

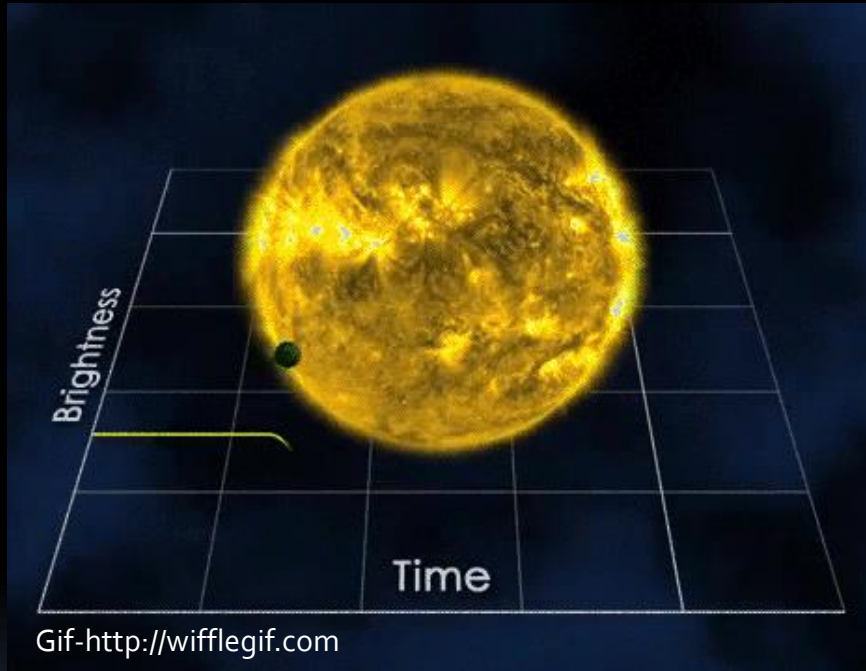


# EXOPLANETS

JAMIE HOGG, CIARA DUFF & SOPHIE GREGORY-  
COLECLOUGH

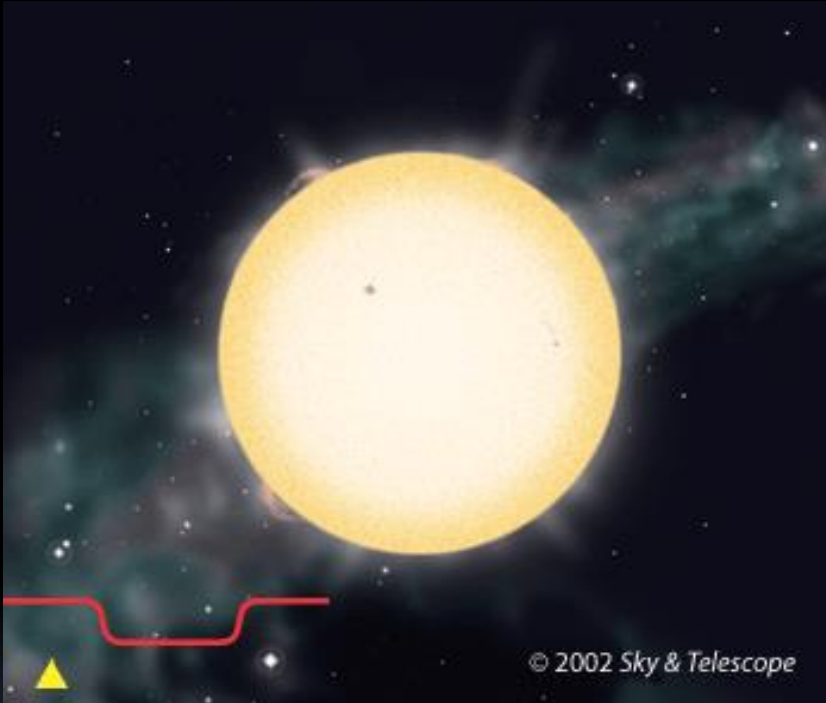


# What is an Exoplanet?



An exoplanet is a planet which orbits a star outside the solar system.

# What is a planetary transit?



The transit or passage of a planet across the disc of a star.

