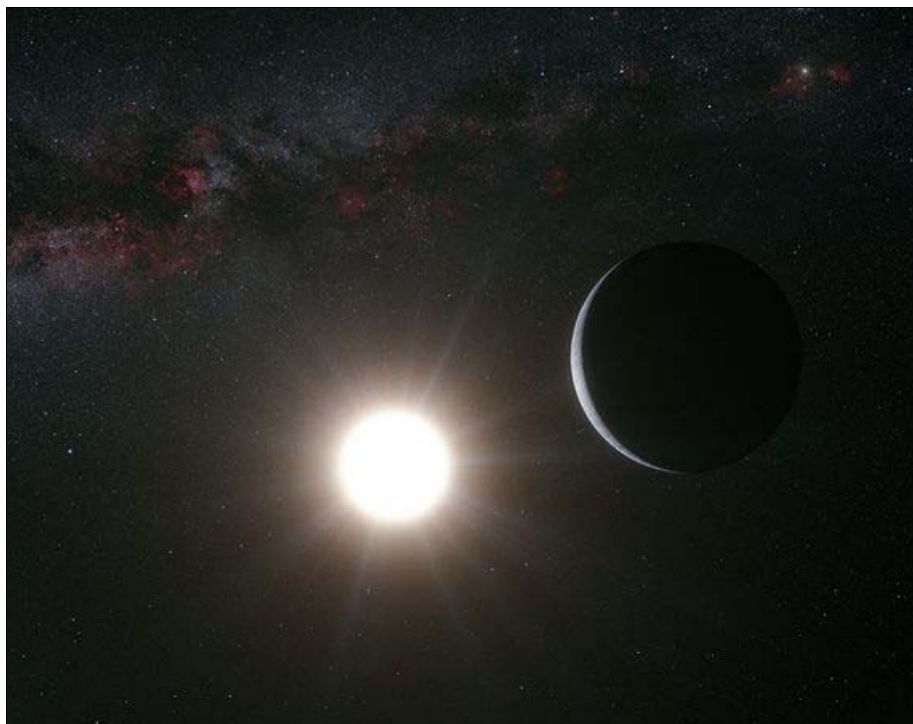


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# New Planet Is Closest Yet: Earth-Size Lava World a Space "Landmark"

The new world's star system, Alpha Centauri, may hold even more worlds.



The star Alpha Centauri B shines on the new planet in an artist's rendering.

*Illustration courtesy L. Calçada, ESO*

**Marc Kaufman**

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**Alpha Centauri—the star system closest to our sun and the inspiration for legions of science fiction writers—harbors at least one planet and probably more, astronomers announced Tuesday.**

The planet orbits very close to Alpha Centauri B—the smaller of two paired stars—and likely has a lavalike consistency to show for it, scientists said. As such, the new world would be way too hot to support life as we know it.

Life or no life, the discovery is a "landmark," said Geneva Observatory astronomer Stéphane Udry, co-author of the study detailing the as yet unnamed planet in the journal *Nature*.

For one thing, the Alpha Centauri planet is the closest yet to our solar system. What's more, the new world is the first known to have a mass similar to Earth's and to orbit a star very much like our own, Udry said at a meeting of the American Astronomical Society's Division for Planetary Sciences in Reno, Nevada.

And though the new planet's signal was described as faint, Udry said, "We are very confident that this discovery will be confirmed. And we fully expect to find other planets in the system."

(Related: Alpha Centauri B planet predicted in 2008.)

**Space Race**

While neither Alpha Centauri B nor the new planet are unusual, their relative closeness to Earth makes them special—and has made the system the source of considerable planet-hunting competition among Swiss, U.S., and New Zealand space scientists.

The Swiss won out by collecting data with a 3.6-meter telescope at the European Southern Observatory in Chile and analyzing the flood of information with the attached High Accuracy Radial velocity Planet Searcher (HARPS) instrument. But it was no overnight success—the team observed the region almost nonstop for four years before they felt they had enough data to go public.

(Also see "Diamond Planet Found—Part of 'Whole New Class'?")

### Dips, Wobbles, and New Worlds

The Swiss team isn't new to this, having found the first known extrasolar planet, or exoplanet, in 1995.

Since then astronomers have identified more than 840 planets—including the new Alpha Centauri world—using what's called the radial velocity method, in which telescopes and spectrometers detect slight shifts in the closeness of stars in relation to Earth. Those telltale stellar wobbles arise when the gravitational fields of orbiting planets tug at their host stars.

The other main way to detect an exoplanet is to look for slight, regular dips in starlight—signs that a large body is passing in front of, or transiting, the star, as seen from Earth. That will be the Swiss team's next tactic in its attempt to confirm the new planet, said lead study author Xavier Dumusque of the Geneva Observatory and Portugal's Centro de Astrofísica da Universidade do Porto.

Detecting a transit at Alpha Centauri, though, will be difficult, given the small size of the planet and the great brightness of the star. Nonetheless, Dumusque said, it's possible.

NASA's Kepler space telescope has identified several thousand other exoplanets using the transit method, though most remain to be confirmed.

Overall, recent discoveries have convinced astronomers that exoplanets are common, and even that there may be more planets than stars in our own galaxy—no small claim, given that the Milky Way holds an estimated hundred billion to 400 billion stars.

(Related: "New Planet Found: Molten 'Mars' Is 'Right Around the Corner.'")

### Forty-Thousand-Year Trip (One Way)

The newfound planet orbits about 4 million miles (6.4 million kilometers) from Alpha Centauri B—much closer to its star than Mercury is to our sun—making its year only 3.2 days long.

Alpha Centauri A—the larger of the companion stars—orbits far enough away from Alpha Centauri B that it's unlikely to affect the new world or any other potential planets in the system. A third Alpha Centauri star, Proxima Centauri, is gravitationally locked to the others but otherwise quite distant.

Though the new world is being branded the planet next door, it's still four light-years away. It would take our best current robotic spacecraft about 40,000 years to travel that distance, estimated Greg Laughlin, an astrophysicist at the University of California, Santa Cruz, who was not part of the Swiss team but who participated in the press conference.

That could change, however, "if there's a public groundswell to get to Alpha Centauri," Laughlin said—for example, if other planets are found orbiting Alpha Centauri B, especially in the system's habitable zone, where temperatures would be friendly to life.

In that case, he said, "it's possible that new technology could be developed to get a spacecraft there from Earth in a human's life span."

*More: "Planet Has Four Suns: Amateur Astronomy Finds 'Tatooine' Times Ten"*

*Author of the National Geographic e-book **Mars Landing 2012**, Marc Kaufman has spent more than 35 years, including the past 12 as a science and space writer, fore*



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*the Washington Post. He is also author of First Contact: Scientific Breakthroughs in the Hunt for Life Beyond Earth, published in 2011, and has spoken extensively to crowds across the United States and abroad about astrobiology. He lives outside Washington, D.C., with his wife, Lynn Litterine.*

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