

Earth-like planet that supports life could be circling Sun's nearest neighbour

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Another Earth could be orbiting one of the Sun's closest stellar neighbours, scientists believe.

Habitable rocky planets are likely to have formed in the Alpha Centauri system, a trio of stars 4.37 light years, or 25.8 trillion miles, away, a study has shown.

Astronomers say if such worlds exist they could be detected using a dedicated telescope.

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The Alpha Centauri star system could contain an Earth-like planet

Because it is so close, Alpha Centauri would probably be the first star system to be visited if interstellar travel ever becomes possible - a fact that has inspired numerous science fiction stories.

The three stars in the system are binary twins Alpha Centauri A and Alpha Centauri B and the much smaller and dimmer red dwarf, Proxima Centauri, which is a little nearer the Earth.

Scientists in California carried out computer simulations that suggest Earth-like planets may be orbiting Alpha Centauri B.

At least some are likely to be in the so-called "habitable zone" at just the right distance from their parent star to allow oceans, lakes and rivers to form without freezing or boiling away. Such planets are the best candidates for supporting life as we know it.

Anyone standing on a planet orbiting Alpha Centauri B would see two "suns" in the sky, a bright "primary" sun and a "secondary" sun which would be much weaker but still many times brighter than the full moon as seen from Earth.

Although Proxima Centauri is considered part of the same star system it is 0.21 light years from the other stars, or 13,000 times the distance between the Earth and the Sun. It would only be visible at night.

The astronomers hope to carry out intensive studies of the Alpha Centauri system using the 1.5 metre telescope at the Cerro Tololo Inter-American Observatory in Chile.

"I think the planets are there, and it's worth a try to have a look," said Professor Gregory Laughlin, one of the scientists from the University of California at Santa Cruz.

Most of the more than 200 planets already discovered orbiting stars other than the Sun have been huge gas giants, similar to Jupiter.

Confirming the presence of small, Earth-like rocky planets around one of the Alpha Centauri stars will not be easy. Prof Laughlin said it would probably require five years of observation using a dedicated telescope.

Because of the brightness of Alpha Centauri B and its position in the sky, the astronomers are most likely to use the "Doppler" detection method.

This measures shifts in the light from the star to detect the tiny wobble induced by the gravitational tug of an orbiting planet. Most of the extra-solar planets identified so far have been found using the Doppler technique.

To study planet formation around Alpha Centauri B, the astronomers ran repeated computer models, each of which simulated 200 million years of stellar evolution.

Because of variations in the initial conditions, each simulation led to the formation of a different planetary system. But on every occasion a solar system was created with at least one planet about the size of the Earth.

In many cases, the simulated planets had orbits lying within the habitable zone of the star.

Also known as the "Goldilocks zone", this is the narrow orbital band where temperatures are neither too hot nor too cold, but just right to allow the existence of liquid surface water and, possibly, life.

The research has been accepted for publication in the *Astrophysical Journal*.