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## 'Super-Earths' orbit nearby stars



The discoveries suggest that we may be close to finding habitable planets

### **Planet-hunters have discovered two "super-Earths" orbiting two nearby Sun-like stars.**

These rocky planets are larger than the Earth but much smaller than ice giants such as Uranus and Neptune.

Scientists say the discoveries are a step towards finding potentially habitable planets - smaller planets that are comparable to the Earth.

Details of the new planets are described in two papers in the *Astrophysical Journal*.

Two US-based scientists led the international research effort - Paul Butler from the Carnegie Institution's Department of Terrestrial Magnetism in Washington and Steven Vogt of the University of California, Santa Cruz.

They combined several years' worth of data from the W M Keck Observatory in Hawaii, and the Anglo-Australian Telescope in New South Wales, Australia.

**“ The discovery of potentially habitable nearby worlds may be just a few years away ”**

Steven Vogt  
University of California, Santa Cruz

By detecting the subtle "wobbling" of the stars, caused by the gravitational tug of orbiting planets, the researchers were able to determine each planet's size and orbit.

The scientists saw evidence of three of these "low-mass planets" orbiting a star called 61 Virginis, which is just 28 light-years from Earth and is visible with the naked eye in the

constellation of Virgo.

The smallest of the three was five times the mass of Earth, and orbited the star once every four days.

Dr Butler said that the signal produced by this planet was one of the smallest ever detected.

"One has to be very cautious when you claim a discovery," he said. "What gives us confidence is that we see the signal from two separate telescopes, and the two signals match up perfectly."

The other newly-discovered system was orbiting the star HD 1461, which is 76 light-years from Earth. The researchers found clear evidence for a planet 7.5 times the mass of Earth, and possible indications of two others.

Both stars resemble our Sun in size and age.

The planets have orbits too close to their stars to support life or liquid water. But, according to Dr Butler, they point the way toward finding other planets in similar orbits around nearby "M-dwarfs" - stars that are typically less than half the mass of the Sun.

"These sorts of planets around M-dwarfs actually would be in a liquid water zone," he said. "So we are knocking on the door right now of being able to find habitable planets."

Professor Vogt said: "These detections indicate that low-mass planets are quite common around nearby stars.

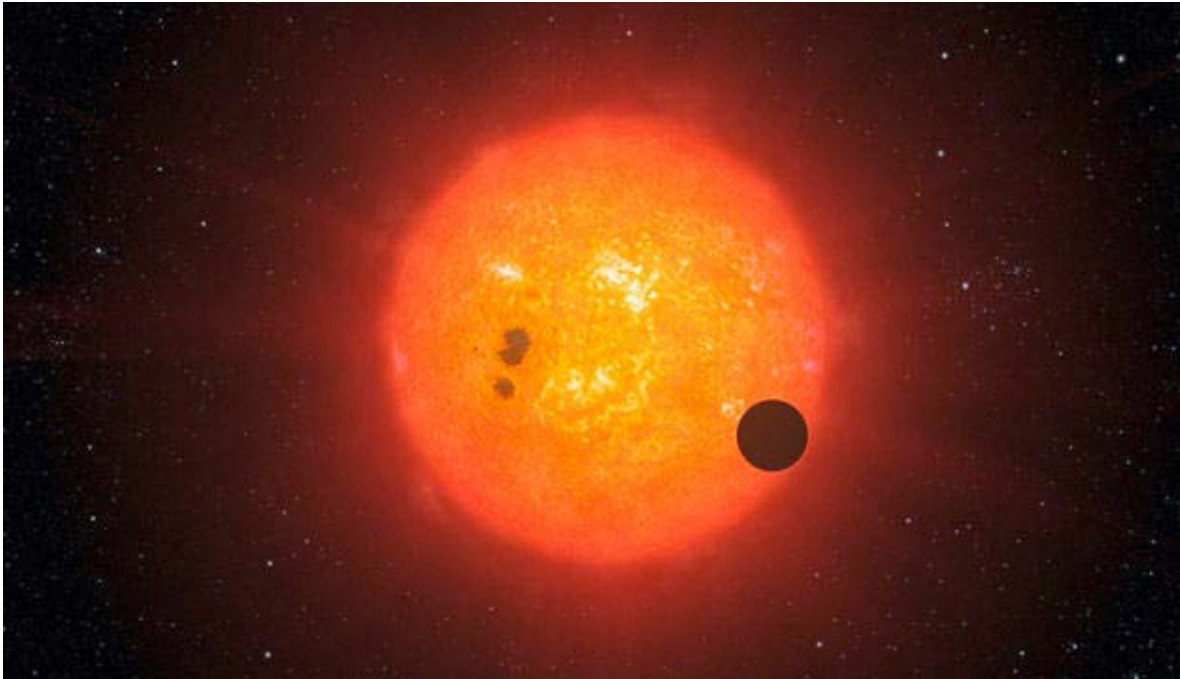
"The discovery of potentially habitable nearby worlds may be just a few years away."

## Scientists spot nearby 'super-Earth'

By **John D. Sutter**, CNN

December 16, 2009 5:12 p.m. EST

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This illustration shows how the newly discovered planet may look orbiting its nearby star, which is smaller than Earth's sun.

### STORY HIGHLIGHTS

- Astronomers have found a watery planet that's similar in size to Earth
- The planet probably is too hot to support life similar to that found on Earth
- The planet, named GJ 1214b, is 2.7 times as large as Earth and orbits a smaller star
- Astronomers spotted the planet using a 16-inch telescope on the ground

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(CNN) -- Astronomers announced this week they found a water-rich and relatively nearby planet that's similar in size to Earth.

While the planet probably has too thick of an atmosphere and is too hot to support life similar to that found on Earth, the discovery is being heralded as a major breakthrough in humanity's search for life on other planets.

"The big excitement is that we have found a watery world orbiting a very nearby and very small star," said David Charbonneau, a Harvard professor of astronomy and lead author of an article on the discovery, which appeared this week in the journal Nature.

The planet, named GJ 1214b, is 2.7 times as large as Earth and orbits a star much smaller and less luminous than our sun. That's significant, Charbonneau said, because for many years, astronomers assumed that [planets](#) only would be found orbiting stars that are similar in size to the sun.

Because of that assumption, researchers didn't spend much time looking for planets circling small stars, he said. The discovery of this "watery world" helps debunk the notion that Earth-like planets could form only in conditions similar to those in our solar system.

"Nature is just far more inventive in making planets than we were imagining," he said.

In a way, the newly discovered planet was sitting right in front of astronomers' faces, just waiting for them to look. Instead of using high-powered telescopes attached to satellites, they spotted the planet using an amateur-sized, 16-inch telescope on the ground.

There were no technological reasons the discovery couldn't have happened long ago, Charbonneau said.

The planet is also rather near to our solar system -- only about 40 light-years away.

Planet GJ 1214b is classified as a "super-Earth" because it is between one and 10 times as large as Earth. Scientists have known about the existence of super-Earths for only a couple of years. Most planets discovered by [astronomers](#) have been gassy giants that are much more similar to Jupiter than to Earth.

Charbonneau said it's unlikely that any life on the newly discovered planet would be similar to life on Earth, but he didn't discount the idea entirely.

"This planet probably does have liquid water," he said.