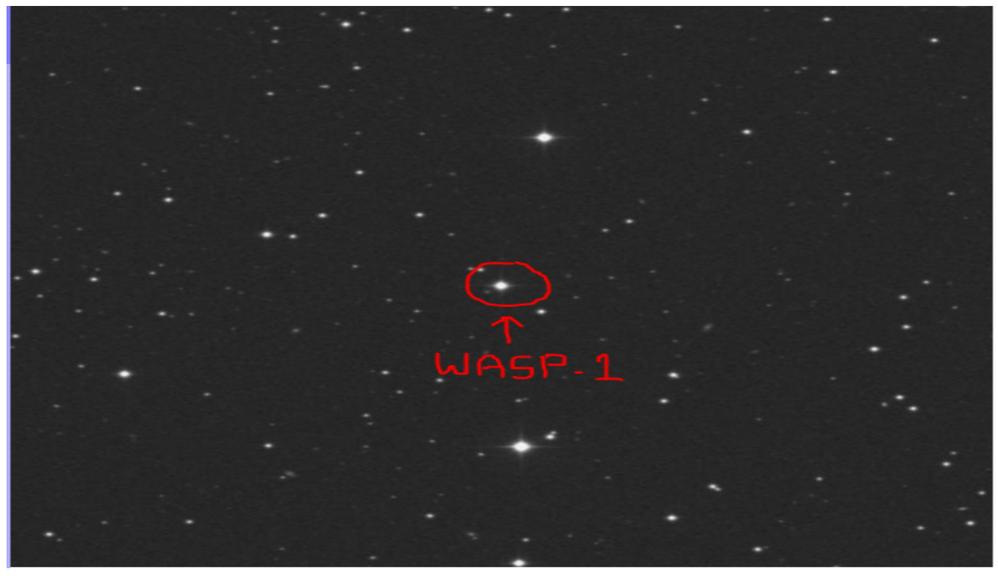
WASP 1-Planet

Description of Brightness Curve

Our brightness curve, measuring the relative brightness of WASP-1, shows a clear dip in the light recorded. Our data supports the notion that an exoplanet exists and orbits the star WASP-1. By the shape of our data, we can determine that the exoplanet orbits its host star on a direct viewing angle as seen from Earth. The entire transit, as recorded, took a little under four hours. From this we are able to to infer that our exoplanet's orbit around WASP-1 has a radius similar to Mercury's orbit around the Sun.



The Existence of an Exoplanet

The first official discovery of an exosolar planet in 1995 marked the first of over a thousand exoplanet discoveries that would be made over the next 18 years. Over the course of the past few weeks, our group has been doing our part for astronomy as we intensely researched the star WASP-1 in an attempt to prove the existence of an orbiting exoplanet. We observed WASP-1 on October 28th over the course of several hours, and, using the Laboratory for the Study of Exoplanets, were able to produce a light curve that strongly suggests the existence of an exoplanet.

