= Thebe (moon) =

Thebe (/ ??i?bi? / THEE @-@ bee ; Greek : ????) also known as Jupiter XIV , is the fourth of Jupiter 's moons by distance from the planet . It was discovered by Stephen P. Synnott in images from the Voyager 1 space probe taken on March 5 , 1979 , while making its flyby of Jupiter . In 1983 it was officially named after the mythological nymph Thebe .

The second largest of the inner satellites of Jupiter , Thebe orbits within the outer edge of the Thebe gossamer ring that is formed from dust ejected from its surface . It is irregularly shaped and reddish in colour , and is thought like Amalthea to consist of porous water ice with unknown amounts of other materials . Its surface features include large craters and high mountains ? some of them are comparable to the size of the moon itself .

Thebe was photographed in 1979 by the Voyager 1 and 2 spacecraft , and later , in more detail , by the Galileo orbiter in the 1990s .

= = Discovery and observations = =

Thebe was discovered by Stephen P. Synnott in images from the Voyager 1 space probe taken on March 5 , 1979 , and was initially given the provisional designation S / 1979 J 2 . In 1983 it was officially named after the mythological nymph Thebe who was a lover of Zeus ? the Greek equivalent of Jupiter .

After its discovery by Voyager 1 , Thebe was photographed by the Voyager 2 space probe in 1979 . However , before the Galileo spacecraft arrived at Jupiter , knowledge about it was extremely limited . Galileo imaged almost all of the surface of Thebe and helped clarify its composition .

= = Orbit = =

Thebe is the outermost of the inner Jovian moons , and orbits Jupiter at a distance of about 222 @,@ 000 km (3 @.@ 11 Jupiter radii) . Its orbit has an eccentricity of 0 @.@ 018 , and an inclination of 1 @.@ 08 ° relative to the equator of Jupiter . These values are unusually high for an inner satellite and can be explained by the past influence of the innermost Galilean satellite , Io ; in the past , several mean @-@ motion resonances with Io would have passed through Thebe 's orbit as Io gradually receded from Jupiter , and these excited Thebe 's orbit .

The orbit of Thebe lies near the outer edge of the Thebe gossamer ring , which is composed of the dust ejected from the satellite . After ejection the dust drifts in the direction of the planet under the action of Poynting ? Robertson drag forming a ring inward of the moon .

= = Physical characteristics = =

Thebe is irregularly shaped , with the closest ellipsoidal approximation being 116 × 98 × 84 km . Its surface area is probably between 31 @,@ 000 and 59 @,@ 000 (~ 45 @,@ 000) km2 . Its bulk density and mass are not known , but assuming that its mean density is like that of Amalthea (around 0 @.@ 86 g / cm3) , its mass can be estimated at roughly 4 @.@ 3 × 1017 kg .

Similarly to all inner satellites of Jupiter , Thebe rotates synchronously with its orbital motion , thus keeping one face always looking toward the planet . Its orientation is such that the long axis always points to Jupiter . At the surface points closest to and furthest from Jupiter , the surface is thought to be near the edge of the Roche lobe , where Thebe 's gravity is only slightly larger than the centrifugal force . As a result , the escape velocity in these two points is very small , thus allowing dust to escape easily after meteorite impacts , and ejecting it into the Thebe gossamer ring .

Zethus Crater is the largest (diameter about 40 km) crater on and the only named surface feature of Jupiter 's moon Thebe . There are several bright spots at the rim of this crater . It is located on the far side of Thebe , facing away from Jupiter . It was discovered by the Galileo spacecraft . It is named for Zethus , the husband of the nymph Thebe in Greek mythology .

The surface of Thebe is dark and appears to be reddish in color . There is a substantial asymmetry

between leading and trailing hemispheres : the leading hemisphere is 1 @.@ 3 times brighter than the trailing one . The asymmetry is probably caused by the higher velocity and frequency of impacts on the leading hemisphere , which excavate a bright material (probably ice) from the interior of the moon . The surface of Thebe is heavily cratered and it appears that there are at least three or four impact craters that are very large , each being roughly comparable in size to Thebe itself .