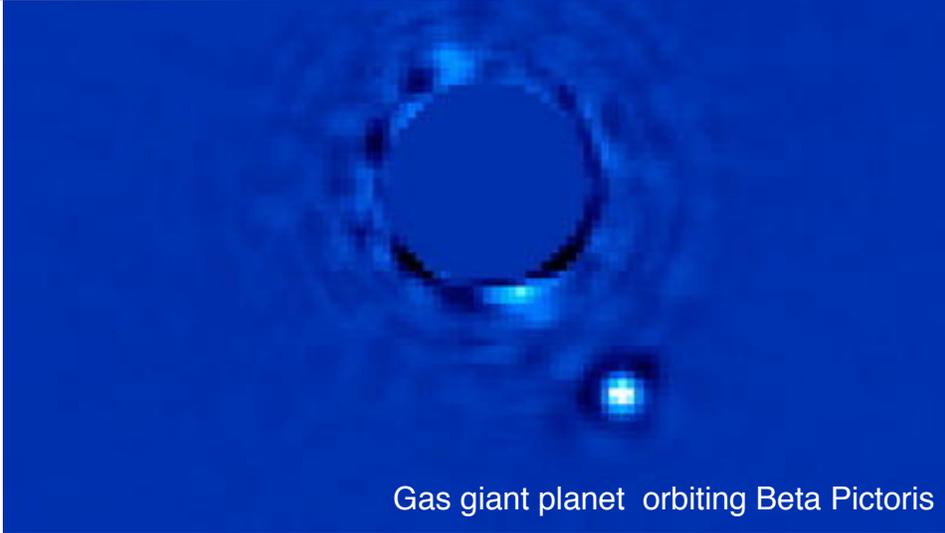


Tessmann Focal Points



Gas giant planet orbiting Beta Pictoris

Next Gen Camera Captures Image of Planet

It wasn't too long ago that scientists believed it was impossible to know if planets orbited stars. Then in the 1990s, astronomers began to develop revolutionary techniques to root out the presence of planets outside our solar system – worlds now known as exoplanets. The first breakthrough came when they saw the effect of the gravity of an exoplanet circling a neutron star. The exoplanet's pull of gravity made the star "wobble." The "wobble" method led to a number of discoveries of exoplanets.

As equipment for telescopes and satellites became more sensitive, astronomers developed a new method for discovering worlds. Their equipment could detect a drop in the brightness of a star, revealing the presence of planet as it passed in front of the star, blocking some of its light. This drop in brightness is, simply put, a mini-eclipse. The newly developed equipment could detect as little as a 1% drop in brightness. The Kepler spacecraft's telescope is the number one exoplanet hunter using this method. Its sensitive equipment has discovered hundreds of new exoplanets and many more candidates as well.

But actually capturing a photograph of an exoplanet has proven somewhat elusive. Up till now, only a handful of exoplanets have been captured photographically – an amazing achievement – but the photos have lacked quality and resolution. The problem is that planets do not emit light – they only reflect the light of the star they orbit. Up till now, the glare of a star's light effectively blocks the smaller amount of light reflected by any planet.

Last November, a Canadian-built camera named the Gemini Planet Imager was installed on the Gemini South telescope in Chile. Literally minutes after installation, the camera captured the best photo ever taken of an exoplanet (see photo above). The camera has a device called a coronagraph which blocks light from a star and can reduce its glare by a factor of 10. The sensitive Gemini camera was able to capture an image of a gas giant world orbiting a star named Beta Pictoris.

The Gemini Planet Imager has now added a powerful new method to discover and photograph exoplanets. In addition, the camera can also detect colors that reveal the makeup of a planet's atmosphere. For example, scientists may discover the presence of nitrogen or oxygen surrounding a planet. Scientists are now working on a report about the atmosphere of Beta Pictoris.

Scientists are now working on a report about the atmosphere of Beta Pictoris.

Latest Discoveries

Here's a glimpse of some of the latest astronomical news and discoveries.

Observatories in South America have discovered an asteroid with rings! The asteroid, known as Chariklo, orbits between Saturn and Neptune. The rings were probably formed during a collision. Go to <http://apod.nasa.gov/apod/ap140409.html> for more information.

Astronomers have discovered a tiny new moon circling Saturn. The moon, nicknamed "Peggy," is only a half a mile across. Astronomers will get a better look at Peggy when the Cassini spacecraft has a close flyby in 2016.

Jupiter's famous Red Spot continues to shrink. Just a few years ago, the storm was large enough to fit two Earths inside its spinning vortex; now, only one Earth would be possible. Are we seeing the final gasp of this long-enduring storm that has been observed continuously since the 1660s?

After maneuvering for 10 years in space, the European Space Agency will attempt to land a probe from the Rosetta spacecraft onto the surface of comet 67P/Churyumov-Gerasimenko. The landing is set for November 11. The probe will fire a harpoon to attach to the low-gravity surface, and will dig up and analyze samples.

Artist's conception of Chariklo

