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Space Telescope Finds Thousands of Asteroids

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There are four times as many asteroids between the planets Mars and Jupiter as astronomers previously thought, according to observations by an orbiting telescope called the Infrared Astronomical Satellite (**IRAS**).

"We see something like 20,000 asteroids out there in the asteroid belt," Dr. Gerry Neugebauer, chief **IRAS** scientist, said in an interview at California's Jet Propulsion Laboratory, where the flight of the orbiting satellite has been directed.

Until **IRAS** was put in orbit last January, astronomers had identified 2,980 asteroids and had seen but not "catalogued" an additional 2,000 asteroids. Most are no larger than half a mile across, but some are almost as big as the moon. Almost all the identified asteroids are in orbit between Mars and Jupiter and stay there. A few, known as the Apollo asteroids, occasionally swing close to Earth in elliptical orbits.

The infrared telescope on the satellite took the new asteroid count by measuring the colors and temperatures of the bodies it saw whirling in orbit between Mars and Jupiter.

"Asteroids look much brighter than stars in the solar system background," Neugebauer said. "Their temperature in space is also warmer than most of the stars we see because they're so close."

Neugebauer also said that the ring of dust that the satellite saw for the first time in the asteroid belt is almost surely the product of a collision between two asteroids eons ago. The larger of the two probably survived, although it may have been broken into pieces. The smaller asteroid was probably pulverized, producing the dust that is in orbit between Mars and Jupiter just outside the asteroid belt.

"That ring of dust, which measures hundreds of millions of miles, is probably the debris left over from an asteroid that was less than a mile in diameter," Neugebauer said. "There is no other explanation that we can think of for that band of dust."

The new estimate of 20,000 asteroids comes as no surprise to astronomers who have studied the asteroid belt. Almost every year in the last decade, astronomers have identified new asteroids as their telescopes became more powerful and sensitive. Said Neugebauer: "We expected to see between 10,000 and 20,000 asteroids. It sounds like a high number, but it didn't surprise anybody who has looked at the asteroid belt for any length of time."

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