# HAT-P-5

- G type star
- 1100 light years away



# Identifying Hat-P-5

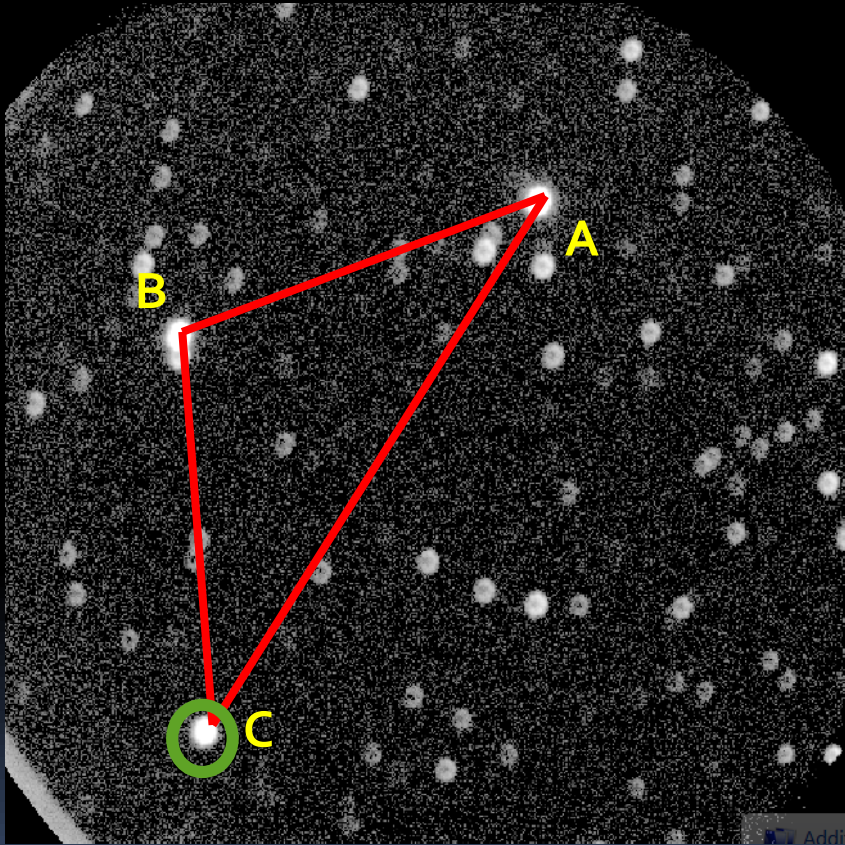
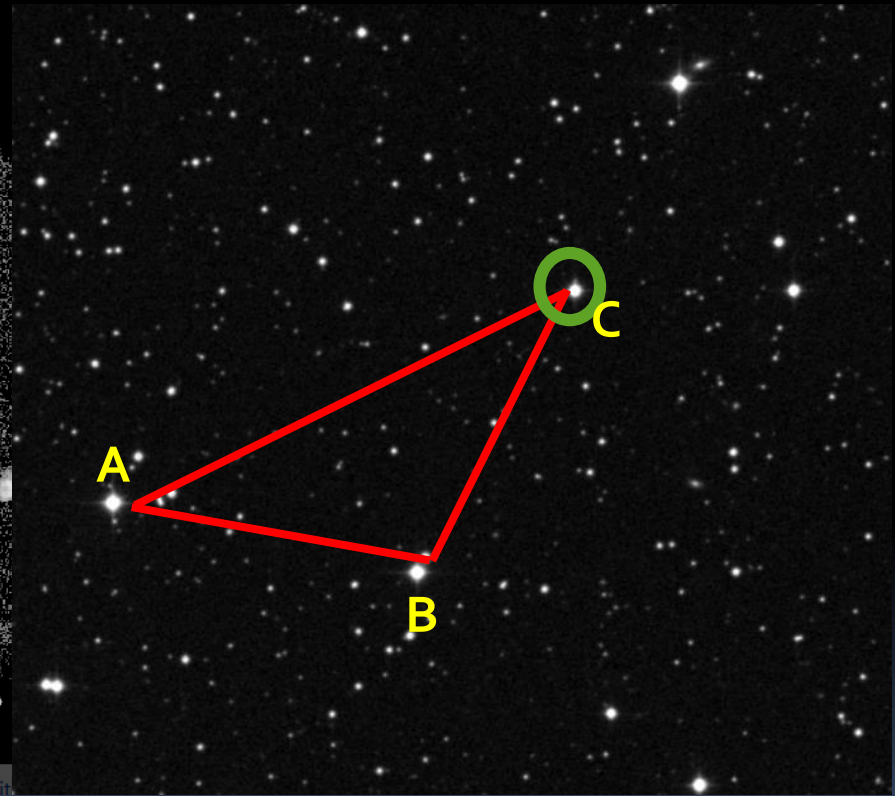


