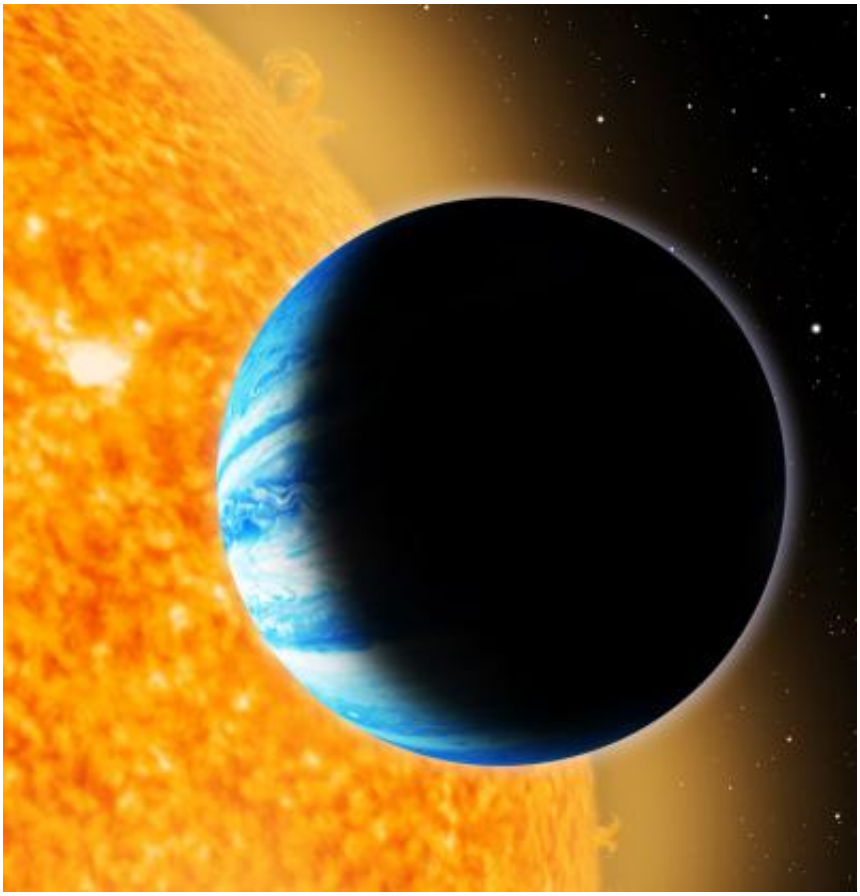
Qatar-led international team finds its first alien world

December 14 2010



The newly-discovered alien world Qatar-1b orbits an orange type K star 550 light-years from Earth. Qatar-1b is a gas giant 20 percent larger than Jupiter in diameter and 10 percent more massive. It circles its star once every 1.4 days, meaning that its "year" is just 34 hours long. Credit: David A. Aguilar (CfA)

In an exciting example of international collaboration, a Qatar astronomer teamed with scientists at the Harvard-Smithsonian Center for Astrophysics (CfA) and other institutions to discover a new alien world. This "hot Jupiter," now named Qatar-1b, adds to the growing list of alien planets orbiting distant stars. Its discovery demonstrates the power of science to cross political boundaries and increase ties between nations.

"The discovery of Qatar-1b is a great achievement - one that further demonstrates Qatar's commitment to becoming a leader in innovative science and research," said Dr. Khalid Al Subai, leader of the Qatar exoplanet survey and a research director of the Qatar Foundation for Education, Science and Community Development.

"This discovery marks the beginning of a new era of collaborative astrophysics research between Qatar, the United Kingdom, and the United States," he added.

The Qatar exoplanet survey hunts for stars that "wink," dimming slightly every time an orbiting planet creates a "mini-eclipse" by crossing in front of the star as seen from Earth. Transit searches like this must sift through thousands of stars to find the small fraction with detectable planets. The complex observations and analysis create perfect opportunities for teamwork.

"The discovery of Qatar-1b is a wonderful example of how science and modern communications can erase international borders and time zones. No one owns the stars. We can all be inspired by the discovery of distant worlds," said CfA team member David Latham.

To find the new world, Qatar's wide-angle cameras (located in New Mexico) took images of the sky every clear night beginning in early 2010. The photographs then were transmitted to the UK for analysis by collaborating astronomers at St. Andrews and Leicester Universities and

Qatar. That analysis narrowed the field to a few hundred candidate stars.

The Harvard-Smithsonian team, with Dr. Al Subai, followed up on the most promising candidates, making spectroscopic observations with the 60-inch-diameter telescope at the Smithsonian's Whipple Observatory in Arizona. Such observations can weed out binary-star systems with grazing eclipses, which mimic planetary transits. They also measured the stars' dimming more accurately with Whipple's 48-inch telescope.

The resulting data confirmed the existence of a planet now called Qatar-1b, orbiting an orange Type K star 550 light-years away. Qatar-1b is a gas giant 20 percent larger than Jupiter in diameter and 10 percent more massive. It belongs to the "hot Jupiter" family because it orbits 2.2 million miles from its star - only six stellar radii away. The planet roasts at a temperature of around 2,000 degrees Fahrenheit.

Qatar-1b circles its star once every 1.4 days, meaning that its "year" is just 34 hours long. It's expected to be tidally locked with the star, so one side of the planet always faces the star. As a result, the planet spins on its axis once every 34 hours - three times slower than Jupiter, which rotates once in 10 hours.

More information: More information is available at www.alsubaiproject.org

Provided by Harvard-Smithsonian Center for Astrophysics

Citation: Qatar-led international team finds its first alien world (2010, December 14) retrieved 19 April 2024 from https://phys.org/news/2010-12-qatar-led-international-team-alien-world.html