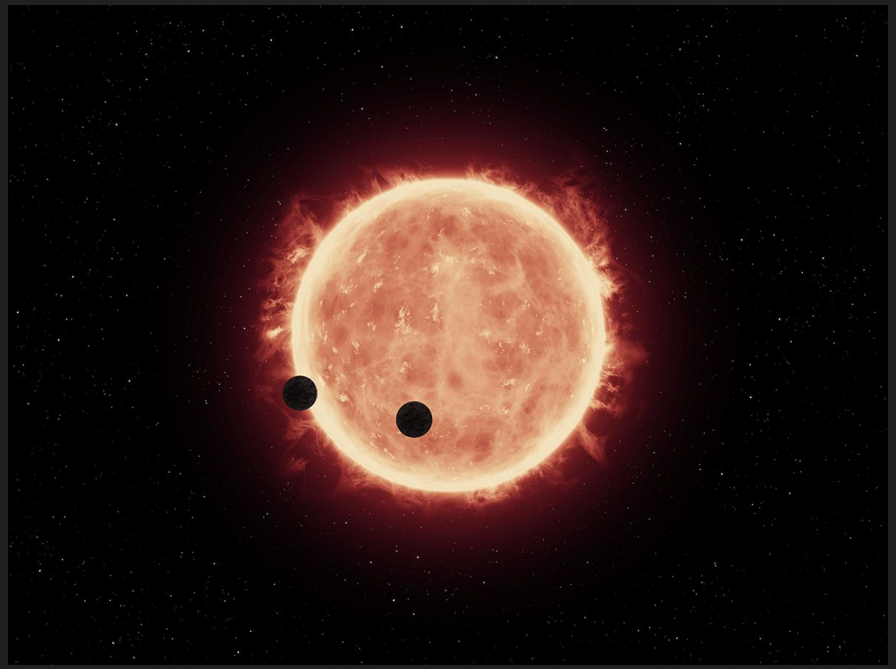
Finding Exoplanets

Project #4

Methods of Research

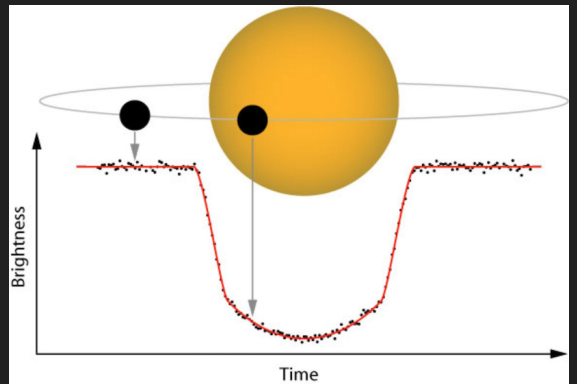
In order to find Exoplanets located light years away, researchers use some of the following methods

- Direct Imaging
- Micro Lensing
- Transit Method
- Radial Velocity
- Astrometry



Transit Method

- The transit method consists of using a stars brightness to determine the existence of an exoplanet
- Researches looks for dips in the brightness of a star that suggest the presence of a planet
- The longer the dip ⟶ the larger the planet
- The wider the dip ⟶ the farther the planet is from its star



Goals of the Project

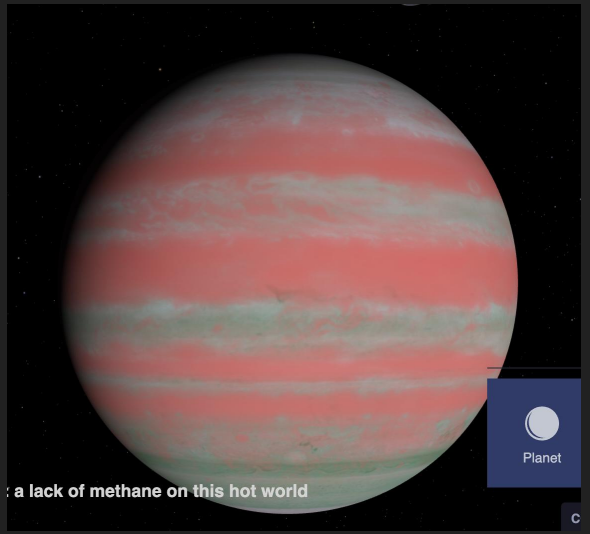
- Use the transit method to locate an exoplanet
- Use the data from the transit to create a graphical representation of the light dip flux
- This data can help us infer the size, orbital velocity, and composition of the exoplanet