Photo taken with RISE in the LT 2009

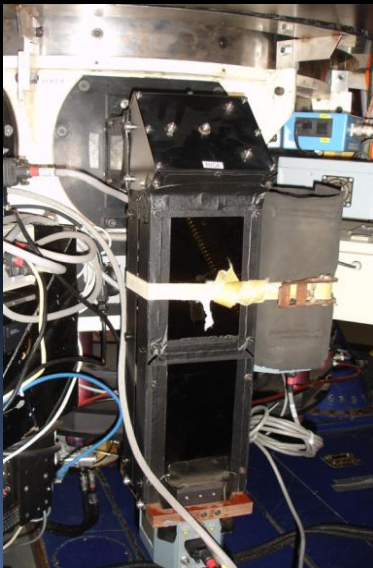


<http://archive.stsci.edu/cgi-bin/dss>

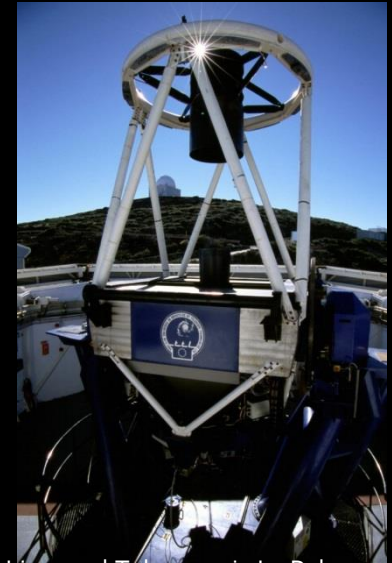
# Liverpool Telescope and RISE

## Liverpool Telescope:

- Located in La Palma in the Canary Islands
- Fully autonomous
- 2 metre diameter mirror



RISE camera  
<http://telescope.livjm.ac.uk>



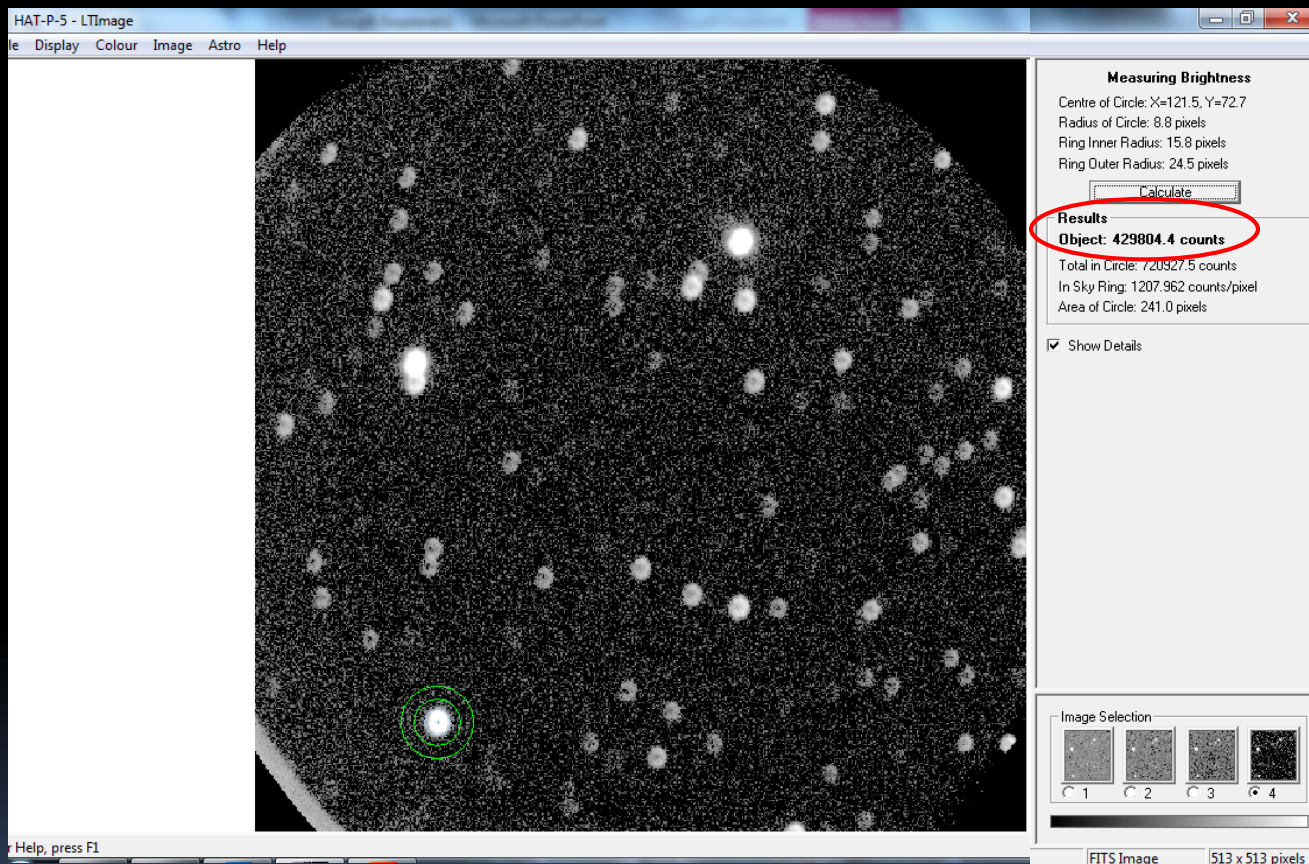
Liverpool Telescope in La Palma  
<http://www.schoolsobservatory.org.uk>

