

NASA's Psyche Mission Begins Journey 1st Mission To Study Metallic Asteroids

Why In News

- NASA on launched a spacecraft from Florida on its way to **Psyche**, the largest of the several metal-rich asteroids known in our solar system and believed by scientists to be the remnant core of an ancient protoplanet, offering clues about Earth's formation.
- A NASA probe launched into space on a **2.2-billion-mile journey** to a huge, metal-rich space rock in the main asteroid belt between Mars and Jupiter.



Who Launched Mission

- Elon Musk-led SpaceX is set to launch NASA's mission to the asteroid Psyche on October 12. It also marks the first dedicated NASA launch on a Falcon Heavy rocket furnished by Elon Musk's SpaceX company, and the first interplanetary mission flown by the Falcon Heavy.
- The mission will launch from the space agency's Kennedy Space Center in Florida on the company's Falcon Heavy rocket.

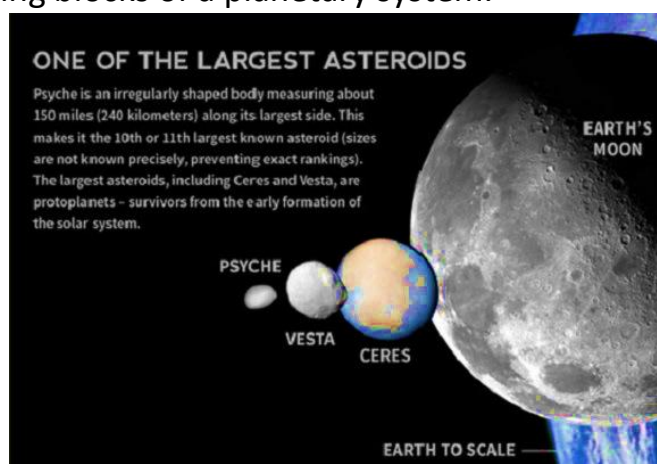


What Is Psyche

- It was discovered by Italian astronomer **Annibale de Gasparis in 1852**, Psyche is the biggest, orbiting the sun in the outer portion of the main asteroid belt between Mars and Jupiter alongside millions of other space rocks.
- Named after Greek mythology's captivating goddess of the soul.



- Psyche is believed to consist largely of **iron, nickel, gold and other metals**, with a collective hypothetical monetary value placed at **10 quadrillion dollars**.
- The asteroid known as Psyche, with an estimated width of **173 miles** (279 kilometers) and a surface area of roughly 165,800 square kilometers.
- The asteroid is believed to be **rich in metal content**, which is why it holds the interest of astronomers.
- There is a chance that it is made of metal from the core of a planetesimal, which is one of the building blocks of a planetary system.



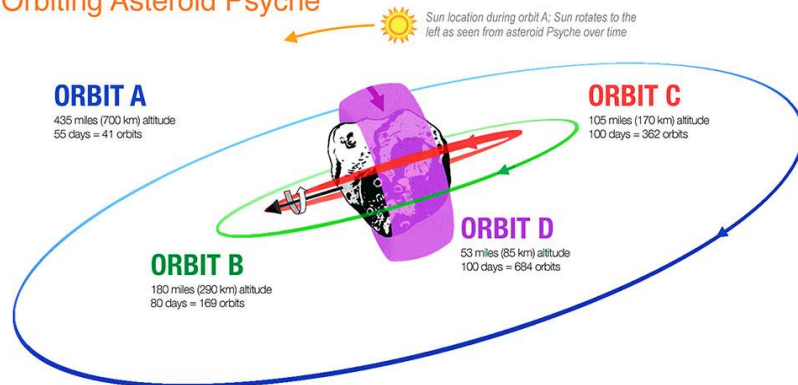
NASA Psyche mission

- NASA **Psyche spacecraft** rocketed away on a **six-year journey** to a rare metal-covered asteroid. Most asteroids tend to be rocky or icy, and this is the first exploration of a metal world.
- Scientists believe it may be the battered **remains of an early planet's core**, and could shed light on the inaccessible centres of Earth and other rocky planets.
- Named for the asteroid it's chasing, Psyche should reach the huge, potato-shaped object in 2029.
- After decades of visiting faraway worlds of rock, ice and gas, NASA is psyched to pursue one coated in metal.
- The Psyche spacecraft will arrive at **Mars in May 2026** and use the planet's gravity to effectively slingshot its trajectory to Psyche.

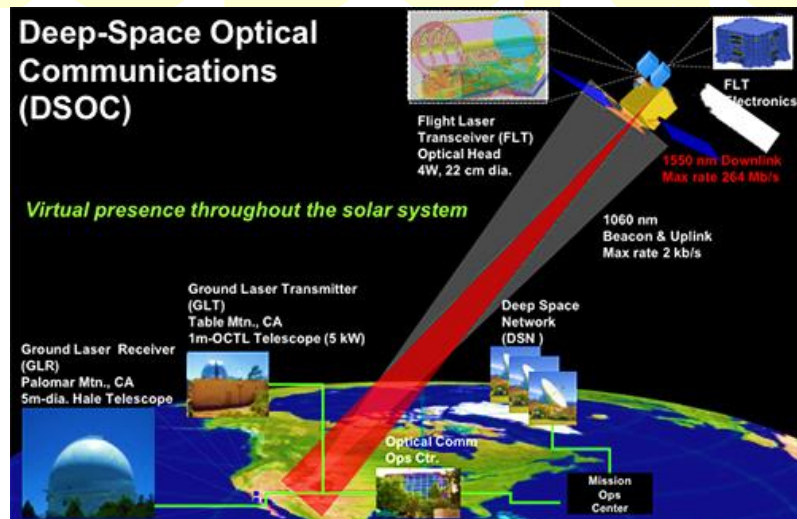


- The mission will arrive at the asteroid in late **July 2029** and spend 26 months orbiting the asteroid to map its surface, take images and determine whether Psyche truly is a metal core.
- The spacecraft will use different orbits around the asteroid, going from 440 miles (**708 kilometers**) away to **just 40 miles** (64 kilometers) above the surface.
- The Psyche mission's imagers will begin transmitting data to Earth as soon as the spacecraft spots the asteroid.

Orbiting Asteroid Psyche



- Also along for the ride is the DSOC **Deep Space Optical Communications**. Occurring during the first two years of the journey to Psyche, it will be NASA's most distant experiment of high-bandwidth laser communications, testing the sending and receiving of data to and from Earth using an invisible near-infrared laser.
- The laser can send data at 10 to 100 times that of traditional radio wave systems NASA uses on other missions. If the tech demo is successful, DSOC could one day be used to communicate with humans exploring Mars.



Other Asteroid Missions

- The launch came two weeks after NASA accomplished a return to Earth of the largest sample of material ever collected from an asteroid's surface - the rocky near-Earth **asteroid Bennu**.



- NASA in 2021 launched a spacecraft named **Lucy** on a **12-year expedition** to study the Trojan asteroids, two large clusters of space rocks orbiting the sun ahead of and behind the path of Jupiter.
- Last September, NASA sent a spacecraft slamming into an asteroid with enough force to nudge it from its natural path - the first time humans altered a celestial body's motion - in a successful test of a planetary defense system.

Nasa spacecraft will crash into asteroid's moon

