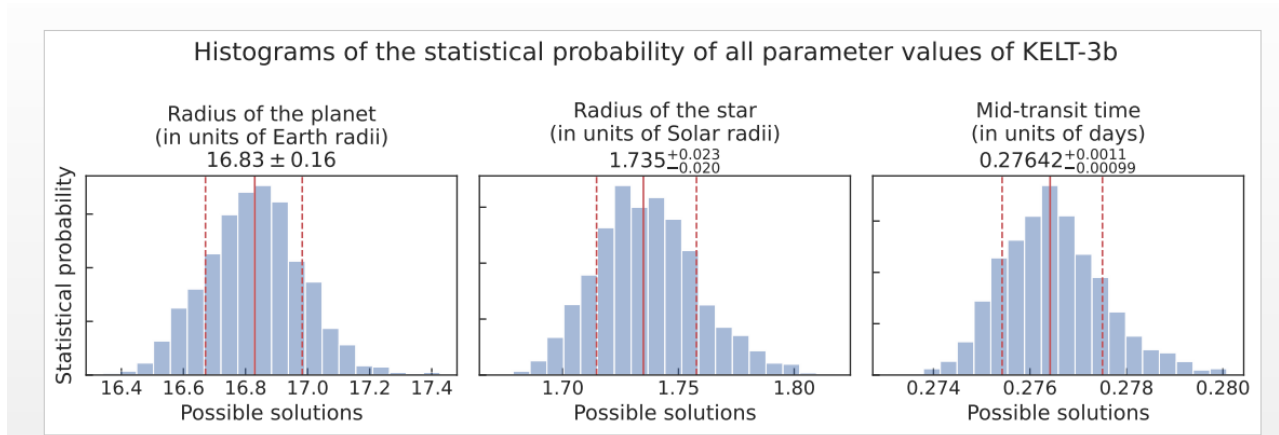
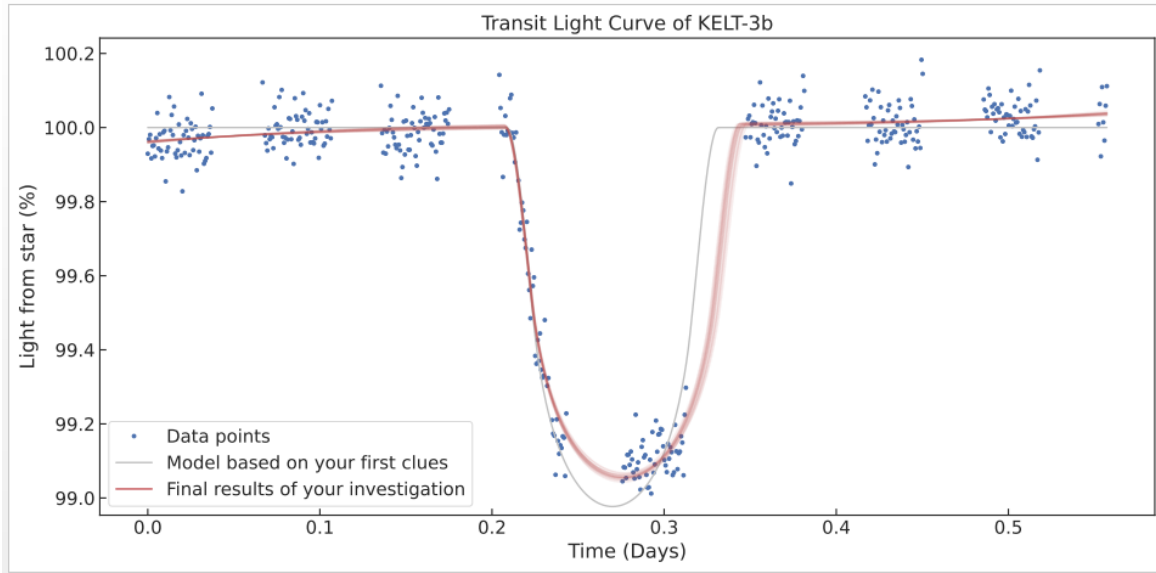


KELT-3b

1. DATA ACCESS



• Hacemos un exoplaneta (Kalt-ab)

