

### Answer on Question #67207-Physics-Mechanics | Relativity

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

#### Solution

$$0.0004 \frac{g}{cm} = 0.00004 \frac{kg}{m}$$

The frequency of wave is

$$f_n = \frac{n}{2L} \sqrt{\frac{T}{\mu}}$$

The tension in a string is

$$T = \mu \left( \frac{2Lf_n}{n} \right)^2 = 0.00004 \left( \frac{2 \cdot 1 \cdot 50}{4} \right)^2 = 0.025 \text{ N.}$$

**Answer: 0.025 N.**

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