

PLANET IS INSANELY DARK



Above: scenes from the video game *Insanely Twisted Shadow Planet*

space CAMBRIDGE, Mass.—Apparently there's more than one "insanely twisted shadow planet" in the universe. Fans of the video game of that name already know about the weird world that oozes a material that wraps other planets in darkness. Now evidence of a real dark planet has surprised space scientists.

The newfound *exoplanet* (planet beyond our solar system) is called TrES-2b. It revolves around the star TrES-2, which lies in the direction of the Draco constellation some 750 light-years from Earth.

TrES-2b is a gas giant like Jupiter. Unlike Jupiter, however, it hugs its star, orbiting at a distance of just 5 million kilometers (3.1 million miles). Jupiter, in comparison, is 778 million kilometers (484 million miles) from the sun. The closeness of TrES-2b's orbit lifts temperatures on the planet to an estimated 980 degrees Celsius (1,800 degrees Fahrenheit).

Jupiter reflects about half the sunlight that strikes it, and Earth reflects about a third. But TrES-2b reflects less than 1 percent of the light from its star. "It's darker than the blackest lump of coal," David Kipping told Space.com. Kipping is an astronomer at the Harvard-Smithsonian Center for Astrophysics. "It's just ridiculous how dark this planet is."

What makes TrES-2b so dark? Kipping and his colleagues suspect that the planet contains light-absorbing chemicals such as vaporized sodium and potassium or gaseous titanium dioxide. None of those fully account for overwhelming blackness, however. Some exotic chemistry never seen before is going on there, says Kipping.

TrES-2b was first spotted in 2006. Since then, the Kepler space telescope has sketched out more details about it. Kepler is operated by NASA, the U.S. space agency.

TrES-2b shows changes in phases, just like our moon, as it orbits its star. (See "Fright Night," issue 4.) By analyzing the subtle dimming and brightening of the exoplanet as its phases change, Kepler astronomers have been able to see how freakishly dark TrES-2b is. "It's truly an alien world," says Kipping. ■