## RISE:

- Fast-readout camera
- Measures transiting exoplanet timing



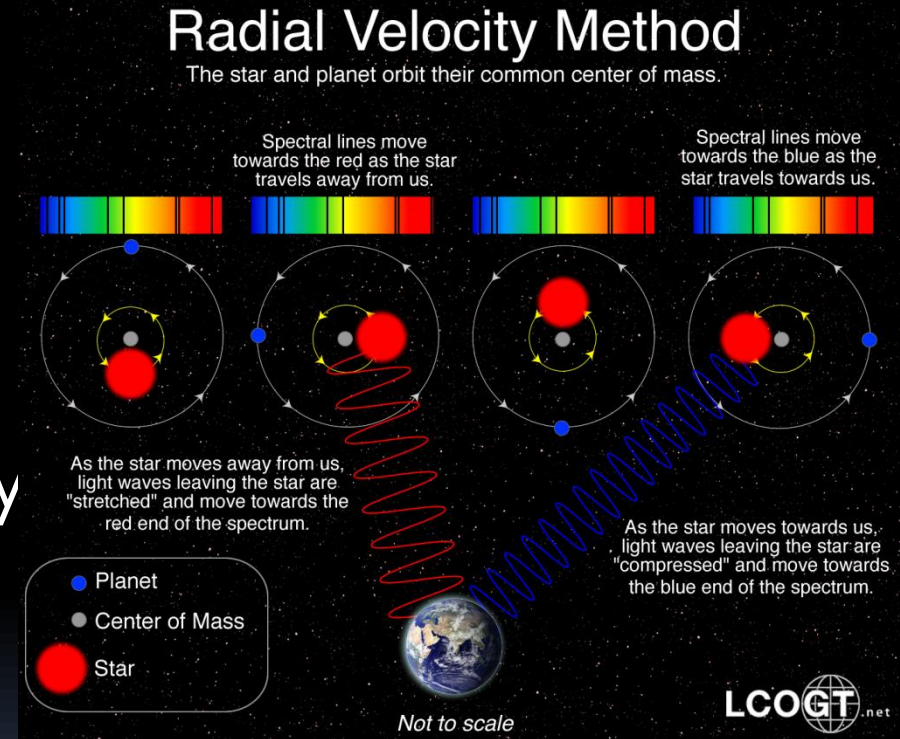
# Method



# Other Methods

## Radial Velocity:

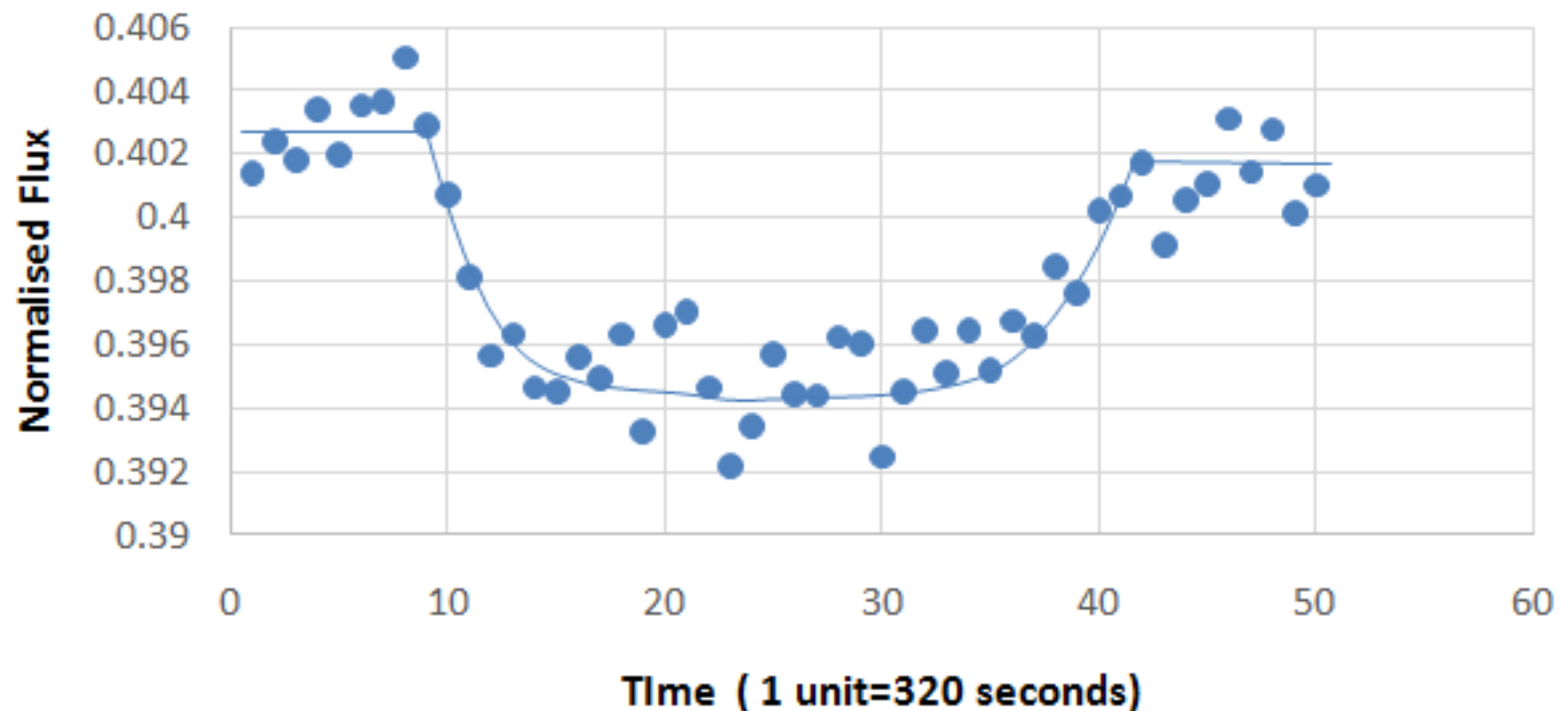
- Most effective method for locating exoplanets
- 3343 exoplanets discovered as of 2<sup>nd</sup> July 2016





# Results

Variation of flux with time during the transit of  
HAT-P-5



# Calculating the radius of the exoplanet

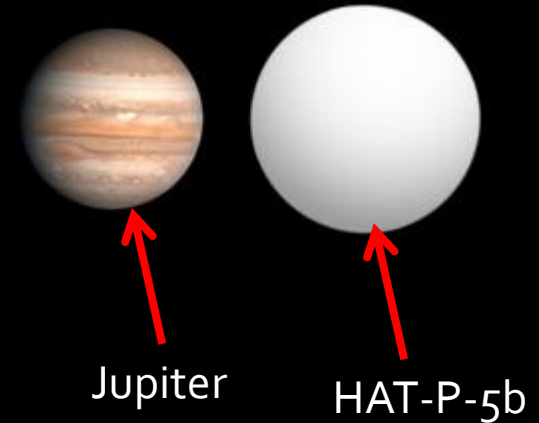
$$\frac{\Delta F}{F} = \frac{R_p^2}{R_*^2}$$



$$R_p = \sqrt{\frac{(0.4025 - 0.395) * 1.167^2}{0.4025}} = 0.159 \text{ solar radii}$$

# Conclusions

<https://en.wikipedia.org>



- Exoplanet in orbit detected by transit photometry
- Exoplanet radius-  $1.59 R_J$  (Jupiter radii)
- Jupiter type star



# Comparisons

	Our Data	Actual Data
Radius ( $R_j$ )	1.59	1.26
Distance from star (km)	6.095 million	6.096 million
Transit Duration (minutes)	176	175

