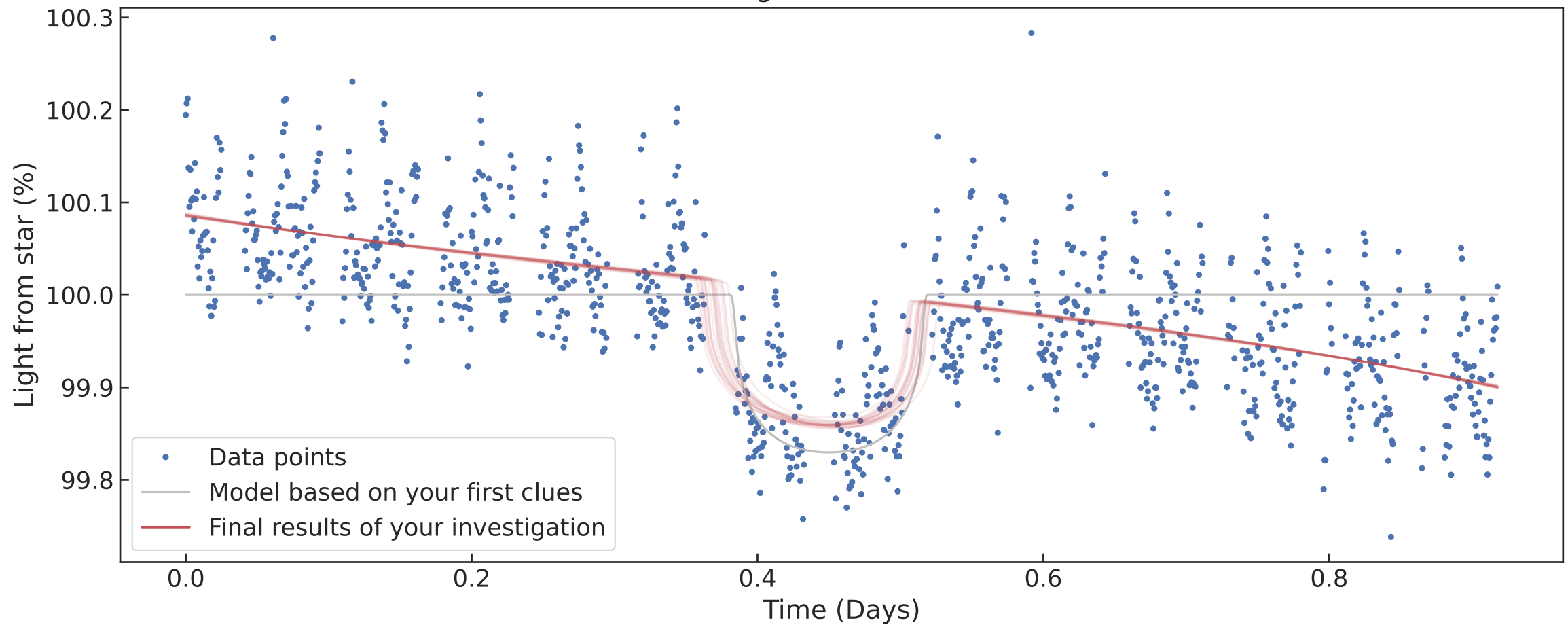


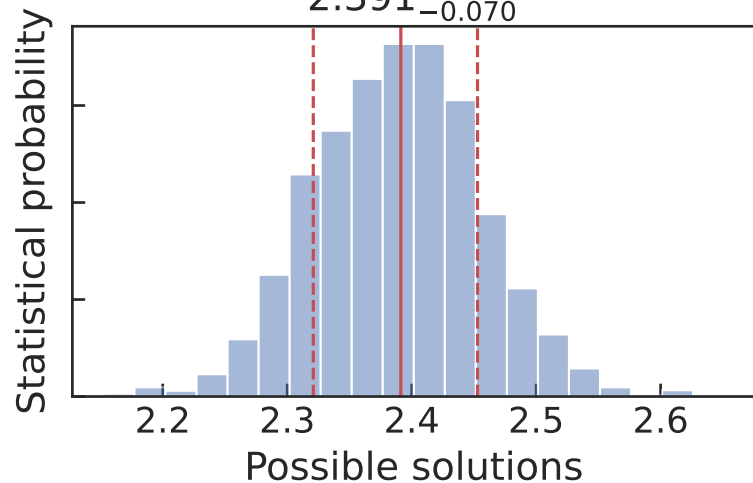
Transit Light Curve of TOI-560c



Histograms of the statistical probability of all parameter values of TOI-560c

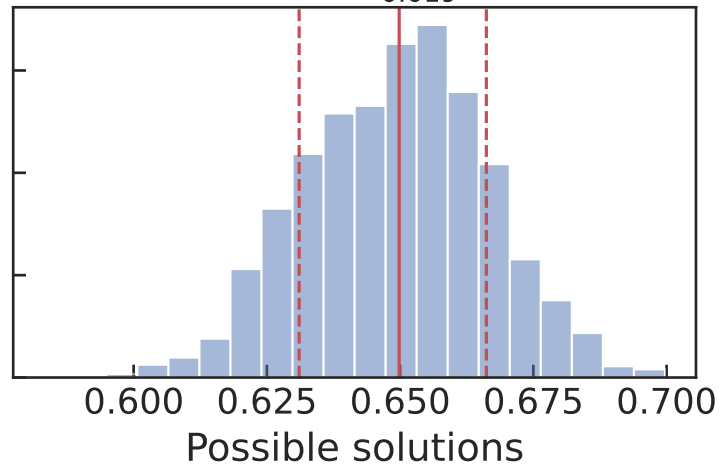
Radius of the planet
(in units of Earth radii)

$$2.391^{+0.062}_{-0.070}$$



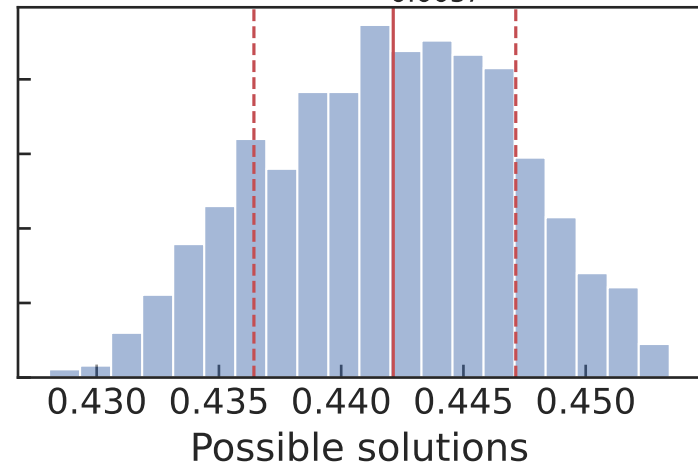
Radius of the star
(in units of Solar radii)

$$0.650^{+0.016}_{-0.019}$$



Mid-transit time
(in units of days)

$$0.4421^{+0.0050}_{-0.0057}$$



Radius

$$R = R_s \sqrt{\frac{\text{transit depth}}{100}}$$

$$R = 0.65 \times 696,340 \sqrt{0,0012}$$

$$R = 15,679.25137 \text{ [km]}$$

Volume

$$V = \frac{4}{3} \pi R^3$$

$$V = \frac{4}{3} \pi \times (15,679.25137 \times 10^5)^3$$

$$V = 1.6146 \times 10^{28} \text{ [cm}^3\text{]}$$

Density

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

$$\rho = \frac{9.7 \times 5.972 \times 10^{27}}{1.6146 \times 10^{28}}$$

$$\rho = 3.587786 \text{ [g.cm}^{-3}\text{]}$$

Escape velocity

$$v = \sqrt{\frac{2 \times G \times M}{R}}$$

$$v = \sqrt{\frac{2 \times 6.6743 \times 10^{-11} \times 5.793034 \times 10^{25}}{2.45 \times 6,378,000}} = 22,245.67555 \text{ [m.s}^{-1}\text{]}$$

$$v \doteq 22.25 \text{ [km.s}^{-1}\text{]}$$

Root-mean-square speed
of H₂ molecules

$$v_k = \sqrt{\frac{3 N_A k T}{M_{\text{mol}}}}$$

$$v_k = \sqrt{\frac{3 \times 6.02 \times 10^{23} \times 1.38 \times 10^{-23} \times 498.15}{2 \times 10^{-3}}}$$

