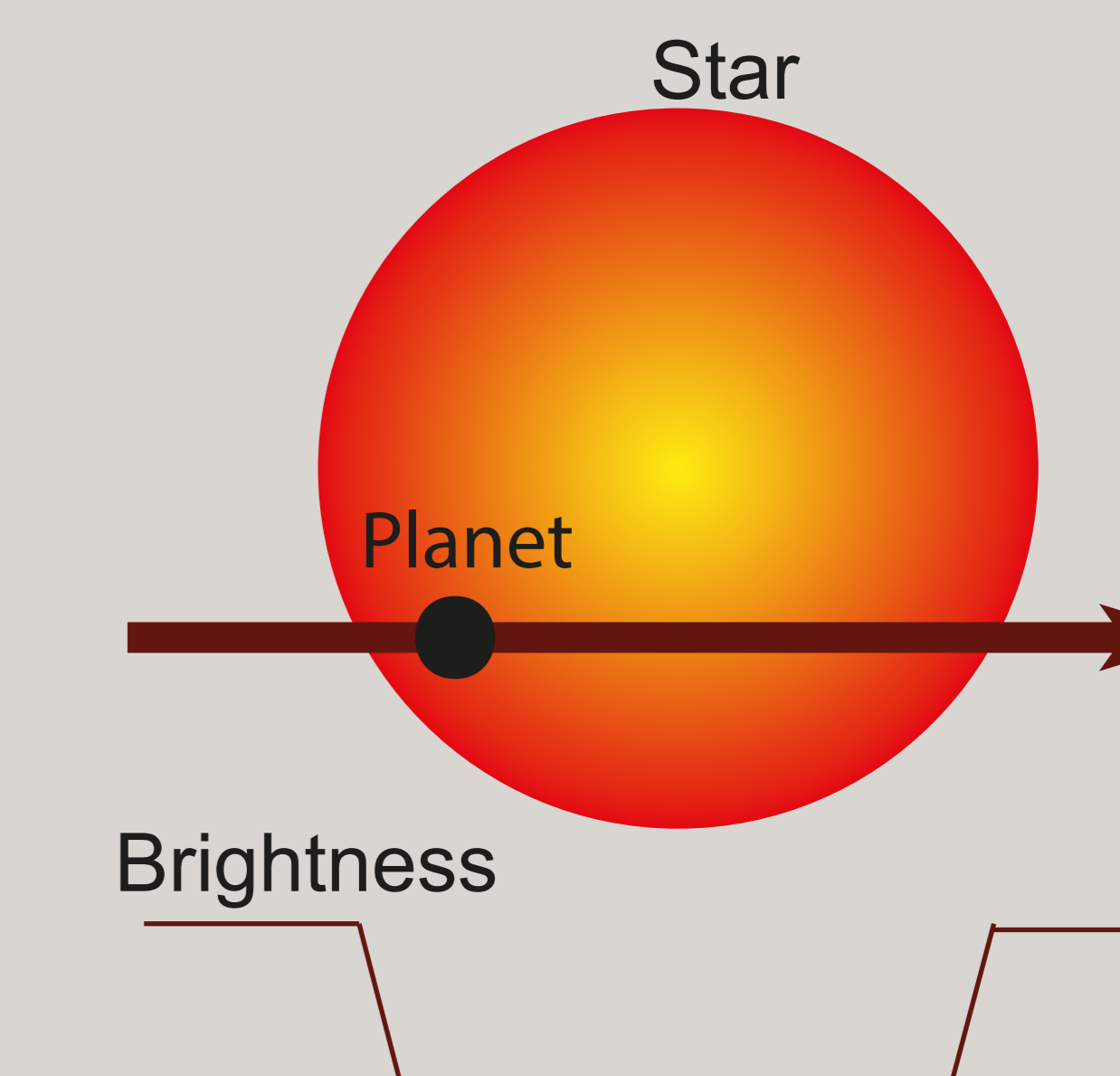
Astrometric method

The small gravitational attraction that the planet exerts on the star alters its motion in the sky. Gaia is able to detect these small motions.



