Answer Question #67081, Physics / Mechanics | Relativity

A 100 cm long string vibrates in 4 loops at 50 Hz.Linear density of the string is 0.0004 gm/cm.Calculate the tension in the string.

Find: T – ?

Given:

L=1 m

f=50 Hz

$$\mu = 0.0004\,\frac{\text{gm}}{\text{cm}^3} = 0.0004 \times \frac{10^{-3}}{10^{-6}}\,\frac{\text{kg}}{\text{m}^3} = 0.4\,\frac{\text{kg}}{\text{m}^3}$$

n=4

Solution:

$$\text{f} = \frac{\text{n}}{2\text{L}}\sqrt{\frac{\text{T}}{\mu}}\ (1)$$

Of (1) $\Rightarrow$ $\text{T} = \frac{\text{f}^2 4\text{L}^2 \mu}{\text{n}^2}$ (2)

Of (2) $\Rightarrow$ T=250 N

Answer:

250 N

Answer provided by https://www.AssignmentExpert.com