

Distância Kelt a Estrela

$$d = \sqrt[3]{\frac{6,67 \times 10^{-11} \times 1,96 M_{\text{sol}}}{4 \times \pi^2} \cdot 233513 \text{ s}^2}$$

$$d = 7,112 \times 10^9 \text{ m}$$

$$d = 0,048 \text{ AU}$$

Raio \rightarrow 1 celt

$$\text{Transit depth (\%)} = \frac{\pi R_p^2}{\pi R_s^2} \times 100$$

$$\frac{0,9}{100} = \frac{R_p^2}{R_s^2}$$

$$0,009 \times R_s^2 = R_p^2$$

$$0,009 \times (1,70 \times R_{sol})^2 = R_p^2$$

$$0,0260 R_{sol}^2 = R_p^2$$

$$\sqrt{0,0260} R_{sol} = R_p$$

$$0,161 R_{sol} = R_p$$

$$0,161 \times 10^9 R_{Terra} = R_p$$

$$R_p = 17,5 R_{Terra}$$

Densidade Tó

$$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi \cdot (6371000 \cdot 2)^3$$

$$= 1,24 \cdot 10^{22} \text{ m}^3$$

$$\approx 9,70 \cdot M_{\text{TERRA}}$$

$$M = 9,70 \cdot 5,972 \cdot 10^{24} \text{ g}$$

$$= 5,79 \cdot 10^{28} \text{ g}$$

$$\rho = \frac{m}{V} = \frac{5,79 \cdot 10^{28}}{1,24 \cdot 10^{22}}$$

$$= 4,79 \text{ g/cm}^3$$

Período T_0 Distância T_0
a Estrela.

$$d = \sqrt[3]{\frac{6,67 \cdot 10^{-11} \cdot 0,173 \text{ seg} \cdot 3640^2}{4\pi^2}}$$

$$d = \sqrt[3]{\frac{9,677 \cdot 10^{19}}{4\pi^2}}$$

$$d = \sqrt[3]{2,45 \cdot 10^{18} \cdot 1,2624320}$$

$$d = 1,86 \cdot 10^{20} \text{ m}$$

$$d = 0,124 \text{ AU}$$

Raio Ter

$$\text{Transit depth (\%)} = \frac{\pi R_p^2}{\pi R_s^2} \cdot 100$$

$$\frac{0.1}{100} = \frac{R_p^2}{R_s^2}$$

$$0.001 \cdot R_s^2 = R_p^2$$

$$0.001 (0.65 R_{\text{sol}})^2 = R_p^2$$

$$0.000423 R_{\text{sol}}^2 = R_p^2$$

$$\sqrt{0.000423} R_{\text{sol}} = R_p$$

$$0.021 R_{\text{sol}} = R_p$$

$$R_p = 2.24 R_T$$

densidade \rightarrow ρ

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

$$= \frac{4}{3} \pi \cdot (6371000 \cdot 17,5)^3$$

$$= 5,8 \times 10^{24} \text{ m}^3$$

$$M_p = 617 M_T = 3,685 \times 10^{30} \text{ g}$$

$$\rho = \frac{m}{V} = \frac{3,685 \times 10^{30}}{5,8 \times 10^{24}} = 6,35 \times 10^5 \text{ m}^3$$
$$= 0,635 \text{ cm}^3$$