

Problema202: Calcula as lonxitudes de onda das seguintes radiacións: a) Raios X de 10^{17} Hz, b) Luz ultravioleta de 10^{15} Hz, c) Microondas de 10^9 Hz , d) Onda de radio 10^7 Hz.

a) Raios X de 10^{17} Hz

$$f = 10^{17} \text{ Hz} = 10^{17} \text{ s}^{-1}$$

$$c = \lambda \cdot f$$

$$\lambda = \frac{c}{f} = \frac{3 \cdot 10^8 \text{ m/s}}{10^{17} \text{ s}^{-1}} = 3,00 \cdot 10^{-9} \text{ m} = 3 \text{ nm}$$

b) Luz ultravioleta de 10^{15} Hz

$$f = 10^{15} \text{ Hz} = 10^{15} \text{ s}^{-1}$$

$$c = \lambda \cdot f$$

$$\lambda = \frac{c}{f} = \frac{3 \cdot 10^8 \text{ m/s}}{10^{15} \text{ s}^{-1}} = 3,00 \cdot 10^{-7} \text{ m} = 300 \text{ nm}$$

c) Microondas de 10^9 Hz

$$f = 10^9 \text{ Hz} = 10^9 \text{ s}^{-1}$$

$$c = \lambda \cdot f$$

$$\lambda = \frac{c}{f} = \frac{3 \cdot 10^8 \text{ m/s}}{10^9 \text{ s}^{-1}} = 0,3 \text{ m}$$

d) Onda de radio 10^7 Hz

$$f = 10^7 \text{ Hz} = 10^7 \text{ s}^{-1}$$

$$c = \lambda \cdot f$$

$$\lambda = \frac{c}{f} = \frac{3 \cdot 10^8 \text{ m/s}}{10^7 \text{ s}^{-1}} = 30 \text{ m}$$