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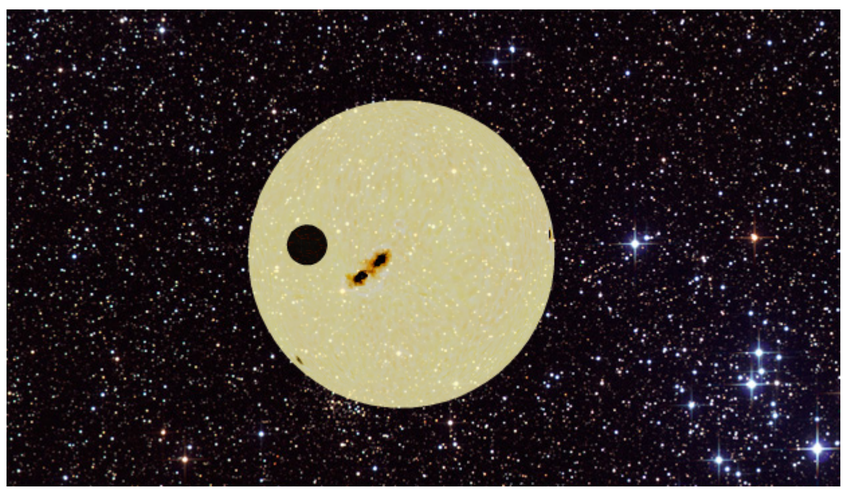
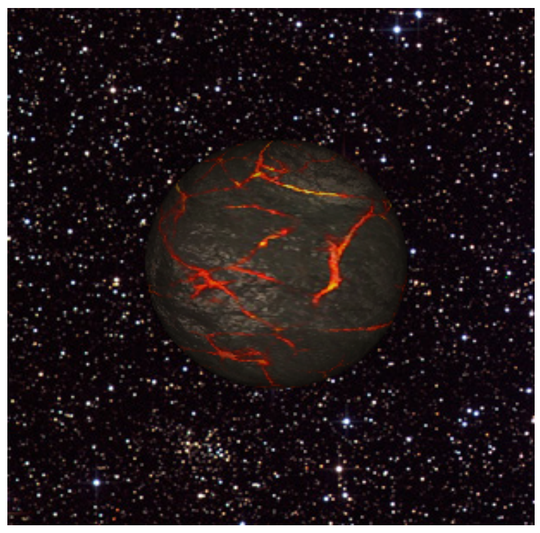
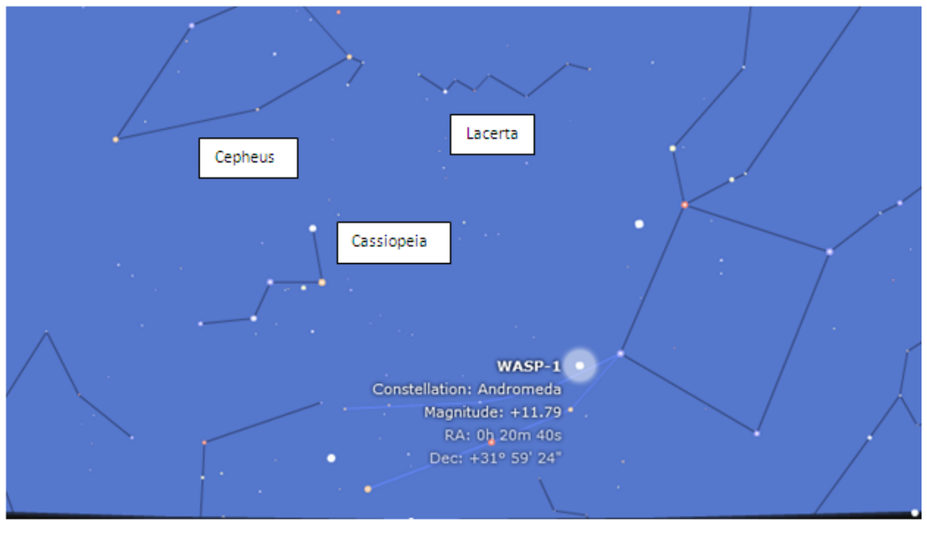
Methodology

In order to detect an exoplanet using the Image Lab at the Laboratory for the Study of Exoplanets, we charted variations in light brightness coming from the WASP 1 star. Using a star chart, we measured one-hundred and twenty different times during a 36 hour period, between October 27th and October 28th. We used two comparison stars and two dark points in our sky to compare the brightness of our star to the night sky. The dips in light allowed us to detect planetary movement of an exoplanet. This process is called the transit method, whereby the changes in the brightness of a star indicate the orbit of an exoplanet passing in front of its star. Highly sensitive telescopes allow us to chart even tiny changes in light.







What's the planet like?

Based on our research we were able to identify several important characteristics of WASP-1's exoplanet. Given that the exoplanet is about one-tenth the size of WASP-1, we can conclude that it's a Jupiter-like planet. The length of the exoplanet's transit is similar to that of Mercury's (about 4 hours), meaning that the exoplanet is the same distance from WASP-1 that Mercury is from Earth. Therefore, like Mercury, it must be a molten planet.