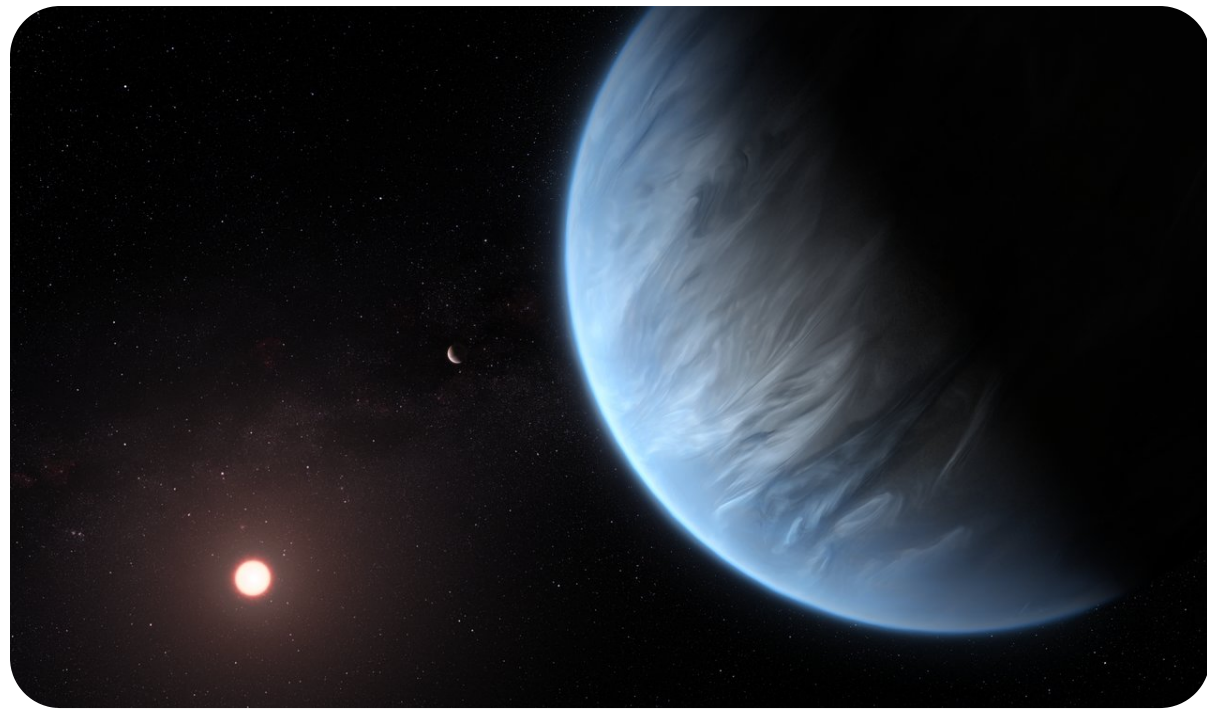


Exoplanets



We do not yet have the technology to take detailed photos of exoplanets, but an artist created this picture of what one may look like. Copyright: ESA/Hubble, M. Kornmesser

[Access the image](#)

