

Exoplanet WASP-96 b (NIRISS Transmission Spectrum)

Extended Description

Graphic titled “Hot Gas Giant Exoplanet WASP-96 b Atmosphere Composition, NIRISS Single-Object Slitless Spectroscopy.”

The graphic shows a transmission spectrum in the form of a graph of the Amount of Light Blocked by the planet’s atmosphere in parts per million on the vertical y-axis versus Wavelength of Light in microns on the horizontal x-axis.

Graph

Axes

The y-axis ranges from 13,500 parts per million (less light blocked) at the bottom to 14,800 parts per million (more light blocked) at the top, with labeled tick marks are labeled every 200 parts per million, starting at 13,600.

The x-axis ranges from 0.6 microns on the left to 2.8 microns on the right, with labeled tick marks every 0.25 microns, starting at 0.75 microns.

Key

The graph includes a key showing that the solid white circles centered on gray vertical lines represent data points, and a blue solid line represents a best-fit model.

Data and Model

The graph consists of 141 data points, each with a gray error bar. The points range in value from 13,589 to 14,883 parts per million. The data points are not connected. They follow a jagged trend from left to right, with a number of broad peaks and valleys. The lengths of the error bars vary from a minimum of plus or minus 43 to a maximum of plus or minus 314. The error bars are smallest between about 1 and 1.3 microns, generally increasing in length toward the left from 1 to 0.6 microns, and toward the right from about 1.3 to 2.8 microns.

A solid blue line with several prominent peaks and valleys represents the best-fit model. The model begins at the far left with a very slight downward slope toward the right with a small peak around 0.95 microns, and another peak at about 1.15 microns. The line then becomes more sinuous, forming a taller, broader peak centered at about 1.4 microns and a slightly shorter broad peak at 1.9 microns. Starting around 2.15 microns, the line trends back upward with a wavy slope of about 30 degrees.

The blue best-fit model line generally follows the trend of the data. It intersects some data points, but does not match the data perfectly. The match between the model and data is clearest between about 0.9 and 1.65 microns.

The four most prominent peaks, which are visible in both the data and the model, are labeled “Water, H₂O.”

Background

In the background of the graphic is an illustration of the planet and its star. The planet has a fuzzy orangish atmosphere with hints of cloud formations below. The star is bright yellowish-white.

Alt text

Graphic titled “Hot Gas Giant Exoplanet WASP-96 b Atmosphere Composition, NIRISS Single-Object Slitless Spectroscopy.” The graphic shows the transmission spectrum of the hot gas giant exoplanet WASP-96 b captured using Webb's NIRISS Single-Object Slitless Spectroscopy with an illustration of the planet and its star in the background. The data points are plotted on a graph of amount of light blocked in parts per million versus wavelength of light in microns. A curvy blue line represents a best-fit model. Four prominent peaks visible in the data and model are labeled “water, H₂O.”