1. Período a los días

2. Tamaño del exoplaneta

$$\text{Relación de transitoria} = \frac{\pi R_p^2}{\pi R_s^2} \times 100$$

$$R_p = 1,7$$

$$P = 0,9$$

$$R_s = 10^9 R_T$$

$$P = \frac{R_p^2}{R_s^2} \times 100$$

$$R_p^2 = \sqrt{R_s^2 \times \frac{P}{100}}$$

$$R_p^2 = \sqrt{10^9 \times \frac{1,7 \times 0,9}{100}}$$

$$R_p = 0,161 R_s$$

$$R_p = 0,161 \times 10^9 = 17,5 R_{\text{Earth}}$$

3. Período Orbital Tiempo en que tarda en completar una órbita completa alrededor del sol

$$T^2 = \left(\frac{4\pi^2}{GM_s} \right) d^3$$

$$G_s = 6,67430 \times 10^{-11} \text{ m}^3 \text{ Kg}^{-1} \text{ s}^{-2}$$

$$M_s = 1,96 \times 10^{30} \text{ Kg}$$

$$3,90 \times 10^{26} \text{ Kg}$$

$$M_p = 1,9884 \times 10^{30} \text{ Kg}$$

$$T = 2,20334 \text{ años}$$

$$2,20334 \text{ años} = 233,5735 \text{ días}$$

$$d = \sqrt[3]{\frac{GM_s T^2}{4\pi^2}} = \sqrt[3]{\frac{6,67430 \times 10^{-11} \times 3,90 \times 10^{26} \times (233,5735)^2}{4\pi^2}}$$

$$= 7,118 \times 10^7 \text{ m}$$

$$= 0,118 \text{ AU}$$

$$\frac{11 \text{ Km}}{1000 \text{ m}} = 112000 \text{ Km}$$

$$\frac{149597870 \text{ Km}}{1000 \text{ m}}$$

Que a Temperatura y habitabilidad

Para la composición

$$\rho = \frac{M}{V} \rightarrow V = \frac{M}{\rho}$$

$$R_p = 17,5 R_{\text{Earth}} = \frac{6378 \text{ km} \times 17,5}{1 \text{ km}} = 11613 \text{ km}$$

$$V =$$

$$1,1161 \times 10^{10} \text{ km}^3$$

$$M_p = 517,1 \text{ Tierra} = \frac{5,9722 \times 10^{24} \text{ Kg}}{3,685 \times 10^{23} \text{ Kg}}$$

$$V_p = \frac{M_p}{\rho} = \frac{3,14 \times (1,1161 \times 10^{10})^3}{3}$$

$$V = 5,83 \times 10^{30}$$

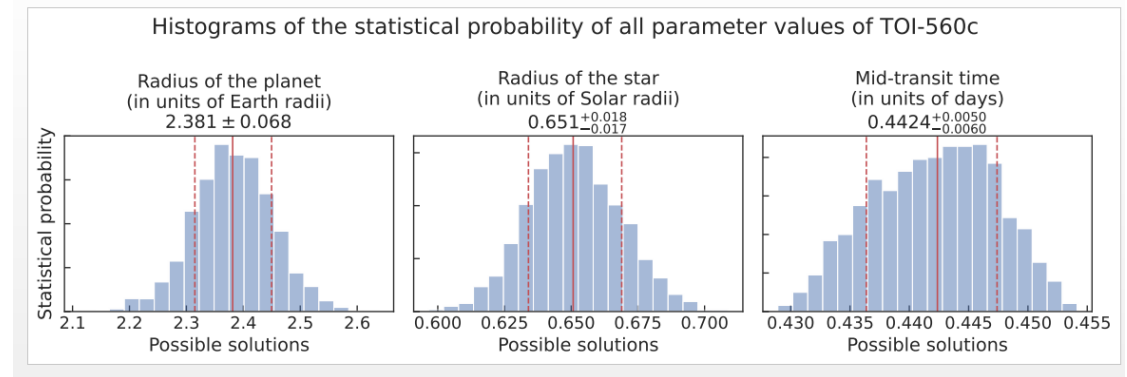
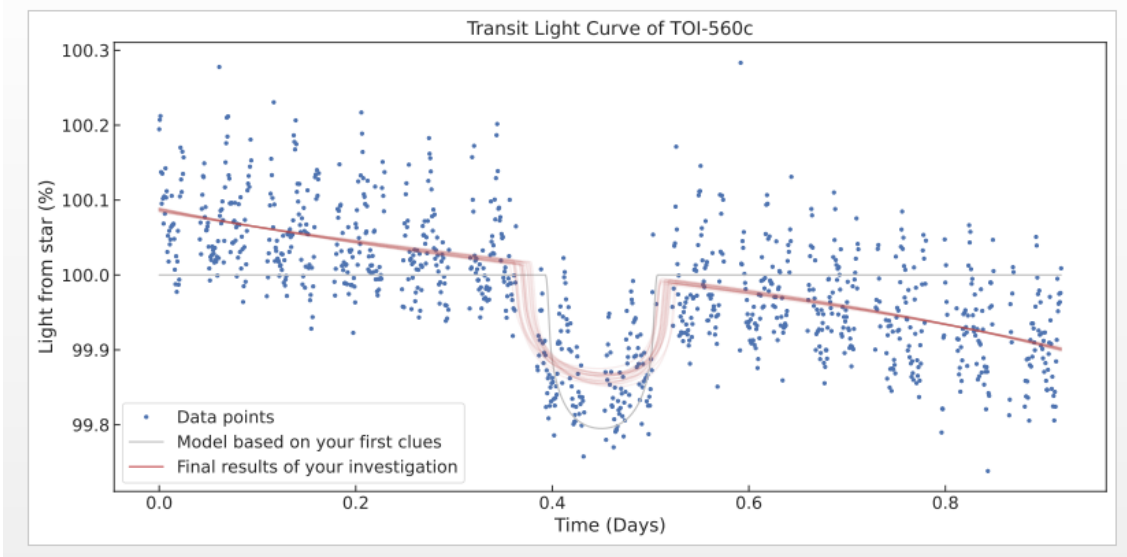
$$= 5,3 \times 10^{-4} \text{ Kg km}^3$$