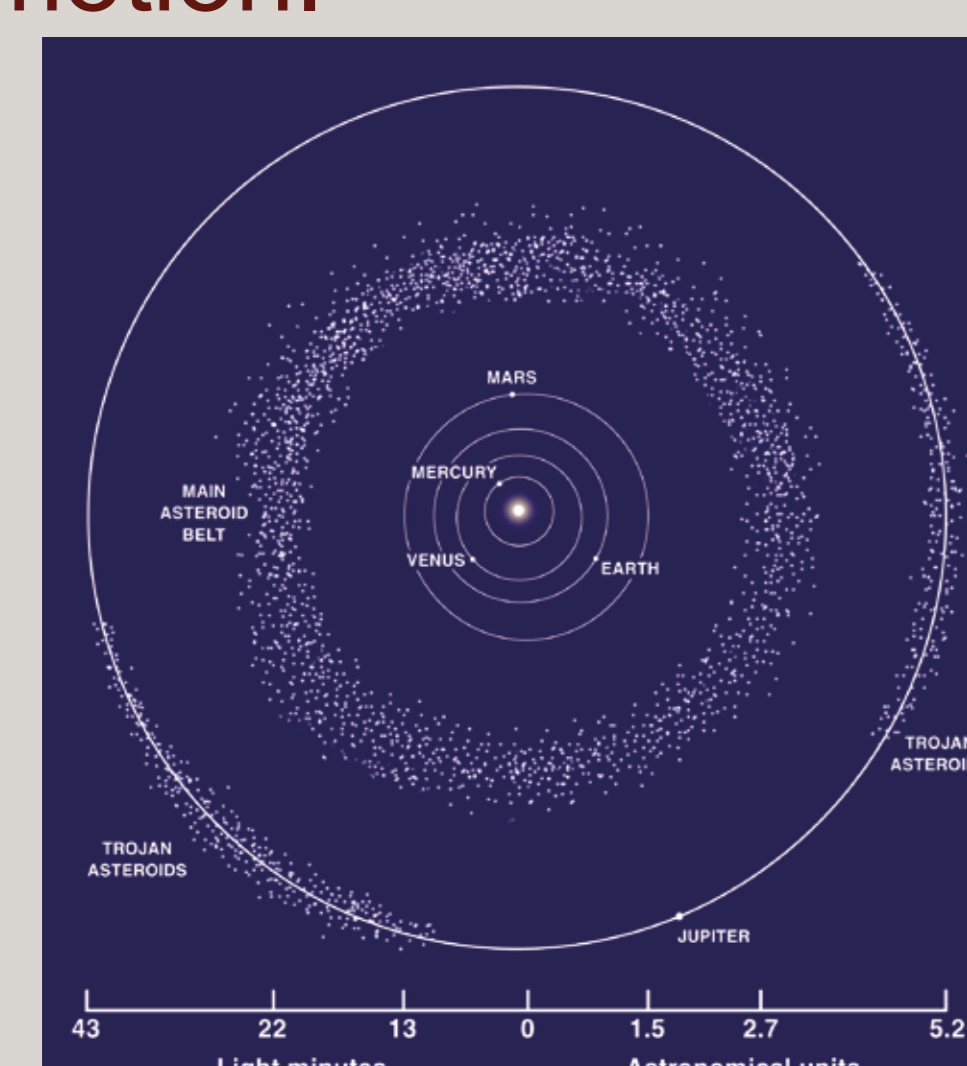
Photometric method

The observed visual brightness of the star drops by a small amount when the planet crosses in front of its parent star's disc.



