TESS is a space telescope which is operated by NASA and MIT. TESS was launched on April 18, 2018 via a Falcon 9 rocket and began regular science operations on July 25, 2018.

Main goal of TESS is discovering thousands of exoplanets in orbit around the brightest dwarf stars outside our solar system.

- TESS has 4 wide-field optical CCD cameras.
- Divides the sky into 26 different sectors.
- Two year prime mission; 1 year on South hemisphere, 1 year on North hemisphere.

**The Transit Method**

TESS uses Transit Method to detect planets. When a planet passes in front of its star, it blocks some of the light, causing a slight drop in brightness. With the drops in brightness, exoplanets are detected by this method.

**OBJECTIVES**

In this Project, we are trying to find periodic behaviors in TESS data with python programming and FFT method. These periodic behaviors may assert that there is a planet in that sector of sky.

**PROJECT DETAILS**

- TESS data is accessible online
- TESS Archive is in fits format
- Python programming for filter and plot the data
- Fits data format:
  - 'Flexible Image Transport System'
  - Endorsed by NASA and the International Astronomical Union
  - Header keywords provide descriptive information about the data
- Astropy and NumPy libraries in Python
  - Astropy for reaching the data in fits format
  - NumPy for doing calculations
- MobaXterm to reach university’s server which stores the data.

**RESULTS**

Then we develop another algorithm for using FFT (Fast Fourier Transform) in order to transform our data into power spectrum and frequency. With the new plot we are expecting to see the periodic behaviors in the flux and detect a planet.

**REFERENCES**