$$v_k \doteq 2,491.51 \text{ [m.s}^{-1}\text{]}$$

Orbital distance

$$d = \sqrt[3]{\frac{M_s}{M_\odot} \times T^2}$$

$$d = \sqrt[3]{\frac{0.73}{1} \times \left(\frac{18.8797}{365.25}\right)^2}$$

$$d \doteq 0.1249 \text{ au}$$

$$d \doteq 18,684,746.8 \text{ [km]}$$

Liquid water and pressure

$$h = \frac{p - p_{\text{atm.}}}{\rho \times g}$$

$$h = \frac{1,000,000}{997 \times 9.81} = 63,36127777 \text{ [m]}$$

$$h = 101,300 \cdot \left(\frac{15.83}{9.81} \right) = 163,463.7105 \text{ [Pa]}$$

Orbital velocity

$$v = \frac{2\pi R}{t}$$

$$v = \frac{2\pi \times 0.125 \times 149,597,871}{18.88 \times 24 \times 3600}$$

$$v = 72.028 \text{ [km.s}^{-1}\text{]}$$

Surface gravity

$$g = \frac{GM}{R^2}$$

$$g = \frac{6.6743 \times 10^{-11} \times 9.70 \times 5.9722 \times 10^{24}}{(2.45 \times 6,378,000)^2}$$