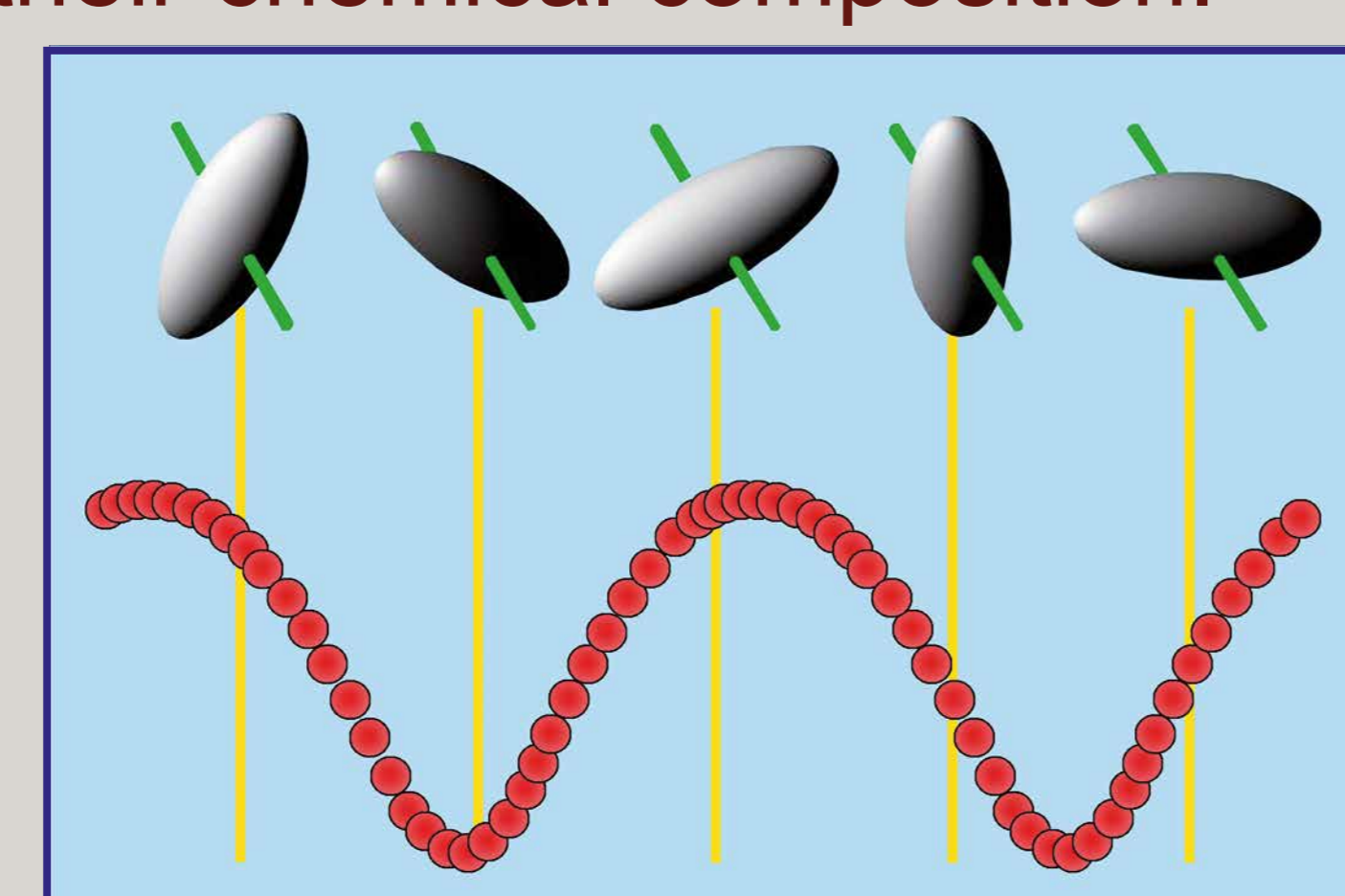
Asteroids

Asteroids are small bodies in the solar system mostly located between the orbits of Mars and Jupiter. Astronomers can detect them because they have a large apparent motion.



