Kamo’oalewa

Why in News

Recently, scientists have observed **a quasi-satellite named Kamo`oalewa**, tracking the Earth’s orbit around the Sun, could be a fragment from the moon.

- A **mission to collect Kamo’oalewa’s samples** has been scheduled for a launch **in 2025.**

Key Points

- **Kamo’oalewa:**
  - **Discovered in 2016** (through the **PanSTARRS telescope in Hawaii**), Kamo’oalewa is a word that is part of a Hawaiian chant, and alludes to an offspring that travels on its own.
  - It is **one of Earth’s quasi-satellites, a space rock that orbits the Sun, but remains relatively close to the planet** – in this case about **9 million miles away.**
  - The asteroid is **roughly the size of a Ferris wheel – between 150 and 190 feet in diameter.**
  - Because of its small size (about 50 metres wide), this quasi-satellite has been difficult for scientists to study, **and little was known about it so far.**
- **Findings-Three Possibilities:**
  - **Part of Earth Moon:**
    - It could have **broken away from the Moon due to a possible impact**, and **gone on to orbit the Sun rather than the Earth-like** its parent does.
    - Spectrum of reflected light from Kamo’oalewa closely matched lunar rocks from **Nasa’s Apollo missions,** suggesting it originated from the moon.
    - It is **in an unusual orbit, one that would be unlikely for objects that had drifted towards Earth** from the **asteroid belt** between Mars and Jupiter.
    - The team are unsure how the piece of moon came to be adrift in space, in part, because **there are no other known asteroids with lunar origins.** However, they narrowed down the timeframe for the violent event to have occurred between 1,00,000 and 500 years ago.
  - **Near Earth Objects:**
    - Captured in its Earth-like orbit from the **general population of** Near Earth Objects.
  - **Earth’s Trojan Asteroids:**
    - It originated from an as-yet-undiscovered quasi-stable population of **Earth’s Trojan asteroids** (Trojans are a group of asteroids that share an orbit with a larger planet).

Near-Earth Objects (NEOs)

- NEOs are comets and asteroids pushed by the gravitational attraction of nearby planets into orbits which allow them to enter the Earth’s neighbourhood.

- These objects are composed mostly of water ice with embedded dust particles.
- NEOs occasionally approach close to the Earth as they orbit the Sun.
- NASA’s Center for Near-Earth Object Study (CNEOS) determines the times and distances of these objects, when their approach to the Earth is close, through the Asteroid Watch Widget.

Source: IE