$$g = 15.83 \text{ [m.s}^{-2}\text{]}$$

Luminosity of TOI-560

$$L = 4\pi R^2 \times \sigma T^4$$

$$L = (7.125 \times 10^{-7}) R^2 \times T^4$$

$$L = 7.125 \times 10^{-7} \times (0.65 \times 696,340,000)^2 \times 4,511^4$$

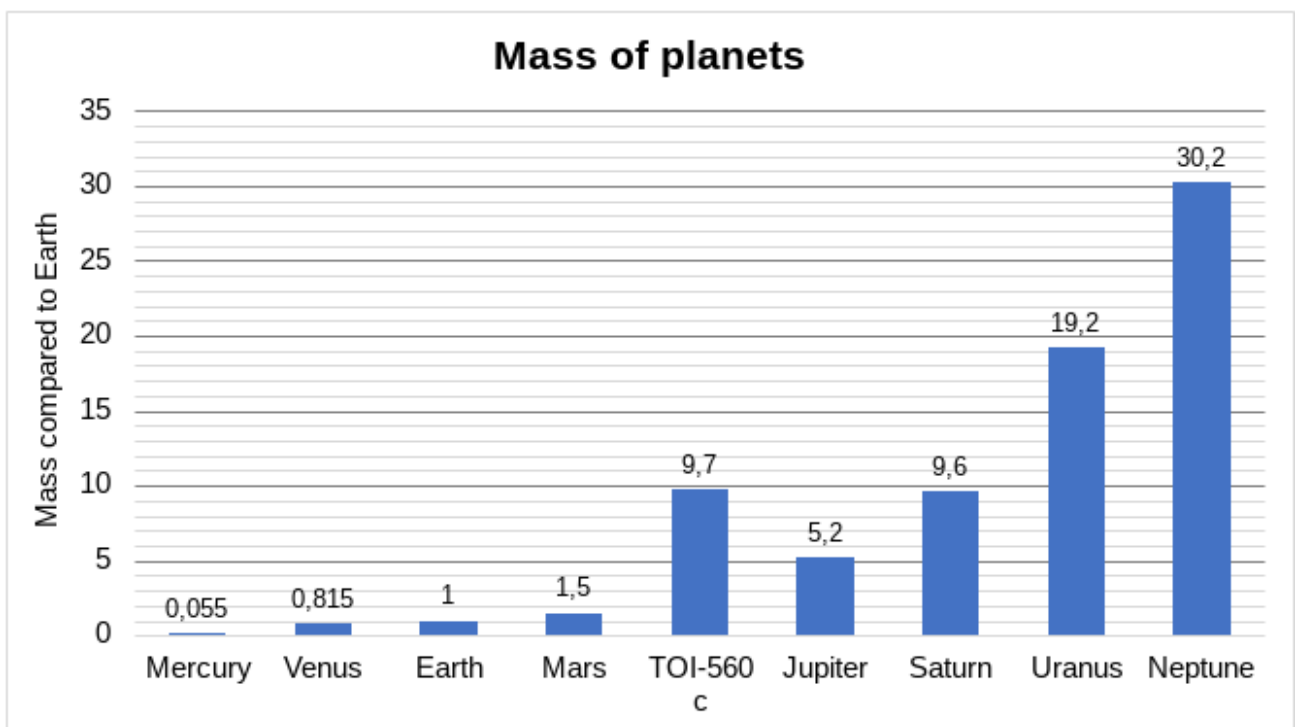
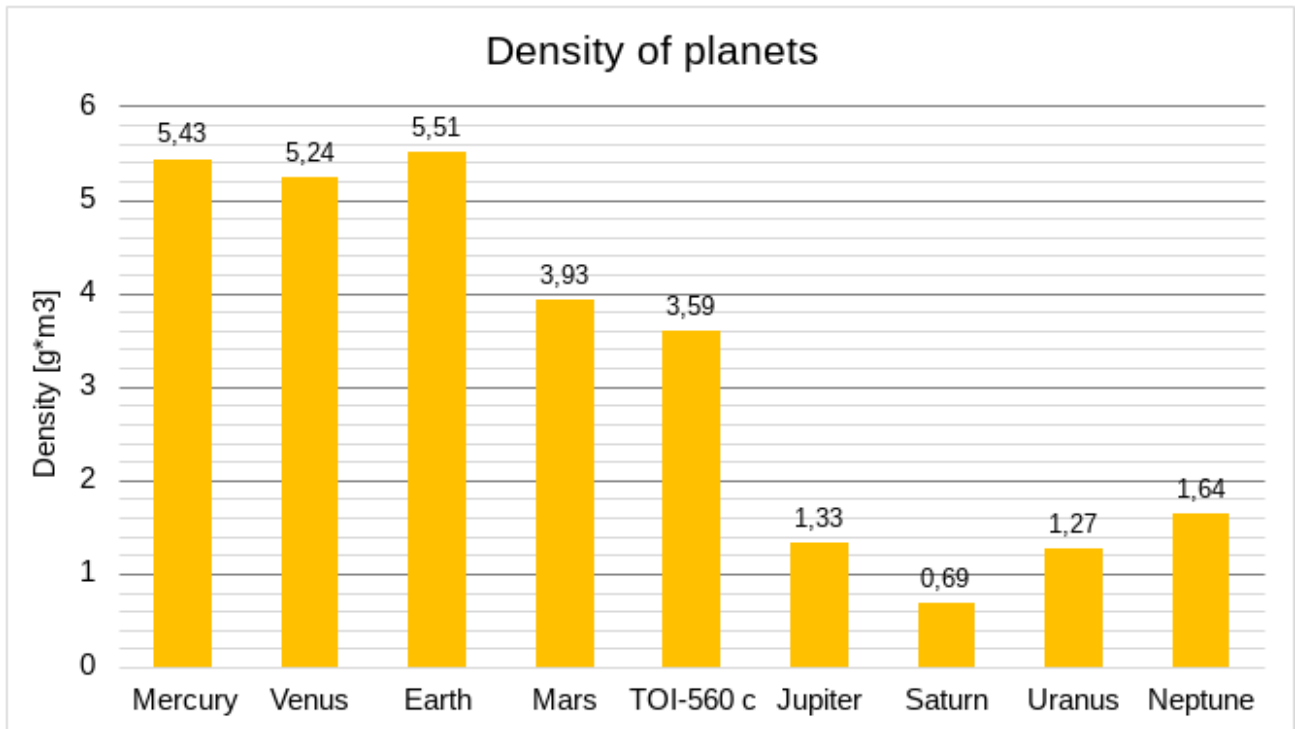
$$L = 6.04429 \times 10^{29} \text{ [W]}$$

Spectral flux of TOI-560

$$\Phi = \frac{L}{4\pi R^2}$$

$$\Phi = \frac{6.04429 \times 10^{29}}{4\pi \times 0.125 \times 149,597,871}$$

$$\Phi = 13,681.47386 \text{ [W.m}^{-1}\text{]}$$



Radius of planets