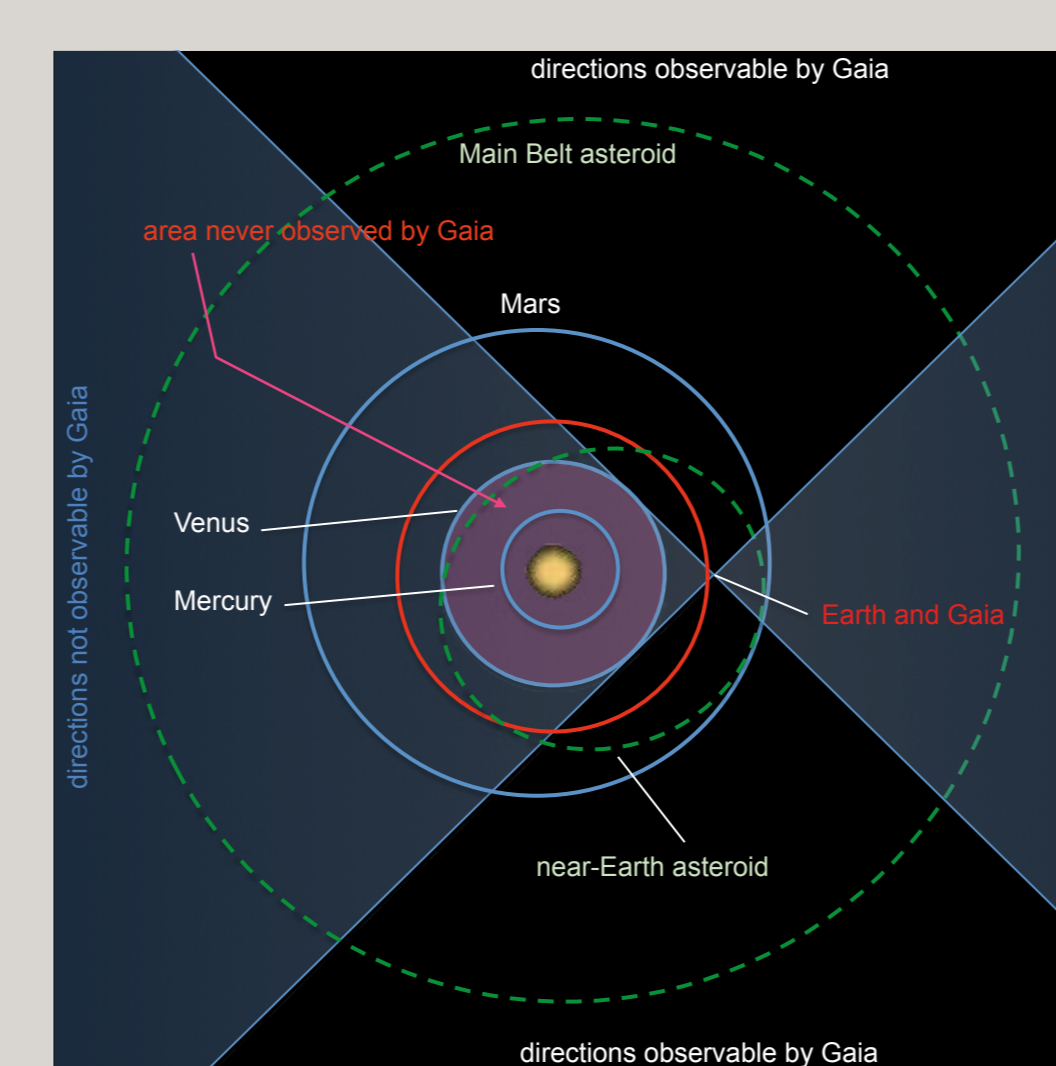
What is their shape?

The brightness of asteroids changes when they rotate. From this we can deduce their shapes and rotational periods. From spectroscopic observations we can also infer their chemical composition.



