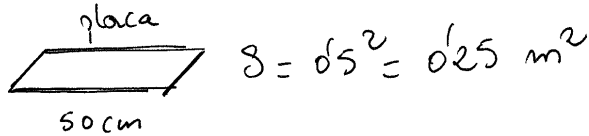


Problema 3

$$I = 14 \text{ kW/m}^2 = 14000 \text{ W/m}^2 \quad (\text{potencia por unidad de área})$$

(a)



$$\text{Potencia sobre la placa: } P = I \cdot S = 14000 \cdot 0.25 = 3500 \text{ W}$$

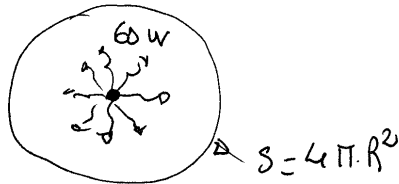
$$\text{Energía " " " en un segundo: } E = P \cdot t = 3500 \cdot 1 \text{ W} \cdot \text{s} = 3500 \text{ J}$$

$$\text{Energía de un fotón: } E_\nu = h \cdot \nu = \frac{6.63 \cdot 10^{-34} \cdot 3 \cdot 10^8}{550 \cdot 10^{-9}} = 3.62 \cdot 10^{-19} \text{ J}$$

$$\nu = \frac{c}{\lambda}$$

$$\text{Número de fotones: } N = \frac{E}{E_\nu} = \frac{3500}{3.62 \cdot 10^{-19}} = 9.68 \cdot 10^{20} \approx 10^{21} //$$

(b)



$$I_{\text{lámpara}} = \frac{P}{S} = \frac{60 \text{ W}}{4\pi R^2} = I_{\text{sol}} = 14000 \text{ W/m}^2$$

$$R^2 = \frac{60}{4\pi \cdot 14000}$$

$$R = 0.058 \text{ m} = 5.8 \text{ cm} //$$