Methods

- Creating a model for the observed flux

- Using the observational data from exoplanet GJ 436 b which was found by using the transit method we plotted the light dip flux

- The data was then compared to the modeled flux and fitted within the model



Results

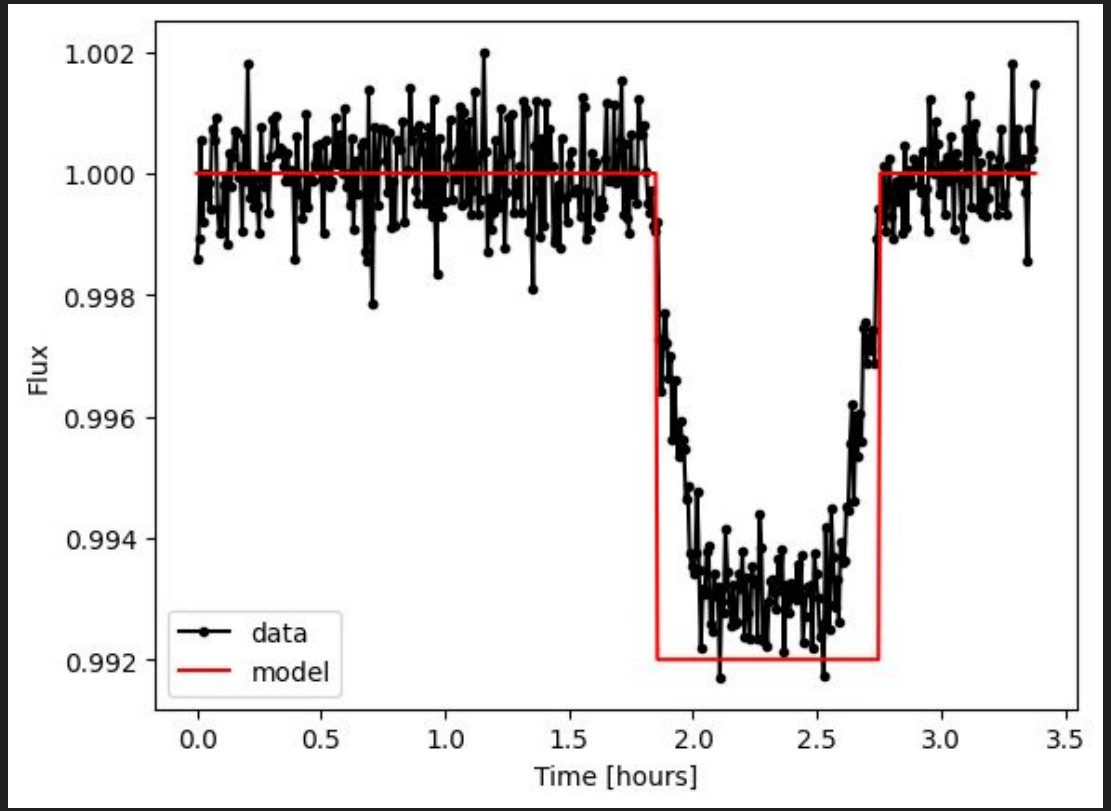
Chi Square Values:

- 0.15
- 64.8

Light Curve:

- t0= 2.3 hours
- t = 1 hour
- delta = 0.008

Flux = 0.992



Conclusion

- The project aided in showing the effectiveness of the transit method when searching for exoplanets

- From the data researchers were able to determine the orbital period and determine that the planet is hot neptune like planet

- Around 76% of exoplanets have been discovered via the transit method

"Transit Method - NASA Science." *NASA*, NASA, science.nasa.gov/mission/roman-space-telescope/transit-method/. Accessed 6 Dec. 2024.