

SCIENTIFIC CASE:

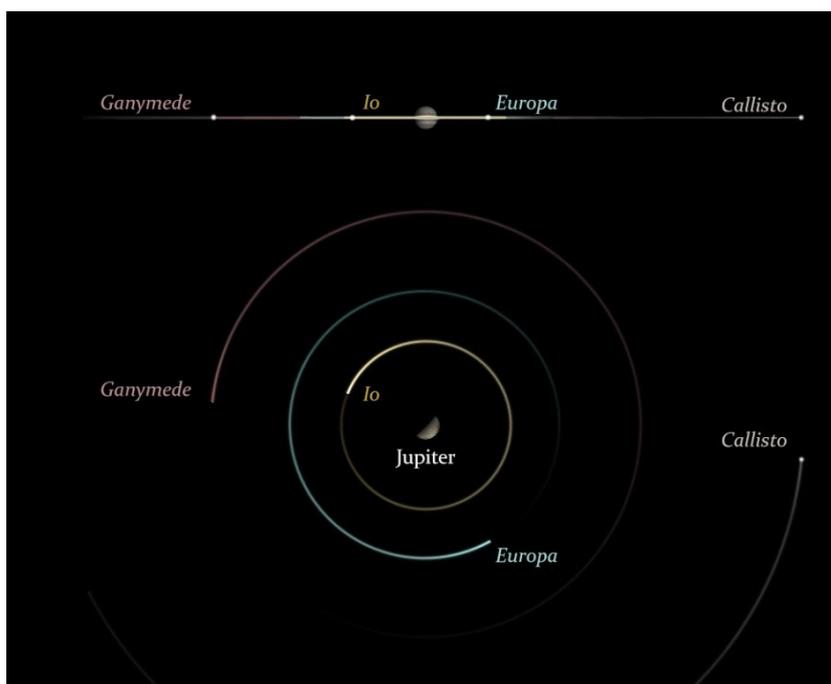
Mass of Jupiter

Context

During most of our History, our position in the Universe was the center, and everything else revolved around us: the Sun, the Moon, the planets, the sphere of fixed stars... That was the *Ptolemaic model*. Everything changed when the first telescopes appeared and they were aimed at the skies.

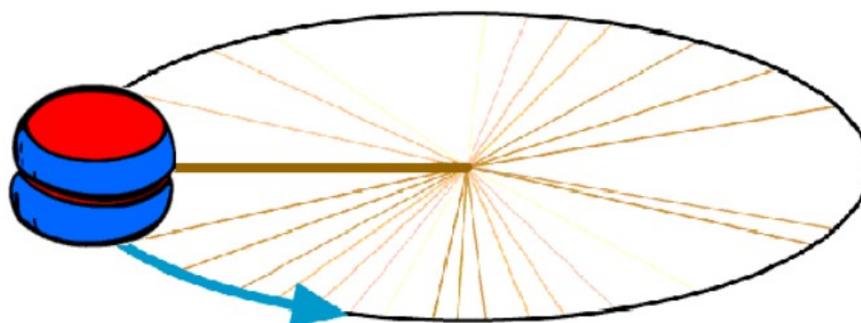
Galileo Galilei (1564 – 1642) was the first one to notice that several brilliant dots were periodically changing positions around planet Jupiter. It was the year 1610. Galileo's observations contributed drastically to the first great scientific revolution: the fall of the *Ptolemaic model* and the rise of the new heliocentric model, in which the Sun turned out to be at the center of the cosmos.

Those four brilliant dots, which were dancing around Jupiter, are known as galileans (or jovians) moons or satellites, and they are: **Io**, **Europa**, **Ganymede** and **Callisto**. These satellites are the biggest among Jupiter moons and are visible from Earth through binoculars.



Main moon Jupiter orbits. Credit: CESAR

If we spin a yo-yo horizontally, we will see the following trajectory:



That is to say, the yo-yo performs a uniform circular motion (UCM)¹.

In a similar way, we can study the motion of the planets around the Sun, or the motion of any moon around its planet².

