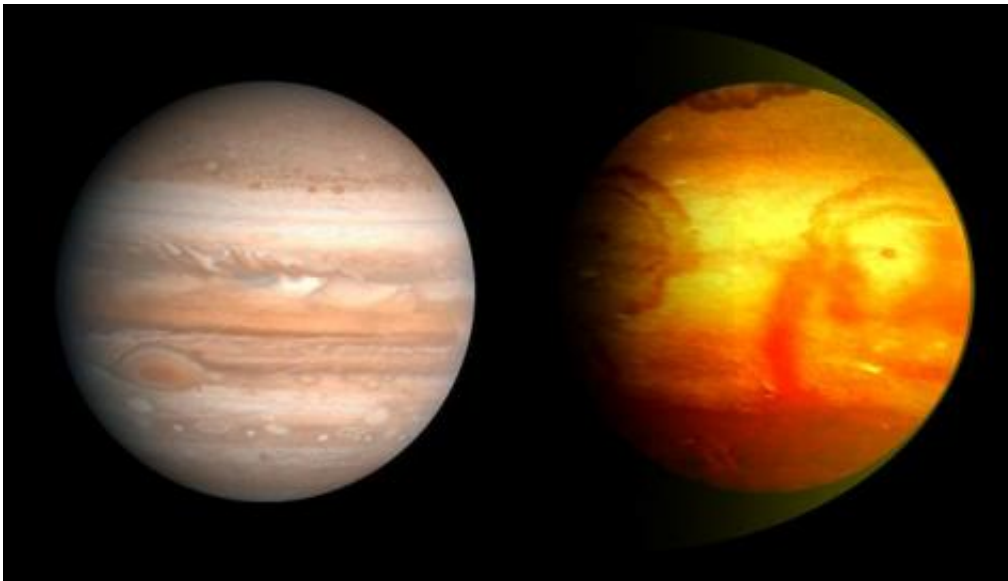


An Exoplanet with a Potassium-Rich Atmosphere

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An image of Jupiter next to a artist's conception of the exoplanet XO-2b. Scientists have discovered that the atmosphere of XO-2b contains potassium.
Credit: Ignacio González Tapia

(PhysOrg.com) -- A hot Jupiter - a type of celestial object unknown only fifteen years ago - is a Jupiter-sized exoplanet orbiting so close to its host star that its atmospheric temperature is thought to be hundreds of degrees Celsius.

When a hot [Jupiter](#) is seen in a transiting system, its passage across the face of the star provides an opportunity to study its atmosphere, as light

from the star passes through the thin layer on route to Earth.

The atmospheres of two hot Jupiters have been studied so far, with sodium (but only sodium) detected.

The constituents and their properties are interesting in and of themselves, and also shed light on global parameters of the planet such as [atmospheric circulation](#), thermal inversion layers, and the possible presence of clouds.

CfA [astronomer](#) Jean-Michel Desert has teamed up with ten colleagues to use the 10.4-meter telescope in the Canary Islands to study the atmospheres of transiting hot Jupiters.

The astronomers have just announced their results on the object known as XO-2b, a hot Jupiter whose radius is the same as Jupiter's, whose mass is about half, and which orbits its star in only 2.6 days.

They discovered that the atmosphere contains potassium, one of the elements that had been predicted to exist in current models but which had not been seen in the other two cases.

The new results help to substantiate and improve the current theory of exoplanetary atmospheres, and illustrate the dramatic advances underway in detecting and modeling the atmospheres around strange distant worlds that were unknown not long ago.

Provided by Harvard-Smithsonian Center for Astrophysics

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