$$6,3 \times 10^{-4} \text{ Kg} \times \frac{1000 \text{ g}}{1 \text{ Kg}}$$

$$0,63 \text{ gr} \times \frac{(1 \text{ km})^3}{1000000 \text{ m}^3}$$

TOI-560c

1. DATA ACCESS



Name	Median value	Lower error	Upper error	Case note	Target
Radius of the planet (in units of Earth radii)	2.381	0.066	0.068	Cheops observations	TOI-560c
Radius of the star (in units of Solar radii)	0.651	0.017	0.018	Cheops observations	TOI-560c
Mid-transit time (in units of days)	0.4424	0.0060	0.0050	Cheops observations	TOI-560c
Orbital period (in units of days)	18.3797			Other observations from the archive	TOI-560c
Orbital semi-major axis (in units of AU)	0.1242			Other observations from the archive	TOI-560c

SIZE OF THE EXOPLANET

Together with the data collected, we realize how small TOI-560c is.

La Fuerza del Desarrollo

Paso 2 (Recardar a los datos) TOI-560c

Transit depth = 8,9%

$R_s = 0,65$

$$R_p = \sqrt{R_s^2 \times \frac{\text{transit depth}}{100}}$$
$$= \sqrt{(0,65)^2 \times \frac{0,1}{100}}$$
$$= 0,02 R_{\text{sun}}$$
$$R_p = 0,02 \times 109 = 2,18 R_{\text{earth}}$$

ORBITAL PERIOD AND DISTANCE

The orbital period is 18.8797 days shorter than that of the Earth, while its distance is far and yet close to the star.

$G = 6,67430 \times 10^{-11} \text{ m}^3 \text{ kg}^{-1} \text{ s}^{-2}$

$M_b = 0,73 M_{\text{sun}} = 1,9884 \times 10^{30}$

$M_{\text{sun}} = 1,45 \times 10^{30} \text{ kg}$

$T = 18,8797 \text{ d.} \times 86400 \text{ s} = 1631206,08 \text{ s}$

$$d = \sqrt[3]{\frac{GM T^2}{4\pi^2}} = \sqrt[3]{d = 1,87 \times 10^{10} \text{ m.} \frac{1 \text{ km}}{1000 \text{ m}}}$$
$$= 18700000 \text{ km.} \frac{1 \text{ AU}}{149597870,7}$$

$d = 0,12 \text{ AU}$

TEMPERATURE AND HABITABILITY

The temperature is about $225 \pm 15 \text{ }^\circ\text{C}$, the temperature is higher than that of the Earth, so it is not a habitable place, some of the living beings would not be able to withstand the conditions.

COMPOSITION

The density of the planet is higher, almost equal to that of the planet earth, in my opinion it can present the same characteristics of a rocky planet.

Handwritten calculations on grid paper:

$$V = \frac{4}{3} \pi R^3$$
$$M_p = 9.30 M_{\text{Earth}} \cdot \frac{5.9722 \times 10^{24}}{M_{\text{E}}} = 5.79 \times 10^{29} \text{ g}$$
$$R_p = 2.18 R_{\text{E}} = 6378 \text{ km} = 13904.04 \text{ km} \cdot \frac{100000}{1 \text{ km}}$$
$$R = 1.39 \times 10^9 \text{ cm}$$
$$V = \frac{4}{3} \cdot 3.1418 \cdot (1.39 \times 10^9)^3$$
$$V = 1.12 \times 10^{28} \frac{\text{kg}}{\text{km}^3}$$
$$\frac{M}{V} = \frac{5.79 \times 10^{29}}{1.12 \times 10^{28}}$$
$$\rho = 5.16 \times 10^{-3} \cdot \frac{1000 \text{ g}}{1 \text{ kg}}$$
$$\rho = 5.16 \text{ g}$$