¹ To study in depth, a practical exercise about kinematics is proposed (to be performed at the classroom). Thus, you can check if the theory adjust to your observations. The proposal will be delivered at the Science Experience.

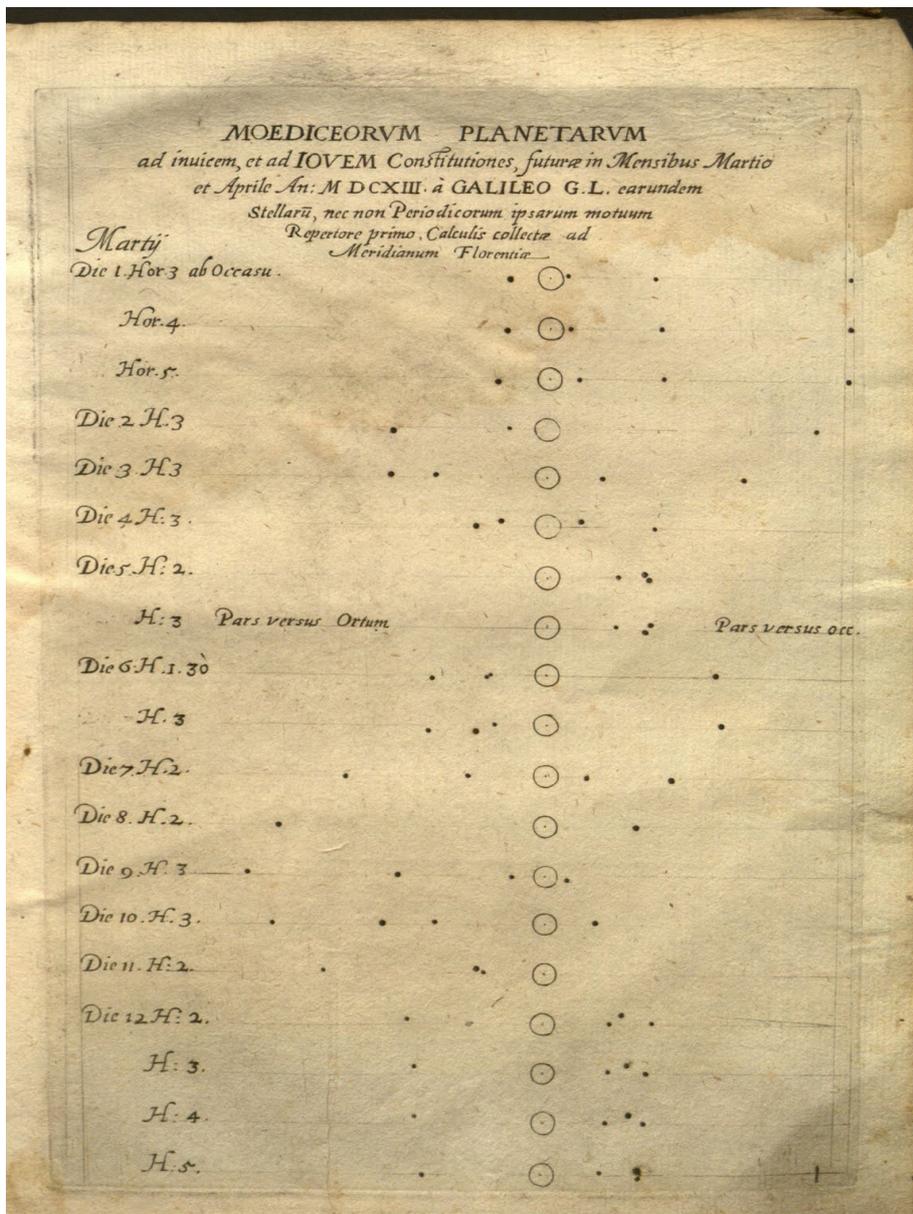
² Even though the planetary orbits are elliptical, the circular motion is a good approximation for the present case.

More educational resources:

CESAR: <http://www.cosmos.esa.int/web/cesar>

ESA education: <http://sci.esa.int/education/>

First observations of the jovian satellites by Galileo Galilei.



Excerpt from *Sidereus nuncius*, written by Galileo Galilei in 1610.