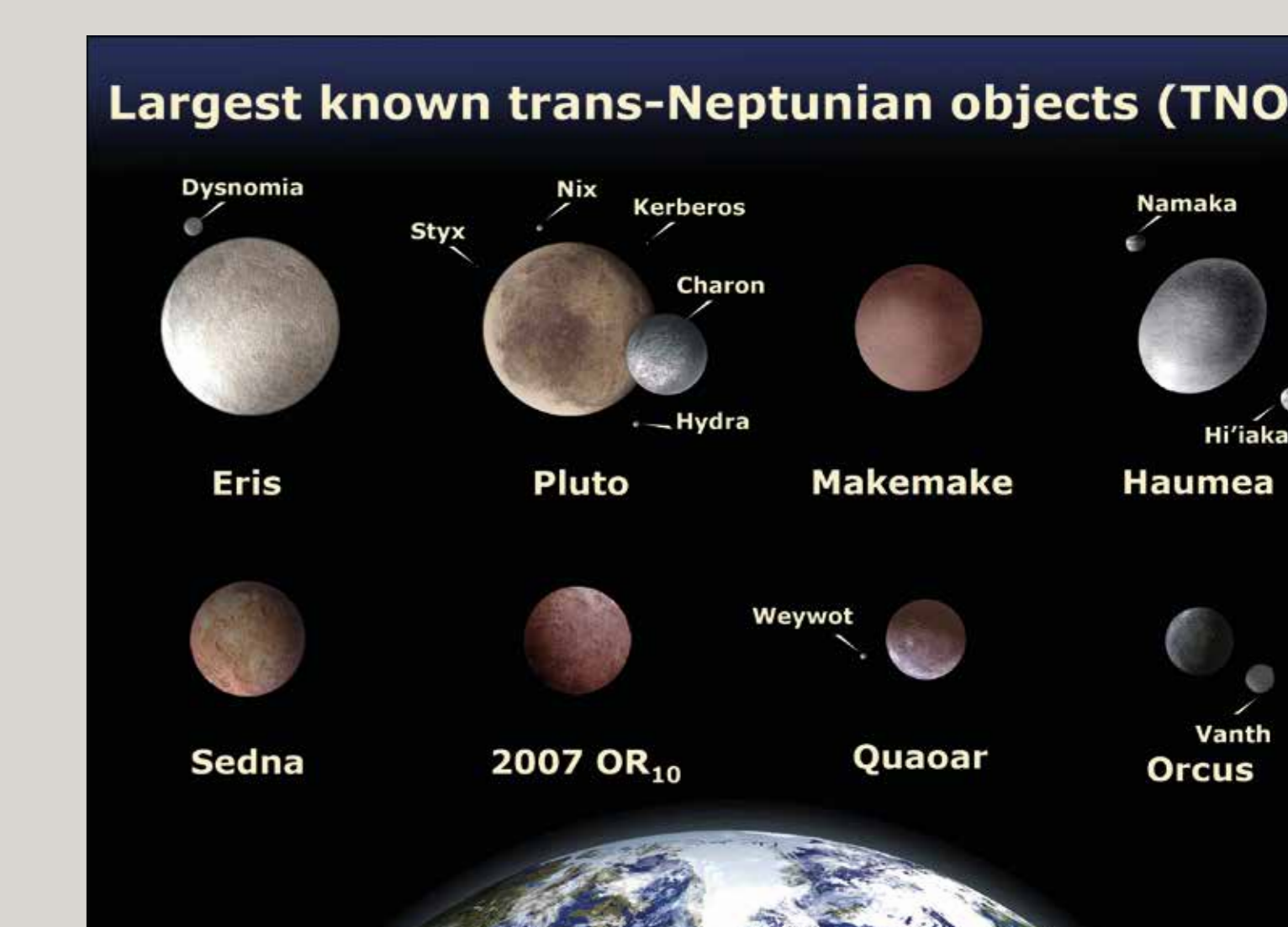
Watch out, danger!

Thanks to Gaia we will learn about thousands of potentially dangerous objects difficult to survey from the Earth because they are too close to the direction to the Sun.



Beyond Neptune

About a hundred trans-Neptunian objects are bright enough to be detected by Gaia.



Did you know that on February 15, 2013, a meteor exploded 25 kilometers above the Russian town Chelybinsk with an energy nearly 30 times larger than that of the atomic bomb that detonated over Hiroshima?