

## Earth-sized planet that may host alien life discovered

This artist's impression shows the temperate planet Ross 128 b, with its red dwarf parent star in the background. This planet, which lies only 11 light-years from Earth, was found by a team using ESO's unique planet-hunting HARPS instrument. Photo: European Southern Observatory/M. Kornmesser | Photo Credit: [Special Arrangement](#)

Astronomers have discovered an Earth-sized planet with 'mild' climate and peaceful parent star just 11 light years away, which may be the closest known comfortable abode for possible life.

A team working with High Accuracy Radial velocity Planet Searcher (HARPS) at the La Silla Observatory in Chile found that the low-mass exoplanet orbits the red dwarf star Ross 128 every 9.9 days.

This Earth-sized world is expected to be temperate, with a surface temperature that may also be close to that of the Earth. Ross 128 is the "quietest" nearby star to host such a temperate exoplanet.

"This discovery is based on more than a decade of HARPS intensive monitoring together with state-of-the-art data reduction and analysis techniques," said Nicola Astudillo-Defru from University of Geneva in Switzerland.

Red dwarfs are some of the coolest, faintest and most common stars in the universe. This makes them very good targets in the search for exoplanets.

It is easier to detect small cool siblings of Earth around these stars, than around stars more similar to the Sun, said Xavier Bonfils from University of Grenoble in France, who is the lead author of the research published in the journal *Astronomy & Astrophysics*.

Although it is currently 11 light-years from Earth, Ross 128 is moving towards the Earth and is expected to become our nearest stellar neighbour in just 79,000 years — a blink of the eye in cosmic terms.

Ross 128 b will by then take the crown from Proxima b and become the closest exoplanet to Earth, researchers said.

Many red dwarf stars, including Proxima Centauri, are subject to flares that occasionally bathe their orbiting planets in deadly ultraviolet and X-ray radiation.

However, it seems that Ross 128 is a much quieter star, and so its planets may be the closest known comfortable abode for possible life, researchers said.

The team also found that Ross 128 b orbits 20 times closer than the Earth orbits the Sun. Despite this proximity, Ross 128 b receives only 1.38 times more irradiation than the Earth.

As a result, Ross 128 b's equilibrium temperature is estimated to lie between minus 60 and 20 degrees Celsius, thanks to the cool and faint nature of its small red dwarf host star, which has just over half the surface temperature of the Sun.

While the scientists consider Ross 128b to be a temperate planet, uncertainty remains as to whether the planet lies inside, outside, or on the cusp of the habitable zone, where liquid water may exist on a planet's surface.

Astronomers are now detecting more and more temperate exoplanets, and the next stage will be to study their atmospheres, composition and chemistry in more detail. The detection of biomarkers such as oxygen in the very closest exoplanet atmospheres will be a huge next step, researchers said.

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