

Answer on Question #69841, Physics / Optics

The optic power, after propagating through a fibre that is 500 m long is reduced to 25% of its original value. Calculate the fibre loss in dB/km.

Solution:

The loss of the power in a fibre (in dB/km) is given by

$$\frac{10 \lg \frac{\text{output power}}{\text{input power}}}{\text{distance}}$$

So, in our case the fibre loss

$$\frac{10 \lg \frac{1/4 P_0}{P_0}}{0.5} = 20 \lg \frac{1}{4} = -12 \frac{\text{dB}}{\text{km}}.$$

Answer: $-12 \frac{\text{dB}}{\text{km}}$.

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