

An overview of the Lucy mission science and target Trojan asteroids.

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Spacecraft have roamed far and wide across the Solar System, passing by numerous primitive small bodies from the orbit of the Earth to beyond the orbit of Pluto. There are two large populations of stable asteroids—estimated to contain more than a million objects larger than 1 km in diameter—that have yet to be explored at close range, the so-called Trojan asteroids, which lead and trail Jupiter by 60° along its orbit around the Sun where they persist due to a stabilizing resonance. The NASA *Lucy* mission will accomplish the first reconnaissance of these distant bodies. *Lucy*'s trajectory has been carefully designed to allow navigation through both Trojan populations, and target some of the most scientifically intriguing Trojan asteroids: Eurybates–Queta, Polymele, Leucus, Orus, Patroclus–Menoetius. The first Trojan asteroid the *Lucy* spacecraft will encounter is the 60 km Eurybates (August 2027), the largest remnant of a parent body that was disrupted by a violent collision, and the final flyby will be of a near equal-size binary pair, Patroclus and Menoetius, among the largest Trojan asteroids (March 2033). In this talk, we will discuss the main scientific motivation for the *Lucy* mission, and present the latest knowledge of *Lucy*'s targets.