

## Telescope Finds Third Solar System

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An orbiting infrared telescope that earlier this year discovered a primitive solar system around the star Vega has found a ring of planets being born around Fomalhaut, one of the most studied stars in the southern skies.

Though scientists have speculated for years that Earth and its eight sister planets are not alone in the cosmos, the discovery that Vega and Fomalhaut appear to have similar solar systems is the first hard evidence that their speculations were correct.

Vega and Fomalhaut may be undergoing the same kind of evolution that our solar system went through 3 to 4 billion years ago. In the rocky debris circling both stars there could be the equivalents of a young Earth.

The Infrared Astronomical Satellite has been dark since last month when it ran out of supercold liquid helium needed to cool its photo-detectors. But just before it blacked out, it discovered a huge swarm of objects around Fomalhaut, ranging in size from grains of sand to bodies as big as asteroids.

"The discovery provides the second direct evidence that solid objects of substantial size exist around a star that is not our sun," Dr. Gerry Neugebauer, **IRAS** program scientist, said at the Jet Propulsion Laboratory in Pasadena, Calif., where the infrared telescope was built.

"These objects could be a solar system in a different stage of development and evolution than our own or the one that we found to be circling Vega."

Fomalhaut ("mouth of the fish" in Arabic) is part of the constellation Piscis Austrinus (the Southern Fish) in the southern hemisphere and is about 22.8 light years from Earth. A light year is the distance light travels in one year, almost 6 trillion miles.

Fomalhaut is 12 times brighter than the sun, though not as bright as Vega. Its surface temperature is cooler than Vega's by 1,300 degrees Fahrenheit, suggesting that it will have a longer cosmological life than Vega and therefore is more likely than Vega to be producing planets, moons and asteroids like those generated by the sun 4.6 billion years ago.

The fact that Fomalhaut's surface is cooler than Vega but hotter than our sun implies a lifetime somewhere between Vega's expected life of 2 billion years and our sun's expected life of at least 15 billion years. Hotter stars tend to exhaust their nuclear furnaces and burn themselves out in less time than cooler stars do.

When **IRAS** went dark early last month, scientists said they were looking at data from 50 stars other than Vega that suggested they might hold their own solar systems in orbit. Neugebauer said the list of candidate stars has now been narrowed to two, Vega and Fomalhaut.

"This is not to say there aren't others out there," Neugebauer said, "but in our celestial survey of solar-like stars with companion bodies in orbit we have only found these two stars."

The **IRAS** satellite detected the two extraterrestrial solar systems by measuring the temperature of the bodies circling the two stars. It found them much cooler than the stars but far too warm and far too large to be rings of interstellar dust.

Said Fred Gillett of Arizona's Kitt Peak National Observatory: "The spirit we're taking it in right now is that we think we see other solar systems in the state of formation."

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