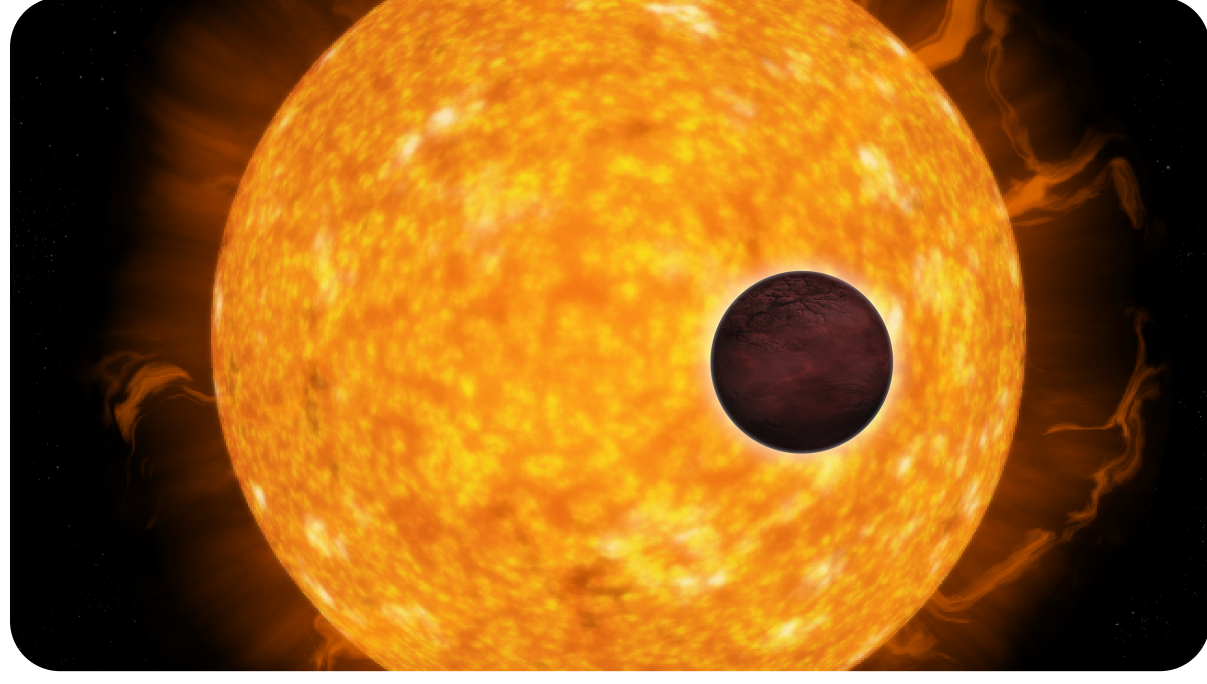
04 February 2009

The [Solar System](#) contains eight planets orbiting our local star, [the Sun](#). But did you know that there are many, many more planets out there in space, orbiting the [stars](#) we see at night? These are called extrasolar planets, or exoplanets for short.

Discovering exoplanets is extremely difficult. They are so far away that we cannot simply look through a regular telescope and see them. They are also very small and faint compared to the stars that they orbit. This means that exoplanet-hunting astronomers need to use some clever techniques!

The first method astronomers used to find exoplanets is called radial velocity, but it has a simpler nickname: star wobble! As a planet orbits a star, the planet's [gravity](#) pulls on the star, making it seem from our perspective as if the star is wobbling in space. The effect is small, but using very sensitive instruments, it can be possible to spot some exoplanets causing their stars to wobble!

Nowadays, the transit method is a more common detection technique. As an exoplanet passes in front of its star, it may block a tiny amount of the star's light. This is called a transit. From our viewpoint on Earth, the star appear a little bit fainter during the transit, and then brighter again once the planet is no longer blocking any light. That is a clue that an exoplanet may be present! Transits are challenging to detect because the change in light level is so small, but special planet-hunting telescopes such as ESA's [CoRoT](#) have been very successful! ESA's 2019 [CHEOPS](#) mission also uses the transit method.



The transit method has been very successful. As a planet passes in front of its star it blocks some light, which we can sometimes detect. Copyright: ESA

[Access the image](#)

Astrometry is another technique, and one that will be used by ESA's [Gaia](#) mission. We can see stars moving in paths across our sky at night, and can predict their positions with extreme accuracy over many years. If a star has a planet, its movement will be slightly different than expected – only a tiny amount, but enough for Gaia to see!

These are the main methods of detecting extrasolar planets, although there are others too. Sometimes it is even possible to use professional observatories to take photographs – although these images appear very basic compared to the pictures we can take of the nearby planets in our own Solar System.



Get creative! Imagine an exoplanet, and draw it. What is your exoplanet called? How was it discovered? What is it like there? Is it home to any forms of life? Copyright: ESA – SJM Photography

[Access the image](#)

So far, using all these techniques, thousands of extrasolar planets have been discovered, and we are finding more all the time. Could any of these be home to life? Perhaps even [intelligent creatures](#) like us? What do you think?

It is certainly a very exciting time to be interested in exoplanets!

Are we alone?

[Life around other stars](#)

[Life beyond Earth](#)

[Life on Earth](#)

[Telltale signs](#)

[Life on extrasolar planets](#)

[COROT- Europe's planet-seeker](#)

[Exoplanets](#)